

CONCLUSIONS



SRBC staff member measures flow along Mosquito Creek, one of the seven tributaries showing improvements in AMD condition.

The West Branch Susquehanna Subbasin continues to be largely impaired by AMD; however, improvements have been noted throughout the years of conducting subbasin surveys in this watershed. Improvement occurred in individual watersheds, where remediation work was conducted, and in the mainstem West Branch Susquehanna River from 2002 to 2009, where large increases in mayfly populations were noted. Some of this improvement on the mainstem may be due to the removal of the Barnes-Watkins pile in 2007, which was a large AMD source.

The AMD impairment was mostly located in the western (headwater) portion of the West Branch Susquehanna Subbasin. Agricultural and urban impacts are more prevalent in the eastern and southern portion of the subbasin. The habitat in this subbasin is mostly forested with numerous state forest lands and state gamelands, so there is not a lot of urban or agricultural impact; however, resource extraction continues to be a threat to the health of this subbasin. Natural gas drilling in the Marcellus Shale formation presents new challenges for this recovering watershed, and continued monitoring and assessment will be imperative.

Approximately 46 percent of the sites that were sampled in 2009 had moderately or severely impaired biological conditions. Of those sites that had moderately and severely impaired conditions, approximately 80 percent were due to AMD. Some of the most degraded watersheds within this subbasin were Muddy Run, Roaring Run, Moshannon Creek, Beech Creek, Two Mile Run, Dents Run, Cooks Run, Alder Run, Deer Creek, Little Anderson Creek, Surveyor Run, and Montgomery Creek. Some of the highest quality watersheds in this subbasin were Pine Creek, First Fork Sinnemahoning Creek, Driftwood Branch Sinnemahoning Creek, Young Womans Creek, Hyner Run, Paddy Run, Lick Run, Larrys Creek, Lycoming Creek, McElhattan Run, and White Deer Creek.

Numerous stream sites had low alkalinity values that exceeded levels of concern. Many of these sites were headwater streams on elevated areas that otherwise had nonimpaired or slightly impaired macroinvertebrate conditions. These low alkalinity values may have been temporary due to acidic atmospheric deposition during high flow conditions that occurred throughout the subbasin during sampling. The 2009 sampling season occurred after a wet spring and had frequent rains in early summer. There may have been more sites that were impacted by atmospheric deposition; however, since they were already acidic due to AMD, the impact may have been masked. Furthermore, the higher flows possibly resulted in some of the streams impacted by AMD to have lower levels of metals than expected.

A second year of more intensive sampling is being conducted in the West Branch Subbasin Survey from March to November 2010. Drury Run and Birch Island Run are being assessed for AMD impacts and restoration needs, with a focus on wild trout habitat and populations. Water quality, flows, macroinvertebrates, and fish population data are being collected. These watersheds have healthy biological conditions in the headwaters, but are impaired by AMD conditions toward the mouth, so fish are not able to pass through this stream from the mainstem West Branch Susquehanna River.



Acidic Deposition Treatment System on Gifford Run north of Karthaus, Pa.