
The MAW Zone exhibits extensive alteration, including pervasive silicification and hematitization, clay mineral growth, and limonite-staining in breccias and along faults and fractures. In addition, the tourmaline-family mineral dravite occupies the interstices between the sand grains. Geochemical analyses indicate that this alteration zone contains elevated levels of the heavy REE and Y (which behaves like HREE).

In order to document the relationship between mineralization and deformation, detailed mapping was completed that shows the distribution and orientations of lithologies, faults, fractures, alteration, and breccias in an area of about 1 km. Structural analysis of this region combined with information from logs of proximal drill holes and published information of the regional history are used to investigate the sequence of structural deformation and alteration. Preliminary results indicate that the alteration could be related to possible uranium mineralization in the area as it may represent the distal halo of a hydrothermal system responsible for uranium mineralization.

A structural analysis of the MAW zone sub-economic rare-earth element deposit, Wheeler River Property, northern Saskatchewan, and the relationship of structures and alteration to possible uranium mineralization

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The MAW Zone is a sub economic rare-earth element (REE) deposit near Williams Lake near the southeastern corner of the Athabasca Basin, northern Saskatchewan. The host rocks are the Paleoproterozoic (~1700Ma) un-metamorphosed quartz-rich sandstones of the Athabasca Group, Manitou Falls “d” Formation. This formation consists of fine to coarse sands with minor (< 2%) mudstone intraclasts. The Athabasca Group in this area is underlain by the high-grade metamorphic and igneous rocks of the Wollaston Group.