



## Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# West Virginia

## Upper Buckhannon River Moves toward Recovery from Metals Impairments

### Waterbody Improved

Mine drainage and acid deposition have degraded several streams in the Tygarts Valley watershed. Consequently, many are included on the West Virginia 303(d) list with metal impairments. Through the teamwork of many partners, restoration efforts are underway. In the Upper Buckhannon River subwatershed, instream limestone treatments, the covering of mine refuse areas, revegetation of affected areas, and other practices show promise that by 2008, the Buckhannon River and other streams within that subwatershed may be delisted for their metal impairments.

### Problem

The 47-mile-long Buckhannon River flows through north-central West Virginia. A tributary of the Tygarts Valley River, the Buckhannon drains a watershed of approximately 94,800 acres. Headwater streams in the mountainous, forested watershed once teemed with trout.

However, drainage from coal mining activities and acid deposition eventually rendered many of the streams sterile. Spring snowmelts and rainfall typically delivered a pulse of acidic water that would lower average pH from 6 to less than 4, wiping out most aquatic life.

In 1998, West Virginia placed 16.74 miles of the Upper Buckhannon on its 303(d) list because of Aluminum, Iron, Manganese and pH impairments caused by abandoned mine drainage and acid deposition.

### Project Highlights

Representatives of state and federal agencies, business, academia, and a newly formed watershed association created the Upper Buckhannon Project Team (UBPT). The UBPT brought resources and expertise to help address water quality impairments. In addition, the UBPT rallied the participation and support of local citizens. Many citizens from various professional backgrounds including forestry, municipal and state government, construction, education,



Local media films the first application of limestone to the Right Fork of the Upper Buckhannon River.

journalism, law and the coal industry formed the Buckhannon River Watershed Association (BRWA), a key member of the UBPT.

Using a \$2 million settlement from Dominion Energy, Inc., the West Virginia Department of Environmental Protection (WVDEP) and state Department of Natural Resources (WVDNR) initiated a program to treat the acid-impacted streams in the Upper Buckhannon watershed. The agencies deposited fine limestone granules into several acid-impacted tributaries. After the initial limestone treatments, WVDNR began stocking trout into several tributaries.

This project involved sealing and covering coal refuse areas, re-grading refuse areas to manage runoff, armoring potential erosion areas, using limestone to reduce acidity in drainage areas and seeding and mulching the entire area. In the future, the project will also incorporate streambank stabilization to include limestone drainage channels and limestone sand treatment.

## Results

Early monitoring results show great promise. In one tributary, the majority of pH readings are around 7.0, and pH has dropped below 6.0 only 2 percent of the time (Note: WV pH standard is 6.0–9.0). WVDNR has started to report year-long trout survival in several streams.

With these encouraging results, WVDEP expects to remove the treated streams' metal

impairments from the state 303(d) list in 2008. However, more remains to be done to fully meet water quality standards. The partners who make up the UBPT will need to make several strategic decisions in the near future.

## Partners and Funding

This project involves many partners, some of whom are not full-time participants in the UBPT. In addition to the BRWA, WVDEP, WVDNR, the partnership also includes the Federal Office of Surface Mining, West Virginia Conservation Agency, U.S. Environmental Protection Agency, and the Canaan Valley Institute. To date, \$90,000 in section 319 funds and \$348,170 from various partners have been contributed to the effort. The BRWA has been an important source of matching funds for section 319 grants. In addition, Dominion Energy, Inc. contributed \$2 million in settlement funds.



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

EPA 841-F-07-001B  
February 2007

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