

JORDAN RIVER CAMP, V.I.Sketch Map

Sketch map No. 1 is copied from a geological map made in 1921 by Roland Blanchard for the Calumet and Arizona Mining Co.

The embayment of Sooke sandstones and conglomerates to the west of the Jordan River, extending from the Strait of Juan de Fuca north-easterly to the head of Winkler Creek, and to an elevation of 1200'+ is not shown.

The object I had in mind in making this sketch was to point out what I think may be an important factor in localizing the mineral-bearing shears to a great extent along the trench cut by the river, i.e: the fairly sharp turn to the west that the Sunro gabbro takes as it crosses that stream. Its change of direction could have had a significant effect in creating stresses.

Faulting

Robertson, Winkler and Sinn Fein creeks may be following northerly striking post-mineral faults. The Caulfield zone seems displaced on Sinn Fein Creek and it is possible the Cave and Centre zones are displaced on Robertson Creek. It has been difficult to trench beyond the latter for the continuation of these zones because of the heavy overburden. A dip needle reading by J.A. Hanna and myself indicated a shift to the right of the Cave zone - upstream from the last open cut.

Dr. J.G. Stevenson, in 1949 noted a number of strike faults in the River zone adit.

I kept a specimen for many years from the footwall of the River zone showing three distinct movements of a minor character, one pre-mineral and two post-mineral. I tried to protect it with an alabaster cast to prevent it breaking up. Dr. V. Dolmage in his report for the Geological Survey, 1919, stated that he was of the opinion that in the Cave zone adit the mineralization shifted from the shear to the bedding (of the basalt) and back. I think it much more likely the ore was offset by faults. The first engineers examining the camp postulated a major fault following the Jordan River. Roland Blanchard suspected that to be the case, but was unable to find any evidence for it.

Zoning

In the area north of the Sunro gabbro intrusion the Cave zone is in my opinion the "master" zone. The River, Centre and Turnbull zones all intersect it. These zones, with which can be included the River branch, Gordon and Discovery zones, follow the pattern of linked Tertiary veins - (in this case shears).

I do not think the River zone adit has reached the intersection of the River zone with the Centre zone, but the River zone intersection with the Gordon zone must have been passed.

Approaching the intersection of the River zone with the Centre zone, the latter had a good surface showing about 7' wide. It was later concealed under a platform from which air pipes carried air from the compressor at the Forebay reservoir.

The cave zone, west of the river, makes high-grade ore where intersected by the Turnbull zone. Its intersection with the Centre zone was not uncovered, due to heavy overburden. Exploration is warranted there. In Dr. Dolmage's 1919 report he states that the largest orebody in the camp is likely to be in the River zone, at or near its intersection with the Cave zone. This would be near the southwest

C
O
P
Y

corner of the Forsbay reservoir.

Mineralization

I think there is a very definite relation between the gabbro contacts and the deposition of ore in the basalt. Just what the maximum distance is can only be conjectural at this stage; possibly not over 1000 to 1500'.

Surface Outcrops

The River zone can only be traced on the surface for about 250' in elevation above the river bed. The highest outcrop was 12 to 15" wide and would assay less than 1% Cu. Good ore was exposed at a higher elevation in both the Centre and Gordon zones.

The Cave zone mineralization cannot be followed on the surface much above the Cave adit, but there is a wide, strong, tight shearing above it near the rim of the canyon. It does not appear to be mineralized at that level and was never shot into. The Hanna zone on the surface is on the contact between the gabbro and the basalt. It is not a particularly strong shear at the surface and the mineralization is weak. It was not considered attractive enough to do much work on.

Ore outcrops on the east side of the river within 100' of the River zone, upstream. It is awkward to get at and no surface work was done on it. I think the Gunlock Mines Limited may have put a D.D. hole through it from the River adit. On the south contact of the gabbro the following zones occur in the basalt; Yellow Cliff, Caulfield, Tiger and Robertson. Unlike the Cave zone area these zones do not seem to follow any pattern. The Cliff zone has 8' of 3% Cu ore on the surface and the Robertson is fully twice that wide. It will assay about 2½% Cu. J.W. Young told me the "Tiger zone, which Mascot drilled, could have 120,000 tons of 1.8% Cu ore. There is also an unnamed zone south of the Winkler zone. It outcrops on a cliff face and can be seen from the opposite side of the river. It appears to be of fair width and well mineralized. I think the top of it can be seen at the level of the tramway where it has had a shot or two put into it.

The Caulfield is a wide, persistent zone and should contain a sizeable orebody somewhere along its strike.

Ore Zones in the Gabbro

On the surface the Stewart zone is the largest and is the first one I found in the gabbro-Xmas day, 1915. The Winkler zone is in the gabbro, almost on the south contact. A D.D. hole 90' below the tramway cut 10' of 2.15% Cu ore. An assay for nickel on ore from the adit ran 0.23%. The south end of this zone is exposed, but drilling might find it extends further north than appears at the surface. A zone about 12' wide, exposed in an open cut below the tramway, intersects it almost at right angles. The intersecting zone is of lower grade.

The Hornet zone on Sinn Fein Creek contains some good ore, but the mineralization is spotty.

The Bend zone is south of the Cave zone on the west side of the river, outcropping in the river bed and just above. It is 10 to 12' wide. Mascot put a D.D. hole into

C
O
P
Y

- Three -

it and reported good Cu and Ni values.

In addition to the zones mentioned there are a number of weakly mineralized shears that Gunlock Mines Limited did some surface work on. These are all in the basalt.

One is east of the reservoir near an outcrop of granite, on or near the Ayah Fr; another is on Winkler Cr; on the Olive Fr. and a third is on the Gunlock 4, or Olive, a short distance south of the most northerly gabbro dyke shown on sketch map No. 1. The Gabbro Co. made some open cuts on a similar one on Winkler Cr. for assessment purposes.

Gabbro Dyke north of River Zone

Blanchard's map shows no dips on the gabbro bodies, but he volunteered the information that the River zone would be cut off a depth by the gabbro. He made this remark to Bob Gordon, Gunlock caretaker for some years. I took this to mean that the most northerly of the gabbro bodies has a southerly dip.

I have only examined this dyke where it crosses the river. I took a grab sample across 30' or so, as it contains a little chalcopryrite and pyrrhotite. My sample ran 0.2% Cu and 4.8 oss. Ag. The silver values failed to hold up in a second sample I took, so I gave it no further attention. It might be worth testing for Ni and Co.

On the east side of the river, below the reservoir and north of the spillway, I found a shear in the basalt 12 to 15' wide. It would likely run about 0.5% Cu. I did no work on it and it might be hard to find now.

Float

There is a big boulder of float on the east side of Uglew Cr., southwest of the Viking claims. It will weigh 10 tons or more and is from a shear in the gabbro, mineralized with chalcopryrite and pyrrhotite much like the outcrop of the Stewart zone. It should be drilled and shot.

I also found float near the forks of Sin Fein Cr. This was also ore from the gabbro. It assayed 2.4% Cu and 0.25% Ni. Due largely to the heavy overburden I was unable to find it's source.

Geo. E. Winkler

C
O
P
Y

ADDENDUM

Intersection of River and Cave zones near southwest corner of Forebay reservoir is about 1500' from portal of River zone adit, and about 250' from gabbro contact, according to Blanchard's map.

Large and numerous inclusions of basalt in the gabbro between the Winkler zone adit and the north contact of the gabbro stock would indicate proximity to the roof of the intrusive. Erosion of the latter cannot be deep.

Diabase dykes occurring in the gabbro and basalt do not appear to have any economic significance. They may be post-mineral.

Alteration of the feldspars to a felted hornblende seemed to precede mineralization in ore-bearing shears. That this cannot be entirely relied on is evidenced by the surprisingly fresh-looking feldspar seen in the Hanna zone where the Sunro adit crosses it.

Surface waters were active in the River zone to form some secondary chalcocite, and I have a specimen of bornite from 400' below the river bed in the Sunro workings that is quite certainly secondary. Cuprite was found at the river level on the Tiger zone, and considerable tenorite was seen in a surface cut on the Discovery zone.

Native copper in felted hornblende outcrops may indicate sulphides at depth.

In the zones where copper preponderates, the deposition seems to me to have depended more on temperature conditions than on pressure. I visualize the Cave as a "hot" zone, and most of the mineralized gabbro zones as being higher temperature zones than those confined to the basalt, though the range difference could not have been very great.

The Hanna zone, as exposed in the Sunro adit, might seem to contradict this theory, but it may have caught the copper that came from the same source as the Cave zone pyrrhotite and was driven out to a cooler area before being precipitated.

Geo. E. Winkler