

## 3D Modeling of the Sand Coulee Basin Abandoned Mine Lands

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**Abstract:** This case study describes the process of creating 3D models in order to make regulatory decisions. Belt and Sand Coulee are two towns with acid mine drainage issues from abandoned mine lands. They are located in the Sand Coulee Basin of the Great Falls coal field in Montana. Montana Department of Environmental Quality (DEQ) Abandoned Mine Lands program is currently working on water treatment options for the acid mine drainage (AMD) from the abandoned mines and has already installed a system to bring clean drinking water to the town of Sand Coulee. Earth Vision modeling software created by Dynamic Graphics was used to build the model. LIDAR, satellite imagery, drilling logs as well as USGS geologic maps and reports were used to create the input files for the 3D model. The completed 3D model will help Montana DEQ better understand the mine pools, hydrologic systems, and geologic setting causing the AMD. This in turn will aid the DEQ in making water treatment choices for the acid mine drainage.

Additional Key Words: Acid Mine Drainage, Hydrology, Water Treatment.

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