

# **Fox-Wolf Watershed**

## **Program Description:**

### **Fox-Wolf River, Wisconsin**

**The State of the Watershed: An Expensive Pollution Problem** The Fox-Wolf River Basin of Northeast Wisconsin encompasses a 6,400 square mile drainage area that represents the largest drainage basin to Lake Michigan and the third largest to the Great Lakes. Its waters rank high among the region's most important assets. They have provided transportation, power, drinking water, recreation, and aesthetic value to both residents and visitors for centuries. But the Fox-Wolf basin has also suffered more than a century of degradation at the hands of those who have used its waters.

Although technology-based effluent limits and pretreatment standards have cut point source pollution dramatically, the basin faces ongoing challenges. Excessive levels of nutrients and suspended solids still reach Green Bay on a daily basis. They continue to compromise aquatic health. And research shows that the problem is increasing, not decreasing.

Since many of these nutrients and suspended solids come from non-point sources of pollution, we cannot expect to achieve any water quality goals unless those sources are reduced dramatically. The reality, however, is that non-point source dischargers, particularly the agricultural community, seldom have the financial resources to put in place the best management practices for preventing pollution. At the same time, local point sources are reluctant to spend millions for wastewater treatment system upgrades that won't make the water much better.

**Watershed-Based Trading: A Cost-Effective Water Quality Policy** In this context, watershed-based trading presents the prospect of a win-win situation for point sources, non-point sources and the watershed itself. At its core, the trading concept is simple: A point source can pay a non-point source to install best management practices that reduce pollutant loads to the watershed. Water quality improves, and the point source avoids having to install more costly pollution controls at its own facility.

Trading offers a way to leverage limited resources to attain water quality goals more cost-effectively than traditional regulatory methods allow. And the concept is flexible enough to encourage Clean Water Act compliance on a watershed basis while incorporating emerging technologies and pollution prevention techniques.

**Fox-Wolf Basin 2000: A Concept that Meshes With Our Mission** Organization began in 1992 as Northeast Wisconsin Waters for Tomorrow (NEWWT), a group of scientists and economists seeking cost-effective ways to achieve and sustain high quality waters for the Fox-Wolf basin. Using a model of the river system and data on the costs of various approaches to reducing phosphorous and sediment loads, we issued a landmark report on options for meeting water quality goals.

That report showed that significant reductions in non-point source pollution are critical to improving water quality. And we looked at how these reductions can be achieved cost-effectively. We transformed ourselves into Fox-Wolf Basin 2000 in 1994, a broadly supported, independent, non-profit organization dedicated to taking actions that will bring about the water quality improvements our research has identified. Fox-Wolf Basin 2000 recognizes watershed-based trading as a promising approach for advancing our longstanding commitment to cost-effective water resource management. One of our current strategic objectives is to gather, analyze and apply the information necessary to assess and launch a trading program. In the process, we will seek to pinpoint problems and opportunities that will

- help improve the state of the trading art for prospective traders in other regions and states.
- offer insights to inform the development of any future trading guidelines.

Advancing Toward a Pilot Trade From our experience and research into watershed-based trading, we see two interwoven themes as essential to the fabric of success in this venture: building partnerships and maintaining regular, significant communication among potential partners and other stakeholders in the trading process.

Fox-Wolf Basin 2000 has identified at least three areas that currently appear to have the potential for a pilot trade. As a result, we have begun building stakeholder partnerships by working actively with Wisconsin Department of Natural Resources "basin teams" - groups that combine the expertise of the DNR with the talents and experience of numerous non-DNR partners. These non-DNR partners will include, especially, those whose lives and livelihoods are most closely intertwined with the watershed. We don't believe any innovation in water resource management is achievable without the direction of those who live closest to the resource.

Developing a TMDL An initial focus of our efforts with stakeholders will be developing one or more Total Maximum Daily Loads (TMDLs) to provide basic information to support the trading pilot. A TMDL will determine how much of a targeted pollutant, such as phosphorous or sediment, that point sources and non-point sources can discharge into a particular waterbody or watershed. During this process, for each TMDL it develops, the stakeholder team will help: · identify any pollutant causing significant stress to the watershed, · estimate how much the waterbody can assimilate, · gauge how much of that pollutant all the sources in the watershed currently contribute, · set a total allowable pollution load (TMDL), and · apportion that allowable total among the pollutant sources in a feasible way that protects water quality.

Modeling Fox-Wolf Basin 2000, from its beginning, has built a reputation for excellence in modeling. We recognize it as a key tool to use in understanding existing pollutant loads, developing a TMDL and gauging the impact of alternative strategies for cost-effective pollutant load reduction. With that in mind, we hope to act as brokers in identifying possible trading scenarios and estimating the pollutant reductions that a trade would make possible.

Working closely with the basin teams, potential trading partners and other stakeholders, Fox-Wolf Basin 2000 plans to couple existing data with watershed inventories currently underway to:

- set up and run the Soil and Water Assessment Tool (SWAT) model, · link it with lake response modeling that DNR is now conducting in one of our potential pilot areas, · expand the SWAT model's capabilities by using orthophotography and Geographic Information System (GIS) inputs, · test the SWAT-GIS interface that the model's authors are currently developing,
- submit our enhanced SWAT modeling technique for review and approval to support TMDL implementation and watershed-based trading proposals.

**Monitoring** One of our prime tasks will be to gather existing water quality data in a watershed or subwatershed that becomes a strong candidate for a proposed pilot trade. We will use it to develop a baseline that will then enable us to measure changes in water resource conditions. In concert with our modeling, we want to use the monitoring data to verify estimated improvements and make sure that real gains in water quality are occurring. As part of our trading proposal, we will advocate for consistent monitoring and modeling over the life of any local trade.

**Partners and Resources** This project is being funded by grants from state agencies, private foundations, and a publicly owned treatment works. We are also devoting full-time staff resources to the project and working closely with federal, state, regional, county and municipal agencies, environmental organizations, consultants, representatives from agriculture and industry and the regulated community as well as residents and property owners who live and work in the watershed.

**Project Contact:**

Linda Stoll, [Fox-Wolf Watershed Alliance](#)  
email: [foxwolf@FWWA.org](mailto:foxwolf@FWWA.org)

**Project Resources:**

Analysis of Phosphorus Control Costs and Effectiveness for Point and Nonpoint Sources in the Fox-Wolf Basin (1999). Joseph Kramer, Resource Strategies, Inc.

[Phosphorus Credit Trading in the Fox-Wolf Basin: Exploring Legal, Economic, and Technical Issues, Water Environment Research Foundation report](#)