

Assessment and Control of Coal Mining Subsidence Impacts to Residential Structures, Water Supplies, Streams, Lands and Highways in Western Pennsylvania

Anthony Iannacchione, Dan Bain, Taylor Dacanal, Patrick Shirey and Emily Adelson, University of Pittsburgh

Bituminous coal resources were first mined underground in Pennsylvania along the slopes of Mount Washington, just across from downtown Pittsburgh as early as the 1760's. Today, some 35 operations still mine coal with the room-and-pillar and longwall mining methods. Through the intervening 250 years, coal mining has had an important role in the development of our region. Unfortunately, protection of the environment from the adverse effects of mining evolved slowly; Federal environmental protection didn't rise to current standards until the passage of the Surface Mining Control and Reclamation Act in 1977. In Pennsylvania, the Federal legislation was further expanded to meet their special needs with the passage of Act 54 in 1993. This is the legislation allows coal companies to subsidize the surface as long as their planned subsidence is identified and approved within the state's permitting process. Mining permits of this type require the coal companies to:

- identify features (water supplies, lands, structures, streams, ponds, and wetlands) that could be impacted by subsidence,
- monitor the impacts to these features, and
- hold companies responsible for the damages to these features.

Over the last decade, the University of Pittsburgh, through contracts with the PA Department of Environmental Protection, has been assessing how these impacts have been mitigated by the coal companies and monitored by state officials. Through this analysis, an understanding of how structures, water supplies, streams, lands and highways respond to coal mining subsidence has been gained. This knowledge is being used by engineers to better plan for, and mitigate, these coal mining subsidence impacts.