



March 17, 2014

Dear Mr. Kelly:

Please accept this letter as a comment on the Alabama Department of Environmental Management's proposed reissuance of the NPDES permit for the Shepherd Bend Mine near Birmingham. I am an Assistant Professor of Biology at the University of Rio Grande in southeastern Ohio and much of my research deals with investigating the impacts of landscape uses on aquatic ecosystems.

By way of introduction let me state very clearly that I am not opposed, principally, to surface coal mining. I am a native of eastern Kentucky and my father was an underground coal miner. Moreover, my father-in-law currently works as an equipment operator for a surface coal mine and my brother-in-law is a federal mine inspector. Therefore, I am keenly aware and cognizant of the personal and regional economic importance of coal mining, as well as the need for the energy produced. Nevertheless, in the case of the said permit, it is my professional opinion that the potential long-term costs grossly outweigh the short-term economic benefits.

**The most pressing issue at hand is the proximity of the proposed mine discharge to a primary drinking water intake for the Birmingham Water Works Board.** Much research (see for example the USPEA 2011 report "The Effects of Mountaintop Mines and Valley Fills on Aquatic Ecosystems of the Central Appalachian Coalfields) has shown that mining operations exert severe negative effects on the water quality in immediately adjacent groundwater and surface water systems. These effects include measures of pH that are too high or low (depending on local geology), high salinities, and in many cases heavy metal pollution. Moreover, my personal research (Hopkins et al. 2013), found that stream systems remain impaired for a very long time after mining activities have ceased and reclamation has taken place. This is particularly true for acidity problems and elevated levels of dissolved solids and ions. Acidity problems are fairly easily and effectively remediated; however, salinity issues are pervasive and are not easily alleviated. For example, streams in southeastern Ohio which drain watersheds with historical surface mining show average conductivities high enough to severely impair aquatic fauna in spite of apparently successful reclamation efforts. In terms of drinking water, to the best of my knowledge, most treatment plants are not properly equipped to effectively purify ion-laden waters. Fortunately, in the region which I studied, drinking water intakes are located well downstream of areas affected by mining and natural dilution from un-impacted tributaries lowers the salinity levels. In the case of the Shepherd Bend Mine that would not be true as the Mulberry Intake would be located less than 0.1 miles from the mined area.

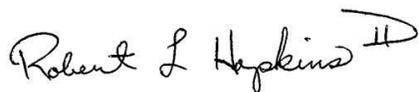
The long-term stress and damage to water treatment equipment and supply infrastructure would likely be great. In addition, there exists the potential public health risk if those waters contain high levels of certain heavy metals such as selenium.

Notably, this comment period comes on the heels of a recent public health emergency related to coal mining which occurred in the region I live in. On January 9, 2014 about 10,000 gallons of a coal cleaning agent, 4-Methylcyclohexanemethanol (MCHM), leaked into the Elk River just upstream from the Kanawha County municipal water intake in Charleston, West Virginia. For more than two weeks nearly 300,000 people were without water as the municipal water treatment system was unable to remove the contaminant. The only solution was to impose a Do Not Use mandate. Several people experienced health issues after exposure, school sessions were cancelled and businesses were temporarily closed. The economic impact this event had on the region was severe and is still ongoing. Moreover, a myriad of law suits have been filed and litigation is sure to continue for years. Such a case highlights the type of risk of ADEM would be taking by permitting the Shepherd Bend Mine.

**Moreover, the Black Warrior River watershed contains outstanding biodiversity and is a national natural treasure.** I recently conducted a study of the effects of mountaintop mining on fish distributions in central Appalachia (Hopkins and Roush, 2013). What I found was that surface coal mining had a profound negative impact on several species studied, resulting in the extirpation of many populations and an overall contraction in the geographic range. This was especially true for species inhabiting headwater streams (i.e. those in closest proximity to the disturbances) such as the Southern Redbelly Dace and those that are pollution-intolerant such as the Eastern Sand Darter. Many other researchers are also documenting widespread declines in the aquatic fauna of central Appalachia –threatening an irreplaceable natural asset. The hazard to the natural environment compounds the risk to public health and further detracts from the potential positive benefits of the mining operation.

In sum, I urge ADEM to deny the Shepherd Bend Mine permit. Given the location of the proposed mine, the risks involved are enormous and the long-term environmental and public health costs are sure to overwhelm short-term economic benefits.

Sincerely,



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