

Use of a Coal Combustion Product (CCP) Grout to Reduce the Formation of Acid Mine Drainage: An Update on the Winding Ridge Project

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ABSTRACT

In 1995, the Maryland Department of Natural Resources Power Plant Research Program (PPRP) and the Maryland Department of the Environment (MDE) initiated the Western Maryland CCP/AMD Initiative. The Initiative is a joint effort with private industry to demonstrate the beneficial application of CCPs to create flowable grouts to abate AMD. The Initiative started with the Winding Ridge Project in 1996 with the injection of 5,600 cubic yards of CCP grout into a small, abandoned, deep coal mine in Garrett County, MD. Post-injection monitoring has continued since that time and included analysis of mine discharge water quality and grout core strength and permeability. This paper presents an update of more than eight years of post-injection monitoring, including water quality, and grout core retrieval from the mine.

The results of post-injection monitoring indicate that injection of CCP grout at the mine has improved the quality of mine discharge. Concentrations of iron, magnesium, sulfate, aluminum, manganese, zinc, cobalt, copper, nickel, and acidity in mine discharge have decreased below pre-injection concentrations. The pH of mine discharge has increased by one pH unit, and the estimated rate of acid production in the mine has decreased by approximately 80%.

Grout cores were collected in 1997 and 2004: one and seven years after injection. Testing of the 1997 cores showed that the grout maintained high strength and low permeability in the mine tunnels. Analysis of the 2004 cores will provide data on the grout's long-term stability.

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