

Department of Natural Resources, conducted a till geochemical survey in the Grand River map area (NTS 21O/05) in northwestern New Brunswick. A total of ninety seven C-horizon samples, all basal till, were collected. Approximately 75 pebbles were collected at each site to determine glacial transport distances. Sampling was done on a rough 4 km spaced sampling grid, following standard NBDNR-GSB protocol.

The NBDNR geochemical laboratory in Fredericton processed the till samples and separated splits to produce two subsamples, one for determining the sand/silt/clay size fractions and the other for the geochemical analysis. From a fine fraction split (0.063 μm) of each till sample a suite of 37 elements (Ag, Al, As, Au, B, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Se, Sr, Te, Th, Ti, Tl, U, V, W, and Zn) was analyzed at an external laboratory by inductively coupled plasma mass spectrometry (ICP-MS). A 1:50 000 scale basal till sample site location map with ice flow indicators, including bedrock geology, will be produced. The results will be published as a New Brunswick Department of Natural Resources Open File Report.

The study area is mainly covered by a till blanket with an average thickness of 1 m. The till blanket is absent (sporadic) in some parts of the study area. The lithological and geochemical results indicate that the till is locally derived (<1 km transport distance). Some geochemical anomalies could warrant further analysis (Cu, Co, Cr, Mg, Ni, and U), especially in the southeastern part of the region underlain by Ordovician Boland Brook Formation sedimentary rocks. A strong correlation (≥ 0.5) exists between Zn and Ni, and Co and Mn. The only observed glacial striations are located in the southwestern part of the Grand River area and they indicate an east-southeast and west-northwest (113° – 293°) ice flow. Stoss-and-lee landforms, for example Quisibis Mountain, support these directions. Some pebbles and boulder erratics from eastern Quebec and the Canadian Shield were observed in the west part of the region, suggesting glacial transport from the northwest.

**Quaternary geology and till geochemistry of
the Grand River map area (NTS 21O/05),
northwestern New Brunswick**

JEAN-LUC PILOTE¹, MICHAEL A. PARKHILL²,
AND MARC DESROSIERS²

*1. History and Geography Department, Université de Moncton,
Campus of Moncton, Moncton, NB, Canada E1A 3E9
<096594p@acadiau.ca> ¶ 2. New Brunswick Department
of Natural Resources, Geological Surveys Branch,
P.O. Box 50, Bathurst, NB, Canada E2A 3Z1*

During the 2004 and 2006 field seasons the New Brunswick