



# Services for Aggregate, Stone, Sand, Industrial Minerals, and Construction Materials

*Golder Associates has over 50 years of experience helping aggregate, stone, sand, industrial mineral, and construction materials producers. We deliver reliable, innovative, and comprehensive services to help our clients conduct their business efficiently and cost-effectively. We can help with every phase of mine and plant development by offering:*

- Integrated services, utilizing multidisciplinary teams of professionals
- Specialty services, such as tailings impoundment design, blasting, geophysics, and aggregate testing
- Local expertise from an office near you, supported by worldwide mining expertise

Whatever your challenge may be, let us help you succeed.

## Resource Evaluation

- Market analyses
- Surface and subsurface exploration
- Geologic mapping, drill hole logging, test pits, and sampling
- Geophysics and hydrogeologic studies
- Materials testing
- Reserve estimates
- Transactional due diligence packages

## Mine Planning and Development

- Green-field and mine expansion planning
- Mine and plant layout
- Geotechnical studies and pit, slope, and highwall engineering
- Tunnel design and construction monitoring
- Surface and groundwater withdrawal
- National Pollutant Discharge Elimination System (NPDES) permitting
- Air quality, air emissions, and fugitive dust

- Land use, zoning, and development impact
- Stakeholder outreach and public consultation
- Regulatory negotiation
- Equipment and building foundation investigation and design
- Surface water and stormwater management
- Overburden disposal
- Tailings impoundment design and construction oversight
- Erosion and sedimentation control
- Transportation and infrastructure
- Construction and construction oversight

## Permitting

- Environmental impact assessments
- Aquatic and terrestrial biology, wetlands, archeology, and ecological studies
- Wetlands delineation and mitigation planning

## SERVICES FOR AGGREGATE, STONE, SAND, INDUSTRIAL MINERALS, AND CONSTRUCTION MATERIALS

### Sustainable Business Practices

- Community outreach
- Environmental impact mitigation
- Carbon footprint and greenhouse gas emissions
- Alternative energy
- Process efficiency
- Sustainability metrics and reporting

### Information Management

- Environmental management systems
- Risk assessment and decision analysis
- Geographic information systems

### Operations

- Blast design, implementation, monitoring, and vibration control
- Wastewater and stormwater treatment and discharge
- Air and water quality monitoring and compliance reporting
- Testing of aggregate, concrete, asphalt, and other construction materials
- Pit dewatering and mine water management
- Mine waste management
- Slope stability monitoring
- Environmental plans (including stormwater pollution prevention plans and spill prevention control and countermeasure plans) and Audits
- Health and safety (Mine Safety and Health Administration [MSHA]) audits and support
- Cement kiln dust management



### Reclamation and Closure

- Pit, overburden, and waste pile grading and revegetation plans
- Erosion and sedimentation control
- Closure completion reporting for bond release
- Reuse of pits for water supply, solid waste disposal, and recreation
- Wetlands restoration, conservation easements, and wildlife management



### Golder U.S. Office Locations

