

THE APPALACHIAN RESEARCH INITIATIVE FOR ENVIRONMENTAL SCIENCE (ARIES)¹

J.R. Craynon², P.F. Ziemkiewicz, W.L. Daniels, R.C. Warner, and M.E. Karmis

Abstract: Energy production and coal mining in the Appalachians occurs via a sequence of events and operations that must be carefully planned, managed, and monitored to control and minimize environmental and human effects. Thus, environmental and community considerations must be integrated into all phases of a project, including planning, development, operation, closure, reclamation processes and establishment of post-operation land uses. To address these issues, a consortium of major research universities formed a new initiative to address the environmental impacts of the discovery, development, production, and use of energy resources in Appalachia. The Appalachian Research Initiative for Environmental Science (ARIES), under the direction of the Virginia Center for Coal and Energy Research at Virginia Tech, will study both upstream and downstream issues related to the energy sector, with the initial focus being on coal mining. The initiative has been endowed for \$15 million over five years by an industrial affiliates program based at Virginia Tech.

The academic team members of ARIES will report on a variety of coordinated research and development activities related to topics of critical concern. Many of the priority topics are presently centered on water quality (e.g., release of contaminants to surface waters and associated impacts on ecosystems) and overall community well-being (e.g., socioeconomic) impacts of coal mining activities. The ARIES academic team includes researchers from the Edward Via College of Osteopathic Medicine, Marshall University, Ohio State University, Pennsylvania State University, University of Kentucky, University of Pennsylvania, University of Pittsburgh, Virginia Tech, and West Virginia University.

Additional Key Words: environmental impacts, coal mining, academic research, energy production.

¹ Paper was presented at the 2012 National Meeting of the American Society of Mining and Reclamation, Tupelo, MS *Sustainable Reclamation* June 8 – 15, 2012. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502

² John R. Craynon, P.E., ARIES Project Director, Virginia Center for Coal and Energy Research, 460 Turner St., NW, Suite 304, Blacksburg, VA 24061, Paul F. Ziemkiewicz, Director, West Virginia Water Research Institute, West Virginia University, Morgantown, WV 26505, W. Lee Daniels, Professor, Department of Crop Soils and Environmental Science, Virginia Tech, Blacksburg, VA 24061, Richard C. Warner, Extension Professor, Department of Biosystems and Agricultural Engineering, University of Kentucky, 217 C.E. Barnhart Building, Lexington, KY 40546, and Michael E. Karmis, Stonie Barker Professor of Mining Engineering and Director, Virginia Center for Coal and Energy Research, 460 Turner St., NW, Suite 304, Blacksburg, VA 24061.