



## **April 30, 2003 Conference Call**

Representatives from the following organizations participated in the conference call: Brown and Caldwell, Nashville, Tennessee (John Ricketts); Charles River Watershed Association (Kathy Baskin and Bob Zimmerman); Kieser & Associates (Mark Kieser and Andrew Fang); Massachusetts Department of Environmental Protection (Marcia Sherman); Michigan Department of Environmental Quality (Rick Hobrla); Pace University School of Law, White Plains, New York (Ann Powers); Shawn Balcklock— independent consultant, Washington D.C.; South Nation Conservation, Canada (Dennis O’Grady); Tar-Pamlico Basin Association (Barrett Lassater); US EPA National Center for Environmental Economics (Barry Korb); US EPA Office of Water (Lynda Hall Wynn); Virginia Colonial Soil and Water Conservation District (Brian Noyes and Jim Wallace); and World Resources Institute (Siet Meijer).

Mark Kieser chaired the call.

### **Overview**

This conference call had three major components: synopses of the Tar-Pamlico and the Charles River trading programs presented by the programs’ participants and designers; and an introduction to the EPA’s National Forum on Water Quality Trading to be held in Chicago on July 22-23. As a follow-up to previous calls, Dennis O’Grady indicated that an MS thesis on the phosphorus reduction efficiency of various agricultural BMPs used in the South Nation River watershed trading program in Ontario is undergoing final reviews. This thesis was written by a graduate student at the University of Ottawa as part of a study requested by the trading program. When available, Dennis will make a copy of the paper available for posting on the ETN website.

### **The Tar-Pamlico River Basin Nutrient Trading Program**

Barrett Lassater from the Tar-Pamlico Basin Association (the Association) presented an overview of probably the most heard about trading program in the nation. In 1991, the Association (now with 16 members) was formed among municipal and industrial point sources in the basin as the State of North Carolina declared the Tar-Pamlico River Basin Nutrient Sensitive Waters (NSW). The state also proposed a NSW implementation strategy which



included nutrient discharge limits on point sources. The Association negotiated with the state and a revised NSW Implementation Strategy was adopted in 1991 (Phase I). A nutrient trading program was part of the strategy. Nutrient (nitrogen [N] and phosphorus [P]) load reduction goals were set for the Association and distributed among members. This trading program allowed the Association to pay into a nonpoint source reduction fund in case they cannot make the overall load reduction goals set for the Association each year. Permits for Association members in the Tar-Pamlico do not have individual limits. Instead, members are subject to the overall mass limit. Intra-Association trading can also take place if one member is over its load allocation. Phase I of the strategy was completed in 1994. Nutrient trading remains a part of Phase II that covers 1995-2004.

As the first step to meet the nutrient reduction goals during Phase I, the Association hired engineering consultants to examine each member's general operational practices to improve nutrient removal capacity. For new treatment plants or expansions, nutrient removal capability is required. This strategy yielded excellent results as the total N mass load has been reduced 45% despite a 40% increase of total discharge volume. The average N discharge concentration went from 15 mg/L to 7 mg/L and P concentration was reduced to 0.8 mg/L. As a comparison, other watersheds in North Carolina are required to have a 30% N reduction. Monitoring is conducted both up and downstream of treatment plants by Association members. Because all the members (and the Association as a whole) have limited their loading under the allocation, no point-point or point-nonpoint trades have taken place in the Tar-Pamlico.

Data collected by a professor from E. Carolina University show signs of decreases in both nutrient and chlorophyll-a in the estuary. Barry feels confident that after 2004, a new agreement will pass to continue this program.

In 1991, a modeling effort funded by the Association indicated that nonpoint sources accounted for 80% of the nutrient loading in the estuary while point sources accounted for 20%.

The following are questions and answers during the ensuing discussion on trading in the Tar-Pamlico.

*Q:* If the overall mass limit (N and P) is exceeded, what is the Association required to do?

*A:* The Association will pay \$56/kg to the state into a nonpoint source project fund. Although no trades have taken place, the Association has still contributed to the fund.

*Q:* Do nonpoint sources in the basin have a mass load limit?

*A:* No.

*Q:* What motivated the Tar-Pamlico program?

*A:* After the 1989 declaration of the NSW status for the basin, the state intended to impose effluent limits on the POTWs in the basin that would require the POTWs to either retrofit or invest in new removal technology. The POTWs convened (organized by John Hall at EPA) to negotiate with the state. The state assumed that point sources were the major contributor to the nutrient problem. The modeling effort funded by the Association indicated otherwise. The state agreed to the program in part because it believed that the point sources would not be able to meet

the overall mass load limit and consequently, the state would have a steady source of funding (from the over-limit payment) for nonpoint source control projects. There were four plants that did not participate in the program. They have been able to meet their individual effluent limits. Two Association members joined later on because they couldn't meet their individual limits. They paid backdues to the Association when they joined. The Association helped them change their operation and management practices. One of the two has cut its loading by half. In general, in order to meet pollution reduction requirements, it is cheaper for POTWs to join the Association (and undergo operation and management changes) than go alone with individual limits.

### **The Charles River Flow Trading Project**

This brief was presented by Bob Zimmerman, Executive Director of the Charles River Watershed Association, and Kathy Baskin, P.E., Technical Director of the Association.

The Charles River Basin includes an area of 380 square miles and the river runs 80 miles long. A 1994 study indicated that combined sewer overflows (CSOs) and low flow in dry season were the primary sources of pollution impairing the River. In 1996, it was recognized that the CSOs and low flow were not necessary the source of the problems, rather only the symptoms of the problem, which is the way cities have traditionally be engineered—to get rid of rain water quickly. Without rain water recharging the groundwater, flow cannot be maintained in the river during the dry season to dilute pollutant loads.

The flow trading project is designed to re-engineer how municipalities deal with rain water (to put water back to ground to increase baseflow and carrying capacity of streams). With help from USGS, flow modeling was conducted in 1998 for eight towns in the upper Charles. About 80-100 monitoring wells were installed. The groundwater flow model MODFLOW was applied and linked to HSPF to determine recharge areas. Modeling work was completed about 1.5 years ago.

The idea is to reduce stormwater runoff by using money from point sources (federal and state permittees). For example, if a POTW wants to expand its operation, it would negotiate to trade flow (quantity) and quality so that part of the would-be inflow to the plant will instead be recharged to the groundwater. Examples of tradable water quantity and quality practices include stormwater mitigation and reduction in local well withdrawal. A four-part stormwater collecting and infiltrating system was mentioned during the discussion that can cost-effectively provide groundwater recharge for retrofits and new residential development (\$3,000 for equipment and \$1,000 for installation). The Massachusetts Department of Environmental Protection is working with the Charles River Watershed Association in developing the trading program. It's likely that an overarching watershed permit will be issued for the program.

The following are questions and answers during the ensuing discussion on trading in the Charles River Watershed.

*Q:* Are there any TMDLs for the watershed? Is trading incorporated in the TMDLs?

A: TMDLs for P, N, bacteria, DO, etc. are now being developed for the watershed. Flow trading may be linked to water quality trading for these TMDLs in the watershed.

Q: What exactly is the problem for the Charles River?

A: The expansion of the Boston metro area has led to increased impervious surfaces, less infiltration, and more groundwater withdrawal in the watershed. Stormwater and groundwater end up in wastewater treatment plants instead of providing clean baseflow to the river. Baseflow is so low that during summer months, 90% of the river flows are from WWTPs. Consequently, a 0.2 mg/L WWTP effluent limit on P is still not enough to improve water quality in the river (four times higher than the desired concentration).

Q: Will the trading take place in an open market or rely more on informal negotiation?

A: The project team is working towards an open market design. However, more information and suggestions are needed and being sought to develop the program. There will be a meeting/conference on the trading program late this summer or early fall. The Watershed Association is looking for experts to attend the meeting to discuss how to implement the trading program.

### **EPA's National Forum on Water Quality Trading**

This forum is a one and half day event co-sponsored by USDA-NRCS, WEF (Water Environmental Federation) and ASWIPCA. The forum will be held in Chicago on July 22-23. It will be of an introductory type, building on the momentum created by the release of EPA's trading policy in January. It intends to bring together people interested in trading, especially those from the agricultural community and point sources. The goal is to generate dialogue between these and other groups.

EPA Assistant Administrator for Water, Tracy Mehan will be the facilitator. Presentations will be provided by representatives from the Connecticut Long Island Sound program, the selenium trading program in the San Joaquin Valley of California, the Lower Neuse trading program in North Carolina, and the Charles River flow trading program and others from existing or new programs.

There will also be technical topics such as nonpoint source pollution reduction. Paul Faeth from the World Resources Institute will talk about how to better move forward with the EPA's policy. A panel discussion on water quality trading is scheduled for the second day of the forum. Mark Kieser will be the moderator.

An EPA webpage for this forum will soon be set up and a draft agenda will be posted on ETN's website.

### **Next Call**

The next call will be at 10:30 EDT, Wednesday, May 28, 2003.