

Fox Run Restoration Project- Phase II Passive Treatment System
SRI O&M TAG Project # 27 Request #1
OSM PTS ID: PA-297

Requesting Organization: Mercer County Conservation District (in-kind partners)
Receiving Stream: Fox Run (Fox Run Watershed)
Hydrologic Order: Fox Run→Yellow Creek→Cool Spring Creek→Neshannock Creek→
Shenango River→Beaver River→Ohio River
Municipality/County: Sandy Township, Mercer County
Latitude/Longitude: 41°18'06.0012"N / 80°07'18.9984"W
Construction Year: 2008

In 2008, the Fox Run Phase II Passive Treatment System was constructed to improve the water quality of an abandoned underground mine discharge. The passive system includes the collection and piping system that conveys the AMD beneath Fox Run to a v-notched aeration platform in a settling pond followed by an aerobic treatment wetland. Water monitoring conducted during statewide synoptic monitoring of treatment systems (aka, water quality snapshots) revealed that after several years of operation, only limited vegetation has been established in the treatment wetlands, resulting in the removal of only about 1/3 of the total iron load. After multiple attempts to develop desirable vegetative cover, animal browsing was found to be a major contributing factor to the lack of vegetative growth. Other factors that may contribute to inhibiting the establishment of vegetation include the cold temperature of the mine water, lack of good wetland substrate, and the relatively high flow rate of the discharge. At similar systems, successful vegetative cover has been shown to improve removal of iron.

On 5/23/13 Shaun Busler met with Shawn Hedglin of the Mercer County Conservation District (MCCD) to visit the site and discuss options to address both the lack of vegetation within the wetland and low iron removal rates. In September 2013, partnering with the MCCD and volunteers, Stream Restoration Incorporated (SRI) and BioMost, Inc., (BMI) worked to establish vegetation along and within the treatment system. New methods employed included the use of compost filter socks and floating wetland islands to provide growth media.

Compost filter socks were secured within the system and planted with live stakes. Floating eco-islands were installed to encourage growth and create a healthier ecosystem within the settling pond. Unfortunately, site visits in months after installation again revealed significant animal browsing activity, reducing growth of plants in the eco-islands and compost filter socks. Subsequent site visits are planned for 2015 to reassess plant growth and make further recommendations, as needed.

The project team thanks Mercer County Conservation District and their volunteers for all of their efforts including support and assistance. Funding for technical assistance and maintenance was provided by the PA DEP's Growing Greener and the Foundation for Pennsylvania Watersheds grant programs and in-kind services by project partners.



The Fox Run Phase 2 passive system consists of a discharge collection system with piping beneath Fox Run, a settling pond with aeration platform, and an aerobic wetland (*top left and right*). Establishing vegetation in the wetland has been problematic, which appears to be responsible for the limited iron removal. To encourage successful vegetation, floating wetland islands with wetland plants (*middle left*) and compost filter socks with live stakes (*middle right*) were installed. Continued significant animal browsing activity post-installation, however, has reduced the growth of plants in both the wetland islands and compost filter socks (*bottom left and right*).