The QV Gold Discovery, soil geochemistry exploration in the Far North

Corresponding author: Rasool Mohammad, Comstock Metals Ltd., jane.perry@larongegold.ca

In 2012 Comstock Metals announced a new gold discovery on its QV Property ninety kilometres south of Dawson City. This portion of the Yukon and adjacent Alaska escaped Pleistocene glaciation. The region is characterized by an incised regional peneplain draped with a veneer of residual soils produced by mechanical processes, locally mixed with loess and relic patches of pre-Pleistocene weathered and oxidized rock. Soil profiles are poorly developed and permafrost is present on north-facing slopes. Outcrop is less than 10%.

Against this background of unfamiliar (from the Canadian perspective) surficial conditions, Comstock started exploring the QV Property in 2011. Subdued geochemical signatures were anticipated, unlike those encountered during conventional exploration programmes in the south that focused on high-contrast anomalies. Initial work at QV included an airborne magnetic survey on 100-metre line spacings plus ridge and spur soil-sampling on 50 metre stations, the idea being that anomalies on high points of land had the best chance of being in place. Our VG Zone discovery started off as a single-sample, isolated 293 ppb gold anomaly, but within a broader area with mixed Hg, As, Sb or Ba highs. Crews completed a series of grid-controlled soil surveys that tightened sample density to 50 metres and augured as deeply into the regolith as physically possible in order to find if values increased with depth.

A series of strong anomalies emerged. One such anomaly extended over 2500 metres in length, changing in character from high gold with Mo, Sb and Te to increasing As and Au over areas underlain by highly magnetic units. Prospecting and mapping within the core of the gold anomaly encountered a large boulder of quartz that bore visible gold, precipitating an immediate trenching campaign using a helicopter-portable CanDig excavator in June 2012. This revealed a well-mineralized, large silicified zone extending 350 metres through 8 trenches, returning compelling results such as 3.78 g/t along 75 metres of subcrop exposures. Drilling followed in September 2012, outlining an east-trending, shallow-dipping zone of intensely silicified rock within an envelope of sericite, albite and carbonate-altered felsic gneiss and tectonic breccia. The mineralized structure is well delineated by subtle but valid soil geochemical patterns and by a distinct east-trending break in the regional magnetic trends.

Utilizing the multi-element ICP geochemical analyses, geologists created strip logs, undertook principal component analyses, and re-examined mapping and geophysical data in an effort to map major rock units and faults. During the 2013 programme these results were used to successfully expand the VG Zone to an area of 350 by 350 metres in extent, and to a vertical depth of 250 metres. Two parallel structures, the VG North and the Adit fault structures (1200 metres to the north and 500 metres to the south respectively), were confirmed by surface mapping and sampling and are considered to be attractive new targets. Similar geochemical anomalies also occur 12 kilometres north at the Shadow and four kilometres northeast at the Stewart. All are high–rank targets, suggesting the QV Property offers considerable potential for additional discoveries.