

Drift Exploration Using Indicator Minerals and Till Geochemistry

M. B. McClenaghan

Drift prospecting in glaciated terrain encompasses a broad range of sample media, including boulders, till, stream sediments, soils and vegetation. The focus of this talk is the application of till geochemistry, indicator minerals and boulder tracing methods to exploration in the glaciated terrain of Canada. Glaciation has dispersed metal-rich debris from mineralized rocks tens of metres to tens of kilometres down-ice, forming dispersal trains or fans which are often much larger exploration targets relative to their bedrock source. Boulder tracing, till geochemistry and indicator mineral methods are used to detect these dispersal trains and can be used to explore for a broad range of commodities, including gold, PGEs, base metals, tin, tungsten, REEs, uranium and diamonds. Over the past 50 years, the application of these methods in Canada has contributed to numerous significant discoveries, including the Strange Lake REE deposit, the Steep Rock iron ore mine, the uranium deposits at Key Lake, gold deposits at Casa Berardi, the Buchans Zn-Pb-Cu deposit, and the highly diamondiferous kimberlites at Lac de Gras. Examples of glacial dispersal patterns associated with a variety of mineral deposits, with emphasis on eastern Canada, will be discussed.

¹Geological Survey of Canada, 601 Booth St., Ottawa, ON K1A 0E8