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Understanding Overprinting Mineralizing Systems of the Ruby Hill Deposit, Eureka, NV: Implications for Future Exploration

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The Ruby Hill deposit in Eureka, NV, hosts gold, silver, base metal, and critical mineral mineralization. The mineralization within the Eureka district includes Zn-Pb skarn, pollymetallic carbonate replacement deposit (CRD), distal disseminated Ag-Au, and Carlin-type Au. Although historical mining focused on the CRD-type mineralization from the 1880s to the 1950s and Carlin-type gold from the 1990s onward, recent exploration has outlined additional CRD mineralization beneath cover that was previously unrecognized within the greater Ruby Hill system. Understanding the temporal, spatial, and genetic relationships between the different styles of mineralization at Ruby Hill is crucial for future exploration in the region.

The initial research undertaken during this project focuses on a total of 166 diamond core and reverse circulation drill holes previous logged by Ruby Hill geologists within the north end of the district. These data provide a guide for spatial and mineralogical relationships between skarn, CRD, and distal disseminated mineralization at Ruby Hill. Preliminary geochemical analysis indicates that the Ruby Hill skarn and CRD systems are geochemically zoned with distinct overlaps between these different systems. Initial interpretation of whole-rock geochemical data for the intrusions in the Ruby Hill area has also identified multiple phases of granodiorite intrusion, although further research is needed to determine the specific phase(s) of these intrusions that are responsible for the different styles of mineralization at Ruby Hill. Further research in the area will include detailed paragenetic and geochronological studies to determine the relative and absolute timing of the formation of the different mineral systems at Ruby Hill as well as any potential genetic links between these systems.