



NONPOINT SOURCE SUCCESS STORY

Kentucky

Watershed Projects and Stakeholder Involvement Improve Water Quality in Yellowbank Creek

Waterbody Improved

Elevated nutrient and eutrophication factors, high levels of pesticides, and high loads of sediment and siltation impaired Kentucky's Yellowbank Creek, prompting the Kentucky Division of Water (KDOW) to add it to the state's 2006 Clean Water Act (CWA) section 303(d) list of impaired waters. Education and outreach activities increased public knowledge and awareness of nutrient and fertilizer applications that could contribute to the stream's impairment. Project partners also implemented numerous "working lands" best management practices (BMPs) targeting livestock grazing practices and erosion control on crop fields, which led to improvements in stream water quality runoff. Due in part to the pesticide educational programs and also from implemented BMPs, Yellowbank Creek improved and was delisted for nutrients and sediment in 2012.

Problem

Yellowbank Creek is in Breckinridge County and is a tributary of the Ohio River in the northwestern corner of the Salt River basin (Figure 1). The 23.5-square-mile Yellowbank Creek watershed includes 48 miles of streams. Land use in the watershed is approximately 57 percent forest, 32 percent agriculture, 5 percent grassland and 3 percent developed land.

Yellowbank Creek was primarily impacted by nonpoint source (NPS) pollution from agricultural activities, including animal feeding operations and livestock grazing. Common land use practices of agriculture operations include the land application of fertilizers and pesticides. Excessive application rates and inadequate stream buffers can cause runoff from farm fields into adjacent streams, causing the impairments related to high nutrients, high sediment loads and pesticide concentrations to be above the assimilative stream capacity.

KDOW biologists determined that Yellowbank Creek was not meeting its designated use as warmwater aquatic habitat due to excessive nutrient, sediment and pesticide loading. The 2004 data indicated a low fish community score and fair to poor habitat scores, using the Kentucky biological indices for fish and habitat categorization protocols. Narrative criteria for nutrients and sediment were exceeded. As a result, KDOW added the 10.5-mile length of Yellowbank Creek

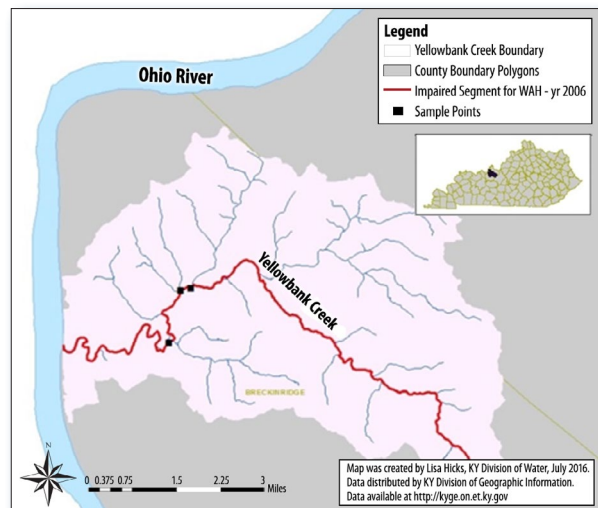


Figure 1. Yellowbank Creek flows into the Ohio River.

(KY516507) to the CWA section 303(d) list of impaired waters in 2006 for not supporting its warmwater aquatic habitat designated use because of nutrients/ eutrophication and sediment/siltation.

Project Highlights

Many project partners and cooperators worked together to identify sources and causes of the NPS pollution, and worked towards implementing BMPs to address agricultural pollution in the Yellowbank Creek watershed, as well as in adjacent watersheds also experiencing similar issues.

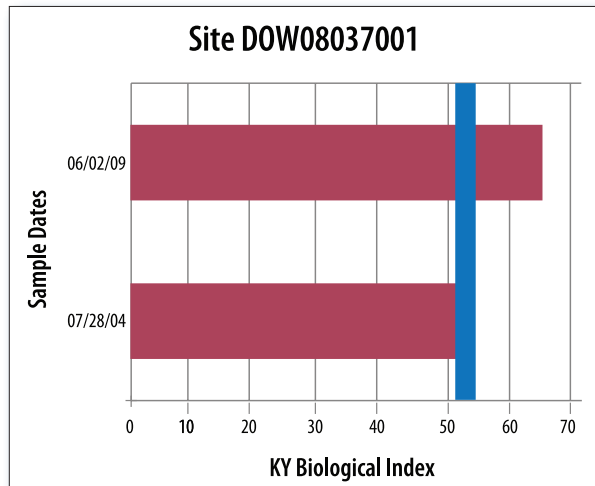


Figure 2. Kentucky biological index scores improved after BMP implementation. Values above the blue line indicate support of Yellowbank Creek’s warmwater aquatic habitat designated use.

The Kentucky Department of Agriculture was awarded a CWA section 319(h) grant in 2004 to build a cooperative group of agriculture professionals to work on NPS pollution issues in Breckenridge County. This project included three educational field days targeting local farmers and landowners in the watershed. Farmers were trained how to interpret pesticide labeling and accurately calibrate pesticide application equipment. They also learned about proper stream buffer and setback requirements and the safe disposal of used pesticide containers. Field days included a classroom portion where farmers received educational materials and training on pesticide applications, including proper rates and amounts for the appropriate size and type of crop.

Demonstration farms were established to show specific BMPs, including rotational grazing systems, alternative water systems, stream fencing, and pesticide application setbacks and stream buffers. Approximately 221 people attended the three field days. Technical and financial assistance for installing on-the-ground BMPs that landowners had learned about during the demonstration field days continued to be provided by partners well after the CWA section 319(h) project concluded.

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) annually reports its

implemented farm practices by 12-digit hydrologic unit code watershed; since 2005, NRCS has implemented 87 of the following BMPs in the Yellowbank watershed: comprehensive nutrient management planning, conservation cover, fencing, forage harvest management, heavy use protection, integrated pest management, livestock pipeline, prescribed grazing, watering facility, conservation crop rotation, contour farming, access control, upland wildlife habitat management and grassed waterway.

Results

Water quality has improved in Yellowbank Creek. Biological monitoring in 2009 showed that Yellowbank Creek achieved a fish community score of *good*, indicating support of the creek’s warmwater aquatic habitat designated use (Figure 2). As a result, the 10.3-mile segment of Yellowbank Creek was removed from the CWA section 303(d) list of impaired waters in 2012. (Note: In the 2010 water quality assessment, KDOW adjusted the Yellowbank Creek segment length to reflect the National Hydrography Dataset. The final segment length as of 2014 was 10.3 miles).

Partners and Funding

Many partners were involved in the farmer education and outreach programs as well as the continued on-the-ground BMP implementation efforts, including Kentucky Department of Agriculture, U.S. Geological Survey – Kentucky Water Science Center, NRCS, University of Kentucky Cooperative Extension Service, Breckinridge County Cooperative Extension Service, Breckinridge and Meade county conservation districts, Kentucky Division of Forestry, Kentucky Department of Fish and Wildlife Resources, Kentucky Corn Growers Association, Kentucky Division of Conservation, and KDOW. These partners contributed much time, energy, expertise and technical assistance in developing and presenting the educational materials to farmers, coordinating and conducting farm field days, installing BMPs for field day demonstration and supporting the sustained BMP implementation effort. The Kentucky Department of Agriculture’s \$535,000 CWA section 319(h) grant was allocated for education and outreach materials development, monitoring water quality locations, and for planning and conducting three farm field days.



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