



Kevin M. Andrews

Current Position

Vice President,
Manager Western Mining
Operations

Profession

Geology,
Hydrogeology,
Mining Engineering

Years' Experience

17

Education

MS – Mining & Minerals
Engineering,
Virginia Polytechnic & State
University, Blacksburg, VA

MS – Geology,
West Virginia University,
Morgantown, WV

BS – Geology,
Juniata College, Huntingdon,
PA

Professional Registrations

Certified Professional
Geologist (C.P.G.)

Affiliations

Member of American
Institute of Professional
Geologists (A.I.P.G.)

Summary of Experience

Mr. Andrews performs geological, hydrogeological, and engineering work. Specifically, he:

- > Authors and prepares proposals, cost estimates, and technical reports for geological, geotechnical, and hydrogeological projects, as well as for professional conferences
- > Manages technical aspects of mining projects
- > Conducts business development activities
- > Conducts rock slope stability assessments for open pit mining
- > Conducts geological field mapping and evaluation of geological discontinuities associated with open-pit mine slope stability and mineral exploration
- > Collects geological and geotechnical logging data including fracture frequency and Rock Mass Rating (RMR) information
- > Utilizes Rocscience programs such as DIPS, Swedge, RocPlane, RocTopple, SLIDE, SLIDE3 for slope stability assessment
- > Evaluates aspects of underground mine roof, rib, and floor stability (hard rock, aggregate, and coal) via underground observations, engineering concepts, and modelling programs
- > Utilizes NIOSH programs including SPILLAR, ARMPS, ALPS, AMSS, CMRR, etc., as well as ACPs to design and assess the stability of underground mine workings
- > Uses the Surface Deformation Prediction System (SDPS), a land surface subsidence modelling program, to predict mine subsidence and assess long-term landscape stability
- > Analyzes underground mine pillar stability, including stepped models of retreat coal mining and/or longwall advance using LaModel, a boundary element stress-modelling program
- > Analyzes underground excavation stability using Examine2D (Rocscience) and evaluates results from FLAC3D stress modeling
- > Assesses potential impacts of underground and surface mining on hydrogeological environments
- > Conducts numerous aspects of mine permitting-related work
- > Evaluates groundwater and surface water conditions
- > Conducts Probable Hydrologic Consequences (PHC) assessments for mining operations

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- > Prepares portions of definitive feasibility and pre-feasibility geology and hydrogeology evaluations for proposed mine complexes
- > Evaluates water volumes in inundated underground mines
- > Assesses water balance issues associated with surface and underground mining activities
- > Investigates mitigation options for mining-related selenium water discharges
- > Assesses mining hydrogeological issues related to litigation matters
- > Conducts mine barrier pillar stability and seepage assessments
- > Works with staff to develop groundwater flow models using modeling programs such as Groundwater Vistas (MODFLOW) and AnAqSim
- > Conducts yield testing and water sampling field work, and evaluates mining effects on water well conditions
- > Conducts geological mapping and modeling of ore bodies and other strata (aquifers, aquitards) using Carlson software
- > Conducts hydrogeological field work including acid-base account (acid-producing potential) sample selection, monitoring well installation, hydraulic conductivity (packer) testing, groundwater and surface water sampling, and water user inventory data collection
- > Plans and supervises mineral exploration field activities (domestic and international); drill rig and field geologist management, data collection quality control, core recovery confirmation, geophysical logging scheduling, site preparation and reclamation, access road maintenance, etc.
- > Develops mineral exploration drilling and mapping database files
- > Contributes to mineral valuations to meet Australasian Joint Ore Reserves Committee (JORC) and US Securities and Exchange Commission (SEC) regulations