

DECISION MAKING FOR PATH FORWARD OF DECOMMISSIONED BEAVERLODGE MINE SITE

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Abstract

Although mining activities ceased in the early 1980s, dissolved radium-226, selenium and uranium levels remain above background in the area surrounding the former decommissioned Beaverlodge Mine and Mill (Canada). In recent years work has been undertaken to develop a final site strategy which would allow for ultimate close-out of the area and the eventually transfer to Saskatchewan's Institutional Control (IC) program. Sources include residual mine features such as several underground mine workings, waste rock piles, the former mill site and tailings deposits.

In support of the regulatory approved Beaverlodge Management Framework and decision making process, a tool called the Beaverlodge Quantitative Site Model (QSM) was developed to carry out contaminant dispersion modeling in the post-decommissioning period for the immediate and downstream environment. The QSM was designed to assess a wide range of remedial activities and predict future environmental conditions (surface water, sediment quality and potential risks) both with and without implementing various remediation measures. Potential remedial activities incorporated into the QSM include cover of waste rock piles, sediment remediation (cover or dredge), stream diversion, elimination (infill) of waterbodies, sedimentation rate manipulation, tailings area remediation and water treatment.

Since development of the QSM, the model has been used in numerous ways including as a communication tool during discussions with regulatory bodies (provincial and federal) and during stakeholder consultation and has played an important role in the consensus building process. As well, the QSM provided insight into the potential short-term and long-term benefits of various remediation strategies that would otherwise been difficult to ascertain. During stakeholder consultation, QSM results as well as data on capital and operating costs of different options were presented; feedback obtained through this process highlighted remedial activities which were generally felt to be a good use of resources and identified others which stakeholders felt were unjustified. This stakeholder feedback was considered during the development of the path forward plan for the site, which was accepted by the regulatory agencies.