RECOVERY, CHARACTERIZATION AND UTILIZATION OF PONDED COAL FINES

Kuehn, Kenneth W.* and Beane, C. Edward
Department of Geology, 304 EST, Western Kentucky University
Bowling Green, KY 42101 USA

Prior to the enactment of modern reclamation procedures, it was common practice for coal mining and washing operations to pump their slurried wastes into large open ponds, many of which remain today. These ponds consist of mineral waste (mostly clays) and coal 'fines'; those pieces that were too small to be of commercial value (mostly -40 mesh). Using modern technology, ponded coal fines become a unique resource which can be recovered, cleaned and utilized.

Total reserves for three sites in Hopkins County, Kentucky were calculated through a combination of aerial surveys and on-site inspections. Of the estimated 7 million tons present it is believed that 60% is recoverable. Ash values decrease with depth in the ponds while moisture contents increase. Petrographic analyses reveal no such trends but, overall, the inertinite contents of these fines are slightly higher than those reported for run-of-mine coal from the same seams. Chemical analyses indicate a cleaned and dried product would yield (on a dry basis) 11,500 BTU/lb, 2.5% sulfur, and less than 4.5% ash. These specifications are superior to those of coals generally mined in western Kentucky allowing the product to be used in coal blends to help meet conditions established under utility contracts.

The recovery process involves flooding a small section of the pond and, with a floating dredge, pumping a slurry of fines and water to the cleaning plant. Initially, the product is screened to remove over- and undersized material, cleaned by cyclone and dried. Refuse material is returned directly to the pond to an area behind the dredge. Later, the entire site is reclaimed according to present standards and practices.