ASSEMBLAGE AGE, PERIOD: Series (Stage, Absolute age range)

LITHOSTRATIGRAPHY (ASSEMBLAGE NAME): Unit 2 (Label); Unit 1 (Label)

ASSEMBLAGE NAME: *Assemblage description, in the following form: major rock types; minor rock types; major rock types or setting. Assemblage name is underlined if it includes metamorphic rock units that allow correlation and portrayal of lithological continuity on a regional scale.*
*2. Separately distinguished and described components of the assemblage are indicated by units 1 & 2, in order of decreasing volume. Each unit is described as follows: major rock types and metamorphic rock types and features; rare rock types and features; or setting (**each constituent, with names indicated in bold** but in a **formation**, unless indicated otherwise as "…group", "…member", "…suite", or "…complex").*
1. Where indicated, some units within an assemblage are distinguished by their own colour to add detail and clarity to the map.

PLUTONIC ASSEMBLAGE AGE, PERIOD: Series (Stage, Absolute age range)

Intrusive contact

LITHOTECTONIC UNIT (ASSEMBLAGE NAME): Unit 2 (Label); Unit 1 (Label)

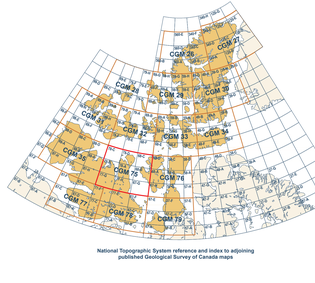
PLUTONIC ASSEMBLAGE NAME: Plutonic assemblage description, in the following form: major rock types; minor rock types; or setting. Plutonic assemblages are subdivided on the basis of lithological continuity and portrayal that allow correlation and portrayal of lithological continuity on a regional scale.
*2. Separately distinguished and described components of the assemblage are indicated by units 1 & 2, in order of decreasing volume. Each unit is described as follows: major rock types and metamorphic rock types and features; rare rock types and features; or settings (**each constituent "…suite"**).*
1. Where indicated, some units within an assemblage are distinguished by their own colour to add detail and clarity to the map.

For clarity at this map scale, not all units in the legend are indicated separately on the map. For example, units of the Stevenson Bay assemblage, labelled Crn-sb1, Crn-sb2, and Crn-sb3 are amalgamated under the colour of their parent (Crn-sb).

Brackets indicate grouping of assemblages and component units by type of formation or setting and colour coded as follows:

- gold: overlap assemblages (Cenozoic only)
- red: plutonic arc, arching plutons
- yellow: fluvial and deltaic clastic wedge
- light green: volcanic arc (continental or oceanic)
- purple: slope and deep water settings
- light blue: shelf, platform
- grey: intracratonic basin
- orange: rift-related
- green: large igneous province (LIP)
- dark blue: orogen, craton

Figure 1. Explanation of map unit features.



National Topographic System reference and index to adjoining published Geological Survey of Canada maps

Abstract

This map and the related geodatabase illustrate the bedrock geology of central and northeastern Victoria Island, Stefansson Island, and western Prince of Wales Island. Major features of the area include inliers of Neoarchean basement granitoid rocks; clastic rock-dominated sections associated with the late Paleoproterozoic Kilohigok Basin, and Mesoproterozoic Ellu Basin; extensive Mesoproterozoic strata of Amundsen Basin, diabase sills, and extrusive basaltic rocks of the 723 Ma Franklin Large Igneous Province (ca. 723 Ma) and unconformable Cambrian to Devonian strata of Arctic Platform.

Résumé

Cette carte et la géodatabase qui s'y rapporte documentent la géologie du substratrocheux dans le centre et le nord-est de l'île Victoria, l'île Stefansson et l'ouest de l'île Prince of Wales. Les principales entités géologiques de la région comprennent des boutonnières de roches granitoïdes du socle néoarchéen; des successions à prédominance de roches clastiques associées au bassin de Kilohigok (Paléoprotérozoïque tardif) et au bassin d'Ellu (Mésoprotérozoïque); de vastes strates mésoprotérozoïques et néoprotérozoïques du bassin d'Amundsen, des filons-couches de diabase et des roches basaltiques effusives apparentées à la grande province magmatique de Franklin (env. 723 Ma), ainsi que des strates discordantes d'âge cambrien à dévonien de la Plate-forme de l'Arctique.

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2nd EDITION

CANADIAN GEOSCIENCE MAP 75

GEOLOGY

TECTONIC ASSEMBLAGE MAP OF HADLEY BAY

Victoria and Prince of Wales islands, Nunavut–Northwest Territories

1:500 000

Abstract

This map and the related geodatabase illustrate the bedrock geology of central and northeastern Victoria Island, Stefansson Island, and western Prince of Wales Island. Major features of the area include inliers of Neoarchean basement granitoid rocks; clastic rock-dominated sections associated with the late Paleoproterozoic Kilohigok Basin, and Mesoproterozoic Ellu Basin; extensive Meso- and Neoproterozoic strata of Amundsen Basin, diabase sills, and extrusive basaltic rocks of the 723 Ma Franklin Large Igneous Province (ca. 723 Ma) and unconformable Cambrian to Devonian strata of Arctic Platform.

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SILURIAN AND DEVONIAN

LUDLOW TO EARLY DEVONIAN (Lochkovian)

Cape Phillips assemblage

SDvdv2 — **DEVON ISLAND - WEST:** Shale, limestone; local oolostromites, bioherms; deep water and sediment starved, locally grading to shelf ramp.
2. Devon Island and Victoria Island; Ludlow only.

SILURIAN AND DEVONIAN

LUDLOW TO EARLY DEVONIAN (Pragian)

SDg — **GOOSE FIORD:** Dolostone, limestone, mudstone; minor wackestone, siltstone, sandstone; nearshore, shelf and shelf edge including reefs and foreslope, mostly unrestricted.
4. Dolostone, white, light brown, tan, medium-grained; limestone including lime mudstone, skeletal wackestone, packstone; fine-grained with ostracodes, brachiopods, stromatoporoids, corals, crinoids, gastropods, cephalopods and dolomitic; minor sandstone, calcareous and dolomitic, very fine- to fine-grained; minor shale; nearshore to shallow offshore, unrestricted **(Drake Bay)**.
3. Argillaceous limestone, dolomitic limestone; thin-bedded, very fine to fine-grained; lime mudstone, wackestone; thick- to massive-bedded, fine-grained, crinoidal, stromatoporoidal coral bioherms; dolostone, medium-grained, massive-bedded; shale in the lower part, dark grey, calcareous; minor sandstone; numerous shallowing-upward cycles; tidal flat, shelf lagoon, back-barrier, shelf edge including reefs, foreslope **(Barlow Inlet)**.

SILURIAN

LUDLOW

Sdo1 — **OCURO:** Limestone; minor dolostone, shale; local bioherms; shallow to deep subtidal shelf ramp.
1. Argillaceous limestone, limestone, dolomitic limestone; nodular, burrow-mottled, minor dolostone, calcareous shale, calcisiltite; local sponge-coral-stromatoporoid mud mounds on Somerset Island, and fenestral-microbial boestromes in basal beds on Grinnell Peninsula; shallow to deep subtidal outer shelf ramp **(Douro)**.

ORDOVICIAN TO SILURIAN

RICHMONDIAN TO LUDLOW

OSa3 — **ALLEN BAY:** Dolostone, limestone; local bioherms, anhydrite; and subtidal to supratidal settings.
3. Allen Bay, Cape Storm, undivided.

CAMBRIAN TO SILURIAN

LATE CAMBRIAN TO LUDLOW

Arctic Platform

CmSa — **ARCTIC PLATFORM:** Dolostone, dolomitic limestone, limestone; minor sandstone, shale, intraclast conglomerate, breccia; nearshore and intertidal to supratidal; mostly restricted **(Turner Cliffs, Ship Point, Irene Bay, Thumb Mountain, Allen Bay, Cape Storm**, undivided).

NEOPROTEROZOIC

CRYOGENIAN (723 to 718 Ma)

Franklin LIP

nPd — **FRANKLIN plutonic assemblage:** Diabase, mostly high titanium tholeiite, olivine-bearing, brown to black, subophitic; plagioclase often saussuritized, olivine replaced by carbonate; local ultramafic rock; LIP intrusives, olivine tholeiite association **(Franklin and Thule swarms)**.

NEOPROTEROZOIC

CRYOGENIAN (723 to 718 Ma)

Franklin Large Igneous Province

nPk2 — **NATKUSIAK:** Basalt, minor volcaniclastic rock, agglomerate; subaerial continental tholeiite flows phreatomagmatic and volcaniclastic units.
2. Basalt flows, massive and amygdaloidal, to 30 m thick; minor volcaniclastic units. Common native copper and copper sulphides; subaerial continental tholeiite flows and phreatomagmatic units **(Natkusiak)**.
nPk1 — **1.** Volcanic breccia, green to maroon; conglomerate, arenite; framework with locally-derived sedimentary clasts; volcaniclastic and proximal pyroclastic settings **(Natkusiak, lower volcaniclastic member)**.

MESOPROTEROZOIC, NEOPROTEROZOIC

STENIAN TO CRYOGENIAN (1033 to 723 Ma)

Amundsen Basin

mnPk1 — **KILIAN:** Limestone, dolostone, gypsum/anhydrite; lesser quartz arenite, redbeds; minor mudstone, arenaceous and argillaceous carbonate; cyclically arranged; shallow subtidal.
1. Cyclically interbedded gypsum/anhydrite and red to tan limestone and dolostone, argillaceous and arenaceous carbonate; often stromatolitic; cyclically shallow subtidal to intertidal and supratidal **(Kilian)**.

mnPe — **WYNNIATT:** Cyclic dolosiltite, dolusilte, intraclast breccia, sandstone, black mudstone; minor quartz arenite, microbialite limestone; common desiccation cracks, stromolitic bioherms; shallow subtidal with reef complex and cyclical intertidal facies **(Wynniatt)**.

mnPm — **MINTO INLET:** Gypsum/anhydrite; minor red siltstone and calcisiltite cyclically alternating with dolarenite and dolosiltite; grey, thin- to massive-bedded; local hummocks and stromatolites; three shoaling cycles; shallow subtidal restricted to supratidal **(Minto Inlet)**.

mnPp4, mnPp3, mnPp2, mnPp1 — **REYNOLDS POINT:** Quartz arenite, dolosiltite, dolosiltite, grainstone; minor shale, glauconitic sandstone; inner to shallow outer clastic shelf, fluvial deltaic and estuarine.
4. Quartz arenite, yellow, crossbedded; dolosiltite, dolosiltite; laminated, mud-cracked; linked and digitate stromatolites; intertidal and lagoonal **(Jago Bay)**.
3. Quartz arenite, medium-bedded, fine- to medium-grained; planar beds, herringbone cross-stratification; minor glauconitic sandstone; shallow subtidal to intertidal clastic shelf **(Port Collinson)**.
2. Ood grainstone, stromatolitic dolostone, dolosiltite; cyclically arranged; shale, quartz arenite increasing upward; storm-dominated inner to outer shelf **(Ikuut Inlet)**.
1. Quartz arenite, fine- to medium-grained, planar crossbedded; basal shale; minor hummocky quartz arenite and dolusilte in upper part; prodelta and fluvial grading up to shoreface and nearshore **(Grassy Bay)**.

mnPr5, mnPr4, mnPr3, mnPr2, mnPr1 — **NAE:** Dolostone, dolosiltite, quartz arenite, minor lithic arenite, intraclast conglomerate; clastic shelf, offshore platform and fluvial-deltaic.
5. Dolostone, solerite to arkerite, cream to orange brown, columnar and digitate stromatolites; minor dololutite and wavy dolosiltite; marine platform below wave base **(Aux)**.
4. Siltstone, red, green; quartz arenite, fine- to medium-grained, white to pink, planar cross-stratified; minor, shale, pyritic, black; glauconitic sandstone, hummocky cross-stratified; marine proderltaic, deltaic, fluvial **(Nelson Head)**.
3. Quartz arenite, lithic arenite, fine- to medium-grained, crossbedded; conglomerate, minor chert; shallow subtidal to supratidal **(Minkelson Islands)**.
2. Quartz arenite, lithic arenite, fine- to medium-grained, crossbedded; siltstone, crosslaminated; minor limestone, argillaceous, dolostone, stromatolitic, concretionary; subtidal to intertidal shelf; in part storm-dominated **(Escape Rapids)**.
1. Dolostone, dolosiltite, quartz arenite, minor lithic arenite, intraclast conglomerate, clastic shelf, offshore platform and fluvial-deltaic **(Rae group)**.

MESOPROTEROZOIC

ECTASIAN (1130 TO 1270 Ma)

Ellu Basin

mnNk2 — **ELLICE-NORTH:** Quartzite, minor siltstone, sandstone, grit, local conglomerate; braided fluvial, shoreface and nearshore.
2. Quartzite, trough cross-stratified; minor pebble conglomerate; local shale near base; unrestricted storm-dominated, shallow marine shelf **(Ellice, upper part)**.
mnNk1 — **1.** Boulder conglomerate, red with quartzite clasts; minor grit, pebbly sandstone, trough cross-stratified; transgressive nearshore and shoreface **(Ellice, lower part)**.

PALEOPROTEROZOIC

OROSIRIAN (1850 to 1810 Ma)

Kilohigok Basin

pPbh4 — **BURNSIDE:** Quartz arenite, sandstone; minor conglomerate, siltstone, shale; local dolostone, breccia; braided fluvial, locally unrestricted shallow marine.
pPbh3 — **4.** Quartzite, red and grey weathering; sandstone; local planar crossbedded; siltstone; minor shale; local conglomerate to boulder grade; braided fluvial **(Hadley, upper member)**.
3. Dolostone,stromatolitic, columnal and bioherms/ dolarenite, oolitic; siltstone, shale, minor, grey-green; shallow marine, unrestricted **(Hadley, middle member)**.
pPbh2 — **2.** Quartzite, red weathering; minor immature sandstone, in part micaceous; shale; local quartz pebble conglomerate; braided fluvial **(Hadley, lower member)**.
pPbh1 — **1.** Quartzite, red weathering; minor immature sandstone, in part micaceous; shale, dolostone, stromatolitic; local quartz pebble conglomerate; braided fluvial; periodically shallow marine **(Hadley)**.

NEOARCHEAN? TO PALEOPROTEROZOIC

(SIDERIAN)

Slave Craton

nAw2 — **WELLINGTON plutonic assemblage:** Granodiorite, syenogranite, monzogranite, collisional plutonic complex restricted.
2. Granodiorite, pink, coarse-grained **(Hadley suite)**.

Contacts
- Geological boundary; defined or approximate

Faults
- Fault: approximate
- Fault: assumed
- Fault: approximate, showing downthrown side

Thrust faults
- Thrust fault: approximate, teeth indicate upthrust side

Dykes
- Diabase dyke

Sills
- Mafic sill, ultramafic sill
- Peridotite, gabbro, diabase sill

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CANADIAN GEOSCIENCE MAP 75

GEOLOGY

TECTONIC ASSEMBLAGE MAP OF HADLEY BAY

Victoria and Prince of Wales islands, Nunavut–Northwest Territories

1:500 000

10 0 10 20 30 40 km

Map projection Lambert Conformal Conic, standard parallels 71°30'N and 73°30'N. North American Datum 1983

Base map at the scale of 1:250 000 from Natural Resources Canada, with modifications.

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area.
Mean magnetic declination 2015, 6°14'E, decreasing 29.5'W annually. Readings vary from 15°20'E in the SW corner to 10°55'W in the NE corner of the map.

This map is not to be used for navigational purposes.

Title Photograph: Shaler Supergroup near Wynniatt Bay, Minto Inlier, northwestern Victoria Island, Northwest Territories.
Photograph by R.H. Rainbird, 2013-072

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map. *See* documentation accompanying the data.

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Preliminary publications in this series have not been scientifically edited.

CANADIAN GEOSCIENCE MAP 75

GEOLOGY

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Victoria and Prince of Wales islands, Nunavut–Northwest Territories