Project

Planning and creativity help mining client meet deadlines and save costs during environmental construction

Summary

- Haley & Aldrich's remediation team helped a mining company conduct voluntary remediation on a complex closed site, a historic vanadium mine.
- Another consulting partner had designed a passive bioreactor remediation system for our client, but the system was underperforming and needed a retrofit. However, the materials needed to rebuild the bioreactor weren't available locally, and the cost to transport them to the remote, high-elevation site would have been astronomical.
- Our team engaged in extensive pre-planning to ensure efficient project mobilization and completion in a single season, before winter conditions made work impossible. Since the original remediation design called for materials that would be difficult and expensive to procure, our team sourced suitable local materials and construction

aggregate alternatives.

- This creative sourcing helped avoid change orders and construction delays, saving our client tens of thousands of dollars.
- We also managed clear, effective communications with the client and stakeholders, which kept the project on schedule.

Client challenge

Our forward-thinking, safety-focused client wanted to proactively remediate and close a historic vanadium mine that was part of its larger legacy site portfolio. The mine is in a remote area of western Colorado and was shuttered long before the U.S. Environmental Protection Agency (EPA) regulated waste piles and runoff from mine openings that could carry contaminants away from the mine. Although potential discharges from the mine were minimal and posed minor risks to the environment, the client chose to conduct a voluntary remediation to eliminate any potential future safety or environmental risks.

Another consulting partner had designed a passive bioreactor remediation system for our client that only needed periodic maintenance when working properly. A bioreactor system degrades contaminants in groundwater using natural wetland processes and microorganisms. However, the original bioreactor filtration system was underperforming, and the system needed a substantial retrofit. This presented a challenge because the original design didn't allow for much flexibility. In addition, the materials needed to rebuild the bioreactor weren't available locally, and the cost to transport them to the remote high-elevation site would have been astronomical.

The site itself was also complicated and posed unique challenges. Regrading the mine's waste rock pile was essential to protect surface water quality, but it was adjacent to a busy roadway where people access a local recreation area. The Bureau of Land Management owns the recreation area and required a safe easement through the client's site.

In addition, due to the remote mountain location, the client needed to complete remediation activities between June and September, as snow and freezing conditions would make work impossible during the rest of the year. The client came to Haley & Aldrich because we had previously performed remediation and construction work for them, and they knew we look at every project holistically and seek out creative solutions.

> *"Our client is forward-thinking and takes a proactive approach to mine remediation. They didn't wait for a mandate, and voluntarily chose remediation to ensure the mine was not posing a risk to the community."*
>
> Eric Mears, Haley & Aldrich

Our approach

Haley & Aldrich staff engaged in extensive pre-planning to ensure efficient project mobilization and completion in a single season. Since the original design called for materials that would be difficult and expensive to procure, our team sourced suitable local materials and construction aggregate alternatives. We also sought out local sources for the contents of the bioreactor, tested them, and worked with the original designer for acceptance.

While finding local alternative materials was time-consuming, our creative sourcing helped avoid change orders and construction delays, saving our client tens of thousands of dollars.

While this project required a high level of expertise, clear communication and careful planning were the major reasons we met stringent deadlines without incident. Our daily safety meetings with all stakeholders, including the other firms on site, were crucial in this effort, and our client appreciated our ability to maintain safe operations while meeting deadlines and helping them save money with thoughtful pre-planning and creative sourcing.

Value delivered

- Ensured the site workers and surrounding community were safe during the voluntary mine reclamation-
- Saved thousands in materials transport costs with carefully evaluated locally sourced materials
- Met the tight deadline and ensured safety using extensive pre-planning
- Rectified a pipe design flaw that caused the original bioreactor to malfunction
- Reconfigured a tight space to regrade the waste rock pile that was adjacent to a busy road
- Coordinated communication with all stakeholders, including daily safety meetings

For more information, contact:

Eric Mears

Principal Consultant