Smooth Rock Lick Project

One of many AMD sources in the drainage

The Buckhannon River Watershed Association, Inc. recently completed its Smooth Rock Lick project. The project was developed from the Upper Buckhannon River Watershed Based Plan, which was based on the Metals and pH TMDL for the Tygart Valley River Watershed, U.S. Environmental Protection Agency (US EPA), March 2001.

The site is the DLM Mine Complex in Upshur County. Treatment to NPDES technology-based effluent limitations is required through litigation by the West Virginia Highlands Conservancy in 1985. Drainage from the Complex flows into several small tributaries of the Buckhannon River. Three of these tributaries are Herods Run, Swamp Run, and Smooth Rock Lick Run.

WVDEP's Division of Water and Waste Management, Nonpoint Source (NPS) Program in cooperation with BRWA and National Mine Land Reclamation Center's WV Water Research Institute (WVWRI) has gathered data on these tributaries in recent years. Ever since the coal company gave up ownership, DEP has been treating metal-laden, acidic drainage on the permitted area, which is now owned by the state of WV (the Alton Special Reclamation site). However the three tributaries are also the receiving streams for seepage that originates from the permitted area but which surfaces off the permitted area and thus is not routinely treated by the DEP as part of the permitted area treatment.

The project areas are located near the head of two unnamed tributaries that drain into the Smooth Rock Lick sub-watershed adjacent to the Alton Special Reclamation site, near Alton, Upshur County, WV. Seepage is from mine spoil and from water collecting along a mine bench.

One of the leach beds near the headwaters

BRWA, DEP's NPS Program and the WVWRI developed a plan to capture the seeps, reduce their metal content, and neutralize their acidity before they enter Smooth Rock Lick Run's headwaters. This project consists of three seepage sites, two of which were combined into one sub-project; the third site was a second sub-project done at the same time. Funding ($330 thousand dollars) for the design, engineering, and construction was from §319(h) of the Clean Water Act and from the U.S. Office of Surface Mine's Watershed Cooperative Agreement Program. Gathering baseline data specifically for this project began in late 2005, with fund procurement, conceptual design, and final engineering design having been completed by 2009. Following a period for surveying and bidding out the job, construction began in July 2010 and was completed by October 2010.

Polishing pond in the lower part of the drainage

The project uses a passive treatment system (no machinery or dosers are involved). The basic system consists of limestone channels to convey seeps to limestone leach beds where prolonged contact with limestone will “sweeten” the water by raising the pH and causing precipitation of iron, aluminum, and perhaps some manganese.

The last phase of the project, occurring now, is gathering water-quality data to determine the project’s effectiveness in meeting the intended goal, which is removal of approximately 80% of the contaminants. This constitutes a total removal of approximately **23,000** lbs/year of acidity, **3,200** lbs/year of iron and **900** lbs/year of aluminum; some manganese reduction should also occur. The post-project water quality data will allow comparison of the metal and acidity loads before treatment with those loads after treatment. The ultimate goal for most of BRWA’s projects is removing much of the acidity, metals, and coliform bacteria from waters entering the Buckhannon River.