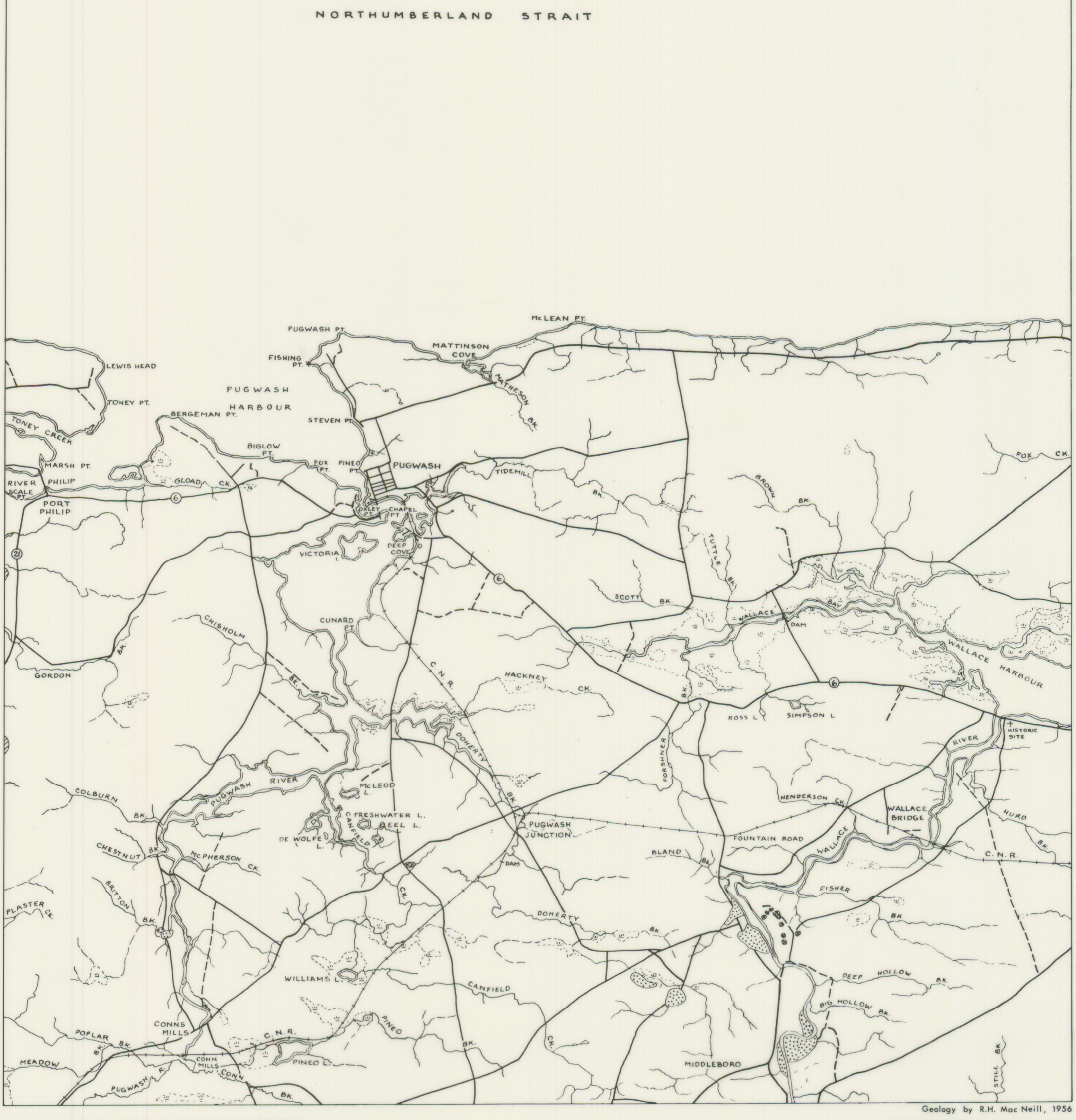
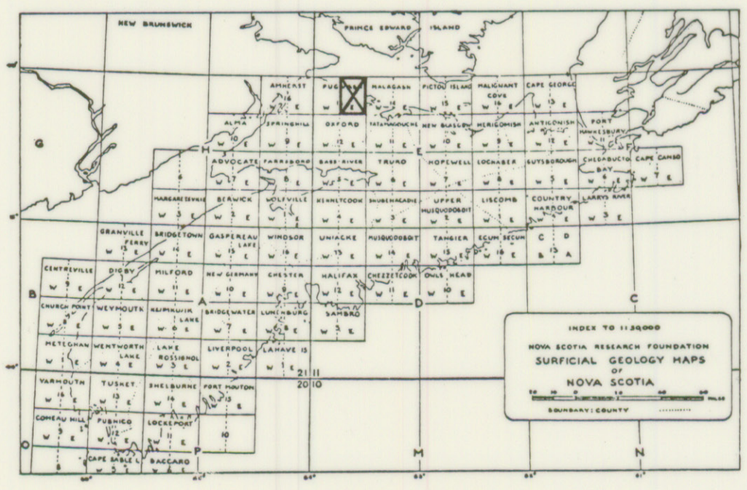


Geology by R.H. Mac Neill, 1956



PUGWASH 11E/13E

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

LEGEND

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

DESCRIPTIVE NOTES

GENERAL

The Pugwash East map area has gently rolling topography, largely a reflection of the underlying bedrock. Elevations are low, ranging from slightly over 200 feet near the southern border of the area to sea level along Northumberland Strait and the river estuaries. Drainage is into Northumberland Strait via River Philip, the Pugwash and Wallace Rivers, and Wallace Bay and Harbour.

BEDROCK GEOLOGY

Sedimentary rocks underlie the area and are divided into the Windsor Group of Mississippian age, and the Riversdale and Pictou Groups of Pennsylvanian age. The Pictou Group underlies about 10 per cent of the area and includes limestone, gypsum, anhydrite, shale, sandstone, conglomerate, and salt. The Riversdale and Pictou Groups underlie 10 to 80 per cent respectively of the area and include conglomerate, sandstone, shale, coal (minor in Riversdale), and limestone (minor in Pictou).

GLACIAL DEPOSITS

Till and Drumlins

Till is relatively thin over most of the area. An average depth to bedrock is 5 to 8 feet although this is known to vary from zero to 25 feet, as seen in coastal exposures.

The till is light to dark brown in colour, with a clay to fine sand matrix (depending mainly on the composition of the local bedrock), and containing varying amounts of locally derived sedimentary rock fragments. Compactness varies from loose and friable in the sand till to massive and tough in the clay till.

Large boulders are rare as the sedimentary rocks were rapidly abraded during transport. Erratic pebbles and the occasional cobble, including vari-coloured granite, quartz, diorite, gabbro, mafic and felsic volcanic rocks constitute less than 10 per cent of the rock fragments. Their source may have been the New Brunswick Highlands.

Bedrock essentially controls the topography. Till is generally thin (less than 10 feet) on crests of ridges but may attain greater depths (25 feet as seen in coastal exposures) on flanks of hills and in stream valleys. Several low ridges near Northumberland Strait may be drumlins but they have no preferred orientation and are now considered to be till-mantled ice-scoured bedrock hills, as are the majority of the hills in the area.

Glaciofluvials

Six areas of glaciofluvial deposits occur. In these deposits boulders and cobbles are predominantly sedimentary in type, including conglomerate, sandstone, siltstone, calystone, and shale; while up to 25 per cent (usually 1 - 15 per cent) of the pebbles are of more resistant rocks including vari-coloured granites, quartz, diorite, gabbro, mafic and felsic volcanic rocks, and porphyries. Most of the sands and gravels have a "dirty" silt and/or clay matrix, this being a reflection of the composition of the sedimentary rocks from which the silt and clay has been almost wholly derived.

A small area of silt-to-gravel outwash is exposed near the mouth of Britton Brook one mile north of Conns Mills. A small deltaic ridge of dirty, pebble gravel occurs 1.2 miles west southwest of Pugwash Junction. The four remaining areas of glaciofluvial material are within a two-mile radius of Middleboro. Two areas along Wallace River are designated valley train deltaic outwash and consist of interbedded silt-to-gravel with crossbedded lenses that indicate a northward flow of water. A delta or possibly a low moraine, with associated outwash, is located 1.5 miles northwest of Middleboro. This stratified drift deposit predominantly consists of a heterogeneous mixture of material ranging in particle size from clay, to blocks and boulders several feet in diameter. Although essentially unsorted, the material was deposited in an aqueous environment, and several lenses of stratified sand and gravel signify short periods of greater water activity. Two miles north northeast of Middleboro, on the east side of Wallace River, a group of low relief ice-contact stratified drift deposits occur including kames and a probable esker.