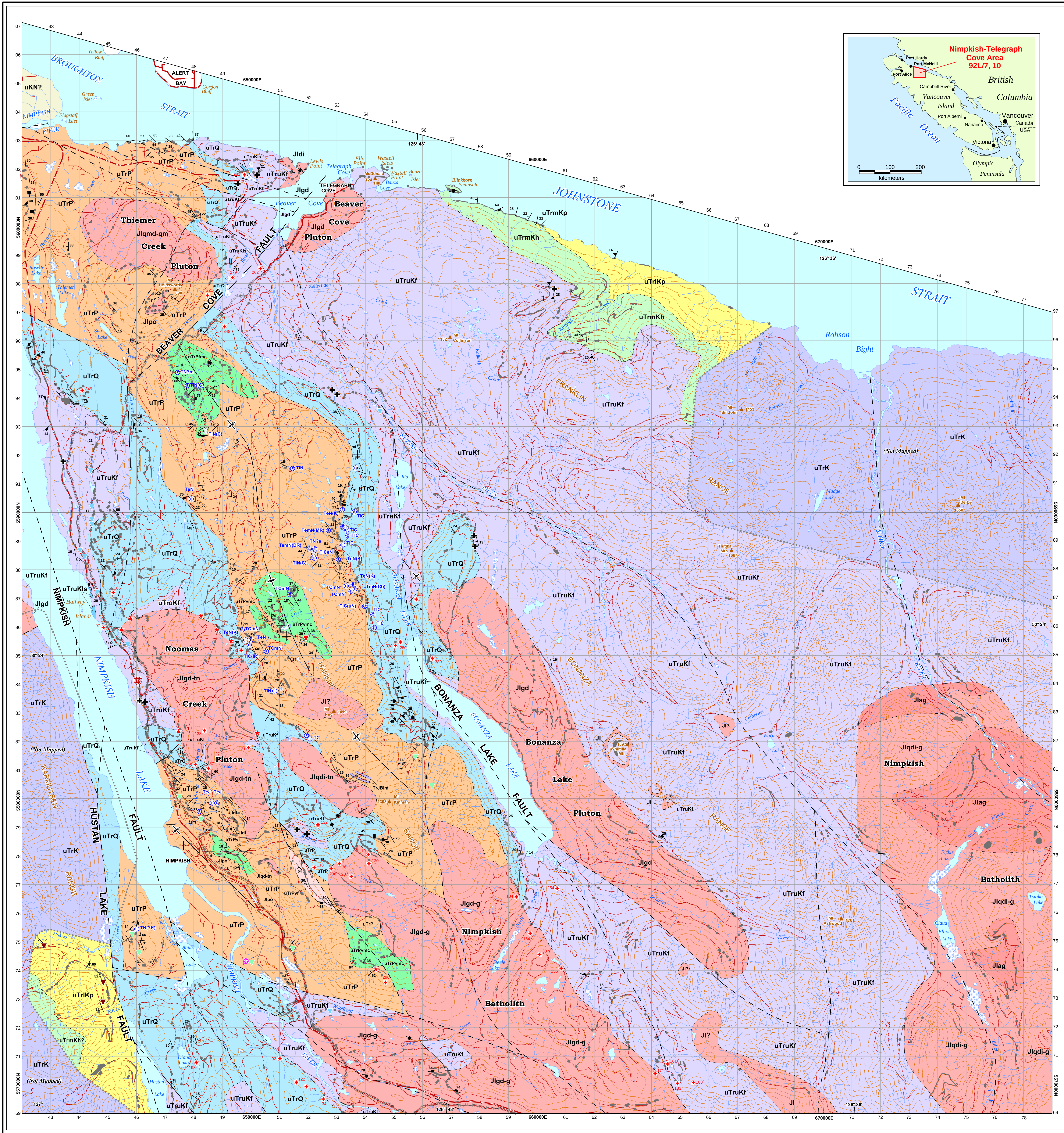




BC Geological Survey
GEOSCIENCE MAP 2009-2



Geology of the Nimpkish-Telegraph Cove Area, Northern Vancouver Island

NTS 92L/7, 10

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PALEONTOLOGY
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GEOLOGY
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0 2 4
kilometres
Scale 1:50 000

LAYERED ROCKS

UPPER CRETACEOUS
NANAIMO GROUP EQUIVALENTS (IN PART)
Campanian to ?Maastrichtian

uKN? Medium to coarse-grained arkosic to lithic wacke, pebble to cobble conglomerate, siltstone and minor coal; locally fossiliferous

UPPER TRIASSIC (CARNIAN) TO MIDDLE JURASSIC (BAJOCIAN)
BONANZA GROUP

Carnian to Rhaetian (Nimpkish-Telegraph Cove area)
PARSON BAY FORMATION

uTrP Medium grey to black, thinly laminated to medium bedded, impure limestone, calcareous to non-calcareous mudstone, siltstone and shale intercalated with variable proportions of grey-green lithic tephroclastic tuffaceous wacke, minor crystal-lithic tuff and reworked equivalents, volcanoclastic breccia and debris-flow deposits, and rare vitric tuff, pebbly sandstone and conglomerate; shale locally yields abundant thin-shelled bivalves (Halobia sp., Monotis sp.) limestone locally contains rare algal structures and, near the top of the succession, sparse colonial corals (Sutton limestone equivalent?)

uTrPvmc Dark grey-green basaltic volcanoclastic breccia and lapilli tuff, aphanitic to clinopyroxene-olivine-plagioclase-phryic (Nimpkish-Telegraph Cove area)

uTrPmc Dark grey-green basaltic flows and minor volcanoclastic breccia and lapilli tuff, aphanitic to clinopyroxene-olivine-plagioclase-phryic (Nimpkish-Telegraph Cove area); minor interbedded mudstone, siltstone, wacke and shale, locally fossiliferous

uTrPvi Dark grey-green, andesitic volcanoclastic breccia and lapilli tuff, aphanitic to sparsely plagioclase-phryic

uTrPfi Dark grey-green andesitic flows; aphanitic to sparsely plagioclase-phryic

uTrPvi Dark grey to reddish grey rhyolite-dacite volcanoclastic breccia and variably reworked lithic and vitric tuff, minor sedimentary and basalt-andesite volcanoclastic interbeds

Thin interbeds of basaltic to andesitic volcanoclastic breccia (too small to show at map scale)

UPPER TRIASSIC
VANCOUVER GROUP

Carnian to Early Norian (Nimpkish-Telegraph Cove area)

Quatsino Formation
uTrQ Medium to pale grey, thinly bedded to massive micritic limestone and locally bioclastic limestone; minor silica replacements and chert nodules; rare laminated interbeds, oolitic layers and algal structures, locally fossiliferous; unit is very thin (<40m) on the West Coast

Carnian (possibly latest Middle Triassic (Ladinian) at the base)
Karmutsen Formation

uTrK Undifferentiated dark grey-green basalt flow/hyaloclastite/pillow lava (outside the map area)

Upper Karmutsen Formation: Flow Member

uTrKf Aphanitic to plagioclase-phryic and minor plagioclase-megacrystic flows, commonly amygdaloidal and locally exhibiting laminar flow features (vesicle trains) and pipe vesicles; may include minor pillow lava and hyaloclastite

uTrKf Plagioclase-megacrystic (<2cm) flows, commonly amygdaloidal and locally exhibiting trachytoid features, intercalated with aphanitic or plagioclase-phryic basalt near the top of the succession

uTrKf Thin (1-5m) beds and lenses of pale to medium grey, micritic to rarely bioclastic or oolitic limestone intercalated with basalt near the top of the flow succession

uTrKf Thin (0.5-5m) beds and lenses of uTrKf

Middle Karmutsen Formation: Hyaloclastite Member

uTrKf Massive to thickly bedded hyaloclastite breccia, including pillow-fragment breccia and medium bedded to laminated hyaloclastite sandstone; may locally be partially or possibly completely replaced by pillowed flows

uTrKf Closely packed pillowed flows; aphanitic and variably amygdaloidal

Lower Karmutsen Formation: Pillow Member

uTrKf Closely packed pillowed flows and localized, massive inflated flow lobes; typically aphanitic and non-amygdaloidal; may include inter-pillow or rare thin lenses of hyaloclastite

uTrKf Rare thin lenses of calcareous mudstone/limestone; may contain fine-grained hyaloclastite detritus

INTRUSIVE ROCKS

EARLY (HETTANGIAN) TO MIDDLE (BAJOCIAN) JURASSIC
ISLAND PLUTONIC SUITE

JI Medium to coarse-grained, equigranular granitoid rocks and porphyry, includes hornblende-/biotite-bearing diorite (di), quartz diorite (qd), quartz monzonite (qmd), quartz monzonite (gm), granodiorite (gd), tonalite (tn), granite (g), plagioclase-/hornblende porphyry (po) and undifferentiated granitoid rocks (ji)

Jlg Agmatite: angular to rounded xenoliths of variably recrystallized Karmutsen volcanic rocks set in a medium grained granitoid mesostasis

Minor intrusions
TERTIARY (NEOGENE)

Basalt dike; plagioclase-clinopyroxene-phryic; possibly coeval with Alert Bay volcanic unit

LATE TRIASSIC TO MIDDLE JURASSIC

Basalt-andesite subvolcanic intrusion or diatase coeval with Bonanza Group volcanism

LATE TRIASSIC TO EARLY JURASSIC

Olivine-clinopyroxene-plagioclase porphyry coeval with mineralogically similar lavas of the Bonanza Group

Data Compilation
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Digital Cartography
G. T. Nixon and R. D. M. Rayner

MAP SYMBOLS

- Geological contact, defined
- Geological contact, approximate
- Geological contact, inferred
- Steeply dipping fault, defined
- Steeply dipping fault, approximate
- Steeply dipping fault, inferred
- Limit of mapping
- Bedding, facing known, inclined, horizontal, vertical
- Volcanic flow lamination, inclined
- Plutonic flow lamination, inclined, vertical
- Dike, inclined, vertical
- Minor fold with plunge
- Minor fold with dip of axial plane
- Recumbent fold
- Lineation, inclined (slickentilines on fault plane)
- Lineation, horizontal (slickentilines on fault plane)
- Axial trace of syncline
- Macrofossil locality (age code as below)
- Conodont locality (age code as below)
- MINFILE Locality
- Calc-silicate skarn (sulphide)
- Manto-type deposit (massive sulphide)
- Outcrop examined
- Outcrop too small to show at map scale
- Road (dirt)
- Road (paved)
- Rail line
- Rail line (abandoned)
- Fossil age designation
- Late Triassic: J Jurassic
- early, m middle, l late
- C Carnian, N Norian
- Ammonoid Zones: (K) Kent; (D) Dawson; (M) Magnus; (Cb) Columbian; (R) Rutherford; (C) Cordilleranus
- Conodont Zones: (N) Nodusus; (P) Primitus
- l lower; u upper
- (combined codes indicate age/zone range)
- (no label indicates age indeterminate)

Base Map Information

Base map produced from digital TRIM (Terrain Resource Inventory Management) 1:25 000-scale topographic database, British Columbia Ministry of Environment, Lands and Parks.

North American Datum 1983 (NAD83) Universal Transverse Mercator Projection (Zone 9). Elevation in metres above mean sea level. Contour interval 100m.

N
1° 44' N
Magnetic Declination
Approximate mean magnetic declination July 2009 for centre of map area: 18 degrees
41 minutes east, decreasing annually 13 minutes per year

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Recommended Citation

Nixon, G. T., Kelman, M. C., Larocque, J. P., Stevenson, D. B., Stokes, L. A., Pals, A., Styann, J., Johnston, K. A., Friedman, R. M., Mortensen, J. K., Orchard, M. J. and McRoberts, C. A. (2009): Geology of the Nimpkish-Telegraph Cove Area, Northern Vancouver Island. B.C. Ministry of Energy, Mines and Petroleum Resources, Geoscience Map 2009-2.