DE SALE RESTORATION AREA PHASE III FINAL REPORT

VENANGO TOWNSHIP, BUTLER COUNTY, PA

A SEATON CREEK MINE DRAINAGE ABATEMENT PROJECT
Slippery Rock Creek Headwaters

submitted to the

Pennsylvania Department of Environmental Protection

EXECUTIVE SUMMARY

Participants in the Slippery Rock Watershed Coalition received partial funding from the PA Department of Environmental Protection through the Growing Greener initiative to install a passive system to treat two acidic, metal-bearing, discharges and to provide related education and public outreach activities. Through additional funding from the Butler County Commissioners and Western PA Watershed Program, and generous in-kind contributions and financial donations from numerous partners, this project has been successfully implemented.

Permitting, design, and construction were completed within 13 months without increase in the original contract costs. This economic, efficient, and effective implementation was made possible by a coordinated team approach developed prior to submission of funding requests. This public-private partnership effort included government agencies, private industry, nonprofits, a local college, and volunteers. Water monitoring data, terrain conductivity, and topographic mapping, provided by the PA DEP Bureau of Abandoned Mine Reclamation combined with monitoring and mining history data by the Knox District Mining Office, were key to successful project development.

To date, of the 15 passive systems installed within the Slippery Rock Creek Watershed, De Sale Phase III addresses the "worst" quality mine drainage. Even though the drainage only averages 12 gpm (60 gpm max.), PA DEP monitoring has documented the pH of seeps to be as low as 2.7 and total iron, manganese, and aluminum concentrations as high as 279 mg/l, 236 mg/l, and 34 mg/l, respectively. After collecting and combining the seeps, monitoring to date indicates the raw water has a 3.2 pH, 102 mg/l total Fe, 103 mg/l total Mn, and 20 mg/l total Al.

The passive treatment system includes nine components, three of which were pre-existing treatment ponds that were modified and incorporated into the system design: Collection Pond (pre-existing); Collection Ditch, Forebay, Vertical Flow Pond 1, Flush Pond, Settling Pond 1 (pre-existing), Vertical Flow Pond 2, Settling Pond 2 (pre-existing); Horizontal Flow Limestone Bed. The system construction was completed on 9/11/02 and final effluent flow was observed on 12/24/02. The improvement in discharge quality is characterized as follows; (Raw/*treated*) 3/*6*+ pH; 0/6*0* mg/l alkalinity; 580/*50* mg/l acidity; 100/*<1* mg/l Fe; 100/*<7* mg/l Mn; 20/*<1* mg/l Al. Currently, the system is neutralizing >75 lbs/day of acidity and preventing >30 lbs/day of metals from entering the receiving stream.

De Sale Phase III is a "Sister" project to De Sale Phase I and Phase II, completed in 2000 through the PA DEP "Reclaim PA" and Growing Greener programs, respectively. The combined effect of these three innovative passive treatment systems and a 55-acre land reclamation project (Chernicky site), completed in 1998, have made a dramatic impact to the water quality of Seaton Creek, which can be most easily illustrated at sampling point #48 located at the McJunkin Road bridge. At this location over 1½ miles downstream of the systems, Seaton Creek has significantly decreased metal loadings and the pH has increased from 4.8 to 6.4. The pH improvement in Seaton Creek was nearly simultaneous with completion of De Sale Phase I & II.

As part of the education and monitoring efforts, an online data management tool, "Datashed", was developed which enabled "real-time" compilation and evaluation of Grove City College student volunteer monitoring data. Future monitoring entered into this database will enable the evaluation of the long-term system effectiveness.