SGMenvironmental

Creating enduring value

SGME VALUES

Honest

Trust

Innovation

Safety

PROJECT CASE STUDY: Future Performance of a Store and Release Cover

SGM Environmental Pty Limited (SGME) did a review and modelling of monitoring data from a waste rock dump store and release cover (the cover).

Site description: The open-cut zinc and lead mine is located in north-west Queensland. The waste rock dump was commissioned in 1998 and received both potentially acid-forming and non-acid forming waste rock. A closure options study identified the cover as the preferred closure strategy and was constructed in 2010.

The problem: Cover trials were established in 2012 and monitored for five years. This monitoring program resulted in the development of an infiltration water balance that was used to model and predict the covers long-term performance. In 2019 the mine sought the services of an experienced consultant to complete further refinement of the water balance, assess the potential for capillary rise and model cover performance to predict the long-term effectiveness of the cover.

What SGME did: Initially, the seven-year data set was collated and corrupt / erroneous data was filtered and removed. SGME then analysed the data set to develop soil water and solute relationships for time and cover depth including in-situ soil water characteristic curves.

Following the initial analysis SGME built a calibrated model in SVFlux. The model was used to verify the future performance of the cover which was certified by SGME's registered professional engineer of Queensland (RPEQ). Certification allowed the mine to use this site-specific cover solution in their estimated rehabilitation cost calculation, providing considerable savings when compared to the States default double capillary break cover design.