

BEDROCK GEOLOGY OF THE CAPE SPENCER AREA (NTS 21 H/04), SAINT JOHN COUNTY, NEW BRUNSWICK

LEGEND

LATE CARBONIFEROUS  
CUMBERLAND GROUP

- CL<sub>mc</sub>** LANCASTER FORMATION: Grey to greenish grey, quartzose sandstone and grey to greenish grey or black, plant-bearing shale, locally abundant, coarse-grained sandstone and quartz-pebble conglomerate, minor, red mudstone and fine-grained sandstone.
- CB<sub>lcc</sub>** BALLS LAKE FORMATION: Red to purple, polymictic to quartz-pebble-rich conglomerate, arkose and shale.

NEOPROTEROZOIC TO CAMBRIAN (?)  
LORNEVILLE GROUP

- ZC<sub>wbvs</sub>** WEST BEACH FORMATION: Epidotized and hematized basalt and basaltic breccia, minor red and green, siltstone, sandstone, shale and conglomerate, minor red felsic lithic tuff, rhyolite and quartz sandstone.

LATE NEOPROTEROZOIC  
COLDBROOK GROUP

- ZB<sub>wmv</sub>** BROWNS LAKE FORMATION: Green epidotized basalt and andesite, locally intrudes plagioclase porphyry and green dacitic sheets.

NEOPROTEROZOIC

- ZM<sub>li</sub>** MILLICAN LAKE GRANITE: Green to pink, medium-grained granite to granodiorite, lesser amounts of leucocratic microgranite and minor fine- to medium-grained leucogranite, mainly deformed to protomylonite and pervasively altered.

BROAD RIVER GROUP

- ZC<sub>p<sub>mc</sub></sub>** CAPE SPENCER FORMATION: Greyish-purple, arkosic sandstone, siltstone and slate, polymictic to granite-cobble conglomerate and very minor limestone, locally contains tectonically (?) interleaved mafic flows and breccia.
- ZB<sub>rrlt</sub>** BLACK RIVER ROAD FORMATION: Grey intermediate crystal tuff.

MINERAL OCCURRENCES

URN	NAME / COMMODITIES
0035	CAPE SPENCER MINE - Au, Cu
0276	WEST BEACH - Au, Cu
0682	CAPE SPENCER SILICA ZONE - Au
0780	MCKENZIE BROOK 1 - Au, Cu, Ag
0781	MCKENZIE BROOK 2 - Cu, Ag, Au, Pb
0782	MISPEC RESOURCES - Au, Cu, Zn, Pb
0818	EVANS COVE - Au, Cu
1387	CAPE SPENCER BIRCHES ZONE - Au
1388	CAPE SPENCER BOG ZONE - Au
1389	CAPE SPENCER POND ZONE - Au
1390	CAPE SPENCER LAKE ZONE - Au
1391	CAPE SPENCER NE ZONE - Au, Cu, Zn, Pb

RADIOMETRIC DATES

- 1 MILLICAN LAKE GRANITE: 623+/-2 Ma (U-Pb)

WATTERS, S.E. 1993. Structure and alteration related to Hercynian gold deposition, Cape Spencer, New Brunswick, Canada. Unpublished Ph.D. thesis, University of Western Ontario, London Ontario, 341 p.

MAIN SOURCES OF INFORMATION (see map inset)

- BARR, S.M. and WHITE, C.E. 1999. Field relations, petrology, and structure of Neoproterozoic rocks in the Caledonian Highlands, southern New Brunswick. Geological Survey of Canada, Bulletin 530, 101 p.
- BARR, S.M., WHITE, C.E., and WATTERS, S.E. 2004. Geology of the Mispec area (NTS 21 H/04), Saint John county, New Brunswick. New Brunswick Department of Natural Resources, Minerals, Policy and Planning Division, Plate 2004-108.
- BARR, S.M., White, C.E. and WATTERS, S.E. 2004. Geology of the West Beach area (NTS 21 H/04), Saint John county, New Brunswick. New Brunswick Department of Natural Resources, Minerals, Policy and Planning Division, Plate 2004-109.
- CURRIE, K.L. 1989. Geology of the Saint John-Saint George area, New Brunswick (21 G/1, 2E 7, B, 21 H/4, SW). Geological Survey of Canada, Open File 1974, 5 maps (1:50 000 scale) and 1 map (1:100 000 scale).
- RUITENBERG, A.A., GILES, P.S., VENUGOPAL, D.V., BUTTIMER, S.M., MCCUTCHEON, S.P. and CHANDRA, J. 1979. Geology and mineral deposits, Caledonia area, New Brunswick. New Brunswick Department of Natural Resources, Mineral Resources Branch, Memoir 1, 213 p.
- WATTERS, S.E. 1993. Geology of the Cape Spencer-Black River area, New Brunswick. New Brunswick Department of Natural Resources and Energy, Mineral Resources, Plate 93-15A.

SYMBOLS

- x ○ Outcrop, area of outcrop
- 45° / 40° Bedding, tops known (inclined, overturned)
- 60° / Bedding, tops unknown (inclined)
- 75° / Cleavage (inclined, horizontal)
- 75° / Crenulation cleavage (inclined, vertical)
- - - Geological contact
- - - Fault
- 10° / Fold axis (plunging)
- 10° Radiometric age (with reference number)
- 0682 x / Mineral occurrence (with Unique Record Number); VN = quartz/carbonate veins and stockworks

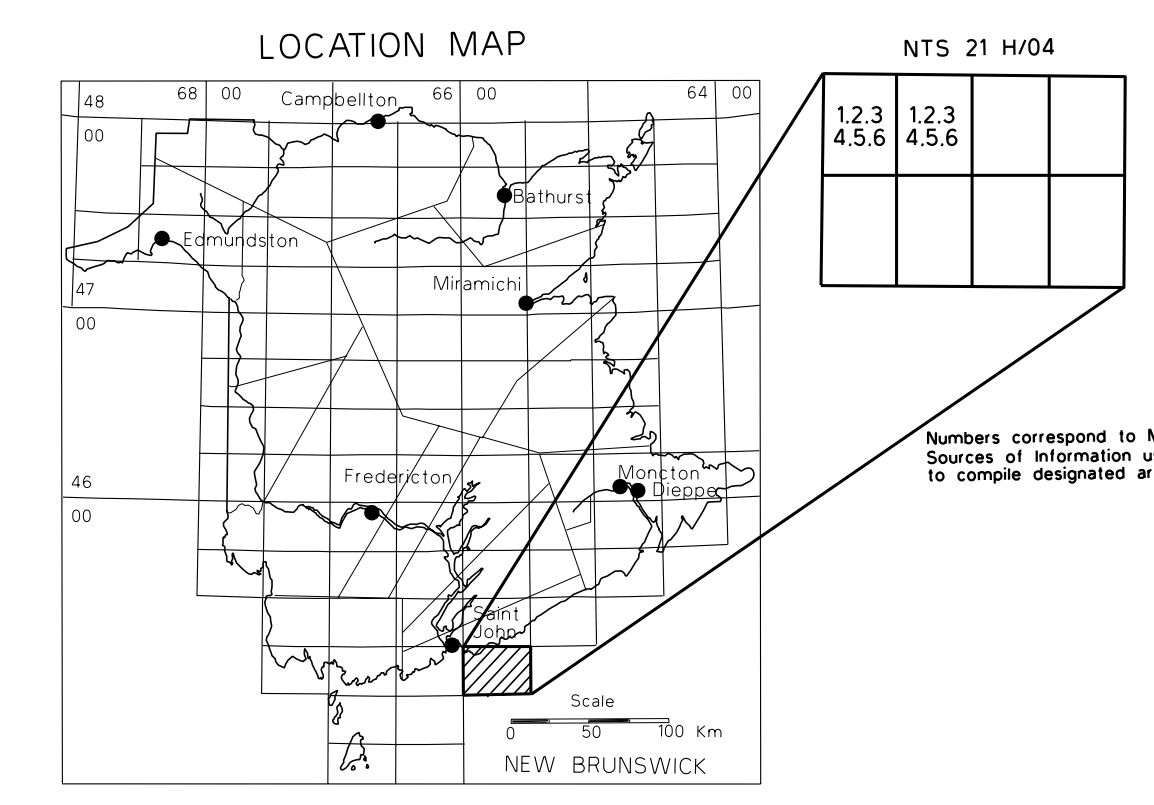
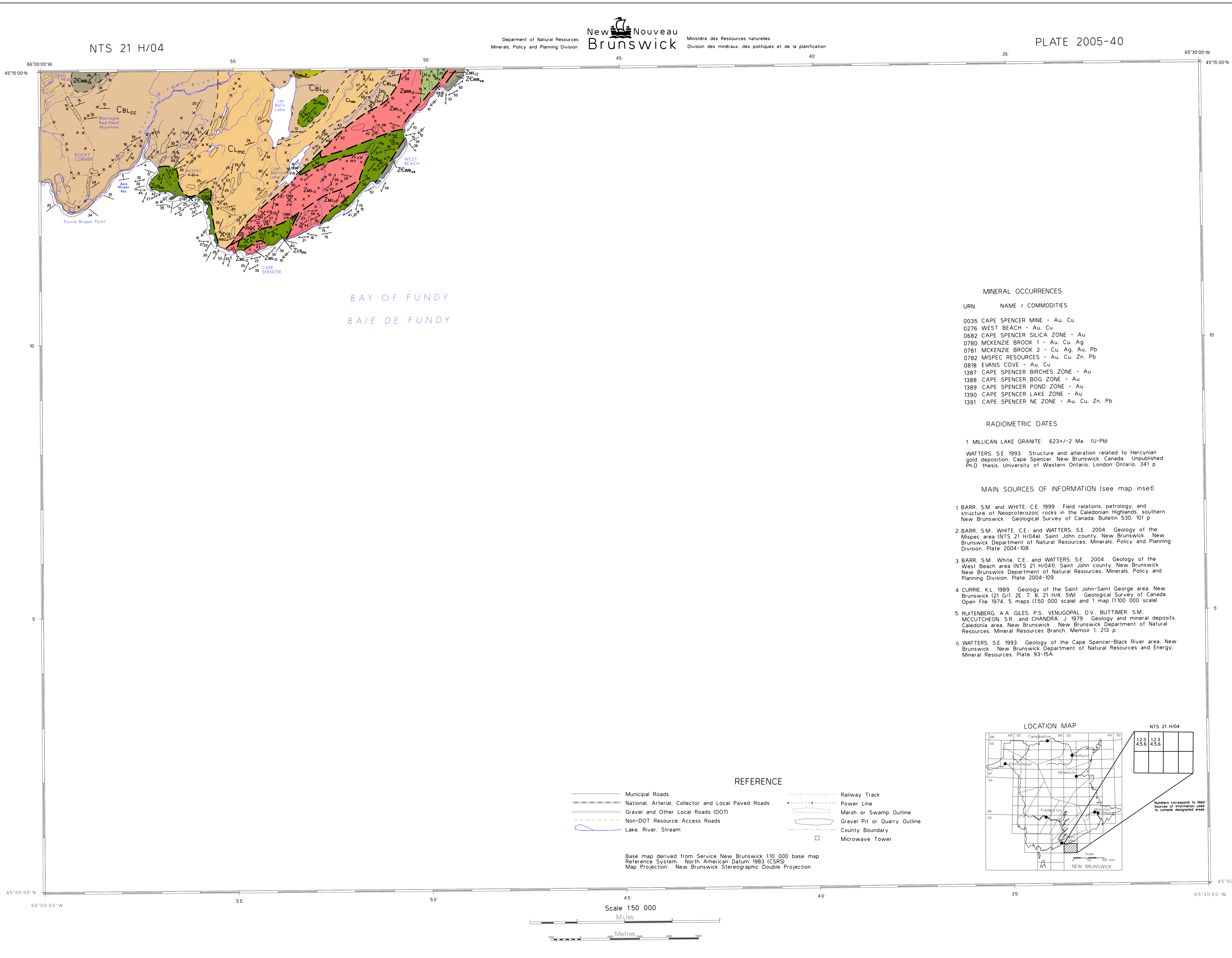
LITHOLOGIC ABBREVIATIONS:

- cc = coarse-grained clastic sedimentary rocks
- mc = medium-grained clastic sedimentary rocks
- mv = mafic volcanic rocks
- ii = intermediate intrusive rocks
- it = intermediate tuff
- vs = mixed volcanic and sedimentary rocks

Compilation by E.A. Smith, S.C. Johnson and M.J. McLeod, 2004  
Digitized by Maurice Mazerolle and Diane Richard, 2004

This map should be referenced in the following manner:  
BARR, S.M. and WHITE, C.E. 2005. Bedrock geology of the Cape Spencer area (NTS 21 H/04), Saint John county, New Brunswick. New Brunswick Department of Natural Resources, Minerals, Policy and Planning Division, Plate 2005-40.

NOTE: This plate is a revised version of  
MCLEOD, M.J., and JOHNSON, S.C. 1999. Bedrock geological compilation of the Cape Spencer area (NTS 21 H/04), Saint John county, New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Plate 99-17.



REFERENCE

- Municipal Roads
- National, Arterial, Collector and Local Paved Roads
- Gravel and Other Local Roads (DOT)
- Non-DOT Resource Access Roads
- Lake, River, Stream
- Railway Track
- Power Line
- Marsh or Swamp Outline
- Gravel Pit or Quarry Outline
- County Boundary
- Microwave Tower

Base map derived from Service New Brunswick 1:10 000 base map  
Reference System: North American Datum 1983 (CSRS)  
Map Projection: New Brunswick Stereographic Double Projection

