

Tar-Pamlico River

Program Description:

Tar Pamlico, North Carolina

The Tar Pamlico program in North Carolina may be one of the most frequently heard about and least understood programs in the country. It has been the subject of a number of articles (Hall and Howett, 1994; Apogee Research, Inc., 1992; Levitas and Rader, 1992; and Riggs, 1993). The cost-effectiveness of this program offers some perspective on the cost savings that market-based environmental programs offer. The cost of nutrient reductions for point sources in the basin was estimated to be approximately \$70 million compared to \$11 million for similar nutrient reductions through increased nonpoint source controls (Hall and Howett, 1994).

Driven by a need to abate fish kills and nuisance conditions, the North Carolina Division of Environmental Management (DEM) declared the sound to be Nutrient Sensitive Waters (NSW) and proposed a hold-the-line nutrient strategy. A coalition of municipal and industrial dischargers took the initiative and formed the Tar-Pamlico Basin Association (Association). The Association devised a basinwide nutrient management plan to reduce phosphorus and nitrogen loadings at less cost than a hold-the-line proposal made by the state. This strategy advocated basin-wide nutrient loadings and nutrient trading to allow regulated sources to meet basin-wide objectives by funding BMP for nonpoint sources. The DEM assumed the more traditional responsibilities of determining the adequacy of point/nonpoint source tradeoffs, assessing compliance and conducting ambient water quality monitoring. The Division of Soil and Water Conservation (DSWC) took the lead for administration and allocation of funds to implement nonpoint source controls under an agricultural cost share program. The Association is given a discharge allowance and required to make a monetary contribution into a nonpoint source fund that is used to implement agricultural BMP.

Under Phase I of the program (1991-1994) a nutrient reduction goal of 200,000 kilograms per year (180,000 kg/year total nitrogen and 20,000 kg/year total phosphorus) was established. Municipal sources were allowed to offset excess discharges with nutrient reduction credits obtained by monetary contributions to the fund. A cost of \$56 per kilogram was based on a 3:1 trading ratio and an average cost of nonpoint source controls (Apogee Research, Inc., 1992). Phase I reductions were greater than the desired nutrient reduction goal, due to the relatively low-cost operational and capital improvements at the municipal facilities. In fact, approximately 80% of the 200,000 kg/yr reductions were achieved at a cost of less than \$40,000 (Personal communication with Malcome A. Green, Greenville North Carolina Utilities Commission, September 29, 1998).

It was estimated that it would cost about \$7 million to achieve the same level of wastewater treatment plant nutrient reduction that can be achieved from investing \$1

million in nonpoint source pollution control (Personal communication with Malcome A. Green, Greenville North Carolina Utilities Commission, January 26, 1998).

Modeling was conducted during Phase I to establish a basis for further reductions under Phase II of the program, which will run through December 2004. A 30% reduction goal provides a total nitrogen goal of 583,000 kg/year for both point and nonpoint sources. The annual Association target nitrogen loading is 405,256 kg and the phosphorus target is 69,744 kg, annually. The in-stream nutrient reduction target for nonpoint sources is 766,228 kg/year. Non-Association facilities will have individual limits established in accordance with the state's NSW strategy (Personal communication with Malcome A. Green, January 26, 1998).

Contrary to popular belief, trading has occurred under the program. Point source/point source trading occurred under Phase I and is continuing under Phase II. This allows point sources to optimize the cost of achieving the nutrient cap established for the Association. Point source/nonpoint source trading in excess of \$750,000 has taken place to date (Personal communication with Malcome A. Green, January 26, 1998). View the Regulatory Agreements between the Tar Pamlico Basin Association and the North Carolina Department of Environment and Natural Resources.

Resources:

[Phase I \(pdf\)](#)

[Phase II \(pdf-current agreement\)](#)

US EPA Success [website](#) and [factsheet](#)

Tar-Pamlico Nutrient Strategy - North Carolina division of Water Quality [website](#)

[Tar-Pamlico Nutrient Strategy - Nonpoint Source Management Program](#) - N.C. Division of Water Quality

[Tar-Pamlico River Basin-Nutrient Sensitive Water Management Strategy](#) - North Carolina Division of Soil and Water Conservation

[Cost-effectiveness of Agricultural BMPs for Nutrient Reduction in the Tar-Pamlico River Basin](#), North Carolina Cooperative Extension Service

[Frequently asked questions](#) (2001)