



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Illinois

Installing Best Management Practices Reduces Nutrients in the Lake Vermilion Watershed

Waterbodies Improved

Industrial and municipal point sources of pollution, agricultural sources of nonpoint source pollution, and hydrologic and habitat modifications led to low levels of dissolved oxygen (DO) in Illinois' Lake Vermilion and Hoopeston Branch, a tributary to the North Fork Vermilion River. As a result, the state added Lake Vermilion to its Clean Water Act (CWA) section 303(d) list of impaired waters in 2002 and added Hoopeston Branch in 2004. Project partners implemented best management practices (BMPs) throughout the Lake Vermilion watershed, leading to water quality improvements. The two waterbodies now meet water quality standards for DO, prompting the Illinois Environmental Protection Agency (Illinois EPA) to remove them from the state's CWA 303(d) list—Lake Vermilion in 2006 and Hoopeston Branch in 2008.

Problem

Lake Vermilion (Waterbody ID: RBD) is an 878-acre lake in Vermilion County, Illinois (Figure 1). Originally created as a reservoir and recreational lake with the construction of a dam across the North Fork Vermilion River, the lake now supplies drinking water to the city of Danville and surrounding areas. The watershed area draining to Lake Vermilion is approximately 189,000 acres. It is predominately agricultural, with almost 94 percent characterized as cropland or pasture. An industrial point source and a municipal point source are within the watershed. The North Fork Vermilion River flows about 62 miles from its headwaters in Benton County, Indiana, to Lake Vermilion. The lake drains into the Vermilion River.

Water quality data collected at three sites in Lake Vermilion in 2000 showed that seven of the 18 samples analyzed did not meet Illinois' water quality standard for DO. The standard states that DO shall not be less than 6.0 milligrams (mg) per liter (L) during at least 16 hours of any 24-hour period or less than 5.0 mg/L at any one time. On the basis of these data, Lake Vermilion was added to the state's CWA section 303(d) list of impaired waters in 2002 for DO. The lake failed to support both its primary contact designated use for swimming and its secondary contact designated use for recreation due to nutrient pollution. In 2008 Illinois EPA developed a total maximum daily load (TMDL) for Lake Vermilion for total phosphorus and nitrate. Illinois EPA identi-

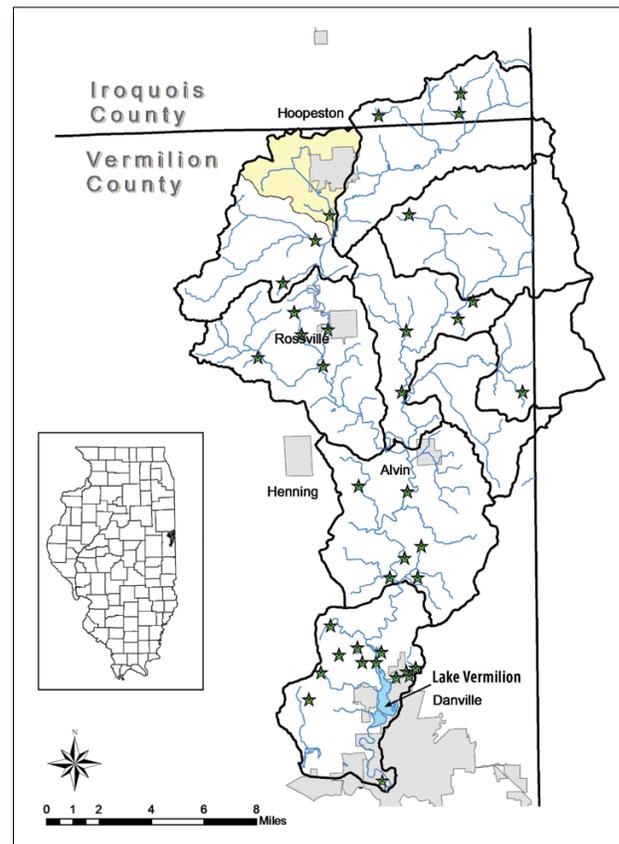


Figure 1. The Lake Vermilion watershed, showing Hoopeston Branch (yellow) and other tributary watersheds. Green points represent locations of BMPs implemented as part of CWA section 319 projects.

fied the potential pollution sources as agriculture, crop-related sources, non-irrigated crops, hydrologic and habitat modification, flow regulation and modification, streambank modification/destabilization, recreation and tourism activities, and herbicide and algaecide application.

Hoopeston Branch (Waterbody ID: BPGD) is a 4.8-mile segment within the North Fork Vermilion River watershed. Sampling performed in September 2002 showed a DO level of 4.7 mg/L, which failed to meet the applicable water quality standard of 5.0 mg/L required to indicate support of the aquatic life designated use. As a result, in 2004 Illinois EPA added Hoopeston Branch to the state's CWA 303(d) list of impaired waters. Industrial point sources, municipal point sources, combined sewer overflows, and hydrologic and habitat modification were identified as potential sources of pollution.

Project Highlights

Illinois EPA has completed five CWA section 319-funded nonpoint source pollution control projects in the Lake Vermilion watershed. Project partners have stabilized 12,054 feet of streambank and shoreline, created eight ponds (with a total surface area of 13.7 acres) as sediment and nutrient retention structures, built seven grade stabilization structures, planted 14.8 acres of grassed waterways, installed 13,665 feet of terraces, planted 1.5 acres of trees, and installed 15,675 feet of water and sediment control basins (Figure 2). Combined, these projects prevent an estimated 6,600 tons of sediment, 4,400 pounds of phosphorus, and 8,800 pounds of nitrogen annually from running off into surface water.

With funding from CWA section 319, the Vermilion County Soil and Water Conservation District led an effort to develop a watershed implementation plan for Lake Vermilion and the North Fork Vermilion River in 2008. Illinois EPA completed a North Fork Vermilion River/Lake Vermilion Watershed TMDL report in June 2008.

Results

Nonpoint source pollution control efforts involving BMP implementation are helping to restore Lake



Figure 2. A CWA section 319-funded streambank stabilization project on the North Fork Vermilion River.

Vermilion and Hoopeston Branch. Water quality samples taken in Hoopeston Branch in 2005 and 2006, and in Lake Vermilion in 2003, showed that these waterbodies now meet Illinois' DO standard. Between October 2005 and October 2006, sampling was conducted on Hoopeston Branch for the Stage 2 TMDL report. All of the 13 samples analyzed met the state's DO standard. Similarly, sampling performed in 2003 at three sites on Lake Vermilion indicated that all of the 14 samples analyzed met the state's DO standard. On the basis of these data, Illinois EPA removed both waterbodies from the state's impaired waters list for DO—Lake Vermilion in 2006 and Hoopeston Branch in 2008.

Partners and Funding

The Vermilion County Soil and Water Conservation District, Consumers Illinois Water Company, local landowners, and others cooperated to implement nonpoint source control projects in the Lake Vermilion watershed. The U.S. Environmental Protection Agency provided \$730,213 in CWA section 319 funding to implement BMPs in the watershed between 1997 and 2012. Project partners provided \$565,702 in local match funding. All entities combined have invested a total of \$1,295,915 in these projects.



U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-14-001L
April 2014

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