

STREAM SEALING OVER AN ACTIVE LONGWALL PANEL

Ackman, T. E. (1) and Hustwit, C. C. (2). ((1) Mining Engineer, U.S. Department of the Interior, Bureau of Mines, Pittsburgh Research Center and (2) Project Engineer, Boeing Services International). Stream infiltration losses associated with longwall mining activities can initiate environmental and mining hazards. In order to identify potential stream loss zones that might occur as a result of active longwall mining, the Bureau of Mines in cooperation with Southern Ohio Coal Company/Martinka Division instituted a study of surface water flow along a 1,400-ft section of Guyses Run, located near Fairmont, WV. Seven stream gaging and forty electromagnetic conductivity stations were established in July 1987, about 3 months before passage of a longwall panel beneath the stream section. Analysis of survey data collected within the stream channel permitted identification of a 300-ft zone of highest probability for stream infiltration losses. Conductivity surveys of the fracture system beneath the adjacent flood plain also confirmed the location of a potential infiltration loss zone in the stream channel. During the passage of the longwall panel beneath the predicted 300-ft loss zone, a complete stream loss event occurred within this section. Total water infiltration into the mine was estimated to be between 500 and 700 gal/min. Immediate steps to restore the streamflow involved sealing the channel with high-pressure injections of polyurethane grout. Approximately 11,800 lb of grout were injected through 153 grout rods located within the stream channel loss zone and along the contiguous channel banks. The rod emplacement depths varied between 3 and 6 ft. Within a few hours after completion of grouting, surface water flow was restored to the stream. This streamflow restoration virtually eliminated water infiltration into the mine. Post-grouting conductivity and stream gaging measurements have shown a flow pattern consistent with premining activities, and water infiltration into the mine has continued to be minimal.

Additional Key Words: electromagnetic conductivity, stream infiltration, stream losses, polyurethane grout.

MICROMAP -- A DATABASE RETRIEVAL AND DISPLAY MANAGER FOR MICROCOMPUTERS

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Additional Key Words: mine sites, water quality, water sampling, CRIS, West Virginia.