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GEOLOGY OF WESTERN MINES

BUTTLE LAKE, VANCOUVER ISLAND

A B S T R A C T

Western Mines Ltd. owns, and produces concentrates from, base metal sulfide orebodies near the center of Vancouver Island at Lat. 49° 35' N and Long. 125° 35' W. The metals in the ore - Zn, Cu, Pb, Ag and Au, the rock alteration - sericite and chlorite, and the gangue minerals - barite and pyrite, are features characteristic of many base metal deposits in volcanic rocks. The Kuroko ores of Japan and the pyritic copper - zinc ores of the Canadian Shield are two commonly cited groups of this widely recognized deposit type. These deposits display a olose spatial relationship to centers of subaqueous volcanism which produce acid breccias and tuffs at the end of a period of activity. Commonly, ore deposits develope as a stratiform sheet separating acid rocks from overlying andesitic rocks. At Western Mines' Lynx property a prominent N-W striking fault separates a structurally disturbed southwest side of an acid breccia pile from a relatively undisturbed northeast side of the pile. Reconstruction of the geology at Lynx suggests an early ridge of rhyolitic breccia and massive rhyolite, approximately symmetrical in section, about 2,000 feet wide at its base and with relief of about 1,000 feet. This pile was partly mantled by a sheet of sulfide up to 30 feet thick thinning to zero in a slope distance of 800 to a 1,000 feet down each flank. Following accumulation of overlying tuffs, breccias and andesite flows, a narrow wedge, elongate parallel to the ridge at or near the crest of the pile collapsed carrying an elongate segment of the thickest portion of the sulfide sheet some 500 feet downward from its original position. The presence of both altered and unaltered post-ore units southwest of the fault suggests collapse may have extended over some duration of instability in the pile. The oversteepened southwest flank of the pile has rotated downward at least 30°. Foundering or compression from the southwest (indicated by late thrust faults) or a combination of both may have caused this rotation.

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