Clay-Fraction Till Geochemistry of the TREK Project Area, Central British Columbia (Parts of NTS 093B, C, F, G): Progress Report

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Introduction

Large parts of central British Columbia (BC) are underexplored because of extensive Quaternary cover that obscures much of the underlying geology from direct observation. Consequently, resource companies are faced with increased exploration risk and must rely on indirect detection of mineralization by geophysical or geochemical methods. As these methods evolve and improve over time, the cumulative geoscience that is generated over covered areas enables the integration of various data types, which in turn increases confidence in the understanding of the bedrock lithology.

Geoscience BC has actively engaged in the generation of high-quality public geoscience in the province for more than a decade, including geoscience in large areas of covered terrain such as the Targeting Resources through Exploration and Knowledge (TREK) project area, which covers parts of the NTS map areas 093B, C, F and G (Figure 1). The size fraction that was selected for the till geochemistry in the TREK project was <63 µm (silt + clay). Although this is standard practice in till analysis because dry sieving to a finer fraction would be impractical, the geochemical response may still be overwhelmed by matrix components such as carbonate minerals and organic matter. To remedy the effect of matrix materials on the analysis of till and reduce its heterogeneity, the clay fraction (<2 µm) can be extracted and analyzed, which has been known to provide superior results for trace elements transported by

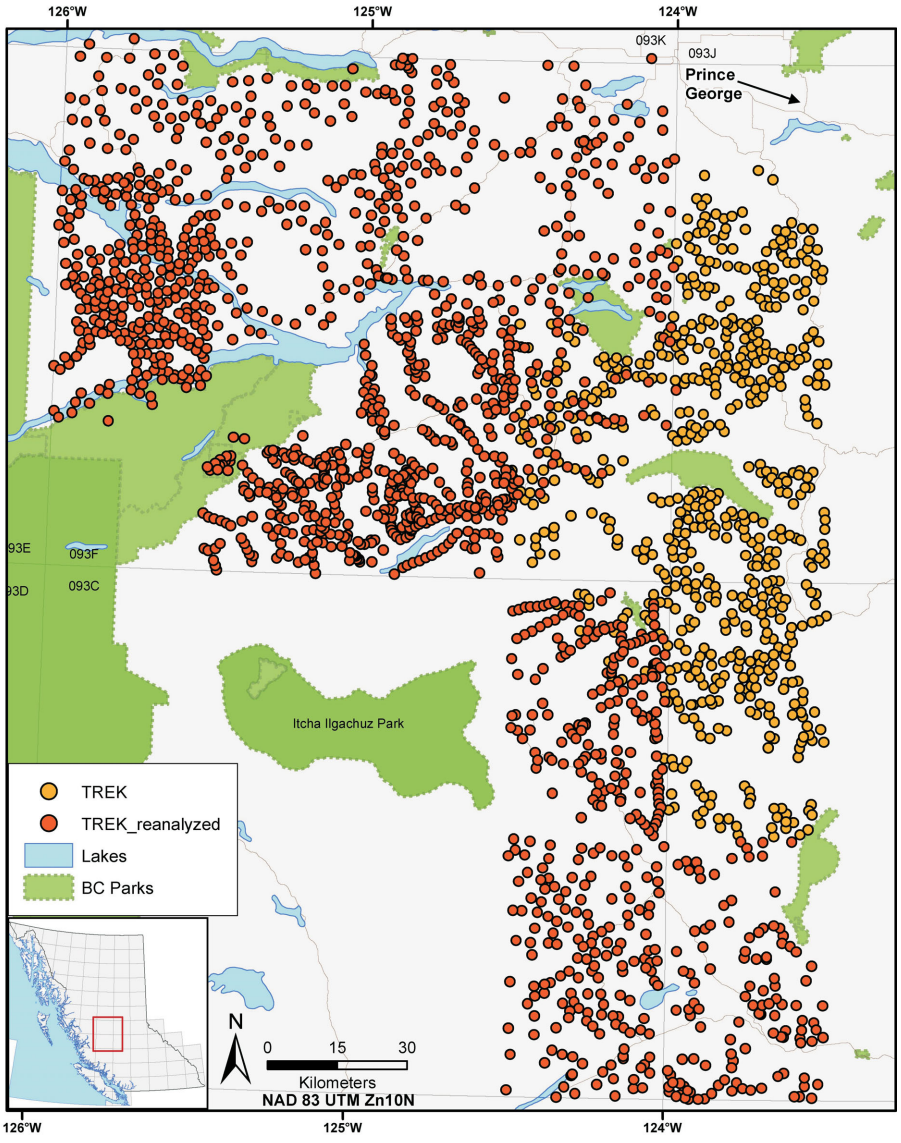

Figure 1. TREK project till sample locations, central British Columbia.

Keywords: *British Columbia, till geochemistry, hydromorphic dispersion, exploration*

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hydromorphic dispersion through the till cover (Slavek and Pickering, 1981; DiLabio, 1995; van Geffen et al., 2012).

Geoscience BC Report 2009-10 (Ferbey et al., 2009) reported the analysis of the clay fraction of archived till samples from the Babine porphyry belt, which were sampled in the earlier NATMAP sampling program (Levson, 2002). The paper described the relative abundances of a range of elements with limited data processing and interpretation. This study will include data validation and basic exploratory data analysis to add value to the generated data and comment on the comparison with the original data from the silt + clay fraction.

Status and Future Work

Till samples that were collected in the TREK project area in 2013 and 2014 were archived by the BC Geological Survey (BCGS) in Victoria, BC (Jackaman and Sacco, 2014; Sacco et al., 2014; Sacco and Jackaman, 2015). To date, 613 'character splits' of the archived samples have been retrieved for clay extraction and analysis, with help from R. Lett, consultant, formerly BCGS. These samples have been submitted to the Bureau Veritas Mineral laboratory in Vancouver, BC, for preparation and analysis. The analytical method is a clay-fraction separation followed by aqua-regia digestion and inductively coupled plasma–mass spectrometry (ICP-MS) finish for 53 elements on 0.5 g aliquots.

Previous campaigns in the TREK area produced till samples that were recovered and submitted for reanalysis as part of the TREK project in 2015 (Jackaman et al., 2015), but the sample volumes remaining at the BCGS archive are considered insufficient for clay extraction. The Geological Survey of Canada published till geochemical data from the area in 2001 (Plouffe et al., 2001), including inductively coupled plasma–atomic emission spectroscopy (ICP-AES) data of both the <63 and <2 µm fractions. These data will be used for reference and, where appropriate, included in the final data analysis of this study.

It is anticipated that this study will be completed by January 2017 and the results presented at the Association of Mineral Exploration Roundup . The final report will be published as a separate Geoscience BC report in early 2017.

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