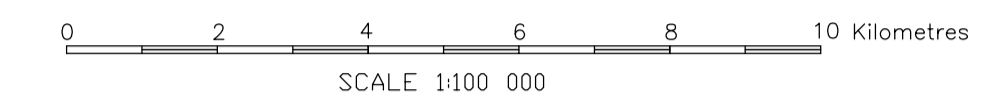


**GEOLOGY OF NORTHERN VANCOUVER ISLAND:  
 PRELIMINARY COMPILATION**

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**TABLE OF FORMATIONS AND CORRELATION CHART**

| Period         | Formation                      | Age                   | Correlation |
|----------------|--------------------------------|-----------------------|-------------|
| TERTIARY       | Pliocene to Oligocene          | "ALERT BAY VOLCANICS" | Tv          |
|                | Maestrichtian to Campanian     | NAKANAO GROUP         | uKn         |
| CRETACEOUS     | post-Cenomanian                | BLUMBERG GRUPE        | uKb         |
|                | Albian?                        | COAL HARBOUR GROUP    | IKC         |
| BRASSIC        | Bathonian/Bajocian to Toarcian | BONANZA VOLCANICS     | Jb          |
|                | Plensbachian to Senonian       | HAMILTON GRUPE        | Jh          |
| UPPER TRIASSIC | Upper to Middle Norian         | PARSON BAY FM         | uP          |
|                | Lower Norian                   | VANCOUVER GROUP       | uV          |
| UPPER TRIASSIC | Carman                         | VANCOUVER GROUP       | uK          |
|                |                                |                       |             |

- LAYERED ROCKS**
- TERTIARY**
    - Tv** ALERT BAY VOLCANICS: ANDESITIC TO RHYOLITIC FLOWS AND VOLCANIC BRECCIA, APHANTIC TO FLAGGCLASE AND HORNBLENDE-PHYRIC.
  - UPPER CRETACEOUS**
    - uKn** CAMPANIAN TO MAESTRICHTIAN: NANAIMO GROUP EQUIVALENTS: MEDIUM TO COARSE-GRAINED ANDESITIC TO LITHIC WACKE, PEBBLE TO COBBLE CONGLOMERATE, SILTSTONE AND MINOR COAL, LOCALLY FOSSILIFEROUS.
    - uKb** POST-CENOMANIAN TO COMACINAC: BLUMBERG FORMATION: MASSIVE TO THINLY BEDDED LITHIC TO ANDESITIC WACKE WITH MINOR PEBBLE TO COBBLE CONGLOMERATE.
    - uKb-1** MASSIVE CONGLOMERATE WITH MINOR LENSES OF COARSE-GRAINED LITHIC WACKE.
    - uKb-2** MASSIVE CONGLOMERATE WITH MINOR LENSES OF COARSE-GRAINED LITHIC WACKE.
  - LOWER CRETACEOUS**
    - IKC-1** UPPER SANDSTONE FACIES: THOUGH CROSS-LAMINATED LITHIC WACKE INTERCALATED WITH SILTSTONE AND MINOR PEBBLE CONGLOMERATE AND BARE COAL.
    - IKC-2** LOWER CONGLOMERATE FACIES: MASSIVE CONGLOMERATE WITH MINOR LENSES OF COARSE-GRAINED LITHIC WACKE.
  - LATE VALANGINIAN TO BARREMIAN**
    - IKL** THINLY BEDDED TO MASSIVE SANDSTONE, SILTSTONE, MUDSTONE AND PEBBLE CONGLOMERATE AND MINOR COAL.
  - UPPER TRIASSIC TO MIDDLE JURASSIC**
    - BONANZA GROUP**
      - SINEMURIAN TO UPPERMOST BAJOCIAN/LOWERMOST BATHONIAN** "BONANZA VOLCANICS":
        - Jb** BASALTIC TO RHYOLITIC, PREDOMINANTLY SUBAERIAL LAWS AND PYROCLASTIC ROCKS INTERCALATED WITH MARINE TO NON-MARINE, COARSE TO FINE-GRAINED PYROCLASTIC, EPILASTIC AND SEDIMENTARY ROCKS. MINOR FELLOW LAWS OCCUR LOCALLY AT THE BASE, SUBDIVIDED ACCORDING TO COMPOSITION AND LITHOLOGY (SEE TABLE OF ABBREVIATIONS AND NOMENCLATURE).
        - Jb-f** PREDOMINANTLY FELSIC LAWS AND/OR PYROCLASTIC ROCKS.
        - Jb-i** PREDOMINANTLY INTERMEDIATE TO FELSIC LAWS AND/OR PYROCLASTIC ROCKS.
      - UPPER CARNIAN TO UPPER PLEINSBACHIAN**
        - TH** HARBLOW FORMATION: PREDOMINANTLY SUBMARINE, LAMINATED TO THINLY BEDDED INTERCALATED PYROCLASTIC, EPILASTIC AND FINE-GRAINED SEDIMENTARY ROCKS INCLUDING LITHIC TUFT, FELSIC/TUFF BRECCIA, VOLCANIC BRECCIA, TUFFEUS SANDSTONE AND SILTSTONE AND MINOR LIMESTONE AND SHALE. FINE-GRAINED, MANY NON-CALCAREOUS ASSEMBLAGES IN LOWER PART OF SEQUENCE. GENERALLY WELL-SORTED WITH LAMINATE TUFTS AND BLOCKS. BRECCIA IS LITHOLOGICALLY SIMILAR TO NON-CALCAREOUS STRATA ARE LOCALLY EQUIVALENT TO THE PARSON BAY FORMATION.
        - TH-1** POORLY EXPOSED, PREDOMINANTLY NON-CALCAREOUS FINE TO MEDIUM-GRAINED SEDIMENTARY AND COARSE-GRAINED EPILASTIC ROCKS NORTH OF HOLBERG INLET. LOCALLY INCLUDES MINOR LITHIC TUFTS.
        - TH-2** THINLY BEDDED AND LAMINATED, SILICIFIED AND COLOUR VARIATED SILTSTONE AND FINE TUFT NORTH OF HOLBERG INLET IN THE MAINTHE LAKE AREA. INCLUDES PARSON BAY SHALES (uP) AT ITS BASE.
        - TH-3** COARSE-GRAINED, IMMATURE FELSPHATIC WACKE AND REWORKED CRYSTAL TUFT; OCCURS NEAR TOP OF THE PARSON BAY FORMATION IN THE BENSON RIVER AREA.
    - UPPER TRIASSIC OR LOWER JURASSIC**
      - UNASSIGNED UNITS**
        - uV** MAFIC TO INTERMEDIATE, AUGITE-PLAGIOCLASE-PHYRIC LAWS AND VOLCANIC BRECCIAS IN NEOLITHIC INLET AREA. POSSIBLY BONANZA VOLCANICS IN FAULT CONTACT WITH QUATSINO FORMATION.
        - uP** MAFIC APHANTIC FELLOW BASALT AND FELLOW BRECCIA.
      - UPPER TRIASSIC**
        - VANCOUVER GROUP**
          - CARMAN BAY FORMATION**
            - uP** THIN TO MEDIUM BEDDED ARGILLACEOUS TO SILTY LIME MUDSTONE, CALCAREOUS SILTSTONE AND MUDSTONE WITH MINOR SILTSTONE, FINE-GRAINED SANDSTONE AND SHALE. CARBONACEOUS AND ARGILLACEOUS TO SILTY CORALLINE LIMESTONE LOCALLY MARKS THE TOP OF THE SUCCESSION.
            - uP-1** PREDOMINANTLY CALCAREOUS LITHOLOGIES AS ABOVE WITH INTERBEDDED MAFIC TO INTERMEDIATE LITHIC AND CRYSTAL TUFT AND MINOR PYROCLASTIC ROCKS.
            - uP-2** PREDOMINANTLY CALCAREOUS, MIXED SEDIMENTARY-VOLCANIC LITHOLOGIES WITH MINOR PYROCLASTIC ROCKS.
            - uP-3** POORLY EXPOSED, VERY THINLY BEDDED SHALE WITH ABUNDANT PELECYPODS (HALOBA).
            - uP-4** VOLCANIC MEMBER: MAFIC LITHIC LAPILLI TUFT AND TUFT-BRECCIA.
          - CARNIAN TO LOWER NORIAN**
            - uQ** THINLY BEDDED TO MASSIVE LIME MUDSTONE, CHERT NODULES AND REPLACEMENTS COMMON. LOCALLY HAVE LAMINATED INTERBEDS AND SILTY LAYERS. LOCALLY FOSSILIFEROUS. -G- THIN (C30m) QUATSINO LIMESTONE ON WEST COAST (KASKINO INLET).
          - CARNIAN**
            - HAMILTON FORMATION**
              - uK** APHANTIC TO COARSELY PLAGIOCLASE-PHYRIC, COMMONLY AMPHIBOLIC, SUBAERIAL BASALTIC LAVA FLOWS, MINOR FELLOW BASALT AND PYROCLASTIC WITH THIN INTERBEDS OF FINE-GRAINED LITHIC WACKE, INTERCALATED WITH HAMILTON BRECCIA NEAR THE TOP OF THE SUCCESSION.

**TABLE OF ABBREVIATIONS AND NOMENCLATURE FOR THE BONANZA GROUP**

**Jb-f** where f is composition and j is lithology.  
**Jb** where undivided

Composition: m mafic (basaltic) i intermediate (andesitic) f felsic (felsic-mafic/basaltic)

A compositional range is denoted by the combination of descriptors: m-i mafic to intermediate i-i intermediate to felsic m-i mafic to felsic

Lithology: f flows p pyroclastic rocks e epilastic rocks (coarse to medium-grained) s fine-grained sedimentary rocks v volcanoclastic rocks (undifferentiated pyroclastic and epilastic)

