

# Mining Engineering

With a growing need for lucrative energy sources and continued advances in mining technology, coal remains a valuable resource. GAI Consultants approaches mining engineering projects with a strong background in academic training, research experience, and practical engineering skills.

Our reputation as one of the nation's foremost authorities on mine stabilization, mine fires, mine reclamation, and acid mine drainage remediation is the foundation for the solutions we provide to help mine owners and operators maintain profitability.

**A full range of services that address the unique challenges of mine owners and operators means we provide solutions that support a healthy industry.**

GAI's broad range of mining engineering, geological, geotechnical, environmental, water, and health and safety related services for the mining industry is supported by a dedicated staff

of engineers, geologists, hydrogeologists, and environmentalist specialists.

For more than 50 years GAI has been delivering premier services—geotechnical investigations, overburden characterizations, mine subsidence evaluations and mine stabilization design, mine shaft backfill operations, underground ventilation studies, mine atmosphere gas characterization, economic studies, risk assessments, abandoned mine land reclamation studies, and mine fire investigations and abatement.

Our design capabilities for mine facilities include mine seals, haul roads, dams and impoundments, sedimentation ponds, coal preparation plants, water control and treatment facilities, acid mine drainage treatment, and waste disposal areas. We collaborate with mine owners and governmental agencies to maintain mining operations that support a healthy industry.

Mining operations consume large volumes of freshwater and generate large volumes of



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## Service Profile



wastewater, and this water life cycle is essential to operations. GAI's services cover water chemistry investigations and testing, water balance studies, water feasibility studies, water and waste water management, mine water permits, and acid mine drainage mitigation and treatment. Knowing the overall financial success of mining operations rests on avoiding long-term liability issues and remaining compliant with regulatory agencies, GAI addresses the challenges unique to mining and provides solutions that meet their needs.

GAI, known for our ability to advance project siting and permitting for energy projects, uses these skills to assist the mining industry. We work closely with state and federal regulatory agencies and are thoroughly familiar with NPDES requirements, EIS programs, and air quality regulations. By assisting federal, state, and local agencies in strategic planning, technical reviews, and abandoned mine remediation design and construction, we also help stakeholders understand the value, as well as the impacts, of mining projects.

### Mining Engineering Services

- Mining engineering
- Mine backfill studies
- Geology, mining, and hydrology interpretation
- Mine subsidence evaluation and mitigation
- Mine stabilization design
- Hazardous waste studies
- Abandoned Mine Land (AML) reclamation
- Acid Mine Drainage (AMD) remediation
- Mine fire investigations and abatement
- Underground ventilations studies
- Fire control measures
- Multispectral thermal infrared fire mapping imagery
- Overburden characterization
- Mine atmosphere gas characterization
- Construction monitoring

### GAI Services Summary

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| ■ Airport Planning and Design                        | ■ Impoundment and Landfill Permitting and Design |
| ■ Bridge and Structure Inspection and Design         | ■ Land Development Engineering                   |
| ■ Coal Combustion Residuals Management               | ■ Landscape Architecture and Design              |
| ■ Construction Inspection and Management             | ■ Master Planning and Urban Design               |
| ■ Cultural Resources Management                      | ■ Mechanical, Electrical, Structural Engineering |
| ■ Economic Analyses and Strategies                   | ■ Natural Gas FERC Certification and Permitting  |
| ■ Electric Transmission Design and Siting            | ■ Nuclear Energy Engineering Support             |
| ■ Environmental Engineering                          | ■ Right of Way and Appraisal Support             |
| ■ Environmental Studies, Species Studies, Permitting | ■ Land Surveying and Mapping                     |
| ■ Gas Pipeline Surveying and Mapping                 | ■ Transportation Planning and Design             |
| ■ Geographic Information Systems (GIS)               | ■ Utility Management Consulting                  |
| ■ Geotechnical Engineering and Geology               | ■ Water, Stormwater, Wastewater Management       |

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