

The paragenesis and mineralization of Ag-Pb-As veins in the Owl Southwest showing, South central Yukon

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The Owl Southwest showing is a Ag-Pb-As anomaly on the Silver Ranges property in the western Selwyn Basin, Yukon near the town of Faro. The age, causative intrusion and genesis of mineralization for Owl Southwest is not well constrained. The showing is of interest as the region around Owl Southwest was previously believed to be barren and Ag-Pb-As veins are not commonly reported in the Selwyn Basin. The Owl Southwest Ag-Pb-As anomaly consists of multiple mineralized galena and arsenopyrite veins located in a siltstone/chert rich lithology. In this project a paragenesis of mineralization was developed through: description of hand samples from drill core and field mapping, thin section microscopy, X-ray diffraction analysis, electron probe microanalysis and stable isotope analysis. Results indicate four phases of mineralization and alteration. An ore bearing stage follows early sulphide poor quartz and calcite veins. Post-dating these are phyllic and then propylitic alteration styles. The $\delta^{34}\text{S}$ values of the arsenopyrite within the ore stage range from -0.5 to -4.1‰ and suggest that the sulphur is derived from an igneous source. Overall, the study reveals a complex history of mineralization and alteration within Owl Southwest. These results will be used in conjunction with future work on other showings on the Silver Range property to understand the metallogensis of the region.