

Caselton Tailings Site

CALIBRE

Our Success Follows Yours

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About CALIBRE

CALIBRE Systems, Inc. is an employee-owned management consulting and information technology solutions company supporting government and industry.

CALIBRE is committed to the success of our customers and delivers enduring solutions that solve management, technology, and program challenges.

Solutions That Make a Difference

We work in multidisciplinary teams, partnering with organizations to support mission-essential needs at every stage of program, product, and business lifecycles, and help achieve business objectives. This collaborative work style helps produce the results you seek – today and where you want to be tomorrow.

Project Scope

>> CALIBRE Systems, Inc. (CALIBRE) completed work for the Bureau of Land Management (BLM) that included: preparing a limited site investigation (SI), design/evaluation and cost estimation of remedial alternatives, completing an Engineering Evaluation/Cost Analysis (EE/CA), preparing an Action Memorandum for BLM signature, and presenting project details and removal action recommendations in public hearings.

Benefits to the Customer

>> CALIBRE developed removal action plans that included several important cost and resource saving measures. First, CALIBRE identified a local borrow pit (on BLM land) to obtain the large volume of capping materials required. Second, CALIBRE identified a stockpile of lime, previously used to process ore in the milling operations, as a source for neutralizing acidic mine water. These two important design considerations resulted in significant cost savings, energy conservation, and compressed/accelerated project schedule.

PROJECT SUMMARY

The Caselton Site consists of abandoned silver, lead, manganese, processing tailings ponds located in the Pioche Hills area of Lincoln County, Nevada. The Caselton Site is a large complex site with tailings spread over 150 acres with an estimated volume of 3.3 million cubic yards contaminated with high levels of heavy metals. The tailings were derived from multiple ore bodies by mining and milling operations starting in the late 1800's. Different extraction processes were used over the 100-year operating period resulting in multiple tailings ponds with very different physical and chemical leaching characteristics. CALIBRE developed a recommended removal action that included the following design elements: 1) surface water run-on diversion, 2) capping and neutralization of acid generation, 3) re-vegetation with appropriate (arid climate) native species, and 4) access restrictions.



Figure 1 – Tailings with ponded water containing toxic levels of heavy metals.

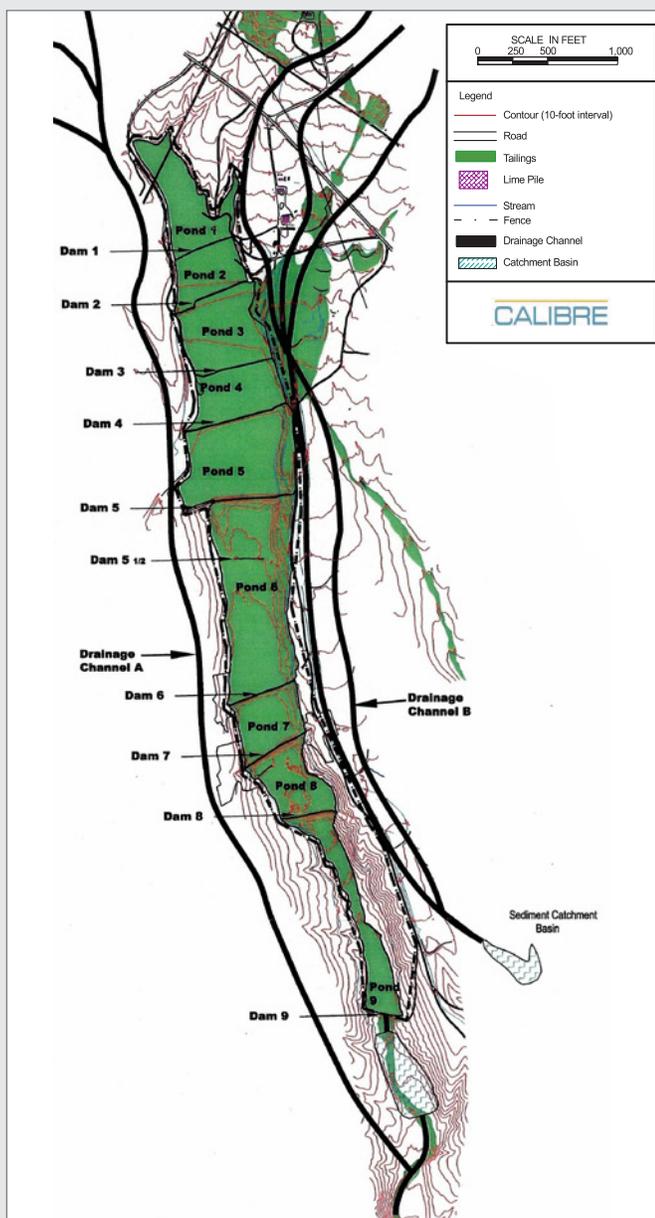


Figure 2 – Caseltown site map showing layout of tailings ponds

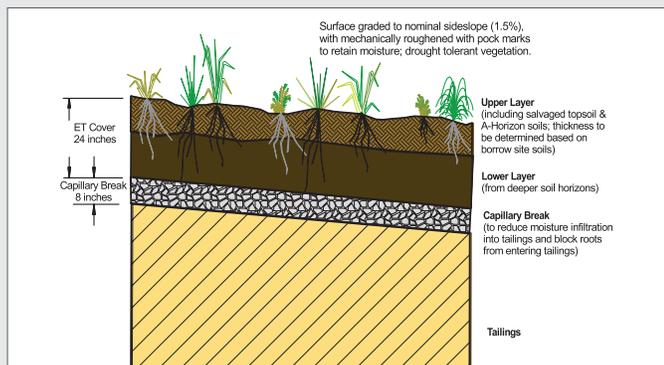


Figure 3 – Schematic of ET Cap with capillary barrier for tailings cover.

CALIBRE's approach for the EE/CA was tailored to meet requirements of a remote mine tailings site including:

- Evaluation of human health and ecological risks using guidance and benchmarks established by BLM for recreational users and wildlife;
- Evaluation of acid mine drainage potential based on SI data and estimation of neutralization requirements using acid-base accounting procedures; and
- Development of alternatives and cost estimates for removal action alternatives that were appropriate for a remote site.

The SI sampling identified ponded areas with pH so low that migrating waterfowl suffered lethal impacts after drinking the water. The remedies developed in the EE/CA included design of an evapotranspiration (ET) cap with appropriate native vegetation to stabilize the cover.

CALIBRE's role in the project was to develop a series of cost-effective removal actions in the EE/CA that allowed BLM to cost-effectively close the tailings ponds thereby reducing risk to human health and the environment.

Pollution prevention measures incorporated in the removal action design included surface water run-on diversion and stormwater/erosion

protection control for all work areas. Use of recovered materials in the removal design for this project included use of lime piles (from former ore processing) for neutralization in the cap design and identification of an adjacent borrow source area with suitable capping materials.

SUMMARY

CALIBRE's success at the Caseltown Tailings Site is just one example of our innovative and cost-efficient approach to successful remediation and reclamation of very complex sites. Two important design considerations included in the Caseltown EE/CA provided significant cost savings for the removal actions and energy conservation by minimizing transport distances for the required reclamation materials. We can apply similar techniques, developed based on critical review of the site considerations and remedial objectives, to develop cost-effective streamlined remediation/reclamation approaches for the environmental liabilities of your organization.