

Dents Run 3895 Passive Treatment System
SRI O&M TAG Project #32 Request #1
OSM PTS ID: PA-276

Requesting Organization: Bennett's Branch Watershed Association
Receiving Stream: Porcupine Run
Watershed: Bennett Branch Sinnemahoning Creek
Municipality/County: Bennezette Twp., Elk Co.
Latitude/Longitude: 41° 20' 24.72" N / 78° 20' 18.984" W

In 2008, a passive treatment system was installed as part of a larger public-private partnership effort among the US Army Corps of Engineers, PA DEP BAMR, PA Game Commission, Elk County Conservation District, Bennetts Branch Watershed Association, P&N Coal, and others to restore the Dents Run Watershed. At the PA3895 site, an innovative passive treatment system was designed by BioMost, Inc. to treat several abandoned mine discharges in Porcupine Hollow, one of the most polluted tributaries to Dents Run. The system contains one of the first, if not the first, instance of intentionally constructing low pH iron oxidation and precipitation channels that utilize naturally occurring iron oxidizing bacteria to remove iron at low pH. In addition, the system utilizes an alkaline iron mine discharge to help treat the extremely acidic metal bearing discharges. This site is especially unusual as it is one of the few sites which treat a discharge with over 1000 mg/l of acidity using only passive treatment components.

On 10/1/14, while providing a site tour for the West Virginia Mine Drainage Task Force, Tim Danehy discovered several maintenance issues that needed to be addressed. Primary concerns included:

- The SB1 outlet pipe had shifted, changing the water outlet elevation which prevented water from flowing underneath the access road to the next treatment component. This caused the water level within the pond to rise and then flow out the emergency outlet riser directly into Porcupine Run thus bypassing the rest of the treatment system. This problem was probably caused by ice pushing against the outlet pipe elbow, causing it to rotate.
- Vegetation growing in OPC3 had also been an on-going issue causing water to backup into SB1.
- A low point in the berm of OPC3 needed to be built up to prevent over topping.

On 12/18/14, Dan Guy and Ryan Mahony of BioMost, Inc. moved equipment to the site and performed a site inspection included taking water quality measurements where possible in the Phase 2 portion of the system. The elbow for the SB1 outlet pipe was then removed to allow SB1 to drain over night. On 12/19/14, the following maintenance activities were conducted:

- The SB1 outlet pipe was cut shorter and a downward facing elbow installed to direct flow into the pipe that conveys flow underneath the road to the Phase 2 portion of the system.
- A section of OPC3 near the inlet was excavated to deepen the channel, which should reduce vegetation growth and maintain flow from Phase 1 to Phase 2.
- Dirt was placed and compacted along the low spot of the OPC3 berm to prevent overtopping.

Water monitoring conducted in May 2015 during the passive treatment snapshot identified that all the water was continuing to flow through the system and the final effluent was of excellent quality.

SRI would like to thank Ken Rowe and the Bennetts Branch Watershed Association for assisting with this project, as well as the PA State Game Commission. SRI would also like to thank the PA DEP for providing funding for the O&M TAG program which makes this work possible.



At Dents Run 3895, the elevation of the SP1 settling pond outlet pipe had shifted (Top Left) which prevented water from flowing into the Phase 2 portion of the passive system. This caused the water level to increase in the pond and then flow out through the emergency overflow riser (Top Right) bypassing the rest of the system. The SP1 outlet pipe was shortened and a downward facing elbow added (Middle Left) to restore proper flow. The low spot in the OPC3 berm was repaired by adding dirt to build up the berm (Middle Right) in order to prevent overtopping. Vegetation, metal sludge, and other debris that had accumulated in the OPC3 inlet spillway, (Bottom Left) were removed and the channel deepened to prevent water from backing up into SP1.