XPS and Rosemont Geometallurgical Development

The Process Mineralogy team at XPS has been working closely with Hudbay Minerals since August of 2014 in support of their Rosemont project in Tucson, Arizona.

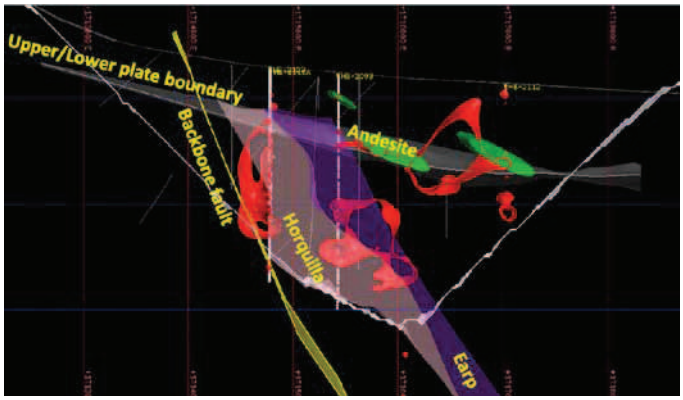
The Rosemont project is a large Cu-Skarn/Porphyry deposit with variable mineralogy and mineralization. After the initial phases of data review were completed, a multiphase geometallurgical testwork program was established to create a robust database of mineralogical, geochemical and metallurgical data to advance the processing and flowsheet design criteria.

The initial phase of variability testing was carried out in late 2014 to early 2015. The first phase of work has provided a foundation for the geometallurgical interpretation and has helped to define a path forward for the project team.

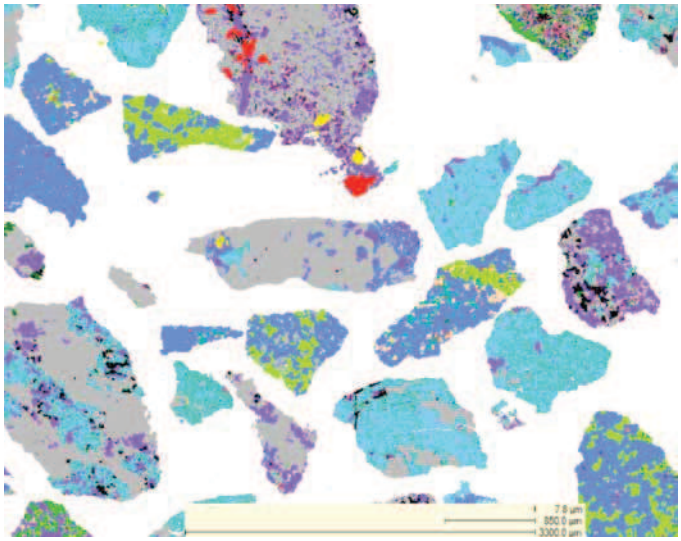
The testwork database has integrated a combination of representative sampling, geochemistry, detailed quantitative mineralogy (QEMSCAN), XRD-CEC, ore hardness data (BWi, SPI, JK drop weight) and lab-scale flotation testing. The interpretation of the combined dataset has resulted in defined geospatial links between the deposit geology and key metallurgical factors which and are now being further tested and modelled. These links and geomet proxies have helped to better define the geometallurgical populations within the ore zone and have improved the understanding of processing variability overall as it relates to throughput and recovery modelling.

The geometallurgical populations are the foundation for subsequent phases of flowsheet development testing and mineralogical testwork which is currently underway at XPS and expected to be completed in the third quarter of 2015.

For further information on Geometallurgical Unit Definition, contact Jorge Oliveira at jorge.oliveira@xps.ca



Cross-section through the Rosemont deposit (planned pit shell in white). Modelling of Geomet domains from established Geomet proxies (red).



QEMSCAN image of +850µm fraction.

XPS Crushing and Blending Plant Reaches a Milestone

One of the most labour intensive and overlooked steps in any laboratory and pilot testing metallurgical program is the preparation of crushed, blended and homogenized ore samples. Lab and pilot programs typically use drill core that is limited in availability and costly to acquire, and must be preserved to avoid oxidation. “Over-crushing” must be avoided as it tends to affect metallurgical response, typically reducing recoveries.

Lab and pilot sample mass requirements can range from 20-30 kg up to several tonnes. Sampling statistics and testing requirements usually require the sample to be crushed to <2-3 mm, yet the target is to stay as close as possible to the nominal top-size without excessive generation of fines. For this to occur, staged crushing and screening is essential. The process from drill core to test sample or assaying is not just “breaking rock”! It is the first step that is critical to success of any lab or pilot evaluation or metal accounting exercise.

Avoidance of mass loss is required during the sample crushing and blending process. A quantitative assessment of mass loss in every processing stage serves as part of the QC process, since it helps to assure that samples are not biased by excessive dust losses, or cross contaminated by mass hold-over between samples. Equipment needs to be completely run out and cleaned between each sample, and the starting and ending masses carefully recorded. Control of contamination also involves elimination of contamination with greases, oils and foreign objects that in some cases may originate from the crushing equipment itself. Following periodic maintenance the crushing equipment needs to be crushed out with a sacrificial sample to carry away any fugitive contaminants.

In 2005/06 XPS configured, engineered and built a complete fine Crushing and Blending Plant at the XPS Centre. The plant is equipped with a primary 8x10 Denver jaw crusher, a Rocklabs Boyd jaw crusher, variable speed conveyors, and