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Ore Control and Production Reconciliation through Density Sampling in the Underground Skarns at Bingham Canyon Mine

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The underground geology team at Rio Tinto's Bingham Canyon Mine initiated a density sampling program in 2025 to reduce uncertainty in the density values used in the mine's production model and to understand their downstream effects on tonnage calculations. Density variability is a critical factor in skarn lithologic units, where mineralogy can shift over short distances and strongly influence resource modeling and ore control.

The program currently applies an initial sampling spacing of approximately 50 ft in the skarns and 100 ft in the quartzite and intrusive units. Density measurements are collected using the water-displacement method, and all data are entered into the Acquire database and integrated into Leapfrog for visualization and further interpretation. As sampling continues, spacing within the skarns is reassessed in response to observed mineralogical variability, with intervals reduced to approximately 20–30 ft in areas where higher-resolution data are needed to better capture this heterogeneity.

Sampling is ongoing, and new data will be incorporated into weekly and monthly workflows as the database grows. The team anticipates that tighter sample spacing within the skarn zones will improve the accuracy of tonnage estimates and strengthen both the resource and production models.