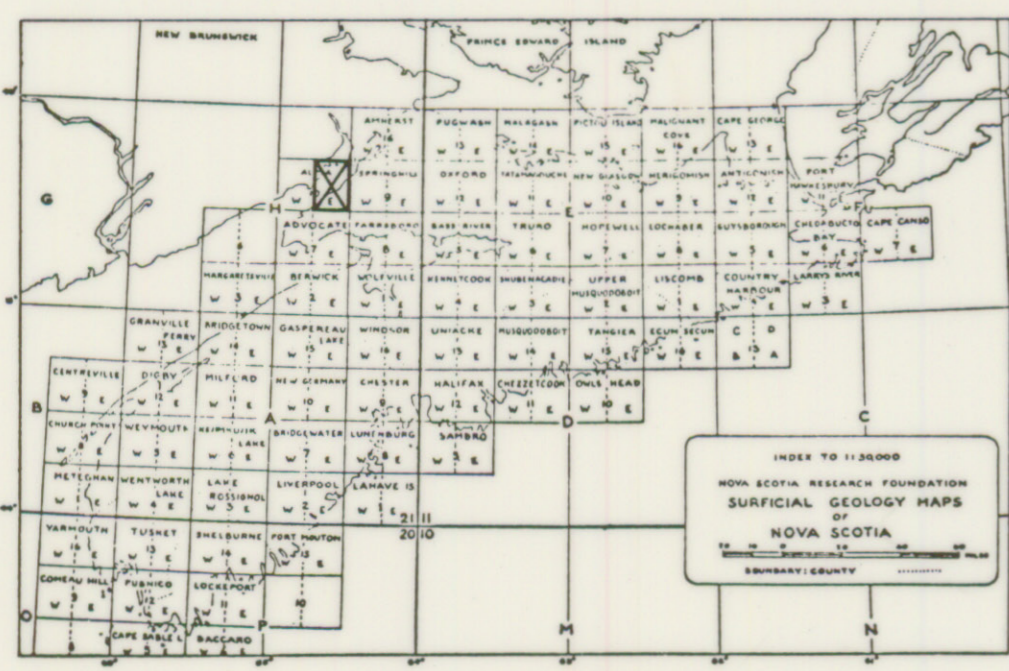


Geology by R.H. MacNeill, 1956



ALMA 21H/10E SURFICIAL GEOLOGY

SCALE 1:50,000
1.25 inches to 1 mile approximately

NOVA SCOTIA RESEARCH FOUNDATION
CORPORATION

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

DESCRIPTIVE NOTES

TOPOGRAPHY AND DRAINAGE

The Alma East map area comprises part of the western end of the Cumberland Lowland subdivision of the Gulf of St. Lawrence Plain. The area is characterized by undulating topography, aligned parallel to Chignecto Bay, with a central zone that is more level and contains extensive swamps. No elevation is above 500 feet. The sea cliffs along Chignecto Bay provide excellent exposures of bedrock and till.

Drainage is northward into Chignecto Bay and Cumberland Basin, with the exception of an area of about two square miles in the southwest corner of

TOPOGRAPHY AND DRAINAGE (cont.)

the area, where flow is south and west via the Apple River to Chignecto Bay.

Near the coast, short streams flow directly into Chignecto Bay, the northeast trending fork at the eastern end of the Bay of Fundy. However, most of the area is drained by three main streams: Shulie River, Sand River, and Mill Creek. The first two flow directly into Chignecto Bay, while the latter flows into the Bay via River Hebert and Cumberland Basin, the northeast extremity of Chignecto Bay.

BEDROCK GEOLOGY

The area is wholly underlain by Cumberland Group Rocks of Pennsylvanian age and includes predominantly red and gray conglomerate, sandstone, shale, and minor coal. Almost continuous outcrop is

PLEISTOCENE GEOLOGY

Drumlins and Till

No true drumlins occur in the area. Glacial action slightly modified the topography by rounding the hills and filling the preglacial valleys with till. However, the present topography is essentially preglacial, although possibly more subdued, as most of the smaller streams have not been able to clear their

GLACIOFLUVIALS

Deposition is recorded by glaciofluvial deposits, as kames and eskers, in the Shulie River and Mill Creek Valleys. There is ice-contact stratified drift deposits extending southward into the Fort Greville (21 H/7 East) map area, and continue down the Greville and Fox River Valleys, to merge with a terraced delta bordering Greville Bay.

GLACIOFLUVIALS (cont.)

The till is brownish-grey to grayish-brown, loosely to moderately compact, sandy, and usually rocky. Rock fragments are predominantly locally derived gray and brown sedimentary rocks. Foreign fragments comprise 2 - 3 per cent of the fragments and include vari-coloured granites, gabbro, mafic and felsic volcanics, and gabbro. Their origin may have been the highlands of New Brunswick.

ICE MASS WASTED

In the Mill Creek - Fox River Valleys, where the water divide is at an approximate elevation of 275 feet, the stratified drift is most extensive and continues intermittently as far as the delta. The Shulie - Greville Valley is devoid of stratified drift from one-half mile south and downstream of the present water divide. The Greville Valley is more narrow and constricted than the Fox River Valley. Ice retreat was more rapid and once the ice level north of the divide went below 375 feet, nourishment from the north was prevented. However, in the Fox River Valley, the divide is 100 feet lower and ice remained longer and left more extensive deposits. It is also

ICE MASS WASTED (cont.)

apparent that the optimum development of deposits occurred when ice was at an elevation of less than 300 feet, which promoted formation of stratified drift in the Mill Creek Valley. No excavations or road cuts are present in the ice-contact stratified drift, but several small pits were excavated and these revealed a dirty (silt matrix), cobbly, pebbly gravel with predominantly rounded sedimentary rock fragments. None of the deposits is being exploited as the only use would be in connection with the Chignecto Game Refuge road which does not appear to warrant a gravel surface.

ICE MOVEMENT

No striae were observed on the generally friable sedimentary bedrock but erratic pebbles and cobbles would suggest a southerly ice flow.

ICE MOVEMENT (cont.)

The present drainage divide of Shulie River - Greville River Valley is at an approximate elevation of 375 feet, and the Mill Creek - Fox River Valley divide is at an approximate elevation of 275 feet. The highest ice-contact stratified is at an approximate elevation of 400 feet and divides higher than 400 feet do not contain stratified drift. It is therefore postulated that the ice surface north of the divide was at an elevation of about 400 feet before the stratified drift began forming. As the

ICE MOVEMENT (cont.)

ice mass wasted, it first exposed the higher divide territory, and left ice tongues in the valleys that shrank northward with their debris forming the stratified drift.