

826824

ECONOMIC POSSIBILITIES
OF THE
TAN PROPERTY,
NEAR CHILLIWACK, B. C.

Prepared for .

M. McCLAREN AND G. STAPLEY

By

W. G. SMITHERINGALE & ASSOCIATES LTD.

July 12, 1979

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
LOCATION AND ACCESS	1
GENERAL GEOLOGY	2
HISTORY AND PREVIOUS EXPLORATION	3
COMMENTS ON PREVIOUS EXPLORATION	4
GEOLOGY AND MINERALIZATION OF THE LOWER SERIES	4
STRUCTURE	6
CONCLUSIONS	7
CERTIFICATION	9
REFERENCES	10

ECONOMIC POSSIBILITIES
OF THE
TAN PROPERTY,
NEAR CHILLIWACK, B. C.

INTRODUCTION

The Tan property contains volcanogenic Zn and Cu mineralization associated with what appears to be a small dacite dome.

The writer spent two days in early June, 1979, examining the property, accompanied by Mr. Gordon Stapley. The purpose of the examination was to advise Messrs. McClaren and Stapley on the possibilities of the "lower zone", which includes some massive sulphide lenses, containing mineralization of economic significance. The "upper zone", which comprises mainly stringer mineralization, was not examined.

Several comprehensive reports are available describing the history, exploration work done and geology of the property (Garratt, McClaren and McInnis, 1975; Garratt and McInnis, 1976).

This report is based on the writer's field examination and on the data in the above mentioned reports.

LOCATION AND ACCESS

Lat. 49°01'N, Long. 121°40'W
N.T.S. Map Area 92H/4
New Westminster Mining Division
Approximately 25 metres southeast of Chilliwack, B. C.

Access is by 18 km. of paved road south from Chilliwack and up the Chilliwack River to the mouth of Tamihi Creek, thence 8.5 km. of logging

road up the valley of Tamihi Creek.

The property is ideally located with regard to the infra-structure required for a mining operation.

GENERAL GEOLOGY

The showing on the Tan claims are contained in a dominantly volcanic sequence of mafic to intermediate flow rocks, intermediate to silicic tuffs, breccias and sill-like bodies, Radiolarian cherts and Fusilinid limestones (Garratt et al., 1975). Most of the sequence appears to be submarine. The sequence belongs to the Chilliwack Group and the Fusilinid limestone is Middle Permian in age. The showings are near the leading edge of thrust sheet that over-rides a slice of Cultus Formation (Upper Triassic or Jurassic age), which in turn is over-ridden by a thrust slice of Lower Pennsylvanian limestone. The strata are locally folded and faulted but in most places they are gently dipping. The rocks have undergone regional metamorphism to lower greenschist facies. There is no indication that plutonic rocks are present on or near the property.

The sequence was divided by Garratt et al., (1975) into two series. They described the lower series as a sill-like dacite body, with porphyritic phases, intrusive into silicic tuffs and breccias containing locally developed chert. The upper series comprises a variety of andesitic and basaltic flows and breccias, some silicic tuff, Radiolarian chert and Fusilinid limestone. It contains the "main showing", which is formed of quartz stringers carrying sphalerite and chalcopyrite in a zone of brecciated, altered and silicified tuff. This showing is not economic (Garratt and McInnis, 1976).

HISTORY AND PREVIOUS EXPLORATION (AFTER GARRATT & McINNIS, 1976)

Mineralization on what is now the Tan property was known in the early 1960's, but the property was not staked until 1972. After examination by Western Mines, Cominco, and Falconbridge the property was optioned to Cominco in 1972. After an expenditure of approximately \$75,000 over two field seasons (see below) during which two drill targets were outlined the option was dropped, apparently as a result of a disagreement with the owners regarding expenditures rather than a lack of encouraging exploration results. The property was optioned to Great Plains Development Company of Canada Ltd. in 1974 and a joint venture exploration program under the supervision of Great Plains was carried out during the 1975 and 1976 field seasons. Great Plains subsequently dropped their option.

Exploration work on the property is summarized below.

- 1972: Minor trenching by the owners.
- 1972: Falconbridge - geological mapping and soil sampling prior to making an option decision.
- 1972: Cominco - soil and stream silt sampling and geological mapping.
- 1973: Cominco - induced polarization survey, road building and drill site preparation.
- 1975: Great Plains Development - geological mapping, geochemical surveys, electromagnetic survey, road building and diamond drilling.
- 1976: Great Plains Development - geological mapping, soil profile studies, trenching, induced polarization and electromagnetic surveying, diamond drilling and, off the property, a regional stream sediment geochemical survey.

COMMENTS ON PREVIOUS EXPLORATION

Diamond drilling to date has not adequately tested the property. Of the seven holes drilled in 1975 one failed to reach bedrock and three were terminated at depths of about 50' due to caving. The other three holes did intersect sparsely mineralized felsic breccias but their locations relative to the coincident geochemical and I.P. anomalies found by Cominco is not clear from the information available, so their effectiveness is difficult to evaluate. These three holes were collared within 200 feet of each other and intersected the lower series. Two holes were drilled in 1976, one to test the main showing in the upper series and the other to test a large geochemical anomaly on the northwest flank of Fumarole Creek. The soil profile studies of the Fumarole Creek anomaly suggest to the writer that the drill hole testing the anomaly was collared down slope from the source of the anomaly. The sparse mineralization encountered by this hole does not seem to be adequate to explain the geochemical anomaly. On the other hand, if the soil profile studies are misleading, the hole was probably off target, for it was collared about 600 feet up slope and 400 higher elevation than the anomaly but was drilled to a depth of only 248 feet.

GEOLOGY AND MINERALIZATION OF THE LOWER SERIES

The writer examined a number of outcrops mapped by Garratt et al. as units 3 and 4 of the lower series. This brief examination gave the impression that there is little difference between these units as mapped (see geological map accompanying 1975 report by Garratt et al.).

The main unit in the lower series is a felsite body several hundred feet thick composed of a variety of massive, quartz-eye felsites.

Colours are black, pale grey, apple green, olive green and medium grey-green; shards are commonly present and in places felsitic lapilli are present; some contains glassy feldspar crystals, some contains cloudy feldspar crystals and some contains no feldspar crystals; some is very cherty and in many places it contains numerous thread-like stringers and small patches of black, cherty looking quartz. The composition of these rocks probably varies from dacite through quartz latite to rhyolite. In general this body contains little pyrite and is not noticeably altered, other than the cloudy feldspar phenocrysts and black quartz threads. Near the topographic top of this body (above the largest outcrop of unit 3 shown on the 1975 geological map by Garrat et al.) this unit inter-fingers with darker green, andesitic fragmentals and tuffs. The unit is topographically overlain and flanked by volcanic breccias composed of felsite fragments and matrices that are similar in appearance to the rocks of the main felsite body.

Mineralization in felsite breccia is exposed in several places. A zone of stringers of quartz and pyrite with associated sericitic alteration is exposed on Falls Creek, (Stapley Creek) below the waterfall and above the lower road. Volcanic breccia across the creek from this exposure is heavily chloritized. A one foot thick bed of semi-massive to massive pyrite occurs about 1,100 feet northwest of Fumarole Creek at approximately 2,100 ft. elevation. The host rock is felsite fragmental tuff containing sericitized felsite fragments up to 3 inches across in a dark grey to black, chloritic matrix that contains what appears to be bituminous material. Both the fragments and the matrix contain 1% to 2% finely disseminated pyrite. Both these showings are barren, other than for a few one inch patches of chalcopyrite intergrown with pyrite.

Logging road construction since the 1976 program has unearthed sulfide bearing float in several places in the southeast part of the property. Angular boulders of disseminated to semi-massive pyrite with a quartz-sericite-chlorite matrix were found 0.4 miles southeast of the Fumarole Creek bridge in a road cut about 25 ft. above the bed of Tamihi Creek. Sulfide bearing boulders up to 5 ft. across were uncovered on the lower road about 2,700 ft. southeast of Falls Creek (Stapley Creek) approximately 200 ft. above the bed of Tamihi Creek. This locality is about 1,000 ft. southeast of the 1975 drill holes 5, 6 and 7, and is presumably in the vicinity of the coincident geochemical and I.P. anomalies on which these holes were drilled. The boulders are light grey felsitic fragmental tuff containing disseminated to semi-massive pyrite (up to 75%) with scattered blebs of chalcopyrite and occasional grains of sphalerite. Most of the fragments are chert or cherty felsite and the matrix is sericitic and highly siliceous. Although the grade of this mineralization is not economic, the boulders are significant because they indicate the presence of massive sulfide type mineralization.

STRUCTURE

Tuffaceous portions of andesitic units have a well developed schistosity that is sub-parallel to bedding and, in most places observed by the writer, dips less than 30° southwestward to southeastward. This would be the attitude of schistosity expected in nappe structures developed within a thrust sheet that is thrust northward over younger rocks (see section on General Geology). In places this schistosity is folded about northeastward trending axis with an attendant fracture cleavage developed

that strikes northeastward and dips steeply. The amplitude of such folds in the massive pyrite bed 1,100 ft. northwest of Fumarole Creek is about 5ft.

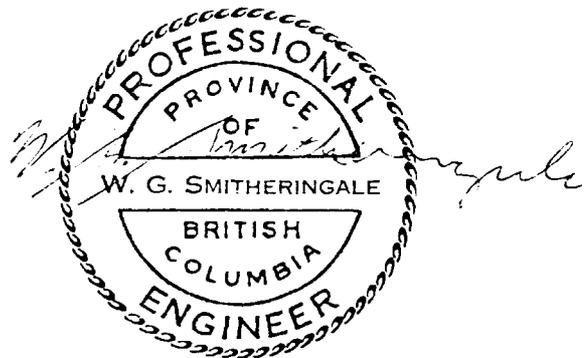
CONCLUSIONS

1. The Tan property contains zones of quartz-sulfide stringers and beds of semi-massive to massive pyrite in locally silicified, pyritized, sericitized and chloritized felsite breccias associated with a body of massive felsitic rocks several hundred feet thick. These mineral showings were formed by volcanic exhalative processes in a dominantly submarine volcanic environment. The fact that no significant quantities of chalcopyrite, sphalerite or galena have been found with the known pyrite occurrences does not eliminate the possibility that massive sulfide bodies carrying these economic minerals may be present in the area.
2. The property has not been thoroughly explored. For example, soil profile studies and a single drill hole did not identify the source of the large geochemical anomaly on the northwest flank of Fumarole Creek. The source of the chalcopyrite bearing massive sulfide boulders 2,700 ft. southeast of Falls Creek is not known (the results of the soil geochemical and I.P. surveys conducted by Cominco in this general area are not available to the owners of the property). Much of the southeastern portion of the property, in which the chalcopyrite bearing boulders were found, has not been explored. Furthermore, it is possible that exploration decisions based on structural

or stratigraphic interpretations have in the past been misguided, since the possible existence of recumbent folds and overturned limbs and possible refolding of these structures has not been appreciated (these possibilities have not been mentioned in any of the reports).

3. The Tan property warrants further exploration for massive sulfide mineralization.

Respectfully submitted,



W. G. SMITHERINGALE, P.Eng.

W.G. Smitheringale & Associates Ltd.
1328 - 510 West Hastings Street
Vancouver, B. C.

July 12, 1979

CERTIFICATION

I, William G. Smitheringale, do hereby certify that:

1. I am a practising Professional Geological Engineer, resident at 219 - 145 West Keith Road, North Vancouver, B. C.
2. I am a graduate of the University of British Columbia with a degree in Geological Engineering (B.Ap.Sc., 1955) and of the Massachusetts Institute of Technology with the degree of Doctor of Philosophy in Geology (Ph.D., 1962).
3. I have practised my profession continuously for sixteen years as geologist with the Geological Survey of Canada, as Assistant and Associate Professor, Department of Geology, Memorial University of Newfoundland, and since 1974, as a Consulting Geologist.
4. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.
5. I did not verify the existence or location of the Tan claim group. I assume that in the field I was correctly shown the Tan claim group by Mr. Gordon Stapley.
6. I have no financial interest in the Tan claim group, nor do I expect to acquire any interest.



W. G. SMITHERINGALE, P.Eng.

1328 - 510 West Hastings Street
Vancouver, B. C.

July 12, 1979

REFERENCES

Garratt, G. L., McClaren, M., McInnis, M. D. (1975): Project Year-end Report, Tan Claims - Chilliwack, B. C., Private report Great Plains Development Co. of Canada Ltd.

Garratt, G. L. & McInnis, M. D. (1976): Project Year-end Report, Tan Claims - Chilliwack, B. C., Private report, Great Plains Development Co. of Canada Ltd.

Monger, J. W. H. (1970): Geology of Hope Map Area, West-Half, British Columbia, Geol. Surv. Can. Paper 69-47.