Goff Station Passive Treatment System
SRI O&M TAG Project # 20 Request #1
OSM PTS ID: PA-115

Requesting Organization:	Slippery Rock Watershed Coalition (in-kind partner)
Receiving Stream:	Murrin Run (Slippery Rock Creek Watershed)
Hydrologic Order:	Murrin Run→Seaton Creek→Slippery Rock Creek→ Beaver River→Ohio River
Municipality/County:	Venango Township, Butler County
Latitude/Longitude:	41°07'51.9996"N / 79°52'19.9992"W
Construction Year:	2000

The Goff Station Passive Treatment System complex was constructed in 2000 to treat several acidic, metal-bearing, discharges from abandoned coal mining activities in Venango Township, Butler County, PA. The complex essentially consists of three separate treatment systems that were designed to treat 6 distinct mine discharges that share a final polishing wetland. The system includes 4 Vertical Flow Ponds (VFP1, VFP2, VFP3, and VFP4), 1 settling pond, and 4 wetlands. This site significantly improved the quality of Murrin Run and also provides wildlife habitat. The Slippery Rock Watershed Coalition (SRWC) had been regularly sampling and inspecting the system since construction was completed.

The SRWC requested assistance in November 2012 to address several maintenance issues related to the treatment system. At some point in time, conditions within the abandoned underground mine pool changed, resulting in substantial changes in flow rates. Visual observations indicated that the majority of the mine water was emanating at discharge ST40 while discharges ST38/39 and ST41 appeared to be no longer flowing; therefore, AMD was not entering over half of the treatment components including VFP1 and VFP2 and the remaining components were being overwhelmed. Final effluent water quality was poor with a pH of about 3.5. In addition, the capacity of the pipe that conveys water to VFP3 and VFP4 was reduced due to being partially plugged with iron and debris. As the flow rate at ST40 had significantly increased coupled with the pipe partially plugged, water was overtopping the berm of Collection Pond 40.

A plan to remediate these issues was developed by BioMost, Inc., (BMI). The plan (Refer to attached Conceptual Overview.) consisted of increasing the height of the embankment to prevent overtopping and installing a channel that would convey a portion of the flow to VFP1 and VFP2 that were no longer receiving AMD. In addition, the pipe conveying flow to VFP3 and VFP4 would be cleaned. Once flow was restored, the system would be reevaluated to identify any other issues that might exist based upon treatment performance. When Stream Restoration Incorporated tried to contact the landowner to obtain approval for the proposed changes, it was discovered that the landowner had changed. The new landowner was contacted to discuss the issues and the need to repair the system. The new landowner wanted to be paid for access to the property. As SRI did not have funds to pay the landowner, SRI was refused access and negotiations for a new landowner access agreement were not successful. SRI will attempt to restart negotiations under the O&M TAG 2 grant and will hopefully be able to acquire access to fix the system.

At the Goff Station Passive Treatment System, a change of conditions within the old abandoned underground mine resulted in a substantial change in flow rates at the existing discharge locations. Several of the discharges dried-up *(top left)* where iron staining indicates previous water levels and other locations received significantly more flow such as at Collection Pond 40 *(top right),* substantially decreasing retention time and treatment performance. Changing of the flow rates and also plugging of pipes has resulted in some of the treatment components not receiving any flow *(bottom left)*. A plan to install a channel through a wooded section of the property *(bottom right)* has been proposed to convey AMD to unutilized sections of the treatment system. Other maintenance such as cleaning pipes will also be conducted as necessary if landowner permission can be negotiated.