

**Santa Fe Metals Corporation – Sully Project, Southeastern, B.C.**

**Scott Broughton, CEO, PEng, Santa Fe Metals Corporation, and  
Paul Ransom, PGeo.**



The Sully Project is located in the Rocky Mountains ~30 km east of the world famous Sullivan sedimentary exhalative (SEDEX) Ag-Pb-Zn-Fe mine at Kimberley, British Columbia. The ore-hosting Aldridge Formation sedimentary basin environment has long been believed to have great potential to host other SEDEX deposits. Historic prospecting by Cominco and others has identified and investigated the low-hanging-fruit of geochemically anomalous horizons, especially the Lower-Middle Aldridge contact (Sullivan-time) in BC, and equivalent units in adjacent USA.

The Sully project is within the Northern Hughes Range, a block of steeply dipping Aldridge Formation and younger strata that form part of a large recumbent fold. The project is located in the Rocky Mountain Trench (RMT), at the base of the Range where a Zn and Pb soil geochemical anomaly was identified in the early 1980s. In 1997 a reconnaissance gravity survey identified an anomalous mass that was the focus of more detailed gravity and follow-up drilling in 2004. That work failed to intersect any rock types to account for the gravity anomaly. The project remained relatively idle until 2010 when more accurate and detailed gravity surveys lead to the identification of a large-scale (Sullivan dimensions) anomaly at depths well below the 2004 drilling. The prevailing geological model suggested a synclinal closure of a Sullivan-size stratabound massive sulphide body.

Drilling in 2012 and 2013 failed to intercept any lithologies that could account for the anomaly and oriented core indicated a no potential for the synclinal closure anticipated. Clearly another structural interpretation was required. Reflecting on this result, further detailed gravity surveying was completed in the area of drilling. Greater resolution provided by new data conclusively showed a camel's back gravity profile, now interpreted as two parallel near-vertical masses (the East and West masses) spaced ~1 km apart.

In 2014, two holes inclined at -70° and -57° were drilled toward the East target from the west. Both holes intersected steep to near-vertical lower Aldridge strata, believed equivalent to the footwall rocks of the Sullivan deposit. Low Angle Normal Faults (LANFs) were also identified in the 2014 drilling. These structures offset the bedding and the East target progressively to the east with depth. This observation fits well with the interpreted gravity model that indicates an east-dipping mass. LANFs may be the rotated remnants of steep normal faults and are perhaps similar to ones observed west of the RMT. These have been observed to offset strata east of, and within, the Sullivan deposit itself. We propose a block rotation of the Northern Hughes Range of 45 - 60° to explain the observed LANFs at Sully, and this correlates well with similar fault sets 10 - 15 km north and 10 km NE that have a cumulative offset of ~3 km.

The gravity anomalies at Sully are large-scale, with physical dimensions similar in scale to the Sullivan SEDEX deposit. Intersected lithologies to date indicate that the East target is coincident with Sullivan-time, both are roughly coincident with air-borne mag anomalies. Interesting soil results above the East anomaly may indicate a geochemical halo or leakage anomaly developed along structures to surface. Drilling to date has tested large volumes along only one drill-section; however the potentially tectonically deformed (and possibly thickened) target horizon at equivalent Sullivan-time has not yet been tested. Exploration work has moved efficiently to test and refine geological models (and the gravity masses themselves) and the current understanding of the setting was dramatically advanced in 2014. A drill program is planned for early 2015 to intersect Sullivan-time and the East gravity mass for the first time in the history of the project.