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Western Pennsylvania Conservancy corrals mine pollution on Dunbar Creek

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By Ben Moyer

It was a perfect storm of pollution in a fateful place. Unregulated 1950s surface mining around the contours of a remote knob in Fayette County unleashed acid, iron and aluminum westward into Dunbar Creek's headwaters and eastward into Jonathan Run. Another spate of coal-stripping followed in the 1980s, when operators' post-mining reclamation efforts failed.

Pollution has been leaking from the mine scars there ever since, rendering Dunbar Creek an under-achieving trout fishing destination, and Jonathan Run an alluring but ruined fishery flowing through the publicly accessible wilds of Ohiopyle State Park. Both streams join the Youghiogheny River.

In the mid-1990s, scientists from California University of Pennsylvania's Environmental Studies program documented poor water quality in Glade Run, a major tributary to Dunbar Creek originating near the mine sites, and verified it supported no aquatic life. Unaffected Dunbar tributaries helped dilute the pollution, but Glade Run's flow still tainted Dunbar's main stem all the way to its Youghiogheny confluence at Connellsville.

These degraded streams are examples of a larger environmental liability. Sulfur and iron occur naturally with coal seams but remain chemically inert while sealed underground. When mining exposes these elements to air, the resulting chemical reaction forms sulfuric acid, which leaches iron and toxic aluminum from surrounding rock. Suspended iron causes the red-orange color so familiar in Western Pennsylvania streams before reclamation efforts began.

"Abandoned coal mine drainage renders about 13,000 miles of streams nearly lifeless throughout the Appalachian coal region, with the highest concentration of more than 5,500 stream-miles found in Pennsylvania," Trout Unlimited's Northeast habitat program director Amy Wolfe wrote in a recent report. "The good news is that we are indeed making progress."

More of that progress reached Glade Run and Dunbar Creek this month. In August, the Western Pennsylvania Conservancy notified Stoy Excavating of Somerset that the firm could begin construction of an $800,000 acid-mine-drainage treatment facility atop the old mine footprint near Glade Run's source. Stoy had won the bid on the project, funded jointly through the state Deptartment of Environmental Protection's Growing Greener program and the Department of Community Economic Development.

Covering about eight acres, the system required grading and land re-contouring. Almost 3,000 tons of limestone, high in calcium carbonate, is needed to treat the mine discharge. High-grade limestone neutralizes acid and enables harmful metals like iron and aluminum to drop out in settling basins instead of flowing into streams. Stoy completed construction in mid-November.

"We are definitely getting treatment right now, but it takes a while for the mine discharge to work its way through the systems and interact with the limestone," said Greg Schaetzle, watershed program director for the Western Pennsylvania Conservancy. "Over the next month or two we'll begin to see the beneficial results we're anticipating downstream."

About half the limestone had to be buried in an "anoxic limestone drain," in which polluted runoff flows through a limestone bed in the absence of air.

"In neutralizing mine acid over the long term, it's important to not have the limestone and water exposed to oxygen during their interaction," said Mr. Schaetzle. "Oxygen causes a non-reactive scale to form on the limestone surface so that it can't react with the acid. Eventually this clogs the system."

He characterized the new facility as a passive system in widespread use across Appalachian mined lands.

"An active treatment system uses on-site machinery of some kind to continuously dose the discharge with neutralizing material to get the chemical reaction you hope to achieve," he explained. "You need less area, but the cost is high over the long term.

“Passive treatment requires a larger imprint, channeling polluted water through the limestone into settling basins by gravity. There’s a bigger up-front construction cost with passive but your long-run savings are half of what it would cost to treat actively because after-build operating costs are almost zero. Here, we have the room and suitable topography, plus we have a landowner granting us permission.”

The site’s current owner acquired the tract after mining. “The landowner has a keen interest in water quality and wildlife habitat. His cooperation has supported improvements downstream,” Mr. Schaetzle said.

“I knew part of the property had been mined before, but I didn’t know about the acidic discharges,” said site owner Jack Krauss. “A few years ago, some friends and I were hunting grouse back there and one of the guys stepped in some red sludge up to his ankles. A couple of days later his boot laces disintegrated. I’m gratified to see these pollution sources cleaned up for people downstream and for the future.”

According to Mr. Schaetzle, the passive system will require little maintenance other than annual mowing to prevent tree roots from puncturing the settling basin liners.

Glade Run’s gradual restoration was sparked in the late 1990s by the stream’s wild appeal.

“On Glade Run’s course to Dunbar Creek, it flows cold and shaded by hemlocks through remote reaches of State Game Lands 51. We considered it tragic that such an otherwise appealing stream could not support trout and public fishing,” said Dale Kotowski, former president of the Chestnut Ridge Chapter of Trout Unlimited.

In 2003, Mr. Kotowski’s group built a similar but smaller facility nearby. That project treats other discharges from the same mining complex. The local chapter of Trout Unlimited has also continued to dose Glade Run’s headwaters with finely crushed limestone sand in three locations to boost water quality until more permanent treatment systems could be installed.

“We congratulate the Western Pennsylvania Conservancy for their initiative and success on their newest Glade Run treatment facility,” Mr. Kotowski said.

Mr. Schaetzle acknowledged the sustained commitment of cooperating partners in improvements to Glade Run and the Dunbar Creek basin, including Chestnut Ridge TU, the state departments of Environmental Protection and Economic Development, Fayette County Conservation District, Pennsylvania Game Commission and bordering Stewart and Wharton townships.

He also indicated that the conservancy is designing a similar system to treat eastward drainage into Jonathan Run, and has a Growing Greener grant application pending with DEP to fund that improvement.

“Part of our mission at the Western Pennsylvania Conservancy is to improve water quality across Western Pennsylvania,” Mr. Schaetzle said. “Because of its unique landscape and outdoor recreation potential, the Laurel Highlands are a focal area for our restoration work. Our hope, together with partners, is to make Glade Run and the Dunbar Creek watershed all that it can be again as an asset for the region.”

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