

The Port Hood - Lake Ainslie map-area was first mapped by Norman (1935) and has most recently been addressed by Lynch et al. (1993). In the latter work, geology of the Carboniferous rocks was largely compiled from Norman. The present mapping complements that of Lynch et al. and updates the understanding of the Carboniferous rocks, their stratigraphic relationships and their structural history. That part of the map-area lying within NTS map 11F/13 south of Little Judique Harbour has never been mapped previously.

In the northeastern corner of the Port Hood Lake Ainslie map—area, and in the Mabou Highlands between Mabou Harbour and Inverness, pre- Late Devonian rocks comprising metasedimentary, volcanic, and a variety of associated plutonic rocks, were mapped by Lynch et al. (1993). They range in age from Hadrynian (?) to Devonian. We have compiled these areas directly from Lynch et al., and have not examined them in the present mapping. In the extreme southeastern corner of the map—area, a small triangular wedge of Proterozoic metasedimentary and volcanic rock is inferred from relationships exposed on NTS Sheet 11F14, mapped by Lynch and Brisson (1995). No

exposures of these rocks are known in our map—area. A major fault is believed to separate these rocks from the

Late Devonian and Carboniferous Stratigraphy

Pre- Late Devonian Rocks

Carboniterous succession.

Fisset Brook Formation The first record of post-Acadian sedimentation in western Cape Breton Island is provided by basalts, rhyolites and associated sedimentary rocks of the Fisset Brook Formation (Mackasey, 1963). The Fisset Brook ranges in thickness from 300-500m, and is late Devonian to earliest Carboniferous in age (Blanchard et al., 1984). Amygdaloidal and vesicular basalts are characteristic of the Fisset Brook. Rhylolites may be porphyritic or flow-banded, purplish to deep reddish-orange in colour, and are much less common than basaltic rocks. Small gabbroic bodies cut the stratified rocks of the Fisset Brook Formation east of Lake Ainslie (Arnott, 1994). Recent geological mapping east of Lake Ainslie by Arnott (1994) has revealed a significant conglomeratic unit low in the Fisset Brook in that area. This conglomerate is typically quartz—rich with abundant clasts of well—indurated red siltstone of uncertain origin. Sedimentary rocks higher in the succession are typically fine to medium-grained sandstones, deep reddish brown in colour. Neither the base or the top of the formation has been seen in the Port Hood — Lake Ainslie map—area.

Lynch and Brisson (1995) separated the Tournaisian Horton Group into a lower Creignish Formation, a medial Strathlorne Formation and a highest unit termed the Ainslie Formation, mapping in the area to the south of the present map—area. We have followed this subdivision with with modification where appropriate. The Creignish Formation is typified by coarse—grained rocks ranging from polymictic cobble conglomerates to pebbly sandstones. Orange clasts of orthoclase feldspar are typical and abundant in the matrix of the conglomerate facies and in the associated sandstones. Rarely, intraformational clasts of gray siltstone are found at the base of conglomeratic units. In the upper part of the Creignish Formation, fine-grained red sandstones and siltstones dominate the succession, particularly well illustrated in the southern parts of the map area on Mirimichi Brook. The thickness of the Creignish Formation exceeds 1000 metres.

At the top of the Creignish Formation, gray and brown arkosic and quartz-rich sandstones, some of which are highly micaceous, define the Judique facies. Thin sandy grey siltstones are sometimes intercalated with sandstones of this facies in repeated fining-upwards fluviatile cycles. Gray siltstones and shales of the Strathlorne Formation overly the Creignish Formation. The contact is abrupt and is apparently a horizon of preferrential deformation, demonstrated by brecciation and intense small-scale folding of basal Strathlorne shales where seen in exposures on Mirimichi Brook. Similar contacts have been observed as far north as Cheticamp and to the southwest in the bed of the Southwest Mabou River, indicating that deformation may be regionally typical at this stratigraphic level. Within the Strathlorne Formation, quartz-rich gray sandstones may dominate intervals up to 15 metres in thickness. These thicker beds may represent the deposits of lacustrine deltas. Thin limestones with cone-in-cone structure occur sporadically in the lower part of the Strathlorne Formation, interbedded with gray shale. Near the top of the formation, thin beds of finely oolitic and stromatolitic limestone, commonly biohermal, occur. At Northeast Mabou, one of the Strathlorne bioherms has been drilled, showing a total thickness of more than 30 metres. The Strathlorne Formation ranges in thickness from approximately 100 metres in the northern parts of the map-area, to over 250 metres in exposures on Mirimichi Brook. The formation is apparently

The Ainslie Formation is characterized by fine-grained gray-green and pale reddish-gray sandstones separated by red-brown siltstones representing a range of fluviatile environments. Sandstones are typically quartz-rich. At Northeast Mabou, the Ainslie Formation is comprised mainly of pebbly. highly calcareous pebbly sandstone and fine conglomerate, mainly gray and gray—green in colour. The thickness of the Ainslie Formation reaches a maximum of more than 500 metres in the southern parts of the map-area, but diminishes locally to less than one metre and in some areas may be absent entirely. In part, this variation in thickness may be caused by lateral facies variation with gray shales of the underlying Strathlorne Formation. In local areas, the Windsor Group is unconformable on the underlying Horton Group, and the thinning of the Ainslie Formation may reflect erosion of the top-most Horton Group strata beneath this unconformity.

transitional upwards into the Ainslie Formation, although observed contacts are faults.

At the base of the Windsor Group, the regionally distinctive Macumber Formation can be traced in surface exposure throughout the map—area where it is typically concordant on underlying Horton Group strata. Exposures at Mabou Mines show that the Macumber may lie locally on older Horton strata with angular unconformity. The Macumber limestone is typically laminated, peloidal near the base, rarely fossiliferous, and ranges in thickness from a few metre to more than 20 metres. At its top, paper-thin laminations in the limestone may represent the product of intense shear deformation. Lynch and Giles (in press) have described a variety of strain features at the level of the top-Macumber, the most significant of which is a calc-mylonite. The latter documents the trace of a bedding-parallel fault which has been termed the Ainslie Detachment. Deformed rocks along the trace of this detachment surface mimic stratigraphic units, but are clearly tectonic in origin. Above the detachment, strata range in age from younger Windsor Group (Visean) to Mabou Group (Visean-Namurian).

Above the Macumber Formation, regional stratigraphic study predicts up to 400 metres of relatively pure anhydrite in the complete Windsor Group succession. In western Cape Breton Island, thick gypsum deposits appear to overlie the Macumber Formation near Mabou Harbour mouth and at Mabou Mines although contacts are not exposed. These evaporite units contrast with those higher in the Windsor Group in lacking intercalated fossiliferous marine carbonate rocks, and are interpreted as the lowest major evaporite interval in the Windsor Group, lying immediately above the Macumber Formation. In both of these areas, the upper contact of these thick gypsum deposits is faulted against

In typical complete Windsor Group successions elsewhere in Nova Scotia, the main lower sulphate unit is overlain by substantial salt deposits which may be represented in parts of the present map-area in the sub-surface. Drilling has revealed thick salt deposits in the vicinity of Southwest Mabou (Boehner, 1982; Howie, 1985). These salt bodies are known only from drill cuttings. Geophysical logs are not available, and the stratigraphic position and lithostratigraph character of these salt horizons are poorly constrained. Present mapping shows them to underlie upper Windsor beds but cannot further refine the stratigraphic interpretation. Severe deformation in Windsor beds exposed at surface in the same vicinity may attest to active salt diapirism, or may reflect movement on listric faults associated with the

Middle Windsor Group beds are well exposed on Port Hood Island but are severely deformed, limiting their stratigraphic utility. At least four discrete carbonate members can be seen in association with nodular gypsum and minor red and green siltstone. A steeply dipping fault separates these strata from beds of the Hood Island Formation which forms the most northerly part of Port Hood Island. Similarly, a fault juxtaposes Middle Windsor beds against rocks of Westphalian age to the south on Port Hood Island. Carbonate rocks of the Middle Windsor exposed on Port Hood Island are variably micritic, dominated by various algal rock types, and are only sparsely fossiliferous. Facing directions can be determined in several instances by the superpositional order siltstone — carbonate rock — gypsum. In the Mull River syncline, Middle Windsor beds are represented by intercalated thin marine limestones and dolostones and fine-grained red siltstones. The carbonate rocks are in part biohermal, but more typically thin to medium-bedded, earthy, and cavernous, modified significantly by post-depositional karstic processes. Jpper Windsor Group beds on Port Hood Island are assigned to the Hood Island Formation (Boehner and Giles, 1982). Exposures on the north shore stretching easterly from Point Vertical comprise the type section of the Hood

Island Formation, and provide a principal reference section for the upper part of the Windsor Group in western Cape Breton Island. Although faulted at the base and therefore incomplete, the Port Hood Island exposures record almost 700m of the Late Visean succession, volumetrically dominated by red siltstones and fine—grained sandstones but typified by intercalated marine bands, each overlain by gypsum in beds up to 10m in thickness. The thickest marine carbonate (15m) in the succession lies at the top and was designated the E1 limestone by Stacey (1953). Distinctive features of the E1 include the presence of a thin oolitic limestone bearing Schizodus sp. at the base of the member, the thickly bedded, dolomitic character of the remainder of the member, and the presence of rugose and tabulate corals at the approximate mid-point of the carbonate interval at several localities including the section at Port Hood Island. South of Little Judique Harbour on map-sheet 11F/13, the Hood Island Formation is totally exposed but thins dramatically to approximately 100 metres.

conformable with highest marine beds of the Hood Island Formation of the Windsor Group, where normal contact relationships are preserved. More commonly, lowermost Mabou Group strata are tectonically juxtaposed on Windsor Group strata across the Ainslie Detachment (Lynch and Giles, in press) with significant stratigraphic omission at the

The Hastings Formation, named by Belt (1964), is characterized by abundant gray shales and siltstones with minor red shales and thin sandstone intercalations. Diagnostic rocks include tan—weathering thin siltstone beds associated with dark gray shales in the lower part of the Hastings Formation, and relatively abundant beds of laminated stromatolitic limestone. Limestone grainstones, many of Which are oolitic, have been noted in the Hastings Formation but are typically less than 20 cm in thickness. A sparse fauna including rare bivalves, ostracods and serpulids indicate deposition in a lacustrine environment subject to possible occassional marine influence. Red sandstones and siltstones form a significant component of the Hastings Formation and can be mapped as informal subdivisions in the Port Hood - Lake Ainslie map area. These strata were formerly considered to be tongues

of the overlying Pomquet Formation and were assigned formally to that formation by Belt (1964). This practice resulted in the local superposition of Hastings Formation gray shales over red siltstones of the Pomquet Formation, an inversion of stratigraphic order. Although we concur with Belt's interpretation of intertonguing relationships, we have assigned these red tongues to the Hastings Formation. Our top-Hastings Formation is placed at the top of the highest significant gray interval in the Mabou Group. Pomquet Formation

The Pomquet Formation consists of red-brown siltstone, shale and sandstone. Coarse-grained beds are limited to conglomerate lag deposits at and near the base of several thicker sandstone bodies within the Pomquet Formation. Clasts are predominantly small nodules of pedogenic carbonate derived presumeably from underlying red fine-grained strata. Occassional rip-up clasts of shale occur at the base of many sandstone beds. Sandstone beds are most typically less than 1 metre in thickness, exceptionally 3-4 metres. Ripple marks are abundant throughout the formation, and are spectacular in the sandstones. Finely commuted plant debris is locally preserved, but is not abundant. Calcretes occur at several stratigraphic levels in nodular zones 10—50 cm in thickness.

Cumberland Group Port Hood Formation

The Port Hood Formation is the lowest lithostratigraphic unit of the Cumberland Group in western Cape Breton Island. Characterized by thick multi-storied gray channel sandstones, rich in plant debris, the Port Hood Formation has been subdivided into two members. The lowest, termed the Margaree Member and reaching more than 2000 metres in thickness, is dominated by red fine-grained strata intercalated with thick channel sandstone bodies. Thin beds of dark gray shale have been noted within red fine-grained portions of the succession, but are more typical of the overlying Colindale Member. The latter, first recognized informally but not named by Norman (1935), is characterized by abundant gray to black shales, many of which are rich in small bi-valves. Bituminous shales are found throughout the member and indicate possible petroleum source rock potential for this part of the Cumberland Group. Channel sandstones similar to those of the underlying Margaree Member occur throughout the Colindale Member as well. coal seams occur in the Port Hood coalfield at this stratigraphic level and have been mined historically. The Colindale Member exceeds 700 metres in thickness in the Port Hood – Lake Ainslie map—area. Henry Island Formation

Beds exposed on Port Hood and Henry Islands are here assigned to the Henry Island Formation. A minimum thickness for this formation is estimated at 650 metres. Norman (1935) assigned these beds to the Inverness Formation, but they are significantly different from the type Inverness Formation and are also entirely older, and are therefore not correlative with the Inverness Formation. The Henry Island Formation is characterized by a return to red fine-grained strata with thick channel sandstone bodies, much like the Margaree Member of the Port Hood Formation It is significant that grain size in significantly coarser in the Henry Island Formation sandstones, in which thin lensoidal beds of pebbly sandstone and even fine-grained polymictic conglomerate occur. In this aspect, the Henry Island Formation is similar to beds of Norman's Inverness Formation where pebbly sandstones are relatively common. The assignment of these beds to a new formation (as opposed to an expanded Inverness Formation) is supported by biostratigraphic research in progress.

The type area for the Inverness Formation is located in the vicinity of Inverness. West of Inverness at Port Ban basal Inverness Formation beds lie unconformably on pre-Carboniferous rocks of the Mabou Highlands. Where these beds extend easterly over older Carboniferous rocks, map patterns and meagre subsurface data show that the Inverness Formation is unconformable on both the Horton and Windsor Groups. By inference, the relationship between the Inverness and Port Hood Formations also seems likely to be represented by this same unconformity. In the Port Hood area, we do not recognize strata equivalent to the type Inverness Formation and contact relationships cannot be determined. Palynological dating of the Port Ban section yields ages of Westphalian D - Stephanian (Dolby, unpublished reports to the Magdalen Basin NATMAP Project 1993—95; samples submitted by P. S. Giles). The thickness of the Inverness Formation exceeds 500 metres.

Lithologically, the Inverness Formation in its type area comprises pebbly sandstones and coarse-grained sandstones, typically arkosic, deposited in thick, (12–30 metres) multistoried bodies. Gray and lessor red-brown overbank deposits become increasingly common upsection, and economically important coal seams were mined historically beneath the

In the vicinity of Mabou Mines, fault-bound exposures of Inverness Formation occur on the coast. There, overbank fines are gray in colour, and the thickness of the associated channel sandstone bodies as great as 50 metres (Gibling et al, 1994). Several coal seams are exposed on the shore at Mabou Mines and supported historical mining operations. Between Port Ban and Mabou Mines, additional exposures of Inverness Formation can be seen at McKinnon's Brook. There, beds are closely comparable to the Port Ban exposures, but lie on a small erosional remnant of basal Windsor Group limestone as well as on pre-Carboniferous rocks.

al, (1991). According to those authors, the Cumberland Group is typified by gray sandstones, gray and lessor red shales, and by the presence of coals. Norman (1935) and subsequent Carboniferous workers have assigned the Inverness Formation to the overlying Pictou Group, perhaps because of its latest Westphalian age. The Pictou Group is, in contrast to the Cumberland, characterized by abundant red colours in the fine-grained portions of the succession. Assignment of the Inverness Formation to the Cumberland Group places its basal unconformity within the Group, but otherwise is consistent with regional stratigraphic practice. In the Port Hood - Lake Ainslie map-area, the Inverness Formation is the youngest Carboniferous rock unit exposed. It is apparently overlain by the Broad Cove Formation of Norman (1935), a distinctive brick-red succession of sandstone, pebbly sandstone and fine—grained conglomerate which is exposed on the shore north of Inverness on the

adjacent 11K/06 map-area (Giles et al., 1997). No contact relationships can be seen, although the Inverness and Broad Cove Formations are concordant and quite possibly conformable. The Broad Cove Formation cannot be dated biostratigraphically, although it must be Stephanian or younger (? Permian) given its stratigraphic position

Assignment of the Inverness Formation to the Cumberland Group follows the definition recommended of Ryan et

Durling et al, (1994) postulated that the Hollow Fault system could be traced using reflection seismic data across the northern limits of St. Georges Bay. These authors noted that the fault or fault system should come ashore west of Mabou Harbour where a major fault had been mapped by Norman (1935), substantiated by the present work. We have applied the term Hollow Fault system to that series of northeasterly-trending faults extending from the Colindale — Mabou Harbour area northeasterly to Margaree Centre and beyond in the Margaree map—area (Giles et al., 1996). Within the Hollow Fault system, we have applied a series of names to those faults deemed most significant for ease of

description and more ready reference. Where the fault system is exposed west of Mabou Harbour, the Colindale Fault juxtaposes highest Windsor strata against strata of the lower part of the Port Hood Formation. The latter exhibits relatively minor deformation confined mainly to fractures in close proximity to the master fault. The Windsor Group, conversely, shows relatively intense deformation expressed in tight, close to isoclinal folding and brecciation of more competent carbonate beds. This variance in intensity of deformation may reflect in part the common presence of gypsum in the Windsor, and a tendency for more plastic response to stresses generated by fault movements. Because the fault system is acutely oblique to the shore west of Mabou Harbour, folding of the Windsor Group is pervasive for more than one kilometre to the northeast from the point where the fault is exposed on the shore. Measured perpendicular to the fault trace, this folding effectively dies out in less than three hundred metres, where the Windsor strata show only minor open folds

To the northeast along the trace of the Colindale fault, parallel and sub-parallel splays appear and may take on considerable significance in the overall history of the fault system. These splays become more and more numerous towards the northeast where as many as four sub-parallel faults cut the Gillis Brook dome. The most northwesterly splay of the system is identified as the Glenville Fault, passing to the northeast into the Timmons- Coulavee Fault of Cameron (1948) in the Margaree map-area.

Many of the large northeasterly-trending faults in Nova Scotia have been interpreted as wrench faults. The Cobequid-Hollow Fault System has been shown to be a dextral wrench, movement on which was responsible for development of the Carboniferous Stellarton Graben as a small pull-apart basin (Yeo and Gao, 1987; Waldron et al., 1995) Relationships within the Port Hood - Lake Ainslie map-area in western Cape Breton, while not unambiguous, suggest that movement on any single strand of the Hollow fault system was not great, and that vertical movements could as easily account for present field relationships. This is particularly evident in examination of the Gillis Brook domai structure, cut by at least four strands of the Hollow Fault system, and yet remaining largely intact as a recognizable dome. On the other hand, the Glendyer - Big Brook strand of the Hollow Fault system, might accommodate a possible large wrench offset, as it fails to cut the Horton domal structures and juxtaposes differing structures and rock units along its trace. Present data do not provide a means to interpret unequivocal movement sense for this fault strand. Northwesterly trending faults have also been noted in the map—area. The Inverness fault (Norman, 1935) dips easterly at angles ranging between 60 and 75 degrees where it is exposed on the coast north of Inverness. It is interpreted as a high—angle reverse fault, juxtaposing Hood Island Formation (Late Visean) rocks over the Broad Cove Formation (? Permian)to the west. To the south, in our map area, the Inverness Fault can no longer be shown to be a reverse fault by virtue of stratigraphic relationships, although it is believed to maintain that character

Ainslie Detachment

In the Margaree map—area and in contiguous areas to the south and east, Windsor Group stratigraphy is complicated by large stratigraphic gaps within which significant portions of the normal succession are absent. At the top of the Macumber Formation, a zone of intense shear marks the trace of a major extensional detachment fault termed the Ainslie Detachment by Lynch and Giles (1995). This detachment has been mapped throughout the map—area as a bedding-parallel fault separating the underlying Macumber Formation from rock units ranging from the middle portion of the Windsor Group to Pomquet Formation (Mabou Group). In the Port Hood - Mabou map-area to the south. associated listric faults and smaller detachment faults occur within the Windsor Group and commonly separate partial sections of Windsor Group rocks but do not cause fault repetition of these strata.

Several contrasting styles of folded structure occur in Carboniferous strata of the Port Hood - Lake Ainslie map-area. Large anticlinal domes are exemplified by the Rankinville, Mount Young, Melrose Hill and Gillis Brook Domes. These features are defined by Horton Group beds, capped in each case by the thin but regionally distinctive Macumber Formation. Within the domes, typically in close association with northeasterly-trending faults, are tightly folded synclinal keels of Macumber Formation. More commonly, these folded keels of Macumber limestone are restricted to the outer perimeter of the domes where crossed by northeast faults. Commonly, attitudes in the outer perimetre of the domes steepen noticably, suggesting that hidden, deep-seated normal faults may define the boundaries of the domes. We believe that these domal structures in large part owe their origin to differential compaction over pre-existing 'basement' features. The Mabou Highlands probably represent an analogous, albeit larger dome, exhumed sufficiently to reveal its pre-Carboniferous core.

Southwest of Lake Ainslie, extending from Centreville to the Indian River area and beyond, a prominant anticlinal structure is defined by Horton Group strata. This fold plunges at moderate angles towards the north and northeast, and is cut by several northeasterly trending faults with moderate apparently dextral (wrench) displacements. South of the map—area, Lynch et al. (1995) have mapped a north—facing projection of pre—Carboniferous rocks of the Creignish Hills, which forms the geometric core of this anticline. Like the large domal structures, this anticline seems to reflect a basement topographic feature and may have been initiated largely as a compaction feature over a

A prominant synclinal structure affecting Horton and Windsor Group strata is the Mull River Syncline, following the distinguished by its asymmetrical, south-verging geometry, and by its association on its north limb, with a high-angle reverse fault. Upper Windsor strata form the core of the syncline. Another large synclinal fold, in this case symmetrical with gentle dips, occurs in the south Skye River area. Like the Mull River Syncline, it is generally east-northeasterly in trend and affects both Horton and Windsor Group strata at surface. In the Southwest Mabou area, Norman mapped a tight anticlinal structure defined by Windsor Group strata and

extending northeasterly as far as Mabou Harbour. Drilling in this structure has shown the presence of rock salt in possible diapiric structures (Boehner, 1986: Howie, 1988). Traced to the southwest, this fold passes upwards into the Hastings and Port Hood Formations. Attitudes on the fold limbs locally exceed 50 degrees in dip, flattening rapidly away from the crest of the fold.

systems bearing significant galena cut the Macumber Formation in the bed of Macphails Brook. Drilling has shown

that this vein system has reasonable lateral extent, although no significant tonnages of metal have been proven.

Above the base of the Windsor Group, indications of metallic mineralization are limited to occassional showings of

potential for base-metal concentrations of economic importance.

St. George's Bay to the southwest are suggested.

J. Hayes and W. Palmer at that facility.

maps through critical review which is gratefully acknowledged.

the larger deposits east of Lake Ainslie, and warrant further investigation.

copper indicated by malachite staining in Upper Windsor limestones. These occurrences presumeably document the

ability of carbonate rocks of the Upper Windsor Group to chemically trap metal ions, but have not demonstrated strong

Barite and fluorite have been mined near the north end of Lake Ainslie. This area is currently under investigation by

A. MacDonald for the Geological Survey of Canada, and we have not attempted to assess this mineralization in detail. ignificantly, we have noted a number of occurrences of fluorite and/or barite on the perimeter of several Horton

Group domal structures, including Carboniferous beds fringing the Mabou Highlands. These occurrences are each

of this sort, although small, provide a broad indication of barite/fluorite mineralization in the map area similar to

The fossil fuel potential of the Port Hood - Lake Ainslie map-area has been the subject of considerable interest.

domal structure in the south-central part of the map-area. No significant petroleum was encountered. At higher stratigraphic levels, bituminuous shales in the middle member of the Port Hood Formation may indicate significant

Field assistance was capably provided by A. Arnott, B. Creaser and R. Brown. The authors have benefitted from

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Similarly, A. MacDonald permitted us to incorporate his current mapping in the area immediately east of Lake Ainslie.

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source-rock potential. This potential would have little direct impact on the Port Hood - Laké Ainslie area, since the source rocks are exposed at surface. However, fossil fuel possibilities in the adjacent Gulf of St. Lawrence and in

Drilling for petroleum on the western shores of Lake Ainslie is of historic interest, and pursued outcropping oil—soaked

sandstones of the upper Horton Group without commercial success. A series of petroleum wells were drilled in the

Southwest Mabou area, again without success. Most recently, the Mull River No. 1 well was drilled on a Horton Group

associated with calcite vein systems cutting uppermost Horton Group and basal Windsor Group strata. Occurrences

In the Port Hood — Lake Ainslie map—area, past mineral production includes coal at Port Hood, Mabou Mines and Inverness, gypsum in the vicinity of Mabou Harbour mouth, and barite east of Lake Ainslie. No mines are operating at present. Coal resources at Port Hood are largely exhausted, and at Mabou Mines and Inverness, large known coal reserves are known only beneath the waters of the Gulf of St. Lawrence where major faults and associated structural complexities prevent their exploitation (Hacquebard et al.,1989). Potential large tonnages of gypsum within the Windsor Group are well known but their use is hindered by a lack of readily available year—round transportation. Small tonnages of high—calcium limestone in the Middle Windsor Group are locally available. Exposures west of the Southwest Margaree River 4 km north of Lake Ainslie warrant further testing. Base metal occurrences have been noted throughout the map area, although they are small showings and mainly of interest only in showing the potential of Carboniferous rocks to host these metals. East of Lake Ainslie, calcite vein

In western Cape Breton Island, two formations comprise the Mabou Group. At the base, the Hastings Formation is

The oldest strata of the Mabou Group are of Visean age (Utting, 1987), and the youngest beds range into the Namurian B in the Port Hood — Lake Ainslie map area (Dolby, unpublished reports to the Magdalen Basin NATMAP Project, samples submitted by P. S. Giles, 1993-1995). The top of the group is marked by a regionally significant unconformity at which mid-Namurian strata are apparently missing. The Mabou Group is overlain by Late Namurian to Westphalian A beds of the Port Hood Formation.

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