BEAVERDELL MINE

Northeasterly structural zone containing the vein system is four miles in length.

Wellington, Sally and Rob Roy vein systems all strike easterly and dip from 70° south to vertical.

Bell system comprises two veins with easterly and northeasterly strikes and moderately south and southeast dips.

Lass vein system in the eastern part of the zone has northeasterly strike and dips at about 50 degrees southeast.

Vein systems in the mine area are essentially the same with fissure fillings of galena and sphalerite with quart and calcite as dominant gangue. (segmented ore zones or vein systems)

Pyrargyrite is especially common in the Bell and Lass.

The so-called East and W st Terminal Faults belong to a set of northerly striking and steeply east dipping normal faults, The East Terminal fault has been found to displace the east half of the Lass vein 700' downward.

Also northeast-striking, moderately west dipping normal faults that are closely spaced and chop the Bell and Lass veins into innumberable sections.

White

The oldest dykes are discontinuous pink aplite dykes, mentioned above, which have various strikes and commonly have gentle dips. Apparently the Idaho dyke was emplaced during a period of mineralization (White 1949 p. 149)

In the Wellington and Sally mines the veins are mineralized fissures that formed along faults or fractures that strike easterly dip moderately to steeply southward.

Five types of faults with distinctive orientation, movement and age have been defined by Whjte (1949 p. 141-142)

Type I. High angle, northerly striking, normal faults--post ore structures that strike from north to north 20° east and dip from 85 to 50° eastward. These arenormal faults dipping eastward and have downdropped ore zones toward the eastward. The east Terminal fault (ETF) has offset the Lass mine by 700' while movement onthe west terminal fault (WTF) has not been defined.

Type II Low-angle, northerly trending, strike-slip faults (Dexteral movement is indicated)

Type III Northerly striking, high-angle, normal faults- High density moderate northwest dipping faults cause complex segmentation of vein systems. These faults move segments downward to northwest and flatten ore sone from 50° to 34°.

Veins occur in zones of altered gd. or sodic granite up to 50' wide locally known as "ore ground". Altered rock is soft and appears speckled with small purplish blotches.

Dev. of sericite & clay minerals, chlorite, calcite, hematite & epidote. Ore ranges from few inches to several feet.
Vein material includes abundant medium grained py., sph., and gn., with some arsenopy., and some cpy. in a gangue of qtz. calcite ser. remnants of wall rock.

Mc Kinstry, H.E., , Silver mineralization at Beaverdell, B.C.

Westkettle quartz diorite is correlated by Reinecke with the Okanagan composite batholith.

Vein fillings: pyrite with some arsenopyrite, sphalerite, galena, tetrahedrite and pyrargyrite (quartz gangue). ruby silver tends to accompany pyrite, and tetrahedrite accompanies galena.

Later stage veins: calcite, argentite and native silver. in the Bell mine native silver occurs with green fluorite.

Order of mineralization:

Stage I & II? Quartz (comb structure) some pyrite and coarse dark sphalerite. Arsenopyrite (subhedral needles in wall-rock and sparingly in vein)
--veinlets of quartz cut sphalerite and pyrite
--angular blocks of sphalerite are outlined by an almost brecciated mass of quartz-pyrite stringers. Along the centers of the stringers, irregular chalcopyrite grains are common.
--galena replaces and surrounds quartz.
--galena replaced in sea and island texture by tetrahedrite
--Pyrargyrite replaces tetrahedrite and galena
--later quartz veins cut above
--calcite veins cut above.

Stage III quartz--calcite--pyrite--cpy.-polybasite--argentite--native silver--fluorite? green fluorite

Order of mineralization in fault veins: 1. quartz 2. calcite 3. calcite & fluorite 4. pyrite, cpy and polybasite 5. argentite 6. native silver

Stage I Quartz, py, arsenopyrite, sph., gn.
Stage II Qtz, py, gn, tetrahedrite, pyrargyrite (cpy?)
Stage III Qtz, calcite & fluorite, py, cpy, polybasite, argentite, native silver

Barite (present)

H.V. Warren and R.M. Thompson, Western Miner, Feb. 1945 pp. 37-40
Staples, A.B. and Warren, H.V. 1946 May&June, Mineralogy of the ores of the Highland-Bell Mine
Specular hematite, molybdenite and scheelite have all been noted by the writer.
Dark sphalerite is more indicative of good silver valuses than is the amber.
Galena, py and sph., tetrahedrite, pyrargyrite, and polybasite. Inclusion of acanthite and native silver are rare.

Freibergite= argentian tetrahedrite = $Cu_{12}Sb_4S_{13}$ --$Cu_{12}As_4S_{13}$ tennantite (solid solution)
Pyrargyrite Ag_3SbS_3 isostructural with Proustite Ag_3AsS_3 (Ruby Silver)
Hg reported in tetrahedrite