

LEGEND

(Ordovician and older rocks are generally foliated and metamorphosed, as are parts of the Silurian and Devonian sequences).

EXPLOITS SUBZONE

- SDMP** Composite plutonic body ranging in composition from pyroxene-hornblende gabbro, quartz diorite, granodiorite to biotite granite. Locally contains pink dikes and veins.
- SDH** Hodges Hill Intrusive Suite. Composed, medium- to coarse-grained plutonic body mainly comprising biotite and hornblende-bearing granodiorite and granite. Minor white diorite and hornblende-pyroxene gabbro, commonly net-veined by granite.

SILURIAN

- SSL** STONY LAKE FORMATION (Upper Silurian): mainly grey and minor pink felsic crystal-lobed tuff, lapilli tuff, breccia, flow-banded rhyolite, and minor porphyry.
- SW** WIGWAM FORMATION (Lower Silurian): mainly red to green, locally cross-bedded, micaceous sandstones, siltstones, and conglomerates.
- SL** LAWRENCE TOWN FORMATION (Lower Silurian): mainly mafic to felsic volcanic rocks and minor red sandstone (Sw). Mafic to intermediate volcanic rocks are green to purple, feldspar-phryic; locally pillowed and/or amygdaloidal lava and minor tuff and associated subvolcanic intrusions. Felsic volcanic rocks are purple-red or green rhyolite crystal-lobed tuff, vitric and lapilli tuff, and tuff breccia.
- SRL** ROGERSON LAKE FORMATION (Lower Silurian): mainly red to grey, polymictic conglomerates, and minor micaceous sandstone and siltstone. Rare limestone beds. Clasts are dominantly derived from underlying volcanic and plutonic rocks, but also include jasper, shale, and red sandstone. Locally includes diabase and gabbroic dikes.

ORDOVICIAN-SILURIAN

- OSB** BAKER GROUP (Caradoc-Landover): Grey to light brown sandstone, minor conglomerate, siltstone, and shale.

CAMBRIAN-MIDDLE ORDOVICIAN

- OSH** VICTORIA LAKE SUPERGROUP HARPOON GABBRO SUITE (Arenig-Llanvirn): Green; locally plagioclase-phryic gabbro, diorite and diabase.
- OHL** LAMARQUE HARBOR FORMATION (Arenig-Caradoc): NOEL PAUL'S BROOK GROUP (Arenig-Caradoc): Locally interbedded with thin felsic ash tuff beds. In part transformed into broken formation or interflow.
- OSW** STANLEY WATERS FORMATION (Arenig-Llanvirn): mainly volcanogenic sandstone and siltstone, minor chert, and red shale. Locally includes some mafic and felsic volcanic rocks.
- ODL** BLACK DUCK FORMATION (Arenig-Llanvirn): mainly aphyric to sparsely feldspar-phryic black, grey or green rhyolite; locally fine banded and/or pebbly.
- ODL** DIVERSION LAKE FORMATION (Arenig-Llanvirn): green, tholeiitic pillowed to massive basalt.

NEOPROTEROZOIC

- Ncf** CRIPPLEBACK INTRUSIVE SUITE (circa 664 Ma): Suite includes Crippleback Lake, Valentine Lake, and Lemoties Lake intrusions. Mainly medium-grained quartz-monzonite and granodiorite. Locally contains abundant mafic dikes.
- Ncm** Mainly hornblende gabbro and diorite. Locally net-veined by felsic members of (Ncf), which in turn is cut by mafic dikes.
- NSB** SANDY BROOK GROUP: Undivided, mainly felsic and mafic volcanic rocks, and minor alloclastic sedimentary rocks. Felsic rocks include quartz-phryic rhyolite. The mafic volcanic rocks include compositionally island-arc-basalt and calc-alkaline basalt to andesite.

Geological boundary (approximate, assumed)
Fault, undivided (approximate or assumed) - - - - -
Thrust fault (approximate or assumed) - - - - -
Unconformity (approximate or assumed)
Outcrop: this study (single, area) ⊗
Outcrop, compiled from Carter (1998); Kean and Mercier (1981) ⊗
Bedding, top known (inclined, overturned) /
Bedding, top unknown (inclined, vertical) /
Bedding, top known from pillow lavas, dip if known (inclined) /
Foliation: S, main and/or composite (inclined, vertical) /
Foliation (generation unknown) /
Foliation (generation - S) /
S-fold, plunge and plunge direction /
Z-fold, plunge and plunge direction /
Brittle fault (motion - normal, reverse) /
Fossil locality ⊕
Mineral occurrence; National Mineral Inventory Number ⊕
Drillhole with surface projection ⊕

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The Red Indian Line Project has been conducted by the GSC in areas previously mapped by the GSNL and the GSC. Results of the project have been combined with existing geological and geophysical maps, and unpublished industry data, to produce a new compilation of the geology.

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Table 1. Mineral Occurrences

Mineral occurrence	UTM easting	UTM zone 21 NAD 83	UTM northing	Name	Alternate name	Commodity	Status
Au/01	588490	5408350	5417900	Twilight Zone			Prospect
Au/02	591200	5417900	5417900	Rip Van Winkle		Au, Sb, As, Co	Showing
Fe/01	592000	5418400	5418400	Grand Falls		Fe	Showing
py/01	573460	5408400	5408400	West Brook North			PF Indication
py/02	573800	5410900	5410900	West Brook South			PF Indication
py/03	582700	5421500	5421500	Fast Cliff Complex			PF Showing

Note:
Notified after the Mineral Occurrences Data System (MDDS) of the Geological Survey of Newfoundland and Labrador.

*National Mineral Inventory Number has form 002D13A-Au-01

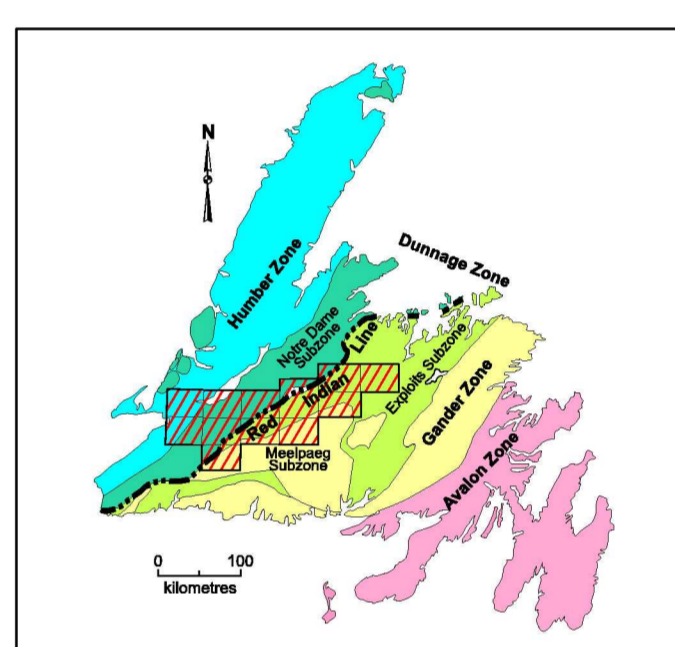


Figure 1. The principal tectonic zones of Newfoundland and Labrador and the position of the Red Indian Line.

OPEN FILE 4545
GEOLOGY
GRAND FALLS
NEWFOUNDLAND AND LABRADOR

Scale 1:50 000/Échelle 1/50 000

Authors: N. Rogers and C.R. van Staal
New geology and interpretation by N. Rogers and C.R. van Staal (2000-2003)
Geological compilation by N. Rogers (2003)

Pre-existing geological data presented on map compiled from: Carter (1998) and Kean and Mercier (1981)
Distribution of units and position of geological boundaries in part inferred from unpublished airborne geophysics provided by Rubicon Minerals Corporation and Placer Dome Incorporated (Golden Promise Project)

Digital cartography by P.A. McBurnie, Earth Sciences Sector Information Division (ESS Info)

This map was produced from processes that conform to the ESS Info Publishing Services Subdivision Quality Management System, registered to the ISO 9001:2000 standard

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Digital base map from data compiled by Geomatics Canada, modified by ESS Info

Some geographical names subject to revision

Mean magnetic declination 2005, 21°43' W, decreasing 70.8" annually

Elevations in metres above mean sea level

12 B/16	12 A/13	12 A/14	12 A/15	12 A/16	2 D/13
12 B/9	12 A/12	12 A/11	12 A/10	12 A/9	2 D/12
OF4921	OF1688	OF1689	OF4544	OF4547	
12 B/6	12 A/5	12 A/6	12 A/7	12 A/8	2 D/5
OF1665	OF1864	OF1667	OF4997		
12 B/7	12 A/4	12 A/3	12 A/2	12 A/1	2 D/4
	OF1665				

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND LINK TO ADVANCING GEOLOGICAL SURVEY OF CANADA MAPS

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