



LEGEND

QUATERNARY
 PLEISTOCENE AND RECENT
 Q (J&B) Glacial till, alluvium, colluvium and fluvial deposits; Q(J&B): areas presumed to be underlain by JB1

JURASSIC
 MIDDLE TO UPPER JURASSIC
 BOWSER LAKE GROUP (JB1)
 JB1 Medium to fine grained lithic to arkosic arenites, and siltstones to silt-rich mudstones (locally pyritic); turbidites

MESOZOIC
 CENOZOIC

Geological boundary (defined, approximate, assumed or inferred under Q) ————
 Trace of individual beds from ground observation and airborne interpretation ————
 Linear features in Q, reflecting bedrock and glacial features (see notes) ————
 Arches, trace of axial surface (defined, approximate, overturned) ————
 Synclines, trace of axial surface (defined, approximate, overturned) ————
 Bedding (inclined, overturned, top unknown, vertical) ————
 Cleavage (inclined, vertical) ————
 Intersection of bedding and cleavage (inclined, horizontal) ————
 Fold axis (sense of rotation unknown, S-fold) ————
 Joints (inclined, vertical) ————
 Glacial striations (direction unknown) ————

NOTES

Beneath the extensive Quaternary cover, bedrock in Brown Bear map area is sandstone and siltstone of the Jurassic to earliest Cretaceous(?) Bowser Lake Group. Sandstone occurs as thin to thick beds of medium to fine-grained lithic to arkosic arenites, forming resistant weathering shales lens of metres thick. Siltstone to silt-rich mudstones (locally pyritic) occurs as laminated and massive units up to tens of metres thick and as the tops of fining upward beds in dominantly sandstone units. Common sedimentary structures are normal grading, flute casts, grooves, cross-lamination, rip up clasts, and syndimentary folds. Sedimentary structures and the overall succession are the basis for interpretation of these strata as turbidites. Strata are similar to those in Cranberry River area (Evenchick, 1996). Interpretation of the structure here is on an estimate of 1500 m for the minimum thickness of the turbidites (Evenchick or Mustard, 1996).

The structure is dominated by northwest-trending, gently plunging, chevron-style folds of tens to several hundreds of metres wavelength. Folds are upright, except the northeast where they are overturned to the northeast. The structures are continuous with, and similar to, those in Cranberry River area. Cleavage is common siltstone and rare in sandstone. The grade of metamorphism is sub-greenschist facies.

Most bedrock is covered by poorly sorted surficial deposits, mainly till. The deposits are tens of metres thick in the lowest parts of the map area, and variably thinner over most of the rest of the area below treeline. Lineaments in crevasse covers mostly by surficial deposits are shown on the map by gray lines. Northwest-trending ones are parallel with bedrock structure, and locally define folds on trend with fold observed in outcrop. Therefore, although surficial deposits cover most of the area, the dominant (northwest-trending) topographic grain appears to be controlled by bedrock structure and is a result of the contrast in resistance to weathering between sandstone and siltstone. Regularly spaced north-trending lineaments in the vicinity of Swan Lake and sporadically to the north and south reflect drumlinized topography. Northwest-trending lineaments may be related to a common joint set which is perpendicular to fold axes (F₁-joints). Some of these appear to offset the northwest-trending lineaments.

REFERENCES
 Evenchick, C.A.
 1996: Geology, Cranberry River, British Columbia (103P/10); Geological Survey of Canada, Open File 3224, scale 1:50 000.
 Evenchick, C.A. and Mustard, P.S.
 1996: Bedrock geology of north-central and west-central Nass River map area, British Columbia; in Current Research 1996-A, Geological Survey of Canada p. 45-66.

Geology by C.A. Evenchick and P.S. Mustard, with the assistance of C. Higgins and K. Holm (1995)
 Map compilation by C.A. Evenchick, 1995
 Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada.
 Digital base map from Geomatics Canada published at the same scale. Generalized and modified by the Geological Survey of Canada.
 Copies of the topographical edition of this map may be obtained from the Canada Map Office, Natural Resources Canada, Ottawa, Ontario K1A 0E9
 Digital geological cartography by C.A. Evenchick and D. McKee
 Electrostatic plot produced by the Geological Survey of Canada
 Magnetic declination 1995, 24° 46' East, decreasing 9.5' W annually.
 Elevations in feet above mean sea level
 Contour interval 100 feet
 Contour lines and drainage do not match western and southern edges of map due to datum conversion from NAD83 to NAD27

Copies of this map may be obtained from the Geological Survey of Canada:
 601 South Street, Ottawa, Ontario K1A 0E8
 100 West Pender Street, Vancouver, B.C. V6B 1R8

LOCATION MAP

OPEN FILE 3225
 GEOLOGY
BROWN BEAR LAKE
 BRITISH COLUMBIA
 Scale 1:50 000 - Échelle 1/50 000

Kilometres 0 1 2 3 Kilomètres

Transverse Mercator Projection / Projection transversale de Mercator
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104A2	104A2	104A1
103P14	103P15	103P16
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103P11	103P10	103P9
	OF3224	

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 GEOLOGICAL SURVEY OF CANADA / COMMISSION GÉOLOGIQUE DU CANADA
 OTTAWA
 02/1995

Recommended citation:
 Evenchick, C.A.
 1996: Geology, Brown Bear Lake, British Columbia (103P/10); Geological Survey of Canada.

