

Applications of regolith mapping and sampling in the California Lake area, northern New Brunswick

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Regolith mapping (1:50 000 scale), involving sampling of C-horizon basal till, 100 pebbles from till, as well as B-horizon soil at 266 sites on a 2 km grid, was completed this year in the California Lake map area (N.T.S. 21 O/8). An additional 37 sites were sampled on a 500 m grid in the vicinity of the Halfmile Lake mineral deposit. Striae, grooves, roche moutonnée, granite boulder erratics, and till fabrics indicate eastward ice movement followed by northeastward- and southeastward-flowing ice. Ice-flow chronology and geochemistry are used to assess the glacial dispersal of geochemical anomalies. Pebble analysis supplies information on the composition of the various till units in the area and gives an indication of the underlying bedrock type in areas of sparse outcrop.

A locally derived, thin layer of Late Wisconsinan basal till (<2 m) covers most of the area and is divided into three units based on texture, composition, topography, underlying bedrock, and the presence or absence of overlying colluvium. Till is sandy over granite bedrock where a layer of preglacial weathered bedrock (grus) commonly occurs. Deeply weathered bedrock also occurs over other rock types but is generally restricted to the highest elevations in the western part of the area. Till thickens to the east where the topography is

lowest and gently rolling.

Until recently, mineral explorationists were the primary users of surficial geology. Increasing demands from various user groups in New Brunswick has further outlined the importance of regolith mapping. The grus, ablation till, glaciofluvial and postglacial alluvial deposits are potential sources of aggregate. Till mapping has applications to acid mine drainage; geotechnical analysis of 60 till samples by Noranda Technology and till mapping, have outlined potential sources of clay-rich till near the Heath Steele Mine to cover tailings ponds and waste piles. Systematic mapping of surficial geology to delineate suitable till (high clay/low pebble content), provides essential geoscience information that future mining operations can use in Environmental Impact Assessments and mine reclamation plans. Forest site classification information, soil-profile descriptions, and pebble analysis obtained in this study are used to plan reforestation projects. Bedrock and regolith comprise the parent material of forest soils. Suitable tree species can be selected to match different regolith (till, soil, etc.) units. Regolith mapping also has applications in land-use planning, regional landfill siting, water resource management, environmental projects, and in the location of construction materials.