82F/2E

82F/5E-20, 21, 25, 26, 26, 27, 18, 13, 14

021780

L 49-118 SW.

THE COPPER AND ZINC CONTENT OF TREES - PHOENIX

Sept. /50.

A study was made of the variations in the copper and zinc content of trees in the Phoenix copper camp in relation areas known to be barren; areas known to contain ore bodies; and to drift-covered areas which might contain copper mineralization. In the period from June 5th to July 2nd, inclusive, a two-man party took 440 twig samples, most of which were from fir trees, and analysed them for copper and zinc by the 'Dithizone-neutral-color-end-point' method. The results of this work are shown on the accompanying map. Sampled trees were located by pace and compass traverses based on Map 16A and Map 45-20A, of the Geological Survey, Canada. In addition to the locations and values of tree samples, the map shows the present outlines of mined and caved areas; the distribution of areas of shallow, patchy overburden in which outcrops are reasonably numerous; and the approximate extent of Tertiary sedimentary and volcanic rocks which are said to overlie unconformably the ore bodies and the ore-bearing formation(s).

In an area such as Phoenix, characterized by copper ores notably poor in zinc, peculiar variations in the metal content of the trees are found. Where it is available, a tree seems to prefer copper to zinc. Thus, trees growing near copper mineralization, although containing copper in somewhat abnormal quantities, have distinctly subnormal contents of zinc. Hence, the ratio of copper to zinc is more clearly anomalous than the relatively small increases in the copper content. When considered in relation to the known and probable distribution of copper mineralization in the Phoenix camp, the tree analyses can be subdivided into a number of groups and classes having the metal charactistics shown in the following table:

	ANOMALOUS GROUP			NORMAL GROUP
	Class I	Class II	Class III	
No. of Analyses	63	65	86	240
Av. Copper p.p.m.	8.2	5.5	4.9	4.1
Range Cu ppm	37.0 - 3.8	8.7 - 3.5	7.1 - 2.5	5.9 - 1.6
Ratio CU:ZN	0.30 or over	0.29-0.25	0.24-0.20	0.19 or less

This subdivision is indicated by symbols on the map. Normal values characterize the outskirts of the mining area as a whole, but occur at places within the camp, such as the area of Tertiary rocks between the Old Ironsides-Knob Hill and Gold Drop-Rawhide workings, where the chances of finding ore deposits are negligible. Class I anomalous values are closely associated with known ore deposits. An isolated value of this class may not be significant, but a group of such values is believed to be a positive indication that the area covered by the group is underlain by copper mineralization. Such areas are indicated on the map as Class I anomalies. Class II values occur in fairly well-defined groups which may contain isolated Class I values. Such groups, referred to on the map as Class II anomalies, occur peripherally to Class I anomalies and also as separate anomalies. Class II anomalies are believed to encompass areas in which the chances of finding copper mineralization are sufficiently attractive to warrant further consideration. Class III values are scattered at random throughout the Phoenix camp. Although not related spacially to individual ore bodies, Class III values suggest that somewhere within a broad area, copper mineralization exists.

The anomalies found in the Phoenix camp, lettered for reference to the map, are discussed briefly in the following paragraphs.

A - Knob Hill-Ironsides: A large, northerly-striking ore body, dipping gently eastward was mined in the glory hole from its outcrop to a vertical depth of as much as 240 feet. The west wall of the pit represents the commercial footwall, but the east side is largely caved hangingwall material. Failure of large stopes farther down the dip xxx is marked by the caved areas east of the glory hole. A Class I anomaly surrounds the glory hold, and a Class II anomaly extends eastward across the caved area, even projecting into an area underlain by un-mineralized Tertiary arkose. This Class II anomaly may represent the ore zone in workings below - reflected through several hundred feet of fractured but un-mineralized hangingwall rock. The area to the north of the Knob Hill-Ironsides workings, that of the old town of Phoenix, was not investigated because of the lack of fir trees.

B - Gold Drop - Snowshoe: The underground distribution of ore in this area is not known with certainty, but the glory holes indicate that several ore bodies, complicated by numerous northerly-striking faults, dipped moderately eastward approximately parallel to the slope of the surface. The main glory holes are within a relatively strong Class I anomaly. A Class II anomaly projects some 1200 feet farther eastward in an un-prospected area of deep, continuous drift.

C - Rawhide: A Class I anomaly encircles the glory hole, extending about 800 feet eastward beyond the workings. Unfortunately, the eastern part of this anomaly is not well-founded due to the scarcity of fir trees

D - Monarch: A Class II anomaly containing two small Class I anomalies occurs in this area. One of the Class I anomalies is on the outcrop of a small ore body in the Monarch glory hole; and the other is in a drift-covered area in which there are a number of old caved cuts, a shaft, and a small glory hole. Dump material at the shaft and in the glory hole is slightly mineralized but probably not of commercial grade.

E - : This is merely two Class II values in shallow, patchy drift on un-mineralized Tertiary arkose. Its significance appears to be slight.

F - Grey Eagle: A small Class II anomaly exists near a small glory hole from which a small quantity of ore may have been shipped. It may be noted that no anomalous values were found at the nearby War Eagle, which has been developed extensively but apparently produced no ore.

G - in part on Danny and Missing Link No.2 Claims: Two Class II anomalies exist in this area. The more westerly anomaly is in a drift-filled creek valley; the other is in an area of patchy drift with outcrops of cherty rock which is highly oxidized and in places slightly copper-stained.

H - Brooklyn-Idaho: A Class II anomaly surrounds the Brooklyn workings, extending across the valley of Twin Creek but not as far as the Idaho glory hole. The expansion of the anomaly near Twin Creek probably indicates only that the drift is unusually thick.

I - New York Claim: Two Class II values were found near old workings. Dump material is well mineralized with pyrite but no copper minerals were seen.

J - Stemwinder: A small Class II anomaly exists near the workings, but any extension to the south could not be tested because of the lack of fir trees.

K, L, M, N : These Class II anomalies are mainly on Tertiary volcanic rocks, not known to be mineralized. No reason for these anomalies can be given. However, it may be noted that in places the rock contains zones of vertical, north-westerly-striking joints, closely-spaced and much oxidized. These might have served as channels for the circulation of copper bearing solutions derived from some unknown source.

By W. H. White.

Tree Anomaly Map. Phoenix BC

To accompany mss by [illegible]
Sept. 1952