

Gold King Adit Discharge

Gladstone Colorado Interim Water Treatment Plant



PROJECT BACKGROUND

The Gold King Mine is located near Silverton, Colorado at 10,500 ft in the San Juan Mountains. Abandoned in 1923, the mine accumulated water and eventually became a source of metals-laden acid drainage. In August of 2015, a contractor working for the United States Environmental Protection Agency (USEPA) was performing an exploratory excavation of the mine portal to assess the ongoing water release from the mine, treat mine water, and determine the feasibility of future mine remediation when the portal plug was damaged and water/sludge began leaking from the mine. Approximately 3 million gallons of water/sludge stored behind the collapsed material were released into Cement Creek, a tributary of the Animas River. This was a high-profile situation garnering national attention.

Project Activities

Ensero was hired by the EPA Region 8 Emergency Response contractor to execute, **within 21 days**, the design, build, and commission of an interim water treatment plant (WTP) to treat Gold King Mine Adit discharge up to 1,000 gpm. Other design parameters included pH levels from 1.8 to 4.5 and elevated metals concentrations (aluminum, cadmium, copper, iron, manganese, and zinc). After successfully construction and commissioning, Ensero transitioned to be the sole, full-time operation and maintenance contractor for the plant, operating the WTP year-round (24/7, 365 days) since 2015.

The treatment system includes dosing hydrated lime from a vertical silo/slurry tank to a large reactor tank followed by settling in a lamella clarifier. The system is connected to the on-site controlling programmable logic controller (PLC) to allow the system to automatically adjust lime feed rates based on continuous pH monitoring. Ensero successfully achieves an average reduction in metals loading by 93% prior to discharge.



Water Treatment Plant

The operating conditions are challenging due to the elevation and remote location. Ensero's innovative sludge management approach designed to function in severe winter weather condition allows EPA to save roughly \$800k/year in labor and equipment costs. Ensero designed/installed a backup generator and automatic transfer switch to ensure continuous treatment to address an unreliable grid power. Spring runoff produces high influent volumes with extreme and rapid fluctuations in pH and metals loading, which Ensero successfully manages through increased sampling, manual plant control, and adjustments to lime and polymer dosing. Additionally, we implemented operational changes to accommodate occasional influent from the American Tunnel and the Red and Bonita Mine when work at these locations produce water that requires management.

Although initially intended to be an interim measure, Ensero recently implemented design improvements intended to extend the plant life.

Project Highlights

- Ensero successfully designed, constructed and commissioned this treatment plant within 21 days of contract award.
- Our plant design achieves metal load reductions exceeding 93%.
- Our innovative and cost-saving sludge management approach saved the client over \$800K/yr in operations cost
- The plant operates 24/7 year-round above 10,000 feet of elevation, often in extreme conditions.



Contact Us

Give us a call for more information about our services and products

Location

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