



MINFILE NTS 093E – WHITESAIL LAKE

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The Whitesail Lake map area lies in the west-central part of the province and contains 120 documented occurrences. The map area straddles the boundary of the Coast and Intermontane tectonic belts; the Coast Belt lies in the west half and the Intermontane Belt in the east half. Physiographically, the Kitimat Ranges of the Coast Mountains occupy the southwestern third of the map sheet while the Nechako portion of the Interior Plateau occupies the eastern half. The Tahtsa Ranges represent the mountainous and highland portions of the Interior Plateau and are wedged between the Kitimat Mountains to the west and the low-lying Nechako Plateau to the east. The dominantly granitic Kitimat Ranges are characterized by round-topped, dome-like mountains with peaks from 2200 to 2500 metres and northerly facing cirques. These ranges have been over-ridden by the ice sheet, which left behind deep U-shaped river valleys with numerous hanging valleys in the steep walls and glaciers in the cirques.

South of Morice Lake, the drainage is eastward across the Nechako Plateau to the Fraser River system through the valleys of Tahtsa, Troitsa, Whitesail and Eutsuk lakes, all at about 900 metres elevation. The serrate ridges and peaks are between 2100 and 2500 metres high, with glaciers in most northeast-facing cirques. The lakes occupy ice-modified valleys extending eastwards from within the granitic Coast Range Mountains onto the Nechako Plateau.

The Coast Belt is essentially an uplifted terrane of Permian to Tertiary granitic and metamorphic rocks bounded by northwest-trending transverse faults; the Intermontane Belt is composed mainly of folded eugeosynclinal rocks of Early to Middle Mesozoic age. In west-central British Columbia the Intermontane Belt includes successor basin deposits of the Bowser Basin and Late Mesozoic to Early Cenozoic continental sedimentary, volcanic and plutonic rocks.

The most areally extensive geologic formation in the map area is the Lower to Middle Jurassic Hazelton Group. The Hazelton Group consists mainly of folded andesitic volcanic and sedimentary rocks that probably represent remnants of ancient volcanic island arcs. The Hazelton Group is unconformably overlain by successor basin deposits of the Middle to Upper Jurassic Bowser Lake and Lower Cretaceous Skeena groups. Continental volcanic rocks of Eocene to Upper Cretaceous age crop out in the vicinity of Ootsa Lake where they constitute the Ootsa Lake and Kasalka groups. A younger sequence of volcanic rocks, the Eocene to Miocene Endako Group, also occurs. The eastern half of the Interior Plateau is largely covered by late Tertiary plateau basalts.

The Intermontane Belt has been the site of major episodes of plutonic activity from Late Triassic until Tertiary time. These intrusive rocks form groups with distinctive isotopic ages, chemical compositions, associated metal concentrations and spatial distribution. Although most of the intrusions are Late Cretaceous or Tertiary age, a few are older. Porphyry copper and molybdenum deposits are associated with porphyritic phases of the Late Cretaceous and Tertiary intrusions. Veins containing lead, zinc and silver are also present (**Emerald Glacier**, 093E 001) and **Ox-C**, (093E 101)).

The most significant porphyry deposits discovered to date include: **Berg** (093E 046) containing 250 million tonnes of 0.4 per cent copper and 0.052 per cent molybdenum; **Huckleberry** (093E 037) with total mineable reserves of 91.2 million tonnes, grading 0.52 per cent copper, 0.014 per cent molybdenum, 2.8 grams per tonne silver and 0.06 gram per tonne gold at a cutoff grade of 0.3 per cent copper; **Ox Lake** (093E 004) with geologic reserves of 17.2 million tonnes, grading 0.33 per cent copper and 0.035 per cent molybdenum; **New Nanik** (093E 055) with inferred reserves of 16.4 million tonnes, grading 0.437 per cent copper; **Whiting Creek** (093E 112) with indicated reserves of 123.5 million tonnes, grading 0.062 per cent copper and 0.025 per cent molybdenum; and **Redbird** (093E 026) with drill indicated reserves of 33.5 million tonnes, grading 0.107 per cent molybdenum available by open pit at a cutoff grade of 0.059 per cent molybdenum. The Huckleberry deposit is currently in the Mine Development Assessment Process.

Other targets include epithermal gold deposits (**New Moon**, 093E 011), subvolcanic shear-hosted gold veins (**Smith-Nash**, 093E 014 and **Lindquist**, 093E 019), skarns (**Harrison Scheelite**, 093E 020) and gem-quality opals (**Northern Lights**, 093E 120).

SELECTED REGIONAL REFERENCES (NTS 093E – WHITESAIL LAKE)

- MacIntyre, D.G., Ash, C.H. and Britton J.M. (1994): Geological Compilation, Skeena-Nass Area, West-Central British Columbia, (NTS 93E, L, M; 94D; 103G, H, I, J, O, P; 104A, B); B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1994-14, Scale 1:250,000.
- Simandl, G.J., Paradis, S., Diakow, L.J., Wojdak, P.J., and Hartley, A.J. (1999): Precious Opal in the Whitesail Range, west central B.C., NTS 93E/10W and 93E/11E, in Geological Fieldwork 1998, B.C. Ministry of Energy and Mines Paper 1999-1, pages 285-293.