Conclusions

Results from this West Branch Susquehanna Recovery Benchmark Project indicate significantly better water quality and biological conditions compared to historical conditions. For example, in contrast to the acidic conditions documented along the entire length of the river in the early 1970s, the Project revealed that the river is now in a near net alkaline state and that concentrations of acidity, iron, and aluminum have all decreased over the last 25 years. Additionally 85% of the tributaries had a higher pH than they did in 1984, and 79%, 68% and 92% of the tributaries were lower in acidity, iron, and aluminum concentrations respectively compared to 25 years ago.

Photo: A. Wolfe

West Branch Susquehanna River as seen from Hyner View State Park.

The fishery of the West Branch Susquehanna River also responded to the improved water quality conditions. Surveys of the sections from Clearfield downstream to Hyner, a section that has been considered mostly inhospitable to fish, showed a two-fold to five-fold increase in fish species diversity with the largest improvement at the Hyner site. Additionally, habitat evaluations indicate that habitat is generally not the limiting factor throughout the study area. All 66 sites had scores that indicated optimal or sub-optimal habitat.

These improvements can be attributed to a combination of factors that primarily include a gradually diminishing amount of pyrite available for oxidation, remining and reclamation activities, better permitting for mining projects, and passive and active treatment projects. However, despite these significant improvements only 10 of the 68 tributaries sampled were found to have water quality that met all Chapter 93 water quality criteria concentrations in the spring and only 11 were found to meet all criteria in the summer. Also, although the fishery on the river is showing obvious signs of recovery, fish species diversity and total abundance are still relatively low when compared to other non-AMD impacted streams and more downstream sections of the river.

While the improvements documented in this Project indicate remarkable achievements toward the recovery of the West Branch Susquehanna watershed, the sheer number of tributary sites that do not meet water quality criteria and the relatively low numbers for fish species diversity and abundance indicate that there is much to achieve before the watershed makes a full recovery.

The water quality and biological improvements accomplished to date deserve to be cautiously celebrated as the watershed ecosystem is only in its beginning stages of recovery. Maintaining the trajectory of improvement toward complete recovery will require the continued diligence and collaboration of government agencies, non-government organizations, private industry, and all other partners to continue implementing new AMD remediation, reclamation, and remining projects; maintaining the existing passive and active treatment systems; and protecting the resulting water quality and biological improvements from new sources of potential impairment.