Mine Closure Services

Adequate mine closure is an important part of the mine life cycle. Orphaned or abandoned mines pose environmental, health, safety, and economic problems to communities, the mining industry and governments.

Since 1960 Golder has been helping the global mining industry with sound decision-making, cost-efficient planning and sustainable reclamation of mines reaching the end of their useful life and abandoned mine sites, having completed hundreds of geotechnical and environmental mine projects in countries all over the world—our team has the skills and industry experience to see the big picture and find the right solution.

Today our work is balanced between proactive environmental management and reclamation planning for new and active mines, as well as closure design and implementation for inactive and abandoned mines. We understand mine development, mine operations, environmental operations, ecology, toxicology, geochemistry, hydrology, acid rock drainage, water treatment, and re-vegetation.

Golder has particular expertise related to our understanding of the key components of mine closure. Perhaps most importantly, from a financial standpoint, Golder has extensive construction and engineering experience and applies that capability to environmental management.

We have been retained by clients to respond to catastrophic mine facility failures resulting in environmental, social, public relations and fiscal impacts. Our size, focus on mining, and specific knowledge in the above disciplines has enabled us to be effective in these complex situations.

Approach to Planned Mine Closure

Golder has experience developing closure plans through every step of mine planning and the life of mine. This includes identifying and incorporating closure concepts into the pre-feasibility and feasibility stages, developing closure plans to address environmental impacts for Environmental Impact Assessments, developing and refining closure plans during the mine life, developing detailed closure plans and construction drawings, and providing construction supervision and post-closure monitoring.

Golder takes a risk-based approach to closure and reclamation planning, working closely with stakeholders to develop and implement closure and reclamation plans that aim to manage liability and optimize closure costs. Recognized internationally in the fields of reclamation and closure planning and design, our staff is experienced in developing strategies that minimize risks and costs associated with closure.

Mine Closure Issues

- Stability and physical hazards
- Water quality and water management
- Extreme storm event management
- Long-term maintenance
- Financial Provision
- Change in socio-economics
- Regulatory changes
- Defer/reduce liability
Golder recognizes that development of a successful project requires a coordinated response to many complex issues. These issues often need more than simply a good technical solution; they demand a broad understanding of the project and its social, environmental and economic parameters. Through our network of offices, we are able to efficiently deliver services to clients worldwide. Each office has local staff so that we can better understand and respond to local needs. These individuals are backed by a global team of specialists.

Approach to Closure and Reclamation of Historic Mine Sites

Our approach to reclamation and closure planning for abandoned mine sites is based upon current technologies to achieve physical and chemical stability. Our professionals, staff with environmental engineering, biotechnology, ecological, and agronomic expertise, work together to determine the remediation criteria necessary to restore the site to agreed to end land uses which are consistent with surrounding land uses or to acceptable alternative uses.

Mine Closure and Reclamation Services

- Baseline geology, climate, flora, fauna, soils, surface water, and hydrogeology characterization
- Risk Assessment
- Surface and geophysical surveys
- Waste characterization
- Hydrogeochemical evaluations
- Acid rock drainage assessment
- Stochastic and regional analyses of hydrologic data
- Groundwater modeling for dewatering and contaminant transport
- Closure alternatives analysis
- Cover design
- Process solution disposal analysis
- Land sculpting
- Erosion and sediment control
- Re-vegetation
- Cost estimation

Closure Management Framework

- Define corporate and regulatory objectives
- Identify closure issues
- Identify and evaluate closure alternatives
- Perform decision analysis and select alternative
- Design and permit closure plan
- Implementation
- Long-term property management

Managing Facility Closure

- Define site conditions
- Review alternatives and evaluate trade-offs
- Develop plan and comprehensive cost estimate
- Update cost estimate annually
- Define responsibilities, track progress and milestones

Throughout our 50 years working in the mining industry we have worked on thousands of projects at every stage of the mine life cycle.