

GEOLOGIC MAP OF THE
BELLINGHAM 1:100,000 QUADRANGLE, WASHINGTON

by
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Scale 1:100,000
MILES
0 1 2 3 4 5
CONTOUR INTERVAL 200 FEET



EXPLANATION

Geologic Units

QUATERNARY DEPOSITS

- Post-Glacial Deposits**
- Qf Artificial fill (Holocene)
 - Qa Alluvium (Holocene)
 - Qb Beach deposits (Holocene)
 - Qoa Older alluvium (Holocene)
 - Qv₁ Lahar of the Middle Fork Nooksack River (Holocene)
 - Qv₂ Lahar (Kennedy Creek assemblage) (Holocene)
 - Qaf Alluvial fan deposits (Holocene to latest Pleistocene)
 - Qls Landslide deposits (Holocene to late Pleistocene)
 - Qp Peat (Holocene to late Pleistocene)

Glacial Deposits

- Fraser Glaciation, Undivided**
- Qgd Glacial deposits, undifferentiated (Pleistocene)
 - Qgo_{ss} Glacial outwash, Sumas Stage and (or) Everson Interstade (Pleistocene)
- Fraser Glaciation, Sumas Stage**
- Qgo_s Glacial outwash, Sumas Stage (Pleistocene)
 - Qgom_s Marine detritic outwash, Sumas Stage (Pleistocene)
 - Qgt_s Glacial till, Sumas Stage (Pleistocene)
- Fraser Glaciation, Everson Interstade**
- Qgo_e Glacial outwash, Everson Interstade (Pleistocene)
 - Qgom_e Marine outwash, Everson Interstade (Pleistocene)
 - Qgom_{ss} Emergence (beach) deposits, Everson Interstade (Pleistocene)
 - Qgdm_e Glaciomarine drift, Everson Interstade (Pleistocene)

- Fraser Glaciation, Yashon Stage**
- Qgt_y Glacial till, Yashon Stage (Pleistocene)
 - Qga Advance outwash, Yashon Stage (Pleistocene)
- Fraser Glaciation, Evans Creek Stage**
- Qgat_e Alpine till, Evans Creek Stage (Pleistocene)
- Pre-Fraser Glaciation**
- Qc_{ss} Continental sediments, Whidbey Formation (Pleistocene)

TERTIARY ROCKS

- Rhyolite dikes (Eocene?)**
- Eir
- Huntington Formation (Oligocene to Eocene)**
- QE_{ch}
- Chuckanut Formation (Eocene) - Continental sedimentary deposits or rocks**
- EC_{ss} Bellingham Bay Member
 - EC_{ss} Governors Point Member
 - EC_{ss} Slide Member
 - EC_{ss} Warnick Member
 - EC_{ss} Maple Falls Member
 - EC_{ss} Paduca Member

PRE-TERTIARY ROCKS

- NANAIMO GROUP**
- Km_{ss} Cedar District Formation (Upper Cretaceous) - Marine sedimentary rocks
 - Km_{ss} Protection Formation (Upper Cretaceous) - Marine sedimentary rocks
 - Km_{ss} Extension Formation (Upper Cretaceous) - Nearshore sedimentary rocks
 - Km_{ss} Haslam Formation (Upper Cretaceous) - Marine sedimentary rocks
 - Km_{ss} Comox Formation (Upper Cretaceous) - Nearshore sedimentary rocks

**Northwest Cascades System:
Rocks of the Northwest Cascade Range**

- HETEROGENEOUS METAMORPHIC ROCKS OF THE BUTLER HILL AREA**
- Jhmc Heterogeneous metamorphic rocks (Jurassic) - Chert-bearing metagabbro and metasediments
 - Jmv Heterogeneous metavolcanic rocks (Jurassic) - Metabasalt

- EASTON METAMORPHIC SUITE**
- Jph₁ Darrington Phyllite (Jurassic)
 - Jph₂ Semischist of Mount Josephine (Jurassic)
 - Jsh₁ Shaskan Greenschist (Jurassic)

- Metabasaltic gneiss**
- Jmv₁
- Metagabbro and metadiorite/quartz diorite**
- Jlv₁

- ROCKS OF THE BELL PASS MÉLANGE**
- pThm_{ss} Bell Pass mélanges, undivided (pre-Tertiary)
 - pTu Ultrabasic rocks (pre-Tertiary)
 - pT_{ss} Twin Sisters Dunitic (pre-Tertiary)
 - pTms_{ss} Conglomerate of Bald Mountain (pre-Tertiary) - Metasedimentary rocks
 - JPhmc₂ Elbow Lake Formation (Jurassic to Permian) - Heterogeneous metamorphic rocks
 - pPhm₁ Vedder Complex (pre-Permian) - Schist
 - pDgn₁ Yellow Aster Complex (pre-Devonian) - Gneiss

- CHILLIWACK GROUP**
- PDm₁ Chilliwack Group, undivided (Permian to Devonian)
 - PDm₂ Metavolcanic rocks (Permian to Devonian)
 - PDm₃ Metasedimentary rocks (Permian to Devonian)
 - PDm₄ Limestone and marble (Permian to Devonian)

- Northwest Cascades System:
Rocks of the San Juan Islands**
- KJm₁ Constitution Formation (Cretaceous to Jurassic) - Marine sedimentary rocks
 - KJm₂ Fidalgo ophiolite
 - KJm₃ Marine sedimentary rocks of the Fidalgo ophiolite (Lower Cretaceous to Upper Jurassic)
 - J₁ Intrusive igneous rocks of the Fidalgo ophiolite (Jurassic)
 - J₂ Ultramafic rocks of the Fidalgo ophiolite (Jurassic)

- Lummi Formation**
- KJm₁ Lummi Formation (Cretaceous to Jurassic) - Marine metasedimentary rocks
 - Jm₁ Lummi Formation (Jurassic) - Metasedimentary and metavolcanic rocks

- OTHER ROCKS OF THE SAN JUAN ISLANDS**
- JTm₁ Orcas Chert (Jurassic to Triassic) - Chert-rich marine sedimentary rocks
 - TPV₁ Deadman Bay Volcanics (Triassic to Permian)
 - PDV_{ss} East Sound Group (Permian to Devonian) - Volcanic and sedimentary rocks
 - pPac₁ Garrison Schist (pre-Permian)
 - pD₁ Turtleback Complex (pre-Devonian) - Intrusive rocks, undivided
 - tz Tectonic zone
 - tz₁ Tectonic zone on Orcas Island

Geologic Symbols

- Contact
- Contact, concealed
- Contact, gradational
- Contact, scratch boundary
- Fault, unknown offset
- Fault, unknown offset, concealed
- Fault, unknown offset, concealed, queried
- Fault, unknown offset, inferred
- Thrust fault, sawtooth on upper plate
- Thrust fault, concealed, sawtooth on upper plate
- Thrust fault, inferred, sawtooth on upper plate
- Normal fault, concealed, bar and belt on downthrown side
- Anticline
- Anticline, concealed
- Anticline, inferred
- Syncline
- Syncline, concealed
- Syncline, inferred

Lambert Conformal Projection
1927 North American Datum
Washington Coordinate System, South Zone
Base map information from the Washington Department of Natural Resources
Geographic Information System - 1997
Washington Division of Geology and Earth Resources

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