ABSTRACT

TITLE:	Testing Models on the Relationship of Clay Alteration and Mineralization: Bulldog Mountain Vein System, Creede, CO
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ABSTRACT: The Bulldog Mountain vein system is one of the four major epithermal deposits in the Creede mining district. Exploration drill cores from within the Bulldog Mountain system reveal alteration haloes that contain secondary micas formed during volcanic and hydrothermal events. In this research we tested the hypothesis that Short Wave Infrared (SWIR) spectroscopy could delineate the proportions of clay species and that these data could be used to predict silver concentrations within the Bulldog Mountain system. The relative proportions and identities of clays species were determined in seven samples from four drills using electron microprobe and QEMSCAN analyses. The analyses demonstrated that the clay alteration is mostly illite + sericite in varying proportions along with minor kaolinite. Electron microprobe and QEMSCAN data served as a baseline to compare with SWIR absorption spectra collected using three different methods of sample preparation. The SWIR spectra gave no definitive control on the abundances or identification of the different clay species in the samples despite using several different methods of analysis. Our results also show no correlation between the SWIR spectra and silver concentrations. Further research is required to fully assess the viability of the TerraSpec 4 Mineral Spectrometer as a tool to use for exploration in the Bulldog Mountain vein system.