

METALS



SERVICES

Millcreek Engineering provides a wide range of technical and project management services for the metals industry. From the mine through the final product loadout, we provide services ranging from conceptual design through full project completion. We provide solutions for maintenance and capital projects, with an understanding that there is not a one-fit-all solution for many of the challenges that the industry faces. We approach each project with experience that allows us to develop the proper solution for each individual and different challenge.

Services

Millcreek Engineering's precious and base metal experience includes:

- Gold
- Silver
- Copper
- Iron
- Steel
- Zinc
- Molybdenum

Millcreek Engineering's precious and base metals facility experience include:

Mining

- Crushing / Screening
- Grinding / Milling
- Flotation
- Concentration
- Thickening / filtering
- Pyroprocessing
- Leaching
- Recovery
- Solvent extraction / electrowinning
- Adsorption Desorption Regeneration (ADR)
- Material handling
- Classification
- Storage
- Dust control
- Tailings
- Product load outs

Millcreek Engineering professionals have had prior experience in the following representative projects:

Gold Ore Transport – New underground mine - Nevada

Millcreek was tasked with identifying possible material handling options to transport ore from the portal stockpile to the processing facility. We performed an initial technology application review and pro/con evaluation to determine the three best options. We evaluated the three selected options for performance, capital cost and operating costs to enable the selection of the preferred option for recommendation. We developed preliminary engineering to determine that no fatal technical flaws were likely and evaluated operational aspects such that risks of implementing the project were known. We defined the scope and features of the potential project. We developed capital and operating costs sufficiently so that an economic evaluation could be performed with accuracy.

Gold Ore Transport – alternative transport options - Nevada

Millcreek was tasked with identifying possible material handling options to transport ore from the portal stockpile to the processing facility. The existing mine required new rail loadout facilities and rail to move ore from mine to processing areas. We performed an initial technology application review and pro/con evaluation to determine the three best options. We evaluated the three selected options for performance, capital cost and operating costs to enable the selection of the preferred option for recommendation. We developed preliminary engineering to determine that no fatal technical flaws were likely and evaluated operational aspects such that risks of implementing the project were known. We defined the scope and features of the potential project. We developed capital and operating costs sufficiently so that an economic evaluation could be performed with accuracy.

Structural Audit – Gold Mine - Nevada

Millcreek was tasked with performing a structural inspection of the entire mine site surface structures. Areas included primary crushing, material handling, autoclave, mill and roaster. All observations were compiled, given a risk rating, given a cost to repair and issued in a report. We are continuing to complete detailed engineering design for repairs needed.

Gold Mine Expansion Pre-feasibility - Nevada

Millcreek performed a pre-feasibility level study to develop the process and material handling options for a gold mine expansion. The mine will move from a surface operation to an underground operation. Millcreek developed the design criteria, trade off evaluation, process flow diagrams and cost estimate. The milling circuit had multiple options considered including, 1200, 1600 and 2000 TPD. Multiple tailings disposal methods were evaluated and cyanide recovery methods were evaluated.

Gold Mine Expansion Feasibility - Nevada

Continuing from the pre-feasibility performed the year before. Millcreek performed a feasibility level study to develop the process and material handling options for a gold mine expansion. The mine will move from a surface operation to an underground operation. Millcreek managed the entire feasibility design deliverables, including site infrastructure, electrical, process, material handling and geotechnical. The tradeoff studies were further refined and the preferred process flow diagram was selected.

Copper Moly Concentrator Project

One of our process engineers performed the Lead Process Engineering for dewatering area for a 40,000 mtpd Copper-Moly concentrator project. Created Metsim® material balance for numerous plants based on the pilot plant test work data. Developed PFD's and P&ID's for the entire copper-moly concentrator using Smartplant® Intergraph. Responsible for cost estimation and related engineering studies about contract proposals and new business development. Led and actively contributed in HAZOP reviews and plant 3-D model review sessions. Created Functional Specification and Control philosophy for plant control system programming.

Ventilation project – Gold Mine - Nevada

Millcreek Engineering was commissioned to perform a design for a ventilation system in the Tails Building which operated their screening system. The building required moisture capture and ventilation. We identified the proper ventilation rate and designed hoods to cover each screen.



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