

The Relationship Between Water Quality and Coal Combustion By-Products Placement in an Arid Western Coal Mine

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ABSTRACT

San Juan Mine (SJM) is located in an arid region of northwestern New Mexico with 20 cm of mean annual precipitation. SJM has been mining coal and placing Coal Combustion By-Products CCBs in the mined areas for 30 years. The placement of CCB materials is tracked and reported annually to New Mexico Mining and Minerals Division (MMD) along with quarterly total metal and leachate analyses. Perennial streams are not located within the operating area of SJM, however, water from the ephemeral drainages that cross the mine site is sampled and analyzed episodically. Trace element concentrations in natural geologic materials and CCBs at SJM are well correlated but do not provide a good measure of leachability and mobility. A leachability and attenuation study was completed using local groundwater sources, CCB, and natural geologic materials to model future potential impacts of CCB placement. This model predicts no significant degradation of groundwater. This prediction is supported by groundwater monitoring data from 14 locations that show no impact.

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