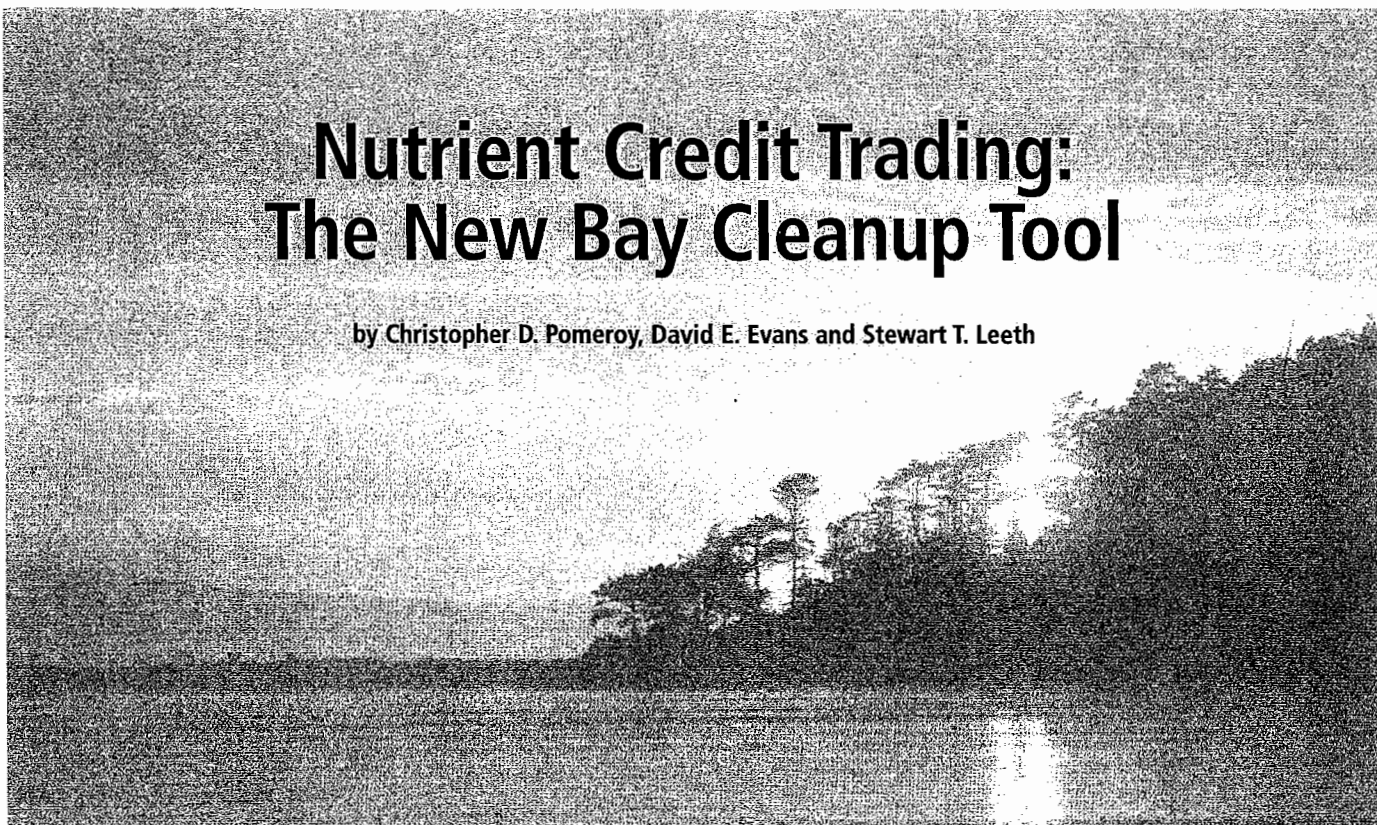


Nutrient Credit Trading: The New Bay Cleanup Tool

by Christopher D. Pomeroy, David E. Evans and Stewart T. Leeth



Virginia is emerging as a leader and innovator in the Chesapeake Bay cleanup due to its new watershed permitting and nutrient credit exchange program. This program will touch every locality and wastewater authority and many industries across Virginia's portion of the bay watershed. State Water Control Law amendments will help guide of the next decade of Virginia's bay restoration work.

Background

Major portions of the bay and its tidal rivers are classified under the Clean Water Act as "impaired" due to low dissolved oxygen levels and poor water clarity. The low oxygen levels are largely attributable to excess nutrients from "nonpoint" sources (e.g., agricultural runoff and air emissions), and also from point sources (e.g., treated effluent from municipal wastewater treatment plants and factories).

Virginia was compelled to undertake a major effort to restore the bay as a result of two federal legal developments in 1999. First, the U.S. Environmental Protection Agency (EPA) added the bay to Virginia's impaired waters list over the objection of

the Virginia Department of Environmental Quality (DEQ). Second, the EPA settled a lawsuit by two citizen groups by entering into a federal consent decree establishing a twelve-year schedule for developing cleanup plans. These plans define Total Maximum Daily Loads (TMDLs) for all of Virginia's waters that were listed as "impaired."

These decisions are controversial. The dissolved oxygen water quality standard on the books at the time was unattainable due to natural conditions, such as the lack of re-aeration in the bay's deep trenches. Any attempt to regulate using the flawed standard would have meant harsh growth restrictions and economic impacts for communities and businesses across Virginia.

These concerns led the six bay states and the District of Columbia, the U.S. Environmental Protection Agency and the tristate Chesapeake Bay Commission to adopt a TMDL transition plan. This transition plan was included in a Chesapeake 2000 Agreement, adopted to guide the restoration of the bay during this decade.

Under the plan, new site-specific water quality standards would be developed, followed by the development of TMDL-like tributary strategies to meet those standards. The tributary strategies would be implemented through nutrient limits in Virginia Pollutant Discharge Elimination System (VPDES) permits for point source dischargers and through typically nonregulatory measures for nonpoint sources. Then the Virginia State Water Control Board began to develop implementing regulations.

Proposed Regulations

In 2004, the State Water Control Board issued proposed implementing regulations that would require:

- Enhanced nutrient removal (limit of technology) upgrades by 2010 at 120 "significant" facilities (municipal facilities with a design flow greater than one hundred thousand gallons per day in tidal waters or five hundred thousand gallons per day in free-flowing streams and equivalent industrial facilities) and upon startup at any new or expanding facility.

- Biological nutrient removal (BNR) upgrades for all “nonsignificant” facilities (those with design flows less than the above significance threshold but greater than forty thousand gallons per day, and equivalent industrial facilities) during the first permit term after 2010.
- Requirements to offset any additional nutrient loads associated with new facilities or facility expansions.

The proposed regulations required all point sources to concurrently bid and complete major capital projects. This was widely expected to lead to major shortages of qualified design engineers for advanced treatment facilities, contractors and skilled labor (e.g., instrument and control technicians).

The result would have been dramatically higher bid prices in an environment where many bids on capital projects are already 25 percent higher than engineering estimates. Significantly, this was not necessary because a smaller number of ENR projects initially at the largest facilities could meet the combined point source wasteload allocations (the point source cap).

Citizen Group Law Suits

Meanwhile, the Chesapeake Bay Foundation, a private nonprofit conservation group, launched a litigation initiative that included two circuit court appeals seeking ENR concentration limits in VPDES permits. One suit concerned the town of Onancock’s wastewater treatment plant, and the other the Philip Morris plant in Chesterfield County.

At the heart of these appeals was the DEQ’s 2004 permitting guidance, which required immediately effective interim mass load limits. The Chesapeake Bay Foundation asserted that the guidance and resulting limits were not stringent enough. At the same time, individual permittees were planning appeals of their own. The limits would have unavoidably resulted in noncompliance for many facilities because—contrary to ordinary permitting practices—the agency was allowing no time to come into compliance.

The bay program might have been tied up in court for years to come. There had to be a better way.

A Legislative Solution

In 2005, Virginia House Bill 2862, and the companion bill in the Senate (Senate Bill 1275) represented an effort to advance the bay cleanup, while avoiding problems that were beginning to surface in the courts. The goal was a practical, cost-effective approach with better prospects for achieving nutrient load reductions in a timely manner.

The legislation would harness market forces through “trading”—a tool already used in Virginia’s air pollution control program. Budget considerations made the cli-

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mate right both for a legislative approach in general and for trading in particular. The General Assembly was grappling with massive funding needs to continue Virginia’s successful state-local partnership for point source nutrient control projects. The EPA’s estimate that trading could reduce point source upgrade costs for meeting the same water quality standards by two hundred million dollars made trading attractive.

These bills, which easily passed in 2005 with overwhelming bipartisan support, were the result of extensive negotiations among interested parties. In an editorial published on June 4, 2005, in the *Richmond Times-Dispatch*, EPA Assistant Administrator for Water Benjamin H. Grumbles said that Virginia’s nutrient credit trading program demonstrates “the power of cooperation and consultation . . . to achieve workable and effective solutions . . . a model not only for the Chesapeake Bay partners but also for watersheds across the country.”

Grumbles was referring to the collaboration among the Virginia Association of Municipal Water Agencies (VAMWA)—the

lead proponent of the bills—and the Chesapeake Bay Foundation, the Virginia Secretary of Natural Resources and the DEQ. Their mutual efforts led to consensus legislation with wide support.

The resulting legislation, which passed nearly unanimously, amended the State Water Control Law by adding the Chesapeake Bay Watershed Nutrient Credit Exchange Program (Exchange Program). (See <http://leg1.state.va.us/cgi-bin/legp504.exe?051+ful+CHAP0710+pdf>).

Key Features of the Legislation

The law memorializes the General Assembly’s determination that a watershed permit and nutrient credit trading program will assist in meeting the point source cap

cost-effectively and as soon as possible, while accommodating continued economic growth and development. The law’s features include:

- **Watershed General Permit**—The State Water Control Board will issue a general permit covering all dischargers in early 2006. Controversial interim limits will no longer be issued, and the general permit will supersede interim limits already in effect. The general permit provides an early, uniform “start date” for all facilities, which will not only help make progress sooner, but also enables the level of coordination necessary for trading and sequencing projects to economically achieve and maintain the point source cap.
- **A Practical Approach to Scheduling**—The legislation exchanged the Water Control Board’s proposed across-the-board 2010 compliance deadline for a feasible schedule requiring the point source cap to be met “as soon as possible.” The board’s general permit will include a tentative compliance schedule that accounts for opportunities to minimize costs to the public or facility own-

ers by sequencing multiple projects; the availability of required services and skilled labor; and the availability of funding from the Water Quality Improvement Fund, the State Revolving Fund (SRF) and other mechanisms. Schedule adjustments will be made when permittees submit facility-specific compliance plans nine months after general permit issuance. These plans will propose how and when each facility will be able to meet its individual wasteload allocations (e.g., via treatment and/or trading). Compliance might take about seven to ten years depending upon the level of trading activity.

- **Trading Framework**—The statute expressly recognizes that the permittees may create a Virginia Nutrient Credit Exchange Association (Exchange) to coordinate and facilitate their participation in the Exchange program. While the Exchange cannot assume any of its members' compliance obligations, it will lead technical studies needed to best coordinate treatment plant upgrades and trading activity. Participation in the Exchange, as well as in trading under the Exchange program, is purely optional to the permittee. The law simply extends trading—already used in Virginia's air pollution control program—to regulated parties as an option to help meet permit limits cost-effectively and expeditiously.
- **Annual Compliance Trading**—While trades will be planned and agreed to years in advance, actual trades will be conducted on an annual basis considering facility performance during the calendar year. All trades must be completed by the middle of the following year. If there is a shortage of credits, additional credits may be acquired from the state through the Water Quality Improvement Fund.
- **Owner Bubbles**—There is additional flexibility for multiple facilities under common ownership. At the owner's discretion, wasteload allocations for its multiple facilities can be aggregated and managed collectively. Thus, a single

owner can trade loadings among its own facilities with minimal red tape.


- **Offset Protection**—Trading also comes into play when offsetting loads from new facilities or expansions of existing facilities that exceeded their wasteload allocations. The permittee must exercise good faith in attempting to secure offsets from point or nonpoint sources. In the event that offsets are not reasonably available from these sources, offsets may be secured from the state through the Water Quality Improvement Fund in the same manner as year-end compliance credits.
- **Relief for "Non-Significant" Facilities**—Rather than conducting capital upgrades at all smaller facilities, which tend to have very high upgrade costs for little environmental benefit, these facilities will be required to upgrade when it is most convenient and least expensive—at the time of a future expansion.
- **Technology (Concentration) Limits**—The law contains technology require-

ments for new or increased discharges. New or expanded facilities will be required to install advanced treatment and most will be required to install "limit of technology" controls. Some smaller facilities will be allowed to use biological nutrient removal advanced treatment.


Next Steps

The DEQ now is developing the general permit, which it plans to issue in March 2006. The Exchange is developing a trading optimization computer model and conducting a construction management study to determine how quickly new facilities can be constructed without serious shortages, price spikes and delays, in order to meet the point source cap. Using the results of these efforts, regulated entities will have the option of participating in the trading program to help meet their new, more stringent permit limits. The Exchange and the DEQ will soon be disseminating information about the trading program, but in the meantime readers may contact the authors of this article for further information. ☛

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