

Case Study

Cover Systems to Reduce Environmental Impact

Iron Ore Mine, MN, USA

> Background

Okane was engaged to develop a conceptual cover system design for two tailings basins, while providing insight for operation and closure planning. The overarching objective for the project was to design a robust cover system that is feasible, cost effective and constructable, and meets site specific objectives. At the time, watersheds were being impacted by seepage out of the basins, consistent with relatively higher constituents of interest (COI) concentrations. The site-specific challenge Okane was presented was the reduction of COIs in the surrounding environment.

> Approach

Okane developed models to inform effective cover system options, considering potential solutions that could be implemented during operations to reduce potential risks or liabilities at closure. In addition, Okane provided a list of recommendations and proposed a risk-based approach to inform decisions prior to developing detailed cover design alternatives based on the permeability of the underlying foundation material. These recommendations were targeted around the reduction of COI concentrations impacting the watershed.

> Client Benefit

Okane's conceptual cover system design reduced seepage into the groundwater flow system by minimizing the amount of water that percolates through the cover system. When implemented, the cover system will result in lower concentrations of COIs into the surrounding watershed.



Managing watershed water quality through improved cover system modelling.

