ECUM SECUM 11D/16E

SURFICIAL GEOLOGY

SCALE 1:50,000

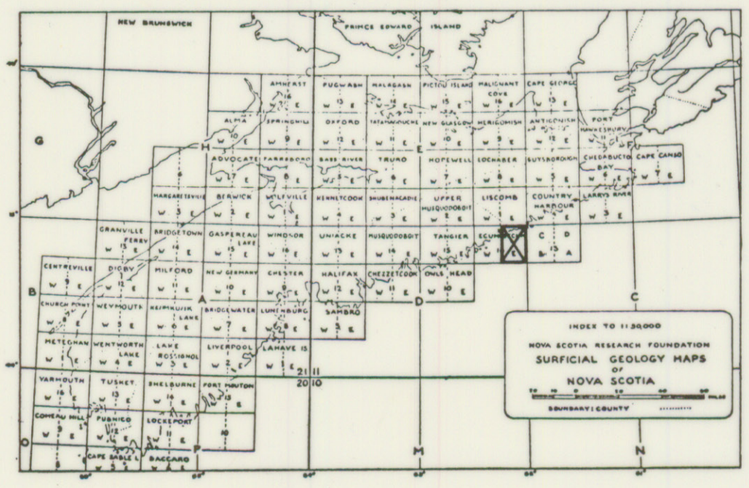
1.25 inches to 1 mile approximately

1 0 1 2 3 Miles

1000 500 0 1000 2000 3000 4000 Metres

NOVA SCOTIA RESEARCH FOUNDATION CORPORATION

Geology by R.H. Mac Neill, 1956



LEGEND

- DRUMLIN & MORAINE
- KAME
- ESKER
- DELTA
- TILL AREAS (undiff.)
- SWAMP
- ROADS & TRAILS
- STREAMS
- GLACIAL STRIAE

DESCRIPTIVE NOTES

GENERAL

Elevations in the map area are low. The land surface begins at sea-level along the coast and the river estuaries then rises gently to slightly over 250 ft in the north. The map area is well drained by many short southward flowing streams.

BEDROCK GEOLOGY

The map area is underlain by the greenish grey quartzites and dark grey slates of the Meguma Group which is Cambro-Ordovician in age. Considerable quantities of this slate from the Dufferin Mines and Little Brook Lake area has been used for road fill. Bedrock is well exposed throughout the area, especially on the outer islands and along the coast in the western part of the map area.

QUATERNARY GEOLOGY

Drumlins and Till

Pleistocene ice generally moved south across the map area depositing a thin mantle of till over much of the bedrock.

Till in the area is generally in the order of 2-3 ft thick. Tills over the slate bedrock are brown, silty and composed almost entirely of slate fragments, while tills developed on the quartzites are grey, sandy and much coarser, and contain many angular quartzite boulders.

Drumlins are found throughout the western map area and east of the Ecum Secum River in the eastern map area. These drumlins are reddish brown to grey in color. ..re moderately stony, with a silty-sandy matrix and contain quartzite, slate, siltstone, sandstone, granite, diorite and traces of quartz. Drumlins with the grey sandy-silty matrix generally contain quartzites, slates, and granite with only a small percentage of sedimentary rocks.

Glaciofluvials

Four major areas of glaciofluvial deposits were examined, all of which are in Halifax County.

The ice sheet at the time of deglaciation in this area appears to have been quite thin, its surface conforming to the topography of the underlying bedrock. Fast flowing narrow channelled streams deposited glaciofluvials at the edge of this melting ice sheet.

Several deltas of low relief and an esker have been formed where Highway No. 7 crosses Halfway Brook. The material in the outwash or deltas is a fine sand to a medium coarse gravel and most of the rocks are under 4 inches and generally iron stained. Borrow pits expose topset and forset beds and, in places, cross-bedding. The material of which the esker is built is coarse gravel containing sub-angular to rounded pebbles-to-cobble size rocks of quartzite, slate, granite and diorite. Little of this gravel remains, as it has been excavated and used in the construction of the highway.

Deposition along Quoddy Inlet is confined primarily to the West side. Several short eskers, kames and outwashes/deltas have been formed. The material ranges from fine gravel and sand in the smaller kames to coarse gravel containing pockets of fine gravel in the larger features. This coarse material has generally been excavated.

Meltwater flowed into Necum Teuch Harbour and deposited a series of kames and outwashes/deltas along its edge and blocked the upper section thus forming Mill Lake. A steep sided esker runs down West Brook and along the southwest side of Mill Lake. The gravel is coarse, washed and sorted.

Kames in the area are numerous: small, low, hummocky hills, containing clean washed gravel and sand. The outwashes/deltas exhibit irregular form and are often pitted as the meltwater flowed off the thin ice and around detached ice masses.

The fourth area of deposition is at Smith Cove, where several kames have formed on the slopes and deltas/outwashes on the lower section which is cut by Smith Brook. The deltas/outwashes contain fine gravel, most of which has been used for road construction. Bedding within these deposits is not well defined.

Direction of Ice Movement

Glacial striae are well defined throughout the map area on the Goldenville quartzites. As the ice mass moved over the map area considerable scratching, gouging and polishing of the quartzites took place. The direction of striae ranges from 355° at Little Beaver Lake and Sober Island to 345° on the quartzites at Port Dufferin and East Quoddy.