

PRELIMINARY REPORT
ON THE
WINDY CRAGGY Cu-Co-Au PROPERTY
Atlin Mining Division
British Columbia

FOR
SOUTHERN GOLD RESOURCES LTD.

BY
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INTRODUCTION

The writer was retained by Southern Gold Resources Ltd, to assemble public information relating to the Windy Craggy copper-cobalt- gold deposit in northwestern British Columbia and to make some preliminary comments and observations on same.

SOURCES OF INFORMATION

B.C. Ministry of Energy Mines and Petroleum Resources assessment files include several reports on the Windy Craggy property; copies of five of these are included as part of the data package. Not included are two reports dealing with a topographic survey (8118) and a geochemical survey of the southern claims (11045). A drilling report (13144), on confidential file until August, 1987 probably contains logs of drill hole 14-83 which intersected good gold values. It should be pointed out that only six of the twenty-two holes drilled between 1981 and 1983 are described in available assessment reports.

Two reports by D.G. MacIntyre of the B.C. Ministry of Energy Mines and Petroleum Resources are included in the appendices as is a recent paper by two ex-Falconbridge employees, John Gammon and Terry Chandler. This paper was presented at both the Prospectors and Developers and Northwest Mining Association annual meetings in the past year and a half.

One of the most useful pieces of information is a summary report prepared by Geddes Resources Limited in March, 1986 which was secured by the writer a few months ago.

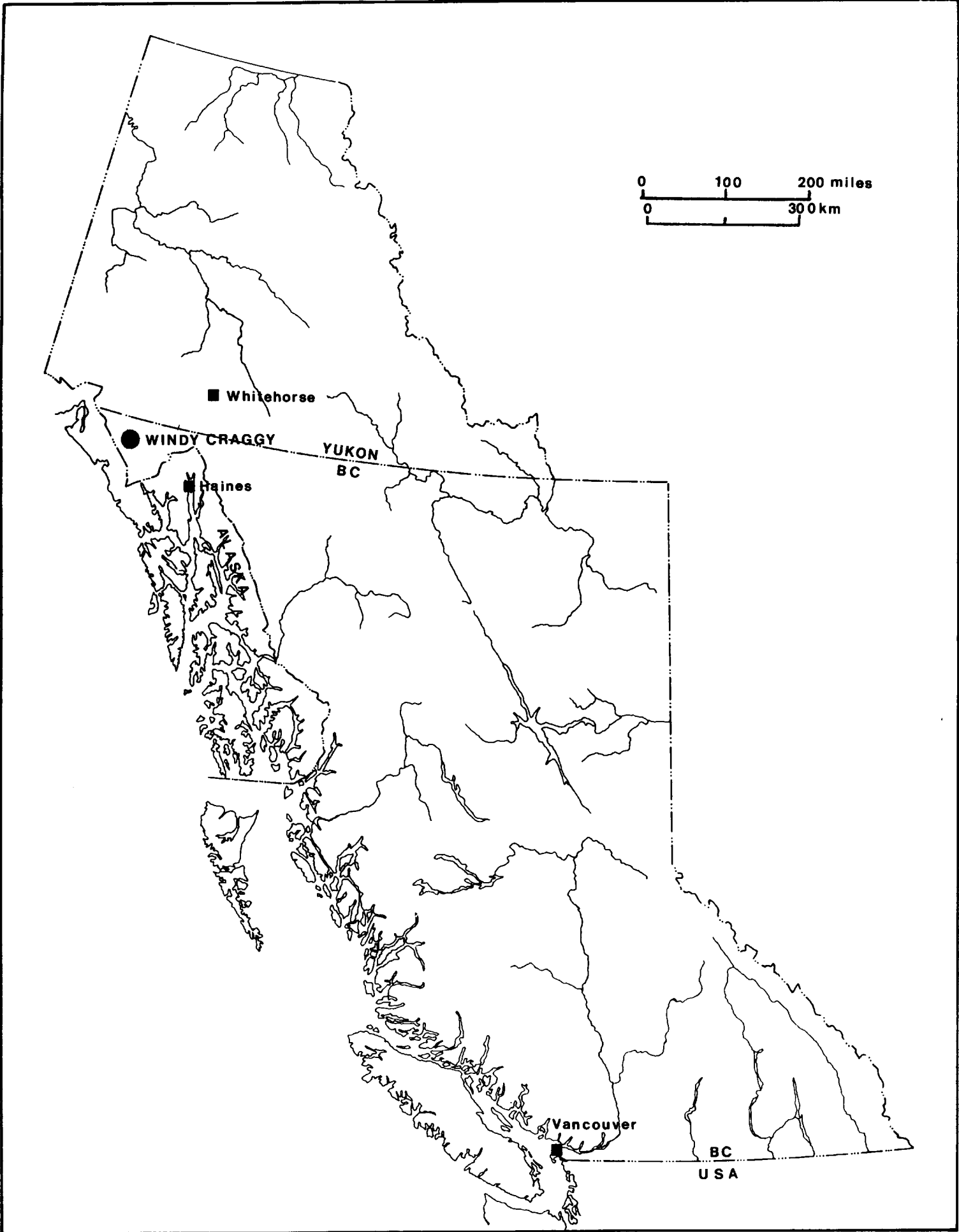
A number of information gaps include plans and sections referred to in the Gammon-Chandler paper - it may be possible to obtain these surreptitiously. Drill logs for assessment report 11763 are missing and this may have been an error in copying.

A number of preliminary economic and feasibility studies have been prepared for Geddes Resources as listed in their summary and metallurgical test work includes one study by CANMET which should be available publically.

LOCATION AND ACCESS

Windy Craggy is situated on the east flank of the Coast Mountains in a triangular area of extreme northwestern British Columbia which is bordered by the Yukon on the north and the Alaska panhandle on the south and west. The property is at latitude 59°44' North and longitude 137°44' West in NTS map-area 114P/12 and is in rugged terrain of the Alsek Ranges, part of the St. Elias Mountains. Elevations range from 2000 feet at Tats Lake base camp to more than 7000 feet in the immediate area of the deposit. Much of the area is covered by permanent ice and snow fields and coastal climatic conditions are the norm.

The property is 120 air miles southwest of Whitehorse, Yukon and 40 air miles west of a point on the Haines Road 60 miles northwest of the deep sea port of Haines, Alaska. A proposed road route to the property extends from the Haines Road down the Tatshenshini River and up the Alsek River to Tats Lake, a distance



0 100 200 miles
0 300 km

■ Whitehorse

● WINDY CRAGGY

■ Haines

YUKON
BC

Vancouver

BC
USA

of 75 miles.

Access to Tats Lake base camp is by aircraft to a 3000 ft. airstrip constructed in 1985. The cost of the airstrip, capable of handling Caribou aircraft, was partially defrayed by a \$75,000 Provincial government grant. Access to the deposit is currently by helicopter.

MINERAL PROPERTY

The Windy Craggy property consists of 11 2-post mineral claims and 12 modified grid claims in the Atlin Mining Division. The claims cover a 16 square mile area and extend in a northerly strip from Tats Lake to the deposit, a distance of 8 miles.

The property is currently held by Geddes Resources Limited with Falconbridge Limited retaining a 22.5% net profits interest.

EXPLORATION WORK TO DATE

The exploration history of the deposit is well documented in the Gammon-Chandler paper. The initial mineral discovery was made in 1957 by J.J. McDougall of Falconbridge. Surface work and pack-sack drilling was carried out between 1958 and 1960 and 3 short conventional drill holes were completed in 1965. VLF-EM and magnetometer surveys were carried out over the mineralized zone in 1974.

Most work on the property was done in the period 1981 to 1983 by way of a joint venture with Geddes Resources and Falconbridge as operator. This work included airborne geophysics and 26,400

feet of diamond drilling in 22 holes. Preliminary mineralogical and metallurgical studies were also completed. A 3000 ft. airstrip was constructed at Tats Lake in 1985 by the Northair group.

Expenditures to date exceed \$5 million of which more than half have been advanced by Geddes Resources.

GEOLOGICAL SETTING

Windy Craggy is within the allochthonous (accreted) Alexander Terrane of the Insular tectonic belt. Oldest rocks are mid-Paleozoic clastic and carbonate sediments which are overlain in the Tatshenshini - Alsek Rivers area by extensive late Triassic argillaceous sediments. These overlie a volcanic complex (of similar age?) of intermediate to mafic flows, pillow basalts and minor sediments which is central to the known mineralized zones.

Overall structural trend is northwest but the area features complex folding and faulting.

PROPERTY GEOLOGY AND MINERALIZATION

Good descriptions of property geology are contained in papers by MacIntyre and Gammon-Chandler.

The Windy Craggy deposit occurs in a probable late Triassic sequence near the contact between altered pillow basalts and overlying graphitic shales and calcareous siltstones. Current opinion is that Windy Craggy is a Cyprus-type massive sulfide

deposit - the best analogy elsewhere in British Columbia are the Anyox deposits.

Several phases of deformation and faulting complicate the geological setting of the deposit which is known over a strike length of 6000 feet. An isoclinally folded sulfide body strikes northwest and dips steeply northeast, and widths exceed 300 feet. Massive sulfides within the zone are known to extend to depths of 1600 feet.

The southeast part of the massive sulfide zone (75-90% sulfides) consists principally of pyrrhotite (60-85%) with 10-30% pyrite and 3-10% chalcopyrite. Copper grades average 1% and cobalt 0.05-0.25%. (Note - no cobalt mineral has been identified to date - cobalt may be in solid solution with pyrrhotite and as such may not be recoverable)

1100 feet northwest, pyrite predominates over pyrrhotite (Pyrite 60-70%, Pyrrhotite 20-30%, chalcopyrite 5-10%) and copper grades range from 1 to 2.5% and cobalt decreases to 0.05%.

In the central part of the overall zone, widths of the massive sulfide body decreases markedly but it is in this interval that a cherty zone with carbonate facies iron formation contains good gold values (DH 14-83 - 200 ft. (estimated true width 100 ft.) grading 0.278 oz/ton gold and 1.22% copper, including 127 ft. of 0.37 oz/ton gold - best grades in this interval include 0.835 oz/ton over 20 feet).

Northwest of the gold zone, widths increase, copper grades

are in the 2-3% range and some interesting silver values are present (up to 6 oz/ton). Cobalt is in the 0.10% range and some zinc is present.

Various estimates of tonnage and grade of the Windy Craggy deposit range from 100 million tons of 2.4-2.8% copper to 300 million tons grading 1.5% copper with a potential for 1 billion tons of mineralized material.

GENERAL COMMENTS AND OBSERVATIONS

There is no doubt that Windy Craggy is a world class mineral deposit. Remoteness and difficulty of access pose the biggest problems at present.

Construction of a road to Tats Lake is feasible although likely very expensive. Accessing the deposit 8 miles north of Tats Lake will present problems although the Geddes Resources summary suggests part of the route will be over glacial moraine.

Haines, Alaska is mentioned as the logical port facility - there may be some merit in considering a route down the Alsek River to tidewater.

Preliminary metallurgical testing indicates 85-90% recovery rates for copper and that gold is free milling. Cobalt may not be recoverable as previously noted.

There is no doubt that the apparent gold zone is the primary target at present. In addition to the good grades over exceptional core lengths in drill hole 14-83, other intersections over an 1100 ft.

strike interval include 0.14 oz/ton over 10 feet in 13-83 and sections of 0.05-0.10 oz/ton over significant core lengths in drill hole 11-83 (see sketch map in Geddes summary).

Deciphering the apparent structural complexity of the massive sulfide zone is difficult based on surface drill holes which necessarily have had to be drilled wherever possible in the difficult terrain. An underground program to test the gold-bearing zone is the obvious route to go. An adit at 4500 feet elevation (800 - 1700 ft. vertically below surface exposures) involving 7000 feet of drifting and cross-cutting in the area of best gold mineralization has been estimated by the Northair group to cost \$6 million.

RECOMMENDATIONS

Additional information is needed, as indicated earlier. Plans and sections from the Gammon-Chandler report should enable a better understanding of the structural setting of the deposit, particularly in the area of the gold zone. Some metallurgical studies are also available. These data can be acquired over the next month if thought necessary.

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