

## **Monongalia Basin Mine Pool Project**

This project, funded by the U.S. Department of Energy - National Energy Technology Laboratory is a multi-disciplinary project incorporating the expertise of researchers with three major universities: West Virginia University, University of Pittsburgh, and Carnegie Mellon University. The objectives include mapping underground mine pools, monitoring mine water levels, water chemistry, and rates of water rise and differences between shallow cover near outcrops versus central basin. Stream water quality changes since the mid 1960's were evaluated. In addition, an attempt was made to evaluate the rate data to develop an improved macroscopic rate expression for the abiotic dissolution of pyrite and to develop the framework for a geochemical model that includes rate-limited and equilibrium reactions for water chemistry evolution in a water-pyrite system. The quantifying of economic values related to water quality changes in the Monongahela River were also initiated.

Phase II of the project is called the Abandoned Mine Pool Flooding of the Pittsburgh, Ohio, and Irwin Basins. This project was funded through Parsons Infrastructure Technology Group, Inc. and supported by the U.S. Department of Energy - National Energy Technology Laboratory. Objectives include investigating flooding and post-flooding hydrology, hydrogeology, and geochemistry pertinent to long-term impacts on surface water ecosystems, modeling hydrogeological (flow) and geochemical evolution of modern and projected future mine-water discharges; conducting pilot field simulations to define and quantify technologies and design parameters for in situ treatment of high-iron net-alkaline mine discharges; continue quantifying economic values (both costs and benefits) related to water quality changes (part and potential future) in the Monongahela River; and expand geographic information system (GIS) support for the project. A draft of the Final Report is available.