

Locating and Abating Sources of Acid Mine Drainage at Reclaimed Strip Mines. Terry E. Ackman, Mining Engineer, U.S. Bureau of Mines, Pittsburgh Research Center, Pittsburgh, PA.

Surface and ground water pollution is a common problem associated with post-surface mining operations and can lead to many costly problems such as: (1) a long-term treatment commitment; (2) sludge disposal; (3) re-excavation and relocation of acid-producing materials; (4) forfeiture of bond monies; and (5) bankruptcy. A reclaimed strip mine in Upshur County, WV is being studied with the objective of developing an effective, economical and permanent method that abates post-mining water pollution problems. Historical water quality, terrain conductivity and flow data from this site, dating back to 1983, supplement more recent hydrologic baseline data. Magnetometry, which has recently been proven capable of locating some types of acid-producing materials by means of magnetic anomalies, was used to target grouting efforts. A thin cement and fly ash slurry (density of about 87 lbs/cu.ft) was injected under pressure into bore holes as means of infusing the entire target zone. The magnetic properties associated with the fly ash also served as a tracer for identifying slurry propagation through the use of post-grouting magnetometry surveys. As the result, the grouted zones of acid-producing materials were transformed into a relatively impermeable and inert mass of sub-surface material. The long-term water quality monitoring of the existing 12 wells and surface seep will be used to evaluate the effectiveness of this water pollution abatement technique.

ADDITIONAL KEY WORDS: Magnetometry, Terrain Conductivity, Fly ash, Cement

