

**INVENTORY OF NUTRIENT
NONPOINT SOURCE CONTROL PROGRAMS
IN THE OHIO RIVER BASIN**



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INTRODUCTION

Abatement of nonpoint source pollution in the Ohio River Basin will involve the cumulative results of many nonpoint source control programs, which are generally carried out on a small watershed basis. In order to assess the degree to which such programs are addressing the problems found in the main stem of the Ohio River, it is necessary to first develop an inventory of existing nonpoint source control programs. Early priorities are programs that address pesticides, which is an identified problem on the Ohio River, and those that address nutrients, which are of concern in downstream watersheds — namely the Mississippi River and the Gulf of Mexico.

This report summarizes current NPS control programs within the Ohio River Basin that focus on the abatement of water quality problems associated with and nutrients. Summaries of projects being conducted through partnerships among state and local governments, environmental groups and communities are provided on a state-by-state basis. In addition to the six Ohio River main stem states, pesticide and nutrient control programs were also investigated in the States of New York (Allegheny River watershed) and Virginia (Big Sandy, New and Tennessee River watersheds); however, no specific control programs in these areas were identified.

PENNSYLVANIA

Two programs related to nutrient and pesticide reduction in the Ohio River Valley were identified in Pennsylvania (Table 1). Both of these programs are related to Pennsylvania's Nutrient Management Act, passed in 1993. This Act established a multi-agency effort under the leadership of the State Conservation Commission to better manage nutrients within the state. In 1994, a work group was formed to develop an educational program to support implementation of the Act. Nutrient management regulations have also been developed and approved. Local conservation districts will play a major role in implementing provisions of the Act.

- *Rotational Grazing Program in Southwestern Pennsylvania.* — A program has been developed to promote and implement rotational grazing systems as a primary nutrient management tool within fifteen counties of Southwest Pennsylvania. The purpose of

promoting rotational grazing systems as a best management practice is to reduce nutrient loadings to ground water and surface water systems. Promoting of these grazing systems will also encourage farm operators to voluntarily comply with Pennsylvania's Nutrient Management Act. (Contact: Carl Rohr, Bureau of Land and Water Conservation,

- *Conservation District Agriculture Program* — Under this program, state technicians will develop, review, and assist in the implementation of nutrient plans in nine priority watersheds and two priority counties which have been identified as being significantly impacted by nutrients. In addition, demonstration projects involving innovative best management practices, soil and manure testing, and training will be completed with the goal being to provide the training and experience needed to meet nutrient management certification requirements under the Nutrient Management Act. (Contact: Carl Rohr, Bureau of Land and Water Conservation)

WEST VIRGINIA

Within the Ohio River Basin, three nonpoint source projects are being conducted under the State of West Virginia's Section 319 program (Table 1). The primary goal of all three projects is to generate information and public awareness about nonpoint source pollution relating to nutrients and pesticides.

- *Big Sandy Creek* — Big Sandy Creek originates in Pennsylvania and flows southwest into West Virginia before joining the Cheat River. A group was established in 1991 in an effort to reduce nutrients, pesticides and sediments in Big Sandy Creek primarily through public awareness and education and the adoption of best management practices. Annual reports are available. (Contact: Teresa Byler, West Virginia Soil Conservation Service, phone: 304-558-2204)
- *Wheeling Creek and Tomlinson Run* — The headwaters of the Wheeling Creek watershed are located in southwestern Pennsylvania. The creek itself begins just across the border in the West Virginia panhandle and flows northwest through the City of Wheeling before emptying into the Ohio River. A demonstration project is currently being funded to reduce instream

concentrations of nutrients, pesticides and sediment through public education and the adoption of best management practices. (Contact: Teresa Byler, West Virginia Soil Conservation Service, phone: 304-558-2204)

- *Kanawha River Basin and Oldtown Creek*— The goal of this demonstration project is to reduce the amounts of nutrients, pesticides and sediment that flow into the Kanawha River through public education and the implementation of best management practices. (Contact: Teresa Byler, West Virginia Soil Conservation Service, phone: 304-558-2204)

OHIO

Nine NPS demonstration programs are currently being implemented throughout Ohio within the Ohio River Basin (Table 1). In addition, one statewide project is demonstrating the use of new technologies for fertilizer application and nutrient management. A description of each program follows.

- *Implementing Nutrient Management in Ohio Using New Technology*— The goal of this project is to demonstrate variable rate fertilizer application using the global positioning system technology. In addition, this project will reallocate manure nutrients from farms and fields with excess nutrients to areas in need of nutrients. (Contact: Kevin Elder, Ohio Department of Natural Resources, Division of Soil and Water Conservation, phone: 614-265-6617)
- *Little Muskingum River Watershed*— The Little Muskingum River flows southeast through the Wayne National Forest and joins the Ohio River at mile point 168, just upstream of the City of Marietta. This project is designed to maintain and improve the high water quality and aquatic life habitat in the Little Muskingum River Watershed by reducing soil loss by 45,000 tons over three years. This is to be accomplished by protecting the riparian corridor and reducing cropland, pasture, and woodland erosion. In addition, the project will focus on improving the management of septic systems and animal waste to reduce nutrients in the river. (Contact: Jeff Bettinger, Soil and Water Conservation District (SWCD) - Monroe and Washington Counties, phone: 614-472-0833)

- *Black Fork River* — The Black Fork River, a tributary of the Mohican River, flows in a southerly direction, primarily through Ashland County in north-central Ohio. The Mohican River is located within the larger Muskingum River watershed. In 1994, a project was funded to improve the water quality of the Black Fork River through improved management of crop residue, wetlands, riparian buffers and filter strips, livestock waste, and septic systems. Specific pollutants targeted for reduction in the river include nutrients, pesticides, and sediments. (Contact: Richard Forbes, Richland County SWCD, phone: 419-589-2712).
- *East Branch Sugar Creek* — The East Branch of Sugar Creek is located within the larger Tuscarawas River watershed. The Tuscarawas River itself is a tributary of the Muskingum River. The goal of this project is to address problems associated with animal waste disposal in the East Branch watershed. Specific tasks of this project include the evaluation of effective alternatives for animal waste disposal and the promotion of technology exchange for farmers in the watershed. (Contact: Shirley Everhart, Tuscarawas SWCD)
- *South Fork, Licking River Watershed* — The headwaters of the South Fork Licking River are located just east of Columbus. The river continues to flow east, and joins the North Fork to form the Licking River, which eventually empties into Muskingum River at Zanesville. Past data indicate that the South Fork has the highest nutrient and suspended solids export rates in the Licking River watershed. This project, initiated in 1993, will provide technical assistance and education to landowners in order to address the agricultural sources of pollution in the South Fork. Specific best management practices to be implemented include: conservation tillage, cover crops, residue management, nutrient management and streambank stabilization. (Contact: Jim McCluskey, Licking County SWCD, phone: 614-349-6920)
- *Upper Wolf Creek* — Wolf Creek flows along the south side of the Muskingum River, before joining the river in Washington County. This project is designed to address the water quality impacts of sediment and nutrients that result from agricultural activities in the Upper Wolf Creek Watershed. Specifically, the project will implement best management practices, such

as animal waste storage and utilization systems and livestock exclusion fences along riparian areas, and an educational program will be offered to landowners in the watershed. (Contact: Doris Taylor, Soil and Water Conservation District - Morgan County, phone: 614-962-4234)

- *Stillwater River Watershed* — The Stillwater River originates in eastern Ohio and flows in a southwesterly direction before joining the Great Miami River in Dayton. The goal of this project is the development and implementation of an information and education program geared towards reduction of nutrients and sediment in the Stillwater River Watershed. The focus of this project will center around the application of best management practices for manure and erosion control. (Contact: Jim Bennett, Darke County SWCD, phone: 513-548-1715). In 1995, a second project was funded to demonstrate new technology for separating manure solids from liquids to livestock producers in the watershed. This will provide for more cost-efficient nutrient utilization and distribution in the watershed. (Contact: Cyndie Rhodes, Miami and Darke Counties SWCD, phone: 513-548-1715)
- *Mad River Watershed* — The Mad River originates in eastern Ohio and flows south past Springfield and through the City of Dayton before emptying into the Great Miami River, just downstream of the confluence with the Stillwater River. A project was initiated in 1993 to protect the coldwater habitat aquatic life use designation of the Mad River by implementing an Integrated Crop Management (ICM) program on 10 farms, establishing wooded buffer strips and grass filter strips, stabilizing sections of eroded streambank, and implementing an information and education program for watershed residents. Information from a second 1993 Section 319 grant will be used to identify critical areas for BMP implementation. Specific pollutants that this project will address include pesticides, nutrients, and sediment. (Contact: Barbara Moore, Champaign County SWCD, phone: 513-653-3318)
- *Little Miami River* — The Little Miami River is a direct tributary of the Ohio River, and has been designated as a National and State Scenic River. This project is designed to address the overabundance of nutrient and sediment loads in the Little Miami River Watershed. Specifically, Integrated Crop Management systems will be established on 30,000 acres within the watershed. In addition, buffer strips (trees) and filter strips (grass) will be

established along the riparian corridor. (Contact: Betty Kitchen, Soil and Water Conservation District - Clark and Greene Counties, phone: 513-328-4600)

- *Upper Four Mile Creek*— Four Mile Creek is located in the Southwest portion of the state and is part of the larger Great Miami River Basin. The watershed extends into eastern Indiana. A watershed management plan to reduce the amount of nutrients and sediment entering Acton Lake, a reservoir on Four Mile Creek, was developed in a cooperative effort between Ohio and Indiana. Goals of the management plan include reducing soil erosion by 17 percent, and improving nutrient management through the implementation of best management practices.

KENTUCKY

Nonpoint source programs relating to the control of nutrients and/or pesticides have been identified in six Kentucky watersheds within the Ohio River Basin (Table 1). These programs for the most part are designed to implement certain best management practices. Section 319 funding priority is given to projects which address nonpoint source pollution in priority watersheds. An updated *Kentucky Nonpoint Source Assessment Report* identifying priority watersheds will be available in early 1997.

- *Fleming Creek*— Fleming Creek, a tributary of the Licking River, is contained almost entirely in Fleming County in northeastern Kentucky. Animal waste from feedlot operations is the primary concern in the watershed. In 1992, a best management practice (BMP) cost-share project was funded. The implementation of best management practices is being carried out by USDA, while Kentucky Division of Water has the responsibility of monitoring the effectiveness of the controls. Pre-BMP monitoring indicate elevated levels of bacteria, phosphorus and nitrogen. Based upon algal data, eutrophic to hyper-eutrophic conditions occur at certain locations within the watershed. Five long-term monitoring stations have been selected to track the effectiveness of the controls. It is also anticipated that a second bacteria and nitrogen survey will be conducted following BMP implementation. (Contact: Carolyn Ritchie, U.S. Dept. of Agriculture, phone: 606-845-4841)

- *Elkhorn Creek* — Elkhorn Creek, a tributary of the Kentucky River, drains approximately 485 square miles, including parts of four counties and the Cities of Lexington and Frankfort. Elkhorn Creek is both a valuable recreational resource and an emergency source of drinking water during prolonged summer droughts. The watershed has been identified as impaired due to sediment, nutrient and pathogen loading, primarily from livestock production areas. A project has been designed to reduce pollutant loadings in Elkhorn Creek through the implementation of best management practices on four demonstration farms in the watershed. Specifically, the objective is to demonstrate to farmers four cost-effective water supply alternatives for livestock as a method of excluding them from streams. To date, pre-BMP monitoring has been conducted, and watering systems have been installed at three of the four sites. Two years of post-BMP monitoring will be conducted. (Contact: Fayette County Conservation District, phone: 606-233-2761)
- *Harrods Creek* — Harrods Creek is a 31 mile tributary of the Ohio River, with a confluence just upstream of the City of Louisville. An educational program has been designed to increase community awareness in Harrods Creek and its watershed in order to maintain water quality during residential and commercial urbanization. Specific pollutants of concern include herbicides, pesticides, fertilizers, and sediment. The project seeks to develop and make available materials which will enable watershed stakeholders to become more environmentally literate in regard to their role of watershed management. Guidance and informational brochures are being developed, artificial wetlands have been developed at two school sites, and a watershed management field day was held where various best management practices were demonstrated. (Contact: Kurt Mason, Jefferson County Conservation District, phone: 502-499-1900)
- *Beargrass Creek* — Beargrass Creek is a small tributary of the Ohio River which drains much of the City of Louisville. A task force has been established to preserve, protect and enhance the Beargrass Creek Watershed through the reduction of sediment, pesticides, nutrients, and heavy metals. Task force members include the City of Louisville, Louisville and Jefferson County Metropolitan Sewer District, Jefferson County Conservation District, University of Louisville, U.S. Geological Survey, U.S. Department of Agriculture and

others. To date, no federal or state funding has been received. Specific projects include restoration of the stream corridor, water quality monitoring and assessment, and development of a public education programs. (Contact: Kurt Mason, Task Force Chair, phone: 502-499-1900)

- *North Fork of Panther Creek* — Panther Creek is a direct tributary of the Ohio River, entering the main stem near the west end of the City of Owensboro. A partnership made up of several federal and state agencies, has been developed to address water quality concerns in the North Fork watershed. Land use in this watershed is primarily agricultural, and pollutants of concern include nutrients, pesticides, sediment and bacteria. The group seeks to improve water quality through implementation of best management practices and educational programs. Water quality monitoring is also conducted. Section 319 funding has been approved to study the impacts of best management practices (installation of filter strips and riparian areas) on triazine concentrations and turbidity in the creek. As of August 1996, contracts to conduct the study were still being completed (Contact: Billy Stratton, USDA Natural Resources Conservation Service, phone: 502-685-1707)
- *Upper Salt River/Taylorsville Lake* — Taylorsville Lake is highly eutrophic and experiences problems with algal blooms, low dissolved oxygen and occasional fish kills. The problems are primarily caused by high nutrient levels in the streams feeding the reservoir. Several studies and projects have been conducted by Kentucky Division of Water, Division of Conservation, the Corps of Engineers and the U.S. Geological Survey to determine the nutrient concentrations of the reservoir and its tributaries, contributing sources, the amount of nutrient reduction necessary to improve water quality, and appropriate controls. Funds have been made available by the U.S. Department of Agriculture to implement agricultural best management practices (BMPs). One demonstration project was designed to reduce nutrients by implementing best management practices on ten farms in six counties within the watershed. For each site, a specific farm plan was developed that outlined management of the riparian and buffer/filter strip areas. A second demonstration project has been designed to provide farmers with an awareness of alternative systems for mixing agricultural chemicals and fertilizers within a controlled area to contain spillage without runoff

contamination. Specifically, a Chemical Mixing Facility will be constructed within the Upper Salt River watershed and demonstrations will focus on the use of the facility as well as pesticide handling without a facility, field application and pesticide safety. Additionally, more than \$1 million has already been spent to treat wastewater from dairy farms with concentrated animal management areas. The Corps of Engineers is currently modeling the response of Taylorsville Lake to various control alternatives. The results of the model will be used to select the appropriate BMPs. Post-BMP monitoring will be conducted to determine the effectiveness of the implemented controls. (Contact: John Overing, USDA Natural Resources Conservation Service, phone: 606-734-6889 or Corrine Wells, KY Division of Water, 502-564-3410)

INDIANA

Seven nonpoint source projects are being implemented to address nutrients and/or pesticides in Indiana (Table 1). Two statewide projects involve the development of educational publications to outline best management practices for lawn and garden care, and the development of programs for agricultural pesticide/fertilizer bulk storage facility operators to demonstrate how to reduce the risk of contaminating surface water resources. In addition, the five following projects are being implemented to address more localized concerns.

- *Little Four Mile Creek* — Little Four Mile Creek is located in the southeast portion of the state and feeds into Four Mile Creek just across the state line in Ohio. The Union and Wayne County Soil and Water Conservation Districts are providing information, technical assistance and cost-share incentives to landowners to install BMPs, including conservation tillage, grass filter strips, livestock fencing and nutrient management. This program is being conducted in conjunction with the State of Ohio Four Mile Creek Section 319 project, which is implementing BMPs to reduce sediment and nutrient loadings to Acton Lake.
- *Laughery Creek* — Laughery Creek is a 39 mile long stream which flows through southeastern Ohio and joins the Ohio River at mile point 498.7. Pollutants of concern in the watershed include sediment, bacteria and phosphorus. A watershed group dedicated to

improving the water quality in Versailles Lake and throughout the watershed was established in 1993. Since this time, 107 erosion control structures have been built, a storm drain stenciling project has been started, and workshops have been held for local farmers.

(Contact: Debbie Mack, Project CLEAR, phone: 812-689-6456)

- *Upper Tippecanoe River* — The primary goal of the Tippecanoe River Water Quality Project is to promote the voluntary adoption of agricultural best management practices. As of 1993, about 100 landowners in the project area, which includes the headwaters in Kosciusko County, have adopted some type of pollution control practice. Also in the Tippecanoe River watershed, Purdue University is monitoring the effects of a constructed wetland on runoff quality from a dairy facility (Contact: Sharen Jarzen, Indiana DEM, phone: 317-308-3208, or Karen Sowers, Purdue University Agronomy Department, phone: 317-496-2578)
- *Upper Eel River* — The Eel River flows in a southwest direction from Allen County in eastern Indiana to the City of Logansport, where it empties into the Wabash River. The Whitley County Soil and Water Conservation District is implementing a multi-phase program to reduce sediment and nutrient loadings. The Conservation District, Indiana Department of Natural Resources and the National Resource Conservation Service are coordinating efforts to implement conservation practices. As of 1993, nearly 70,000 feet of filter strips have been planted, and a wetland was restored in Columbia City. (Contact: Mark Rekoweg, Whitley County SWCD, phone: 219-244-6780)
- *Fall Creek* — The headwaters of Fall Creek are located in Henry County. From here, the creek flows southwest to the Geist Reservoir and then through the City of Indianapolis, where it joins the White River. The Soil and Water Conservation Districts in Madison and Henry counties began working together in 1993 to reduce sediment, nutrient and pesticide inputs into Fall Creek by implementing best management practices in critical areas of the watershed. (Contact: Dean Forney, Madison County SWCD, phone: 317-644-8530)

ILLINOIS

Only one nonpoint source control program specific to nutrients or pesticides is currently being conducted in the Illinois portion of the Ohio River Basin (Table 1).

- *North Fork Embarrass River* — Funding has been provided to the North Fork Conservancy District to develop and implement a project to reduce sediment and nutrients in the North Fork Embarrass Watershed. This will primarily be accomplished through the implementation of watershed information and education programs. The project is scheduled to be implemented in two phases over the course of four years.

Table 1. Summary of projects addressing nutrient and/or pesticide nonpoint source pollution in the Ohio River Basin.

State	County	Program	Waterbody	Pollutant
PA	15 Southwest Counties	Rotational Grazing Program	All Surface Water	Nutrients
PA	Armstrong, Berks Cambria, Crawford, Erie, Mercer Washington, Westmoreland	Conservation District Agriculture Program	All Surface Water	Nutrients
WV	Preston	Nutrient and Pesticide Erosion Control and Abatement Assistance	Big Sandy Creek	Nutrients and Pesticides
WV	Marshall, Hancock, Ohio	Watershed Demonstration Project	Wheeling Creek and Tomlinson Run	Nutrients and Pesticides
WV	Mason	Nutrient and Pesticide Demonstration Project	Kanawha River/ Oldtown Creek	Nutrients and Pesticides
OH	All	Implementing Nutrient Management in Ohio Using New Technology	All Surface Water	Nutrients
OH	Monroe, Washington	Watershed Area Water Quality Protection Project	Little Muskingum River	Nutrients
OH	Richland	Watershed Project	Black Fork River	Nutrients
OH	Tuscarawas	Livestock Waste Water Treatment Demonstration	East Branch Sugar Creek	Nutrients
OH	Licking	South Fork, Licking River Watershed Project	South Fork, Licking River	Nutrients
OH	Morgan	Water Quality Project	Upper Wolf Creek	Nutrients
OH	Darke, Miami	Nutrient Management and Riparian Corridor Restoration	Stillwater River	Nutrients
OH	Champaign	Pollution Prevention and Riparian Restoration	Mad River	Nutrients and Pesticides
OH	Clark, Greene	River Restoration Project	Little Miami River	Nutrients and Pesticides
OH	Preble	Four Mile Creek Watershed/Acton Lake	Four Mile Creek	Nutrients

State	County	Program	Waterbody	Pollutant
KY	Fleming	Joint Partnership	Fleming Creek	Nutrients and Pesticides
KY	Fayette, Franklin, Scott, Woodford	Best Management Practices Demonstration Project	Elkhorn Creek	Nutrients
KY	Henry, Oldham, Jefferson	Community Education Project	Harrods Creek	Nutrients and Pesticides
KY	Jefferson	Joint Partnership	Beargrass Creek	Nutrients and Pesticides
KY	Daviess, Hancock, Ohio	Joint Partnership	North Fork of Panther Creek	Nutrients and Pesticides
KY	Anderson, Boyle, Mercer, Nelson, Shelby, Spencer	Demonstration Chemical Mixing Center/ Riparian Area Demonstration Project	Upper Salt River/ Taylorsville Lake	Nutrients and Pesticides
KY	42 Counties	Joint Partnership	Kentucky River	Nutrients and Pesticides
KY	Bourbon, Clark	Joint Partnership	Strodes Creek	Nutrients and Pesticides
IN	All	Yard Maintenance Practices Impact on Water Quality	All Surface Water	Nutrients and Pesticides
IN	All	Pesticide/Fertilizer Storage Program	All Surface Water	Nutrients and Pesticides
IN	Union, Wayne	Four Mile Creek Watershed/Acton Lake	Little Four Mile Creek	Nutrients
IN	Decatur, Franklin, Ripley	Joint Partnership	Laughery Creek	Nutrients
IN	Tippecanoe	Tippecanoe River Water Quality Project	Tippecanoe River	Nutrients
IN	Whitley	Upper Eel River Watershed Project	Eel River	Nutrients
IN	Madison, Henry	Fall Creek Watershed Project	Fall Creek	Nutrients and Pesticides
IL	Clark, Jasper	North Fork Embarrass Watershed Project	North Fork Embarrass River	Nutrients