

**JOINT LEGISLATIVE AIR AND WATER POLLUTION
CONTROL AND CONSERVATION COMMITTEE**

REPORT ON

WATER QUALITY CREDITS AND TRADING

**PURSUANT TO
HOUSE RESOLUTION 361 OF 2000**

February, 2001

TO: All Members of the General Assembly

**FROM: Representative David G. Argall, Chairman
Senator Raphael J. Musto, Vice-Chairman**

SUBJECT: Report on House Resolution 361 of 2000

DATE: February, 2001

Pursuant to House Resolution 361 of 2000, the Committee was directed to evaluate the feasibility of establishing a voluntary water quality credits and trading program in Pennsylvania. The recommendations adopted and presented in this report are the result of a public hearing held on August 14, 2000 and subsequent meetings and briefings concerning this subject.

INTRODUCTION

For business and industry in Pennsylvania, sustainability is a complex goal that often must bridge profitability with environmental compliance. With multiple stakeholders and perspectives, state government faces even greater challenges as it seeks to balance environmental management with economic development. Consider the difficulty in developing an infrastructure that protects the environment while maintaining the needs and integrity of communities, employers and residents.

In recent years, there has been a growing interest in developing watershed-based trading programs as a regulatory tool to meet water quality goals. Wastewater treatment operations are increasingly looking for cost-effective alternatives to capital investments in order to meet treatment demands, and to correct ongoing water quality degradation that cannot be addressed by wastewater treatment facilities. Throughout the country, states are considering watershed-based trading as a new approach to cleaning up waterways. To become involved, we need to understand what trading is, identify strengths and weaknesses of watershed-based trading, and recommend appropriate strategies to implement a statewide program.

Pursuant to House Resolution 361 of 2000, the Joint Legislative Air and Water Pollution Control and Conservation Committee was directed to evaluate the feasibility of establishing a voluntary water quality credits and trading program in Pennsylvania, and to determine whether such a program could be used as an incentive for achieving point and nonpoint source pollution reductions beyond those required by federal and state clean water laws.

The committee convened a public hearing concerning House Resolution 361 on August 14, 2000 and concluded that market-based approaches to water quality management, including nutrient trading, have the potential to provide greater improvements in water quality at much lower costs than traditional regulatory approaches alone. The primary goal is to ensure that water quality goals are met throughout a watershed by allowing reductions in pollutants from point and nonpoint sources to be cost effectively achieved. The immediate goal is to develop a framework for pollutant trading in Pennsylvania; to allow trades to occur if trading appears to be a viable option and subsequent pilot projects prove successful; and to have in place at the end of two years a process to allow future trades. This report represents a review of the public hearing testimony and subsequent meetings and briefings and makes the following recommendations:

RECOMMENDATIONS

- 1. The committee supports the recommendation of the governor's 21st Century Environment Commission to create a watershed-based pollutant credit trading system with the goal of raising water quality above the minimum standards.**
- 2. The Pennsylvania Department of Environmental Protection (Department) should establish a watershed-based trading pilot program and develop a set of fundamental principles that outline the philosophy of such a program. To the extent possible, the Department should provide the flexibility within such a program to address future changes and maximize participation of qualified traders but guard against water quality degradation of localized areas within a watershed.**
- 3. The Department should establish a stakeholder group comprised of persons representing point sources, nonpoint sources, environmental organizations and watershed associations to help identify watershed trading program issues, program design, pollution reduction goals, trading eligibility and assure accountability and monitoring of water quality progress as required by law.**
- 4. Public information, education and outreach activities should be conducted in conjunction with pilot program development and implementation.**
- 5. Within two years of the implementation of any pilot program, the Department should evaluate and examine the operation of the pilot program(s) to determine the feasibility and likelihood of a continued and successful watershed-based trading program in Pennsylvania, and report these findings to the Chairman of the House and Senate Environmental Resources and Energy committees.**

The idea of pollutant trading was first used several years ago to help achieve national air quality goals. States have been successful in reducing air emissions by trading in sulfur dioxide allowances under Title IV of the federal Clean Air Act and trading in nitrogen oxide emission reduction credits and ozone season allowances under Title I of the Clean Air Act. Many of the same principles of the air emissions trading program may also be applied to watershed-based trading.

The national effort to allow watershed-based trading began when the U.S. Environmental Protection Agency (EPA) issued its first effluent trading policy in 1996, followed by its “Draft Framework for Watershed-Based Trading” in June 1996. The draft strongly supports the use of watershed-based trading as a way to address water quality problems within a watershed. The draft promotes the idea that watershed-based trading is not a departure from the goals of the Clean Water Act (CWA), but rather an opportunity to expand and exceed those goals.

Due in part to the success of the air emissions trading program, state agencies and municipal and industrial communities have shown increased enthusiasm for watershed-based pollutant trading as an innovative and relatively inexpensive opportunity to improve water quality. The goals of the CWA are to eliminate pollutant discharges and to restore and maintain the integrity of the nation’s waters. Pollutant trading is now being considered by municipal and industrial dischargers as a flexible and cost-effective alternative to meeting those goals.

In 1997, Pennsylvania’s 21st Century Environment Commission, charged with studying Pennsylvania’s environmental needs and the challenges facing the Commonwealth during the next century, recommended “a watershed-based pollutant credit trading system to encourage various approaches to the goal of raising water quality above the minimum standard required to protect health and aquatic life.

In June 1999, the Chesapeake Bay Program organized a Nutrient Trading Negotiation Team for the purpose of examining the feasibility of creating a nutrient trading program in the Chesapeake Bay watershed. The team is comprised of 18 members representing federal, state and local government, as well as representatives from industry, the agricultural community, municipal dischargers, and environmental groups. The negotiation team was charged with developing guidelines and principles considered essential for a viable trading program for jurisdictions affecting the Chesapeake Bay Watershed. A draft of the Chesapeake Bay Program Nutrient Trading Guidance Document was issued on September 8, 2000

for public review and comment with a final document to follow. The principles and guidelines contained in this document were presented before the committee for consideration.

To better understand the principles and the overall process of watershed-based trading and its applicability to Pennsylvania, the following information may be helpful.

Defining Watershed-Based Trading

Effluent trading, nutrient trading, and water quality trading are terms used to describe a process that allows one source to use discharge reductions generated by another source to meet environmental water quality standards or to comply with discharge limits. Watershed-based trading is a strategy used to reduce high concentrations of pollutants found in a watershed and reallocate pollutant discharge reduction goals among pollutant sources to achieve water quality goals. Trading allows a pollution source (such as industrial dischargers or a wastewater treatment facility) to remove or prevent additional discharges from entering a waterway while allowing another pollution source to discharge pollutants elsewhere in the watershed. Trading requires that a discharger find another entity willing to assume the legal requirements of reducing its pollutant loadings beyond its statutory requirements. The agreements may also include third parties such as state agencies or local authorities. The primary goal is to ensure that water quality standards are achieved throughout a watershed by allowing pollution reductions from all sources to be cost-effectively achieved.

Types of Trades

- ◆ **Point to Point Trading** – an agreement between point sources (usually wastewater treatment facilities and regulated industries) where one point source pays another point source to reduce pollutant discharges beyond the standards required by law in lieu of reducing pollutant discharges from their own point source.
- ◆ **Point Source to Nonpoint Source Trading** - an agreement between a point source and a nonpoint source where a point source pays for and/or installs controls to reduce pollutant discharges from a nonpoint source somewhere within the same watershed.
- ◆ **Nonpoint to Nonpoint Source Trading** - nonpoint sources arrange for the installation of more cost-effective pollution prevention practices of other nonpoint sources.

- ◆ **Intraplant Trading** - a point source arranges discharge allocations among its outfalls while maintaining or reducing total pollutant discharges.

Mechanisms for Trading

Trading makes it profitable for sources with low treatment costs to reduce their own discharges beyond legal requirements, generate a credit from the surplus reductions, and sell these credits to dischargers with higher treatment costs. This flexibility produces a less expensive outcome while achieving a mandated reduction goal. With the option of using trading to meet regulatory requirements, dischargers such as municipal sewage and industrial waste treatment facilities can choose to upgrade their plants with technology designed to meet new requirements or share in the cost of an upgrade of another facility that will exceed regulated discharges. This would generate a reduction credit for the first facility and represent a point to point trade. Similarly, a treatment facility may work with farmers within the same watershed to adopt conservation practices that reduce fertilizer runoff. This would in turn generate a credit for the treatment facility and represent a point to nonpoint trade.

Trading Benefits

The overall intent of trading is to achieve reductions of a particular pollutant at a lower cost. If trading allows dischargers flexibility in how they reduce pollutants loads, trading has the potential to lower the overall discharge of pollutants to a particular watershed at a lower cost. This creates an economic incentive for dischargers to go beyond minimum pollution prevention and has the potential to prevent future environmental degradation, addresses the issue of sprawl, and encourages the use of technologies that allow pollution reductions to occur sooner. Such benefits may also create incentives for nonpoint sources to participate in watershed restoration and protection efforts. Delivering cost savings to all dischargers while achieving water quality improvements makes trading an option worth exploring.

Policy Considerations

Trading is fundamentally different from the more traditional approaches to water quality improvement. In a trading program, competition is used to stimulate efficiency at a lower cost by letting the free market determine where pollution should be reduced. Credits are created by both point and nonpoint sources when more pollutants are removed than what is required by a permit or regulation. Buyers can purchase these credits in an effort to meet their specific water quality re-

quirements. Therefore, the sale of credits would require dischargers to move beyond compliance. It is important to understand that trading programs supplement existing regulatory water quality protection programs.

In its “Draft Framework for Watershed-Based Trading”, EPA recommends that trading occur in the context of a Total Maximum Daily Load (TMDL) Program. A TMDL sets a limit on the pollutant discharges that can enter a waterway so that the water can meet water quality standards. The CWA requires states to list all waters that do not meet water quality standards, even after pollution controls required by law are established. For these impaired waters, Pennsylvania must calculate how much of a substance the waterway can sustain without violating water quality standards, and then distribute that quantity among all the pollutant sources within the waterway.

SUMMARY OF TESTIMONY

Pennsylvania Department of Environmental Protection

According to testimony presented by the Pennsylvania Department of Environmental Protection (Department), “a properly designed water quality credit trading system should be developed for Pennsylvania”, and creating such a program would be a “win-win-win solution” for the environment, watersheds, and the citizens of the Commonwealth. The Department suggested that a sound trading program would result in greater water quality improvements at less cost than traditional methods, but must incorporate sound science and active public participation. The Department believes that trading can be used as a supplemental tool to existing water quality improvement programs and will strengthen the Commonwealth’s ability to meet state, regional, and federal water quality standards. The Department emphasized that water quality would not be compromised through this approach, and the cost of compliance would be significantly reduced.

Consistent with the governor’s 21st Century Environment Commission, the Department is currently taking steps to manage Pennsylvania’s watersheds and increase local citizen involvement. The concept of effluent trading fits well with the Pennsylvania Watershed Approach, which will address water quality impairment through the development of Total Maximum Daily Loads, or TMDL’s. The Department believes that it is feasible and advisable to develop a trading system in Pennsylvania and will provide the economic incentive for dischargers to go beyond compliance, and in turn, achieve supplemental environmental results.

The Department has been actively working with the Nutrient Trading Negotiating Team, and suggested in testimony that they intend to use recommendations of the team to customize Pennsylvania’s program to meet water quality needs and priorities.

Pennsylvania Electric Power Generation Association

Just as trading programs under the federal Clean Air Act have proven to be environmentally and economically beneficial in meeting air quality goals, the Pennsylvania Electric Power Generation Association (EPGA) believes that a market-based water quality credit and trading program creates a tremendous opportunity to achieve water quality goals in the Commonwealth. Such a program, if properly designed and implemented, has the potential to broaden the focus of wa-

ter quality improvement from small, incremental improvements to large-scale watershed improvements in water quality.

EPGA also believes that trading is a significant tool for watershed partners to capitalize on the potential benefits offered through a voluntary program and improve overall water quality. However, EPGA cautions against a trading program that is too restrictive. Referencing EPA's policy statement and subsequent framework for establishing water quality programs, EPGA suggests that restricting opportunities for water quality based trading to nonattainment areas would significantly reduce the chances for developing a successful trading program. This would preclude many potential water quality improvements in nonimpaired waters. Testimony suggested that clear and simple objectives need to be defined for the program and a balance between restrictiveness and flexibility needs to be established.

(EPGA is a regional trade association that represents seven electric generating companies that collectively own and operate over 75,000 megawatts of electric generating capacity, almost half of which is located in Pennsylvania.)

Chesapeake Bay Foundation

The Chesapeake Bay Foundation (CBF) supports efforts to develop and implement innovative approaches as a means of improving and enhancing water quality, including market-based trading. However such approaches must not compromise existing safeguards in environmental protection. Possibly the most important benefit, according to testimony, is that trading may create the financial incentives for nonpoint sources to participate in watershed restoration efforts. Although progress has been made to address the issue of point source pollution, nonpoint sources such as runoff from streets, residential housing development, and agricultural areas are still the principal causes of water quality problems.

Watershed-based trading can be a useful tool for enhancing water quality and reducing overall control costs, provided that caution is taken in the design and implementation of trading programs. CBF believes that there are a number of concerns that should be taken into consideration while developing a trading program. While pollutant trading is not a new concept, its application in solving water quality problems is relatively new. Trading programs need to be consistent with water quality issues, anti-degradation policies and the goals of the Clean Water Act. A trading program should carefully consider the geographic scope of a trading area to avoid localized effects of pollutant concentrations or "hot spots". Trading should reduce, not redistribute, pollution in a more cost-effective manner.

Administering nonpoint source controls with respect to a trading program may be one of the most challenging issues and one causing the greatest concern. CBF suggested that programs that allow for point/nonpoint source trades include mechanisms for ensuring that at least one trading partner is accountable for nonpoint source reductions and that appropriate trading ratios are identified to accommodate the uncertainty associated with runoff control practices.

While cost reductions may be the primary incentive for trading, CBF believes that water quality improvement must be the primary objective and cautions against putting a disproportionate emphasis on trading. Trading has the potential to be used as one of many tools for improving water quality in Pennsylvania.

(The Chesapeake Bay Foundation is one of the largest regional, private, nonprofit conservation organizations that works on water quality issues, stream and wetland restoration and protection, land use issues, and environmental education.)

Pennsylvania Environmental Council

A watershed-based water quality trading and credits program, according to the Pennsylvania Environmental Council (PEC), is one of many tools that can be used for achieving the designated goals of the CWA. When used in conjunction with the federal government's proposed TMDL Program, trading would be an appropriate and effective way of improving water quality in Pennsylvania. The role of effluent trading is to create incentives for nonpoint source control, one of the major threats to water quality in the Commonwealth. Testimony suggested that trading would create a balanced approach to the TMDL Program implementation and not an approach focused only on point sources. This would bring agriculture, forestry and land use patterns into a strategy for achieving the CWA's designated uses.

According to PEC, implementation of effluent trading should be consistent with current regulatory requirements and particularly the anti-degradation program. The process should be stakeholder driven in each watershed so that affected parties can determine how water quality standards will be met. Trading obviously should not result in "hot spots" or the relocation of pollution loadings. Therefore, accountability, enforcement, and careful monitoring of the program will be needed.

(The Pennsylvania Environmental Council is an environmental organization that promotes sustainable land use, watershed protection, establishes environmental partnerships, and builds consensus for environmental improvement.)

Clean Water Action

The measure of success for effluent trading, according to Clean Water Action, is whether trading results in real, measurable reductions in pollutant loadings and real improvements in water quality. In order to achieve this, Clean Water Action suggests that cautious and careful deliberation and discussion about the development of an effluent trading program in Pennsylvania is critical. A watershed-based trading program should have sufficient safeguards for protecting and improving water quality, with careful consideration given to the geographic scope of trading to avoid the creation of “hot spots” or water quality degradation. Clean Water Action suggests that all trades should be closely monitored and only occur where TMDL’s have been established for a waterway. The allowable levels for trades should be reduced over time with a goal of eliminating pollutants of concern.

For trades that include nonpoint sources as a partner, Clean Water Action suggested that trades deal with one pollutant, that is, partners must be releasing the same pollutant, and trading ratios need to be established in order to protect against water quality degradation. The argument for pollution trading is simple - it is the cheapest and easiest way to get additional improvements in water quality. However, a poorly designed program could in fact have the opposite effect - worsening water quality and degrading the state’s waterways. Therefore, developing a program and implementing methods to measure and enforce promised reductions in discharges is critical to successful trading.

(Clean Water Action is a national environmental organization with a primary focus on water issues, including the protection of rivers, lakes, and streams from pollution.)

Delaware River Basin Commission

In general, the Delaware River Basin Commission (Commission) supports the concept of watershed-based trading by encouraging community-driven watershed management planning; establishing a voluntary effluent trading program to achieve water quality standards; and encouraging a watershed pollutant banking system to facilitate the trading of point and nonpoint sources of pollution. The Commission suggested that some advantages to this type of program include achieving water quality objectives more cost-effectively; maintaining existing water quality while facilitating economic development; eliminating the need to add filtration to water treatment plants by controlling nonpoint source pollution upstream; and creating partnerships between the regulated and nonregulated communities to solve water quality problems.

According to testimony, the goals of a watershed-based trading program complement the Commission's policy for Special Protection Water Regulations. This allows no measurable change to existing high quality waters classified by the Commission as Special Protection Waters. The Commission's policy for Special Protection Waters specifically allows for trades between new and existing non-point sources or equivalent point sources, and requires submission of a nonpoint source plan outlining pollutants being reduced. Although the Commission's policy has been in place since 1994, no trades have taken place. The Commission suggested that implementation of a watershed-based trading program would enhance the Commission's existing policy and regulations.

(The Delaware River Basin Commission is an agency responsible for establishing water quality standards, regulating and controlling water withdrawals and diversions, and planning and funding water supply and pollution control facilities.)

U.S. EPA, Chesapeake Bay Program Office

The U.S. EPA Chesapeake Bay Program Office has been instrumental in organizing efforts to explore the option of watershed-based trading in the Chesapeake Bay watershed. Testimony offered background information on the formation of the Nutrient Trading Negotiating Team, charged with developing guidelines for implementing a trading program within the bay watershed, and offered a list of fundamental principles that would help ensure a successful and environmentally protective trading program. If done properly, trading can offer improvements in water quality at a reduced cost. Reductions in regulatory and compliance costs can create the incentives for further reductions in discharges and also promote the use of innovative technologies.

According to testimony, trading can facilitate a watershed approach in which nonpoint sources have the opportunity to become involved in the process of reducing discharges where they may have otherwise not participated. Testimony suggested that nutrient trading must be consistent with all federal, state, and local regulations and cannot adversely impact water quality. For the Chesapeake Bay watershed, nutrient trading must be consistent with the Bay Program's reduction goals and strategies and result in maintaining current nutrient loadings or a net reduction in loadings.

(***Full text of testimony can be obtained from the Joint Committee office.)

Issues for Consideration

Trading programs raise many policy and program design issues. Establishing an institutional framework that encompasses point sources and urban and agricultural nonpoint sources can be one of the most challenging. Watershed-based trading can be a useful tool for enhancing water quality and reducing overall costs provided that care is taken in the design and implementation of trading programs. Elements for program design must provide assurances that trading occurs in an environmentally sound manner.

One product of the legislative hearing process has been the identification of issues that should be considered by the Pennsylvania Department of Environmental Protection prior to executing a trading program. Some of the issues revealed through testimony are listed below:

- ◆ **Risk of “Hot Spots”** - Trading has the potential to create “hot spots” or localized concentrations of pollutants that exceed water quality standards. Testimony suggested that careful consideration should be given to the location and size of the watershed where a trade may occur; the type of pollutant being traded; and increased monitoring and enforcement in order to reduce this risk.
- ◆ **Total Maximum Daily Load (TMDL)** - The use of TMDL’s can help identify watershed and stream segments where improving water quality is a high priority and set limits on the amount of pollution which can be allowed. The question and use of the TMDL process in facilitating the use of trading to improve water quality should be stakeholder driven in each watershed.
- ◆ **Cross-pollutant Trading** - In order to maintain the integrity of a trading program, testimony recommended that trades involving different types of pollutants, for example, trading phosphorus loads for nitrogen loads, should not be allowed. Not enough is known about the relative impacts posed by different pollutants to insure that this type of trade would result in an overall improvement in water quality.
- ◆ **Trading Ratios** - There is some degree of uncertainty surrounding the effectiveness of nonpoint source control practices and the ability to trade effectively and still maintain water quality. Testimony suggested that proposed trades need to have adequate trading ratios to act as an “insurance policy” to protect water quality.
- ◆ **Statutory Requirements** - Unlike the Clean Air Act, the CWA does not specifically approve or prohibit water quality trading. The lack of a firm foundation in statute may create legal and regulatory uncertainties.

PARTICIPANTS

PUBLIC HEARING ON HOUSE RESOLUTION 361 OF 2000

August 14, 2000

THE FOLLOWING ORGANIZATIONS SUBMITTED COMMENTS TO THE COMMITTEE

**Chesapeake Bay Foundation
Clean Water Action
Delaware River Basin Commission
Pennsylvania Department of Environmental Protection
Pennsylvania Electric Power Generation Association
Pennsylvania Environmental Council
U.S. EPA, Chesapeake Bay Program Office**

REFERENCES

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