

LAUREL RUN HEADWATERS RESTORATION EFFORT BRUSHVALLEY AND CENTER TOWNSHIPS, INDIANA COUNTY, PA A BLACKLICK CREEK MINE DRAINAGE ABATEMENT PROJECT



An acidic, iron-laden, aluminum bearing abandoned mine discharge emanates from this century old underground mine gravity drain.

EXECUTIVE SUMMARY

Stream Restoration Incorporated, a Pennsylvania 501(c)(3) non-profit organization, received funding from the Pennsylvania Department of Environmental Protection through the Watershed Restoration and Partnership Act (WRPA). The primary project goals were to improve Laurel Run (Blacklick Creek headwaters) by passively treating an acidic, metal-laden, abandoned underground mine discharge, to create wildlife habitat, and to provide education and outreach opportunities.

Within a period of five months, permits/approvals had been received and the passive system had been designed and online. The result: the abandoned mine discharge and a 2-mile section of Laurel Run, were remarkably improved, clearly illustrating the value of Public-Private Partnership efforts with state agencies, private industry, nonprofits, and volunteers to form a determined team to efficiently and economically complete successful water restoration projects.

The four-component passive treatment system included a collection system, Vertical Flow Ponds (two in parallel), a Flush Pond, and a Wetland.

The Vertical Flow Pond design utilized a “state-of-the-art” extensive, two-tier, underdrain, with about 2 miles of perforated, Schedule 40, PVC piping with valved,

adjustable outlets to encourage even flow distribution and to provide more thorough flushing of accumulated metal precipitates. (Flushing is intended to decrease plugging potential and maintain effective hydraulic conductivity.)

To provide for educational, "hands-on", opportunities and to provide the optimal value of the wetland as wildlife habitat, students and faculty of Indiana University of PA along with Aquascape and other team members, planted the wetland using 13 species of hydrophytes harvested from areas with similar water chemistry.

Currently, the passive treatment system is neutralizing about 257 lbs/day of acidity and preventing about 21 lbs/day of metals from entering the receiving stream. The pre- and post-construction passive system discharge characteristics are (raw/treated) 3/7 pH, 0/100+ mg/l alkalinity, 140/0 mg/l acidity, 10/<2 mg/l iron, and 10/1 mg/l aluminum.

Based on recent and historical monitoring and continued functioning of the system, an estimated average of 47 tons/yr of acidity and 4 tons/yr of metals are expected to be eliminated from Laurel Run.

The effect of this single innovative passive treatment system has already positively impacted Laurel Run, substantially improving a 2-mile segment. This was demonstrated by conducting pre- and post-installation stream assessments. As this is of national interest to the mine reclamation community, a peer-reviewed, professional paper was presented at the 2002 national meeting of the American Society of Mining and Reclamation.

As part of the continuing emphasis on public outreach, Stream Restoration Inc. conducted a workshop on the application of passive treatment technology at the above noted conference. The Laurel Run passive system was used as the model in the development of the well-received, Construct Your Own Passive Treatment System Simulation.

In order to more fully evaluate the continued effectiveness of the system and the degree of success in improving Laurel Run on a long-term basis, PA Dept. of Environmental Protection personnel, and other participants are intending to continue monitoring efforts.