

# MINING RECLAMATION

Stewards of the Earth's Resources



HGL provides expert planning, design, and restoration services to federal and state regulatory agencies, management organizations, and enterprises engaged in mine site operations and reclamation. As the world's demand for mineral resources grows, HGL recognizes the increasing importance of developing sustainable solutions that prevent future adverse effects and account for the complex physical, biological, and geochemical conditions that exist at mine sites. HGL employs best management practices and use industry-leading modeling tools and technologies to design and implement innovative, cost-effective solutions to the environmental challenges faced at active and abandoned mine sites.

HGL's expertise encompasses the following service areas:

- Property Ownership/Claim Analysis
- Groundwater/Surface Water Modeling and Planning
- Subsidence Investigation and Adit Closure
- Consumptive Use Permitting
- Water Management, including Dewatering and Stormwater Capture
- Hydrology and Hydraulics
- Field Sampling and Analysis
- Biological Treatment
- Human Health and Ecological Risk Assessments
- Feasibility Studies
- Remedial Design
- Remedial/Removal Action
- Geomorphological Restoration
- Habitat Restoration
- Treatment System Design and Operation
- Design and Construction of Passive Treatment Systems
- Optimization of Treatment Systems and Water Handling
- SCADA System Installation and Monitoring
- Long-Term Operation and Monitoring
- Ancillary Construction Services Support
- Expert Testimony and Litigation Support



## HGL DISTINCTIONS

**ENR Top 200 Environmental Firm**

**Expertise in Carlson Mining software suite of modules for design of sustainable reclamation and to support construction**

**Specialized experience in hydrology, sediment transport, and management of mine drainage**

**Experience in revegetation of mine sites in challenging site settings with poor soil conditions**

**Completed investigation and reclamation at >12,000 mine sites, including uranium mines, throughout the western U.S.**

# MINING RECLAMATION

In 2015, HGL expanded its mine site capability by acquiring Spectrum Engineering, LLC, a prominent mining niche firm based in Billings, MT.



HGL is a proven state and federal government prime contractors with over 30 years of experience supporting mine site investigation, design, and remediation for the States of Montana, Wyoming, and Utah, as well as federal clients, including EPA, DoD, and DOE nationwide.



HGL has conducted investigations and engineered reclamation at >12,000 mine sites, including >8,000 hard rock mine sites across the western U.S.



## CASE STUDIES

**Zortman and Landusky Mines in Montana:** hard rock, underground and open pit gold mines. Project highlights:

- Implemented remedy of mine waste consolidation and stabilizations and source control, reducing acid rock drainage, preventing releases, and bringing selenium and nitrate discharges into compliance.
- Operated in rugged terrain with challenging geology, including multiple shear zones and surface water drainage features.
- Successfully executed a reclamation project at the remote, complex hard rock mine sites under the close scrutiny of multiple stakeholders.
- Optimized treatment system to reduce labor costs, and designed and implemented phased change-outs to variable frequency drive pumps, rewired systems, and dropped transformers, thereby cutting energy costs.
- Treated 1.4 billion gallons of acid rock drainage.

**Gilt Edge Mine Superfund Site in South Dakota:** a hard rock, underground and open pit precious metals mine. Project highlights:

- Implemented an interim remedial action for the operation and maintenance of acid rock drainage treatment system and management of capture ponds and pump backs.
- Provided engineering support for and constructed automation upgrades, including a 40-foot communication tower, to allow through a SCADA (supervisory control and data acquisition) system real-time monitoring and on-demand pumping of remote capture systems to prevent releases.
- Treated and discharged 573 million gallons of groundwater while operating at 99% on-stream efficiency.
- Completed system automation upgrades that eliminated the need for a night shift, reducing labor costs.

**Cherokee County Mine Superfund Site in Kansas:** part of the Tri-State Mining District (Kansas, Missouri, and Oklahoma) contaminated with lead and zinc. Project highlights:

- Prepared planning documents, collected field data, modeled hydrologic and hydraulic conditions, and conducted an “outliers” investigation to identify previously unidentified waste.
- Obtained access agreements from over 70 landowners, provided estimations on volumes of economically viable chat, and used aerial survey techniques to develop topographic data for use in the design.
- Through value engineering modified haul routes, saving 55,000 gallons of fuel, and reduced the carbon footprint of remedial actions by nearly 50%.

## CREDENTIALS

- Certified Construction Managers
- Certified Hazardous Materials Managers
- Certified Industrial Hygienists
- Certified Project Management Professionals
- Certified Safety Professionals
- Certified Sustainable Development Professionals
- Certified Wastewater Treatment Plant Operators
- LEED® Accredited Professionals
- Professional Engineers
- Professional Geologists
- Subject Matter Experts
- USAESCH Certified UXO Personnel

## CLIENTS

- Department of Justice
- Environmental Security & Technology Certification Program, DoD
- Federal Bureau of Prisons
- National Aeronautics and Space Administration
- National Park Service
- Strategic Environmental Research and Developmental Program, DoD
- US Air Force
- US Army Corps of Engineers
- US Army Environmental Command
- US Bureau of Reclamation
- US Department of Energy
- US Environmental Protection Agency
- Arizona Dept of Environmental Quality
- Florida Water Management Districts
- International Public and Private Clients