

LEGEND

Uncoloured areas are drift-covered areas in which the character of the underlying rocks is uncertain

PENNSYLVANIAN	
14	Sandstone, shale, conglomerate; 14a, Morien group: sandstone, shale, conglomerate, coal
MISSISSIPPIAN	
WINDSOR GROUP	
13	Marginal basin beds: conglomerate, limestone, sandstone, gypsum, shale; includes undifferentiated Grantmire formation; 13a, Grantmire formation: conglomerate, sandstone
DEVONIAN	
12	Diorite, quartz diorite, andesite; 12a, andesite, basalt, gabbro
11	Granitic rocks; 11a, rhyolite
SILURIAN OR DEVONIAN (?)	
MIDDLE RIVER GROUP	
10	Conglomerate, arkosic sandstone
CAMBRIAN	
UPPER CAMBRIAN	
9	MacNEIL FORMATION: shale, minor limestone
MIDDLE CAMBRIAN	
5	TROUT BROOK AND MACLEAN BROOK FORMATIONS: shale, siltstone
LOWER CAMBRIAN	
4	MACCORMACK AND CANOE BROOK FORMATIONS: shale, claystone
3	MORRISON RIVER FORMATION: red sandstone, conglomerate, minor white quartzite, grey shale
FOURCHU GROUP	
2	Volcanic breccia, tuff; lavas; sandstone, shale; chlorite schist
GEORGE RIVER GROUP	
1	Hornfelsic shale, crystalline limestone
CAMBRIAN	
MIDDLE CAMBRIAN	
7, 8	7, MACMULLIN FORMATION: quartzite, shale 8, KELVIN GLEN GROUP: Siltstone, shale, sandstone, conglomeratic sandstone
BOURINOT GROUP	
6	Greywacke; volcanic tuff, breccia; lava

Rock outcrop, gypsum outcrop *
Bedding (horizontal, inclined, vertical, overturned) +
Bedding (direction of dip known, upper side of bed unknown) /
Schistosity /
Fault (defined, approximate, assumed) -
Glacial striae -
Fossil locality @
Mineral prospect or occurrence (Copper, iron, Molybdenum) X Cu, Fe, Mo

Geology by L.J. Weeks, 1944-47; Cambrian subdivisions east of Mira River by R.D. Hutchinson, 1949

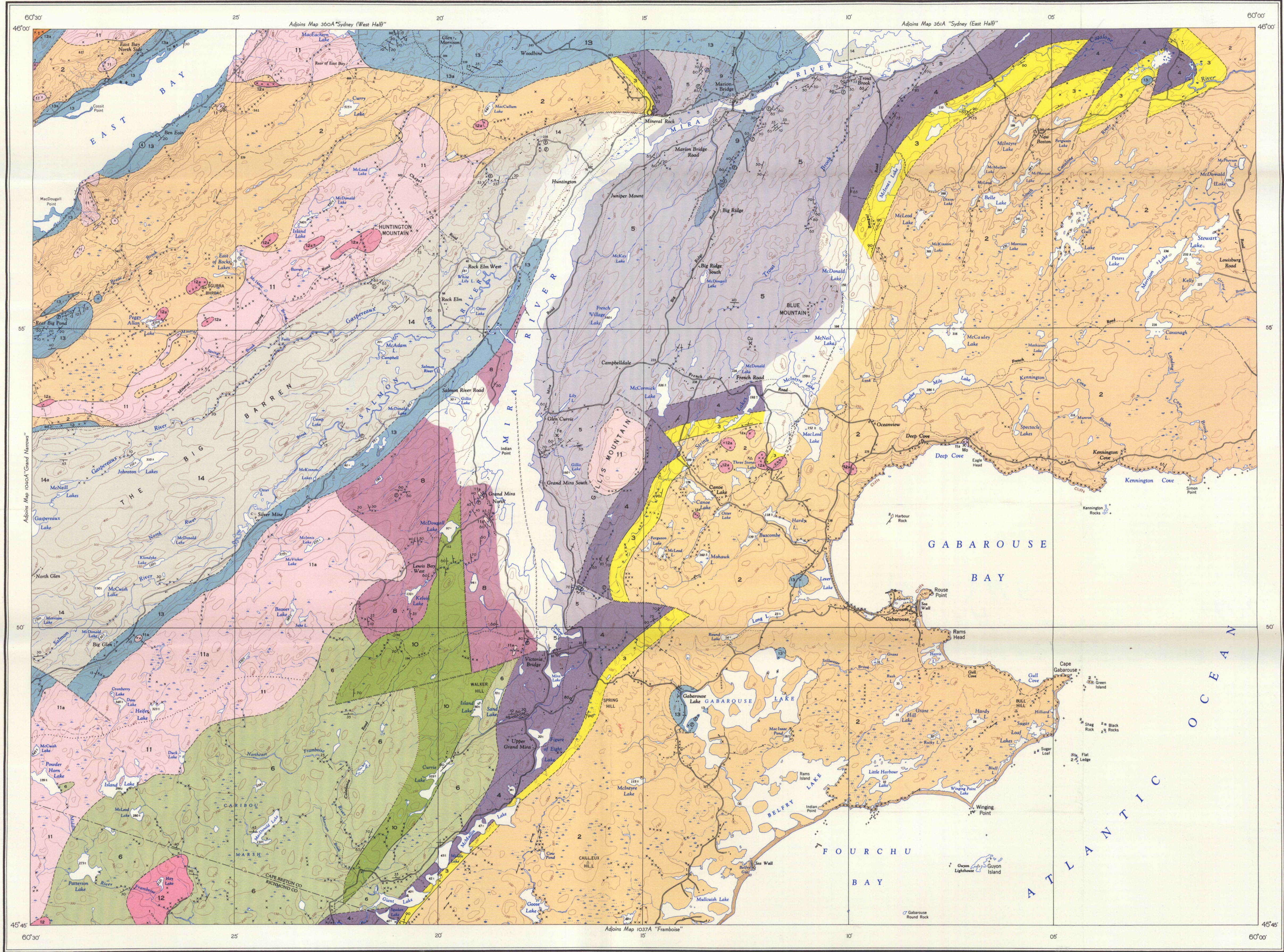
Main highway 1
Road and buildings
Road not well travelled
Cart track, trail
Power transmission line
Bridge
Church, cemetery
School
Post Office
Lighthouse
Wharf or pier
Horizontal control point
County boundary
Intermittent stream
Marsh
Sand or gravel
Rock or small island
Contours (interval 50 feet)
Height in feet above mean sea-level 100

Cartography by the Geological Cartography Unit, 1957

Base-map compiled and drawn by the Army Survey Establishment, R.C.E. Department of National Defence

Air photograph covering this map-area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario

Approximate magnetic declination, 26°03' West



DESCRIPTIVE NOTES

The area is a tilted and somewhat warped plateau that dips beneath the Atlantic Ocean on the southeast end, where underlain by resistant rocks, attains elevations of about 600 feet to the northwest. Areas of less resistant late Palaeozoic formations and certain Cambrian rocks are marked by depressions and lowlands that lie below the plateau surface.

The oldest rocks in the area, those of the George River group (1), comprise metamorphosed clastic sedimentary beds and limestone. They are probably of Archean age.
The Fourchu group (2) of volcanic and sedimentary rocks is nowhere in contact with the George River group. A late Proterozoic age is assumed for this group inasmuch as it is succeeded, with no evident break, by beds of the Morrison River formation, which is overlain conformably by fossiliferous Cambrian strata. The Fourchu rocks are less metamorphosed than those of the George River group, and such metamorphism as they have undergone appears to be dynamic rather than regional, and restricted to broad zones of considerable shearing that are probably associated with undetected faulting.

The Morrison River formation (3) is mainly a distinctive, red, micaceous, poorly sorted sandstone, which overlies a red conglomerate member and is overlain by a thin shale member succeeded by a white quartzite member. The rocks are unfossiliferous, and are considered by Hutchinson to represent the lowermost Cambrian of the district. They may equally well be, wholly or in part, of latest Proterozoic age.

The MacCormack and Canoe Brook formations (4), of Lower Cambrian age, succeed the Morrison River conformably. East of Mira River and of the assumed fault under the river, Lower Cambrian strata are succeeded by a series of fine clastic strata of Middle Cambrian age, which has been divided by Hutchinson into the Trout Brook and Maclean Brook formations (5). West of Mira River, Lower Cambrian beds are overlain by clastic rocks and lavas (6) deposited under tectonic conditions, and including relatively large thicknesses of greywacke and pyroclastic rocks. These rocks are correlated with the Bourinot group of Indian River Valley, some 10 miles northeast of this area, and which Hutchinson correlates with the lower part of the Middle Cambrian Trout Brook formation.

To the northwest of the area, rocks of the Bourinot group are succeeded by beds of the MacMullin formation (7) of clastic, non-tectonic origin, including appreciable thicknesses of conglomerate. Hutchinson correlates the MacMullin with the middle part of the Trout Brook formation. Overlying the Bourinot group west of Mira River are beds of the Middle Cambrian Kelvin Glen group (8) comprising a basal conglomeratic sandstone succeeded by siltstone and shale. On fossil evidence, rocks of this group can be ascribed only to the Middle Cambrian as a whole, and not specifically to either the MacMullin formation or to any one part of the Trout Brook formation. They are in general finer in grain than the MacMullin formation, and slightly coarser in grain than the Trout Brook, and are believed to be equivalent to the former and to the middle part of the latter.

The Maclean Brook formation is overlain disconformably by the late Upper Cambrian MacNeil formation (9) of shale, with beds of limestone.

Coarse, poorly sorted clastic rocks of the Middle River group (10) lie with angular discordance upon the Cambrian beds, indicating thereby an interval of strong folding in post-Cambrian time, probably at the close of the Ordovician Period. Middle River beds were intruded by igneous rocks, probably in early or mid-Devonian time, and consequently, are assumed to be of Silurian or, possibly, early Devonian age.

Granitic rocks (11) intrude all the pre-Mississippian formations of the map-area. The batholith southeast of Salmon River Valley is bordered on the northwest by rhyolite, which is believed to represent that part of the batholith nearest the surface at the time of intrusion. The dioritic rocks (12) and their fine-grained equivalents, together with minor gabbroic rocks (12a), are probably relatively younger than the granitic rocks and together with them are associated with the Acadian orogeny of early Devonian time.
Separated from all of the previously mentioned rocks by a great erosional unconformity are beds of the Windsor group (13) consisting mainly of a basal conglomerate and coarse sandstone, and succeeded in places by marine limestone, shale, and some gypsum. Where differentiated, the basal conglomerate is termed the Grantmire formation (13a). These Windsor beds rest only upon pre-Mississippian rocks, and nowhere upon earlier Mississippian (Horton) strata. For this reason they are referred to as marginal basin deposits to differentiate them from Windsor successions in adjacent areas, which overlie Horton strata and are designated as central basin deposits.

Pennsylvanian beds (14) occur in the so-called Salmon River basin, in which, just west of the map-area, coal has been mined. That part of the series adjacent to the coal seam has been correlated with the Morien group (14a) of the Sydney area.

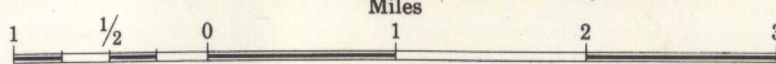
Prospecting for iron has been carried out at Grand Mira South about 1/2 mile south of the road from Glen Currie to Campbelldale. Hematite and magnetite have replaced Cambrian shale beds, resulting in a ferruginous zone about 3 feet wide, which has been exposed in two or three pits.

A shaft was sunk some years ago on a showing of copper minerals in Cambrian shale about 1/2 mile north of French Road. Flakes of molybdenite are visible in narrow quartz stringers cutting rhyolitic granite at Deep Cove on Gabarouse Bay.

¹Hutchinson, R.D.: The Stratigraphy and Trilobite Faunas of the Cambrian Sedimentary Rocks of Cape Breton Island, Nova Scotia; Geol. Surv. Canada, Mem. 253, 1952.

MAP 1056A
MIRA
CAPE BRETON AND RICHMOND COUNTIES
CAPE BRETON ISLAND
NOVA SCOTIA

Scale: One Inch to One Mile = $\frac{1}{63,360}$



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