

TECTONIC ASSEMBLAGES AND PLUTONIC SUITES (from Wheeler and McFeely, 1991)

Tectonic assemblages represent distinctive successions of stratified rocks, mainly bounded by unconformities or faults, deposited in specific tectonic environments during particular intervals of time. Thus they are fundamental components of Cordilleran geology that reflect its evolution and allow comparison of the tectonic behaviour of various regions during specific intervals of time.

An assemblage may comprise one or more formations from a single region or from several separate regions. Most assemblages are named for an important constituent or group, although a few are named after the region in which the assemblage is best developed. The age assigned to each assemblage reflects the age range of its components. Each assemblage is characterized in terms of its tectonic or depositional setting, the latter illustrated by descriptions of its principal lithologies, facies variations, source areas and other criteria.

The degree of confidence in the identification of the associated tectonic or depositional regimes varies considerably and, in some cases are controversial. Most assemblages are categorized in terms of environments currently observable on modern continental margins, island arcs and ocean basins. Others are defined with reference to their positions relative to the orogen (foredeep clastic wedges) or to the craton (passive continental margin sediments).

The plutonic suites are defined mainly by age and subdivided on the basis of composition or other attributes. They are grouped, for the most part, into magmatic episodes (Armstrong, 1985).

REFERENCES

- Armstrong, R.L.
1985: Mesozoic - early Cenozoic plutonism in the Canadian Cordillera - distribution in time and space. Geological Society of America, Abstracts and programs, 1985, v. 17, p. 338
- Wheeler, J.O. and McFeely, P.
1991: Tectonic Assemblage Map of the Canadian Cordillera and adjacent parts of the United States of America. Geological Survey of Canada, Map 1712A, scale 1:2 000 000

SOURCES OF INFORMATION

Geological information contained in the GIS map library and the 1:1 000 000 scale folio series is derived directly from John Wheeler's Tectonic Assemblage Map of the Canadian Cordillera (Wheeler and McFeely, 1991; Map 1712A), and is subject to all Copyright laws for distribution in either digital or hard copy form. This map is a revision of the Geological Survey of Canada Map 1505A by Tigler, Woodsworth, and Gabriel, published in 1981. It is a compilation of published maps, thesisi, and unpublished information from officers of the Geological Survey of Canada, from J.G. Abbott, G.W. Lowery, and J.K. Murray. The Geological Survey of Canada, Department of Indian and Northern Affairs, Whitehorse, Yukon; from D.A. Brew, J.H. Dover, C. Dusek-Bacon, H.L. Foster, J.E. Harrison, W.J. Nelsberg, G. Pfister, and R.W. Tabor of the U.S. Geological Survey; and from R.L. Armstrong, M.T. Brandon, R.L. Brown, D.S. Cowan, P. Erdmer, J. Filippes, R.M. Friedman, J.L. Giles, J.M. Henthorn, C.J.R. Hart, P.A. Heagerty, C.J. Hickey, P.M. Hobbs, G.A. Hilden, D.L. Jones, A. Jung, W.C. McLelland, E.W. Moorhead, J.K. Mortensen, D.C. Murphy, J.S. Oikow, R.A. Price, P.B. Reed, T.A. Richards, M.E. Rasmussen, C.M. Rubin, P.S. Simony, A. Sutherland-Brown, R.S. Tabor, P. van der Heyden, and W.J. Wells. Geological cartography for the original version of this map was by M. Sigouin, Geoscience Information Division.

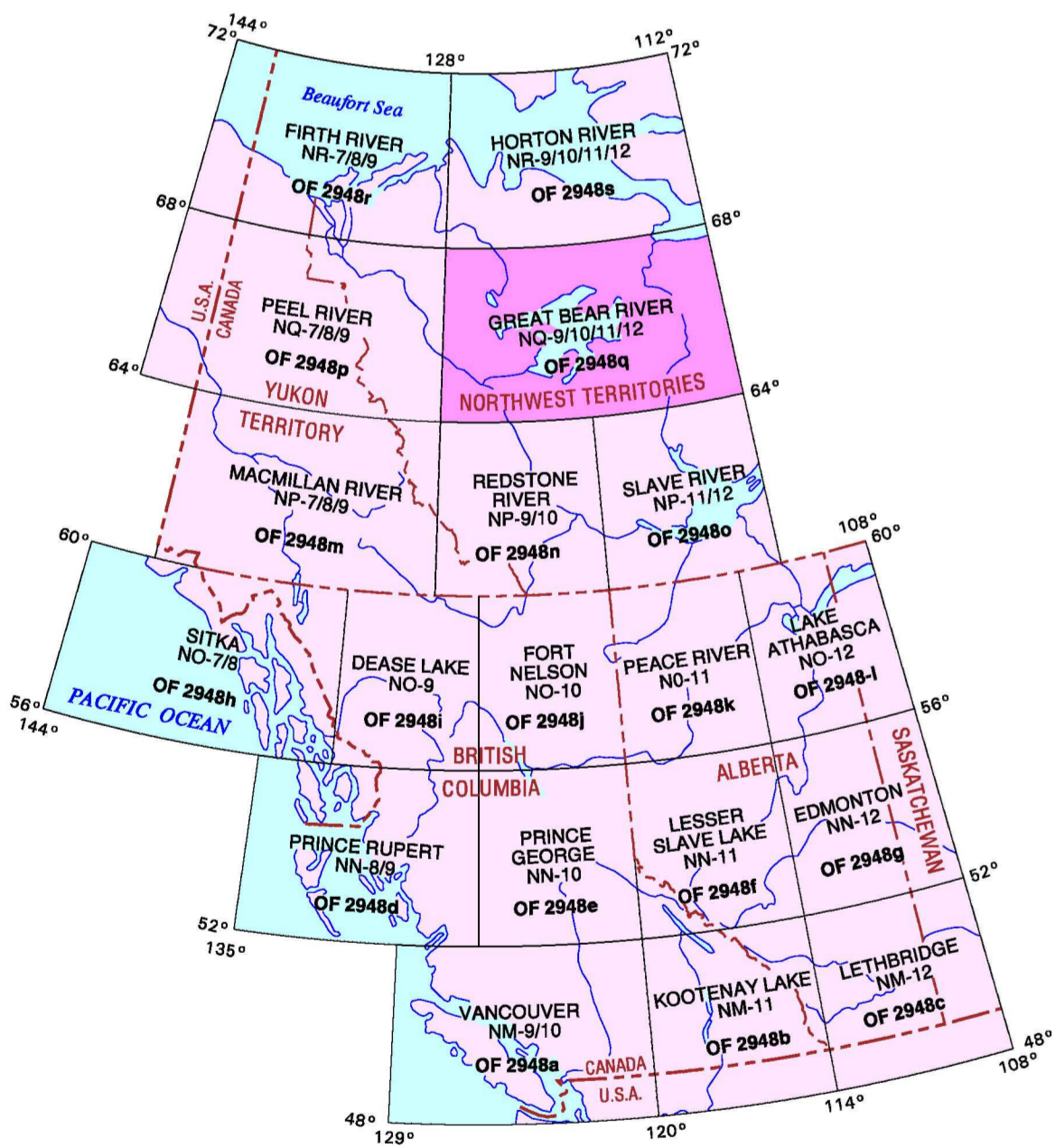
GIS MAP LIBRARY

The Cordilleran GIS Map Library was initiated in March, 1993 as a collaborative research and development project by the Pacific Division and the Geoscience Information Division (GID) of the Earth Sciences Sector (ESS). The goal is to develop an integrated 1:1 000 000 scale digital geoscience database for the Canadian Cordillera that can be used as an archive and research facility by the Geological Survey of Canada (GSC) and its clients. This map is part of a new series of 1:1 000 000 scale tectonic assemblage maps for the Canadian Cordillera based on the Wheeler and McFeely (1991) Tectonic Assemblage Map of the Canadian Cordillera (Map 1712A). It is one of 19 digital data sets derived from the Cordilleran GIS Map Library (GSC Open File 2948).

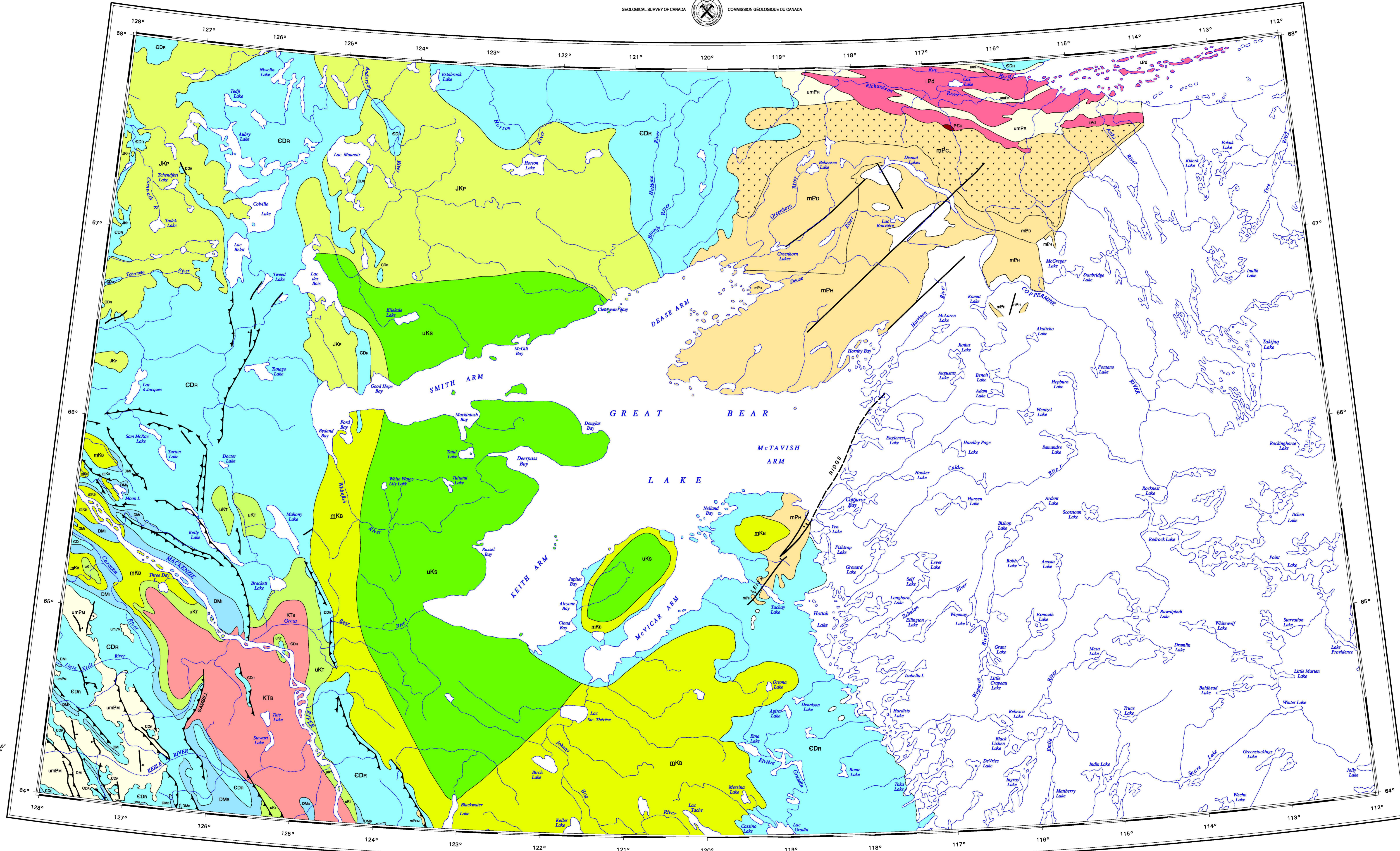
The legend which accompanies Map 1712A was converted to digital format and made available to the GSC by Doug Brownlee, and has been modified and expanded for use as a GIS database. Design and implementation of the digital GIS map library structure, final editing and attribution of all geological and geographic features and cartographic production of the 1:1 000 000 scale folio series were performed by Stephen Williams and Murray Journey of the GSC Pacific Division, and Richard Altamirano of the Geoscience Information Division.

The geographic base for the GIS library and the 1:1 000 000 scale folio series is derived from the National Atlas Information System (NAIS) 1:2 000 000 digital map series and is subject to all Copyright laws for distribution in either digital or hard copy form.

CORDILLERAN TECTONIC ASSEMBLAGE MAP LIBRARY



TECTONIC ASSEMBLAGES OF THE GREAT BEAR RIVER MAP AREA 1:1 000 000 GSC OPEN FILE 2948q



LEGEND

- TECTONIC ASSEMBLAGES**
- UPPER CRETACEOUS - OLIIGOENE**
- KTa** BRAZEAU: foredeep clastic wedge; eastward prograding alluvial sandstone, conglomerate, shale, coal and local tuff and bentonite. In southern foredeep, lower part grades eastward into marine shale; upper part nonmarine fluvioestuarine.
- UPPER CRETACEOUS**
- UKT** TREVOR: southwesternly derived clastic wedge; interbedded calcareous and glauconitic sandstone and mudstone, bentonitic shale, and local limestone lenses; also includes Devonian conglomerate, sandstone, siltstone and shale; marine.
 - UKs** SMOKY: foredeep marine shale; siliceous and calcareous shale, siltstone and sandstone forming two megacycles; marine.
- MID-CRETACEOUS**
- mKb** BLARMORE: foredeep clastic wedge; mainly eastward prograding detritic clastics: basal chert pebble conglomerate, sandstone, locally with metamorphic, granitic and volcanic detritus, shale, coal; alkaline volcanics at top; marine and nonmarine.
- UPPER JURASSIC - LOWER CRETACEOUS**
- JKP** PARSONS: continental margin clastics; shale, siltstone, sandstone derived mainly from south and southeast, deposited on broad northwest-trending continental shelf; basal and pelagic sandstone in Mackenzie Delta; marine and nonmarine.
- DEVONIAN - MISSISSIPPIAN**
- DM** IMPERIAL: distal northerly derived clastic wedge; richly derived turbiditic shale and siltstone; basal dark, partly bituminous shale; includes chert pebble conglomerate and quartz sandstone of Madison Assemblage in E. Northhorn Mts.; marine.
 - DMb** BESA RIVER: most distal part of northerly derived Imperial Assemblage and western derived Eden Assemblage; upper Devonian chert partly derived from craton; shale, mudstone, and siltstone; marine.
- CAMBRIAN - DEVONIAN**
- CDR** ROCKY MOUNTAINS: passive continental margin sediments; resistant dolomite, limestone, and local sandstone interbedded with recessive red, green, and grey shale and detrital calcareous wedge that together form several carbonate shale grand cycles. These pass westward into offshore shale, siltstone and thin-bedded carbonate with minor siltstone tuff. Dolomite and amygdules basal of Cambrian, Cambro-Ordovician, Silurian, and Devonian ages but mainly of Ordovician age; marine.
- UPPER PROTEROZOIC - LOWER CAMBRIAN**
- PCa** GOC: shelf and passive continental margin sediments; shallow-water cross-bedded orthoquartzite, pelagolithic quartzite, locally graded bedded quartzite, quartz pebble conglomerate, mafic flows, breccia and tuff overlain by interbedded quartzite, siltstone, shale, and limestone with archeoalgal reefs; metamorphic equivalents; marine.
- MIDDLE AND UPPER PROTEROZOIC**
- umPM** MACKENZIE MOUNTAINS: platform continental margin sediments (equivalent to Rise Group - umPs on the craton); shallow-water platform assemblage of red and green muscovitic shale, siltstone and sandstone, gypsum and anhydritic basinal limestone, rhythmic, nodular limestone, stromatolite reefs, platform carbonate granitoids, fluvio-deltaic orthoquartzite and mudstone, stromatolite and stibiochalcid dolomite, marine and nonmarine.
- MIDDLE PROTEROZOIC**
- mPc** CASP MOUNTAINS: long-lived all-embayment sediments equivalent to Damsel Lake (mPp) and Homby Bay (mPq) groups on the craton (mPc). Copesternie River Group on the craton; Wenlock Supergroup contains diamictites and breccia complexes. Purcell Supergroup contains alternating basaltic to andesitic volcanics, upper, white and grey cross-bedded orthoquartzite, olive grey shale and purple and red mudstone; minor siltstone and conglomerate; lower, brick red and purple sandy and silty mudstone, red, purple and green siltstone and sandstone with interbeds of stromatolitic dolomite; marine.
- PLUTONIC ROCKS**
- LATE PROTEROZOIC**
- LP** LPd - undivided diorite, monzodiorite, gabbro, diabase, amphibole.
- VOLCANIC ROCKS**
- Tholeiitic volcanic rocks
- SYMBOLS**
- Geological contact (defined) - - - - -
 - Thrust fault (left on upper plate) - - - - -
 - Extension fault (bold circle indicates downthrow side) - - - - -
 - Fault of unknown displacement - - - - -
 - Submerged faults and those buried by younger strata - - - - -

OPEN FILE 2948q
TECTONIC ASSEMBLAGE MAP
GREAT BEAR RIVER
NORTHWEST TERRITORIES
Scale 1:1 000 000 - Echelle 1/1 000 000
kilometres 25 0 25 50 75 kilometres
Lambert Conformal Conic Projection Projection conique conforme de Lambert
Standard Parallels 64°40' and 67°20' Parallèles d'échelle conforme 64°40' et 67°20'
North Measured by the Queen in Right of Canada, 2000 Nord Mesuré le Règne du chef du Canada, 2000

Mineral Development Agreement
OPEN FILE DOSSIER PUBLIC 2948q
GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA OTTAWA 01/2000

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2000. Tectonic Assemblage Map, Great Bear River, Northwest Territories.
Geological Survey of Canada, Open File 2948q, scale 1:1 000 000