

GEOLOGICAL SERIES

SHEET 21 1/2 (West Half)

LEGEND

- CARBONIFEROUS**
- PENNSYLVANIAN**  
PICTOU GROUP (4-8)
- 8 Purple-red trachyte, quartz porphyry
  - 7 SUNBURY CREEK FORMATION: grey and red sandstone, conglomerate and shale; 7A, grey sandstone and quartz conglomerate; 7B, grey, brown weathering sandstone, grey, commonly carbonaceous, siltstone, and shale; coal; 7C, pinkish grey to green sandstone, pebbly sandstone, and conglomerate
  - 6 HURLEY CREEK FORMATION: purple-red, locally green, sandstone, shale, and siltstone, reddish grey, gritty sandstone and conglomerate
  - 5A MINTO FORMATION (Upper Part): buff sandstone and pebbly sandstone, commonly carbonaceous and with iron sulphide concretions, light grey siltstone and shale; 5A, coal
  - 4 MINTO FORMATION (Lower Part): grey-buff quartzose sandstone, pebbly sandstone, and conglomerate
- PENNSYLVANIAN OR (?) EARLIER**  
PRE-PICTOU (1, 2, 3)
- 3 Mainly basalt to andesite: purple-grey, dense, locally porphyritic or amygdaloidal lava
  - 2 NEWCASTLE CREEK FORMATION: quartz conglomerate, ironstone, chert, purplish red shale
- PRE-CARBONIFEROUS**
- 1 COAL CREEK FORMATION: green pyritic phyllite and foliated sandstone, with many quartz veins

- Area covered by sand and gravel
- Rock outcrop
- Bedding (inclined, vertical)
- Coal outcrop (natural or in prospect)
- Slope, adit (Note: shafts are too numerous to be shown)
- Stripped area
- Approximate position of corner of provincial mining block
- Bore-hole

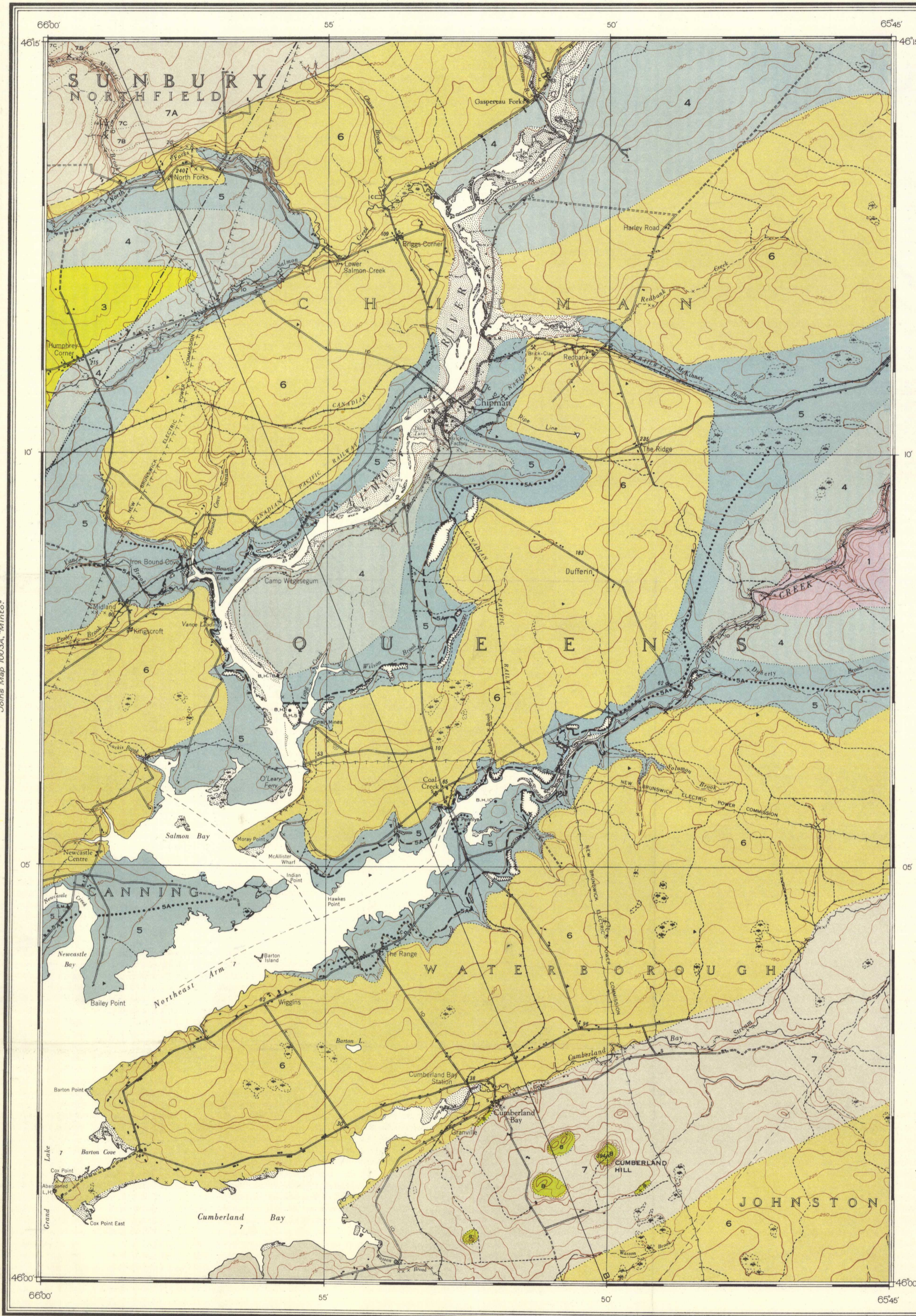
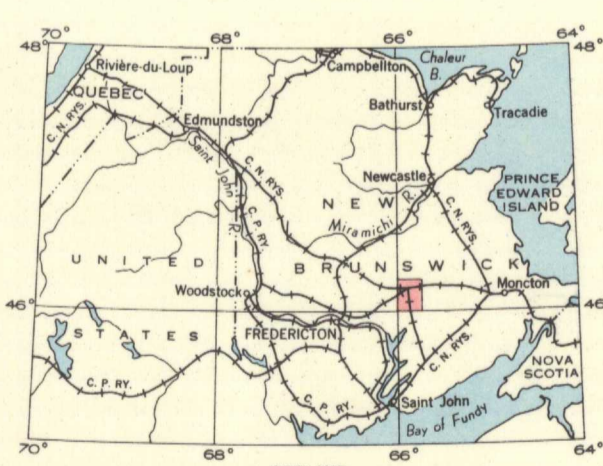
Geology by J. E. Muller, 1948

Cartography by the Geological Mapping Division, 1950

- Provincial highway
- Road and buildings
- Road not well travelled
- Trail
- Power line (on steel towers, on wooden poles)
- Triangulation station
- Survey monument
- County boundary
- Parish boundary
- Church
- School
- Post Office
- Sawmill
- Water tank
- Oil tank
- Cemetery
- Intermittent stream
- Marsh
- Contours (interval 25 feet)
- Depression contour
- Height in feet above mean sea-level

Base-map surveyed by the Topographical Survey and by the Army Survey Establishment in 1947 and 1948, Compiled by the Topographical Survey and the Army Survey Establishment in 1949, from air photographs taken in 1944 and 1945, by the Royal Canadian Air Force

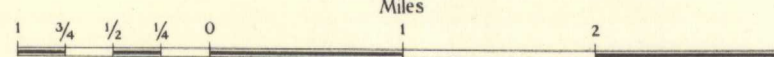
Approximate magnetic declination, 22° 37' West



PUBLISHED 1951, SUPERSEDES PUBLICATION NO. 2107, CHIPMAN (WEST HALF)

MAP 1004A  
CHIPMAN  
NEW BRUNSWICK

Scale: One Inch to One Mile = 1/63,360 Miles



DESCRIPTIVE NOTES

The map-area is part of a low, rolling plain, with small streams that have not been incised more than 150 feet below the general surface. Elevations range from sea-level in the southwest (Grand Lake) to 400 feet in the northwest. Although the Pennsylvanian formations are gently folded, their northeasterly trend is clearly expressed in the general direction of peninsulas and inlets of Grand Lake and some low ridges of harder sandstone.

The COAL CREEK formation (1) is a complex of folded, dark green phyllites and foliated sandstones. It contains many quartz veins, which are up to 1 foot thick and generally parallel the strike of enclosing strata. These beds are well exposed for 3 miles in the channel of Coal Creek and some of its tributaries. They strike generally about north 60 degrees east and are vertical. Near their exposed contact with Pennsylvanian strata they are cut by a dyke of pinkish grey orthoclase porphyry.

The NEWCASTLE CREEK formation (2) is much thinner in the Chipman area than in the adjoining Minto area, and does not carry large boulders as in the type locality. On Salmon River, 1 1/2 miles downstream from Chipman, beds of angular quartz-conglomerate with fragments up to 1 inch in diameter are the lowest beds exposed. This rock grades into soft, crumbly ironstone, overlain by 4 feet of greenish grey chert with indefinite columnar jointing. In these exposures the Newcastle Creek beds are directly overlain by the Minto formation, as the lava that separates them in the Minto area is missing. However, this flow extends into the northwestern part of Chipman map-area, as indicated by the occurrence of many loose fragments and by anomalies observed with a magnetometer. On Coal Creek, both the Newcastle Creek formation and the lava are missing, and the Coal Creek pre-Carboniferous schist is directly overlain by green sandstone and red-brown shale, probably representing the basal part of the Minto formation.

The lower part of the MINTO formation (4) consists of grey fine and coarse sandstone and conglomerate, of which the main constituents are rounded pebbles of quartz and quartzite. Crossbedding is conspicuous in many places and commonly obscures the real dip of the strata, which is generally flat. Outcrops of the lower beds of the Minto formation occur characteristically in cliffs at the top of the stream banks, below which the slopes are covered with sandstone slabs. The formation is well exposed on Salmon River, near Iron Bound Cove.

The upper part of the MINTO formation (5) has no sharp boundary with the lower beds. The sandstone of this division is marked by the presence of marcasite or pyrite concretions. Stems of *Calamites* several feet long lie on the bedding planes. Good outcrops of this sandstone occur on the shore of Grand Lake. The sandstone grades upwards into grey, thin-bedded to massive siltstone and shale, with fine carbonaceous material forming black coatings on the bedding planes. The only workable coal seam in the area (5A) occurs in these shales. Well-preserved plants in the roof shales of the seam indicate a late Pennsylvanian (Pictou) age. The coal is generally underlain by about a foot of soft, grey fireclay. Near Minto, the coal occurs 20 to 40 feet below the base of the overlying Hurley Creek formation, and this is also the common relation in the Chipman area. In the north part of the area the coal seam is very thin or missing, and distinction between upper and lower parts of the Minto formation becomes difficult.

The HURLEY CREEK formation (6) consists of purplish red, or locally light green, shale, siltstone, and sandstone, and lighter coloured grit and conglomerate; the finer sediments occur mainly in the lower part. Much of the red sandstone contains fragments of green phyllite. Red is a less conspicuous colour in the conglomerate and grit, but these rocks can be distinguished from the Minto conglomerates by the predominance of pebbles of metamorphic and igneous rocks, and by the many pink grains of felsitic rock or orthoclase in the gritty material. Good exposures of the formation may be seen in the shale pit of the Chipman brick plant, on North Forks Stream, and on the shore of Grand Lake.

The SUNBURY CREEK formation (7A-7C) consists of a sedimentary series, very similar lithologically to the combined Minto and Hurley Creek formations. It is insufficiently exposed to warrant anything but a tentative subdivision into lower, middle, and upper parts. In the northwest corner of the area the basal part (7A) is lithologically and topographically similar to the lower Minto beds. The middle part (7B) contains grey, rusty, weathering, slightly limy sandstone in 1-to 2-inch slabs, and grey, thin-bedded to massive, grey siltstone and shale. On Mowatt Brook the shales enclose a coal seam, about 1 foot thick, which has been prospected in two places. The upper part of the Sunbury formation (7C) contains sandstone and conglomerate similar to that of the Hurley Creek formation. The conglomerate carries pebbles of greenish grey shale in several exposures. So far as known from the few outcrops, the formation does not include red shale in the north part of the map-area. Near Cumberland Bay, red shales and sandstones, exposed in a few places, seem to occur in the upper part of the Sunbury Creek formation.

A trachytic lava (8), associated with some dykes, occurs in the southern part of the area, and overlies the Sunbury Creek beds. In the hand specimen it resembles the older lava on Newcastle Creek, but is of more acidic composition and in places contains pink phenocrysts of sanidine. This flow caps the highest parts of Cumberland Hill and is probably the youngest rock in the map-area.

All the strata in the area, with the exception of those of the Coal Creek formation, exhibit a very gently undulating structure. Although it is commonly difficult or impossible to obtain accurate attitudes of the beds, the distribution of formations in the map-area shows a certain structural pattern with a general strike of north 60 degrees east. The Hardwood Ridge anticline of the Minto area plunges northeasterly and may continue parallel with Salmon River. Erosion of the Coal Creek anticline, also trending north 60 degrees east, is responsible for the exposure of the pre-Carboniferous strata and the coal occurrences along Coal Creek. Its extension to the southwest is expressed topographically by a depression occupied by an arm of Grand Lake. Between these two gentle anticlines is another uplift area along Salmon River, where Newcastle Creek and lower Minto beds are exposed. South of the Coal Creek anticline is a syncline, the axial position of which is roughly indicated by the volcanic flow on top of Cumberland Hill.

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