

DESCRIPTIVE NOTES
Map 42-1965: Nickel content of stream and spring sediments

Geological

South of a line following the Millstream River and westward through Tetagouche Lakes, the area is underlain mainly by the Ordovician Tetagouche Group comprising a series of complexly folded and sheared metasediments, metavolcanics, and metabasic intrusives. These are intruded south of Bathurst by a granitic mass.

North of the Millstream River the rocks are mainly of Ordovician, Silurian, and Devonian age. The Elmtree Group, of probable Ordovician age, is composed of folded and contorted metasediments and some metavolcanics which are intruded by a granitic stock in the vicinity of Antinouri Lake. The Silurian and Devonian rocks comprise both sediments and volcanics that are faulted in places, gently folded, and on the whole are less metamorphosed than the older rocks in the district. In the Nicholas Dénys area the Silurian rocks are intruded by a granitic stock that has an associated metamorphic aureole in which the rocks are mainly hornfels and skarn. Another granitic stock intrudes Silurian volcanic rocks along South Benjamin River.

East of Nepisiguit River the area is underlain by the Pennsylvanian Bathurst Formation. These rocks are mainly siltstones, sandstones, grits, and conglomerates that dip gently eastward.

Flat-lying conglomerates and sandstones (Bonaventure Formation), possibly of Triassic age, underlie Heron Island and fringe the coast in the Jacquet River area.

Glacial till, sand, and gravel mantle the whole district, and Recent post-glacial sands and clays cover much of the area around Bathurst harbour and occur in the shore section at Jacquet River.

The principal mineral deposits in the area are massive, vein, and disseminated deposits containing essentially iron, Zinc, lead, and copper sulphides. Molybdenite occurrences are associated with the Bathurst, Nicholas Dénys, and Antinouri Lake granitic bodies. Nickel minerals are rare in the area; nickeliferous pyrrhotite and millerite have been reported only from two occurrences east of Antinouri Lake.

The text of the paper accompanying this map should be consulted for further details on the geology and economic geology of the district.

Geochemical

The analyses recorded on this map were done on samples of sediment collected from the channels of rivers and streams and from rivulets flowing from springs. Where possible the active channels were sampled, but in a few cases the residual sediment of dried-up streams was used. In muskeg areas and in streams where beaver workings are present the sediment contained abundant decomposed organic matter.

The sediment was dried, sieved to -80 mesh, ground to -150 mesh, and analyzed for nickel by the spectrographic method outlined in the text of the paper accompanying this map. The values are expressed in parts per million. The subdivisions used on the map are arbitrary and based on experience in the district. The lowest subdivision can be taken to represent the background.

All streams and rivers were traversed on foot, and the stream sediments were collected, where possible, at intervals of 1,500 feet.

The nickel content of the sediments ranges from less than 2 to 300 ppm. The background for the whole district is about 45 ppm, but in some areas the background is less than 20 ppm. This indicates that each stream or group of streams should be treated individually.

With the exception of the Armstrong Brook deposit most of the known sulphide bodies are not marked by anomalous trains of nickel in the stream sediments. This indicates that nickel in stream sediments is a poor indicator for sulphide deposits of the type common in the district.

Higher than normal amounts of nickel occur in the sediments of a number of streams. Some of these include stretches of Six Mile Brook, a number of the tributaries of the Tetagouche River, Rocky Brook and some of its tributaries, one of the northeast-draining tributaries of Grants Brook, some of the tributaries of the Lower South Jacquet River, Eel Brook, certain tributaries of the Elmtree River, Fournier Brook, Hendry Brook, and South Nash Creek. The significance of these anomalous nickel trains is difficult to assess. In some cases they appear to be related to the presence of higher than normal amounts of manganese. In other cases, as in the tributary of Rocky Brook, the relatively high nickel contents appear to reflect the presence of ultrabasic bodies.

Higher than normal amounts of nickel in the stream sediments are often correlative with those for chromium and cobalt; also in places with Cu, Zn, Mo, As, and Ba, particularly where the stream sediments are rich in manganese.

The nickel contents of the stream and spring sediments shown on this map should be compared with those for heavy metals in water on Map 32-1965 and also with the contents of individual elements in stream sediments on Maps 34-1965 to 44-1965 inclusive.