

# Use of Flue Gas Desulfurization By-Product for Mine Sealing and Abatement of Acid Mine Drainage

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## ABSTRACT

Broken Aro mine is located on the Woodbury wildlife area, seven miles west of Coshocton, Ohio. An abandoned underground mine complex last mined in 1910, this site forms the headwaters of the Simmons Run Watershed. Acid mine drainage (AMD) from the underground mine complex has negatively impacted the water quality in Simmons Run.

Recent re-mining of coal reserves near the mine provided an opportunity to implement a control strategy to inhibit the AMD. Re-mining allows recovery of an energy reserve, exposure of the AMD source, de-watering of the mine complex, and simple placement of a continuous mine seal. The objective of a mine seal would be to inhibit the formation of acidic drainage by inundating the mine voids with groundwater. Mine flooding forces out trapped air and thus minimizes the oxidation reaction responsible for AMD. A continuous mine seal assures integrity of the hydraulic barrier and is effective for multiple openings. Stabilized FGD scrubber by-product was chosen as the material for mine seal construction. The low hydraulic conductivity would retain groundwater inside the mine and the high alkalinity could neutralize any generated acidity.

This paper will discuss the re-mining effort, FGD seal placement, and seal effectiveness. Mine inundation is evaluated through water levels in monitoring wells and subsequent surface water quality monitoring is utilized to assess mine flooding effects on water quality both inside and outside of the underground mine complex.