

# WRASP

## WATERSHED RESEARCH, ASSESSMENT AND STEWARDSHIP PROJECT



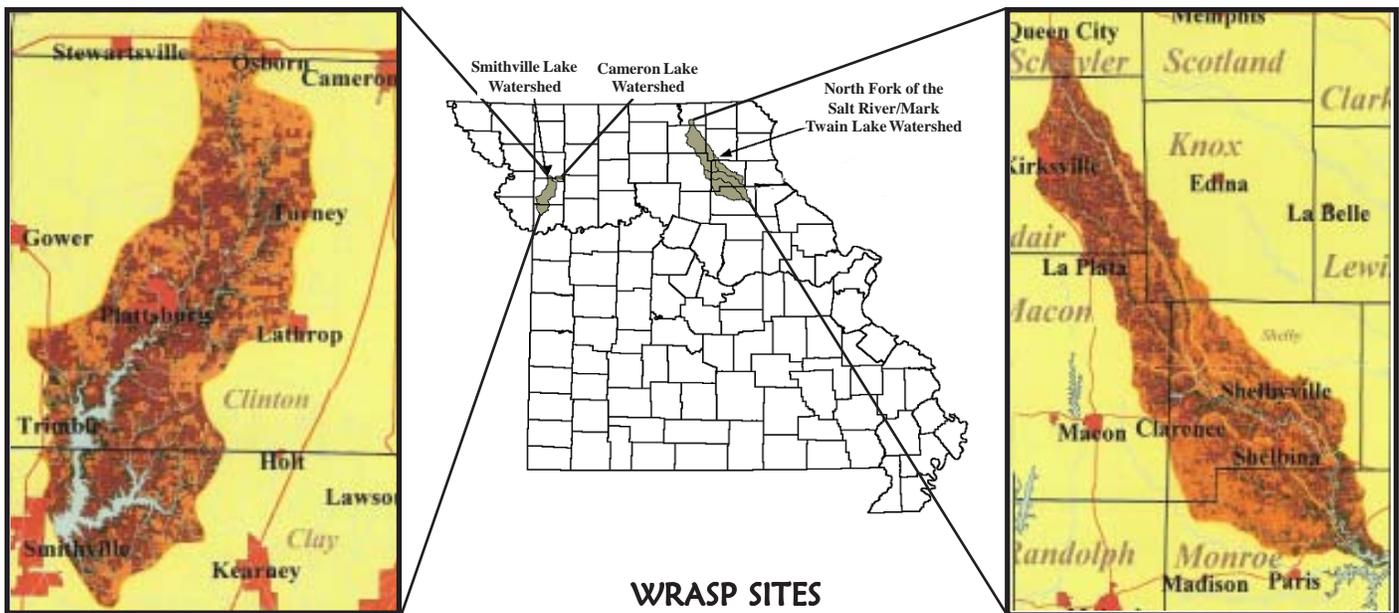
### PROTECTING YOUR RIGHT TO FARM PROTECTING WATER QUALITY FOR EVERYONE

For several years, the Missouri Department of Natural Resources noted elevated levels of contaminants, such as atrazine, in several drinking water lakes in northern Missouri. Some believed the problem was related to the farming practices in the surrounding watersheds. Because of human health concerns, atrazine has a Maximum Contaminant Level (MCL) established for public drinking water supplies. MCLs are the maximum levels of contaminants that are allowed by federal law in drinking water.

Levels of atrazine and other crop protection products in the Cameron, Mark Twain, and Smithville lakes exceeded state Water Quality Standards. This caused the lakes to be placed on the Missouri 1998 303(d) impaired water bodies list, as mandated by Section 303(d) of the federal Clean Water Act of 1972. Levels of atrazine in the three lakes

were found to be significantly higher than the amount allowable by regulation. These levels distressed farmers, who feared the widely-used product might be banned.

Aware of the concerns, the Missouri Corn Growers Association (MCGA) stepped in to help Missouri corn farmers find ways to be better environmental stewards of the land, water, and natural resources while remaining profitable in their farming endeavors. MCGA and the Missouri Corn Merchandising Council initiated the Watershed Research Assessment and Stewardship Project (WRASP). Partners included U. S. Environmental Protection Agency, the Missouri Department of Natural Resources, and Syngenta Crop Protection. WRASP was a five million dollar effort to address water quality challenges facing corn farmers in northern Missouri.



**WRASP SITES**

The goal of WRASP was to find a science-based process that would improve water quality while maintaining or increasing farm profitability. This process involved a one-of-a-kind partnership that proved that good farming practices and environmental protection are not opposing forces. The partnership was proven to be successful in solving a problem pertaining to both concerns when managed correctly. As designed by the MCGA and partners, WRASP proposed to collect water runoff data for nutrients and crop protection products at field and stream levels, recognizing the importance of stewardship practices that would clean up the watershed lakes.

A key point of the WRASP project was ensuring the fair implementation of the Total Maximum Daily Loads (TMDLs). A TMDL regulation sets the maximum amount of a particular contaminant in a water body. Establishing TMDLs for the lakes would require farmers to change certain management practices so that water quality standards and beneficial uses for the impaired watersheds could be met.

Increased levels of nutrients and crop protection products in Missouri lakes could have been due to a combination of many factors

including (but not limited to): tillage practices, herbicide programs, characteristics of the products, location, nutrient management, and precipitation. To address these issues, the MCGA and affiliated Environmental Resources Coalition (ERC) went to work to lower contaminant levels in the selected watersheds. It was important to address the problem and to allow products like atrazine to remain EPA approved and on the market. Reservoirs needed to remain drinkable and safe for recreation. A goal was reducing rates of crop protection products and altering application methods, while still maintaining water quality and farm profitability. This type of project could also serve as a model for other impaired lakes.

***“We knew we had to do something to halt and reverse the buildup of atrazine in Smithville Lake and other watersheds.”***

**Gary Marshall, CEO  
Missouri Corn Growers Association**

## COURSE OF ACTION

To properly monitor the origin and quality of water running into the affected water bodies, approximately 50 water quality monitoring samplers were set up in the watersheds of northern Missouri. Samplers (as pictured below) were placed in non-tiled fields, at the edge of waterways, and in small and large streams that flowed into the public drinking water supplies. Samplers were positioned to collect runoff each year from March through August. This sampling period allowed for monitoring of pre-plant and post-application atrazine runoff, and again prior to harvest. Each sampler took 300-400 samples per season, with at least 200 milliliters per sample.



Lakes were also sampled starting in late March, prior to any contaminated runoff, and continued every three weeks until September (see Mark Twain Lake pictured above).

One major objective of the WRASP project was to discover which Best Management Practices (BMPs) had the greatest impact on improving water quality while maintaining farm profitability. Different BMPs apply to different



*Water bottles (sample above) are collected from samplers after rainfall events for analysis.*

areas due to the varying topography, soil types, and other factors. Farmers in areas susceptible to runoff in the watershed volunteered to implement the action plan of WRASP. Each site was given various application treatments of atrazine (as pictured below). Water samplers were placed below each treatment area to monitor field runoff.

Some of the main BMPs implemented were grass buffer strips, split applications of crop protection products, no-till farming, reduced rates of crop protection products, and soil incorporation. Implementation of some BMPs reduces runoff and soil erosion which, in turn, improves water quality.



Analysis by project staff determined the BMPs appropriate for that specific geography. BMPs tested at the field sites helped keep atrazine in the field and limit runoff from the fields. Sampling and BMPs will continue to be used in future projects involving corn farmers in northern Missouri.

After rainfall events, water samples taken by the monitors were sent to the National Soil Tilth Laboratory - United States Department of Agriculture in Ames, IA and MEC Water Resources in Columbia, MO for analysis. Each sample was tested for concentrations of different crop protection products like atrazine, as well as nitrate nitrogen, suspended solids, and phosphorus. Lake samples were tested for the same parameters.

## HARD WORK REAPS SUCCESS

A major task of WRASP was to collect water runoff for five years in selected watersheds. This was completed in late 2004. Levels of atrazine and other contaminants in the lakes began to decrease after the first year of the project. This was due to farmers' reducing application rates, as well as implementing other BMPs. The Missouri Department of Natural Resources removed Smithville, Mark Twain, and Cameron lakes from the 303(d) impaired water bodies list in late 2003, the fourth full year of sampling. The lakes' levels of atrazine had dropped well below the Maximum Contaminant Level

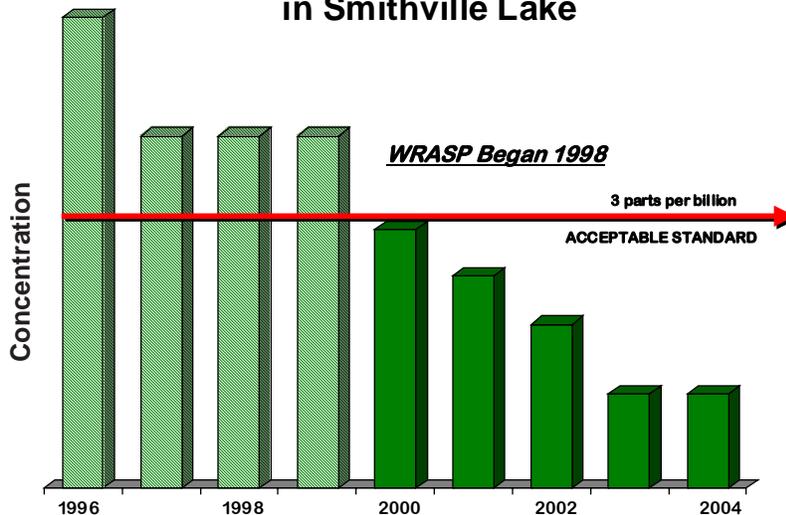
(MCL) for drinking water and Water Quality Standards.

Along with coordinating the sampling and monitoring, ERC and MCGA staff members held field events throughout the project to help inform and educate the public about the WRASP project. Specifically, farmers were able to learn about water quality and how to implement BMPs in their own operations.

### *ATRAZINE REREGISTRATION*

Atrazine, one of the most widely used agriculture crop protection products, is under an Interim Reregistration Eligibility Decision (IRED). The EPA placed atrazine under reregistration to ensure that it meets current health and environmental safety standards. Atrazine has been under consideration for reregistration in Missouri and the U.S. for the last decade. The WRASP project was one of many studies on atrazine over nine years of stringent research during EPA's special review of triazine crop protection products. During this process, EPA reconfirmed that atrazine is not likely to cause cancer in humans and allowed its continued use at current rates. The final reregistration decision for atrazine is expected in 2005 or 2006, following completion of a cumulative risk analysis for all triazine products. Registrants will continue water quality monitoring in sensitive watersheds for atrazine levels. Atrazine use in watersheds may be prohibited if atrazine levels exceed established levels.

**Concentrations of Atrazine  
in Smithville Lake**



## RECOGNITION

**M**CGA's production stewardship programs were recognized when ERC received the Governor's Environmental Excellence Award in 2004. The project received one of its first recognitions on Earth Day 2000. The Missouri Department of Agriculture commended the WRASP project for being an "environmentally friendly project." The Missouri House



Interim Committee on Water Quality (pictured above) visited various WRASP sites in October 2003 and observed firsthand the great stewardship program that led to a "win-win" solution for the farmers and the environment.

The success of the WRASP project has allowed project participants to make production and implementation decisions based on sound science. In an ongoing effort, farmers will continue using BMPs on their land in order to keep water drinkable and safe for recreation. "The unique partnership of federal, state, and local government, private industry and non-profit organizations proved to be a great success for all involved," stated Steve Taylor, CEO, ERC.

### *NATIONAL RECOGNITION*

**In August 2004, the conclusion of the WRASP project was celebrated on the banks of Smithville Lake, near Kansas City. Among the special guests joining to celebrate the partnership and success were Senator Kit Bond (R-MO); Mike Leavitt, former EPA Administrator; Jim Gulliford, EPA Region 7 Administrator; AgriTalk Host Mike Adams; and various Missouri Corn Growers Association members. At the event, Leavitt noted how the partnership had found a way to improve water quality and**



*From left to right: Mike Leavitt, former EPA Administrator; Steve Taylor, CEO, Environmental Resources Coalition; Jim Gulliford, EPA Region 7 Administrator; Senator Christopher "Kit" Bond (R-MO).*



*From left to right: Mike Leavitt, former EPA Administrator; Gary Marshall, CEO, Missouri Corn Growers Association; Mike Adams, AgriTalk.*

**also keep farms profitable in the process. He stressed that the WRASP project is a good example of how working together to protect and restore our nation's water can achieve environmental progress that will benefit all Americans. Senator Bond emphasized that the work of WRASP has been critical to preserving the continued use of atrazine by corn farmers throughout the state and Midwest, not just in the challenged water bodies.**

## CONTINUATION OF STEWARDSHIP

In 2002, MCGA launched the Stewardship Implementation Project (SIP). The SIP is focused on the implementation of nutrient and crop protection product management practices to help corn farmers be more profitable and better environmental stewards. The SIP takes the ideas developed in WRASP and applies those land management practices to larger fields. This allows farmers to gather better agronomic and economic data. The goal of the project is to use reduced rates of crop protection products on sensitive acres in the watershed, which will help improve water quality and profitability for farmers. By applying the ideas learned in WRASP to field scale, farmers are able to proactively address environmental concerns.

Through the program, farmers have been able to see firsthand the effectiveness of reduced rates, not only of atrazine but also of other crop protection products. This produces a “win-win” situation for farmers and the environment. SIP staff members are providing scouting and agronomic recommendations to several farmers in northern Missouri located in the watersheds affected by WRASP. This allows farmers to compare their conventionally applied crop protection program with the methods of the SIP project. The SIP project will continue water monitoring at the stream and lake level, along with field crop protection product trials until 2007. Lessons learned from these regional experiences will then be shared with corn farmers in future years.

### *SUCCESS THROUGH PARTNERSHIP*

The success of WRASP depended heavily on its many supporters. Senator Kit Bond (R-MO) secured more than \$1 million through direct federal appropriations and participated in WRASP throughout the project. Other outstanding supporters include the Missouri Department of Natural Resources, U.S. Environmental Protection Agency, Syngenta Crop Protection, U.S. Department of Agriculture-Agriculture Research Service, and the Missouri Corn Growers Association.



Missouri  
Department of  
Natural Resources

USDA - ARS logo

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