Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Kentucky

Acid Mine Drainage Abated in Rock Creek

Waterbody Improved

Acid mine drainage from coal mines had decimated aquatic life in a 4-mile stretch of Rock Creek. Best management practices (BMPs) installed in the Rock Creek watershed, including removal of coal refuse from streambank areas and treatment of creek water with limestone to increase pH, have decreased acid loading to the creek, resulting in a reclassification from full nonsupport to partial support for aquatic life and swimming on Kentucky's 303(d) list of impaired waters.

Problem

The upper portion of Rock Creek between the Kentucky-Tennessee border and the stream's juncture with White Oak Creek is designated as a wild and outstanding natural resource water. However, below the stream's juncture with White Oak Creek, acid mine drainage, from more than 40 coal mine portals and 8 coal refuse dumps, has severely affected aquatic life. In 1990 Kentucky listed Rock Creek on the 303(d) list as nonsupporting for aquatic life and swimming. A total maximum daily load for Rock Creek is under development.

Bank restoration along Rock Creek has reduced sediment loading by 500 tons per year.

Project Highlights

The Kentucky Division of Abandoned Mine Lands led the implementation of Phase 1 of the Rock Creek restoration project in spring 2000. Coal refuse that contributes to acidic conditions in runoff was removed from the banks of the creek, and open limestone channels and a modified vertical flow wetland system were installed to further neutralize acidic drainage. Water in the creek was further treated with monthly applications of limestone sand to reduce acidity.

Results

Activities to date have dramatically improved the water quality in the lower Rock Creek watershed. Acid loading into the Big South Fork of the Cumberland River from Rock Creek has decreased from a monthly average of 110 metric tons to near zero. Removing 25,000 cubic yards of coal refuse from streamside areas and revegetating the banks of Rock Creek have reduced the sediment entering the stream by 500 tons annually. Fish populations are improving in the lower Rock Creek watershed, and the number and diversity of fish species are increasing. Stations that once supported no fish are now supporting fish. Because of these improvements, Rock Creek has been reclassified from full nonsupport to partial support for aquatic life and swimming on the 2002 Kentucky 303(d) list.

Phase 2 of this project, already in the works, includes installing more alkaline-producing features in the watershed to ensure long-term results in Rock Creek. These features will reduce the need for monthly limestone dosing of the tributaries. The 4 miles of Rock Creek affected by acid mine drainage might become a viable fishery thanks to the hard work and cooperation of the many agencies involved.

Partners and Funding

The Rock Creek Task Force was formed in the mid-1990s with the goal of restoring the lower Rock Creek watershed. This group includes 12 state and federal agencies and conservation organizations. Under Phase 1, section 319 provided $200,000 in grant funding for the construction of open limestone beds and removal of coal refuse from the banks of the creek. Other Phase 1 funding included $280,000 from the Appalachian Clean Streams Initiative, $250,000 from a Personal Responsibility in a Desirable Environment grant from the National Oceanic and Atmospheric Administration, $160,000 from a Kentucky Abandoned Mine Land Grant, and $80,000 from the U.S. Geological Survey cost-share program.

Rock Creek bank before restoration.

Rock Creek bank after restoration.

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

EPA 841-F-05-004H
July 2005

For additional information contact:

Mark Carew
Kentucky Division of Abandoned Mine Lands
502-564-2141
mark.carew@ky.gov