## **NI 43-101 TECHNICAL REPORT**

# on the TOPLEY PROPERTY

Topley Landing, Babine Lake Area, Omineca MD, BC

Centered Near:
Latitude 54° 45′ 06.8″ North, Longitude 126° 12′ 30.3″ West
UTM coordinates: 6070758 m N, 679650 m E
(NAD 83, Zone 09)



Prepared for: GEOLOGICA RESOURCE CORP.

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## 1 **SUMMARY**

Geologica Resource Corp. contracted David Mark, P.Geo. of Geotronics Consulting, to visit as well as to prepare a Technical Report on the Topley Property. This independent report summarizes known information pertaining to **porphyry copper-molybdenite and/or volcanic-hosted massive sulphide (VHMS) targets**. It describes the geology of the project area, summarizes the property's known exploration history, reviews the nature of property copper, molybdenite, and gold mineralization, documents the results of the 2018-2020 exploration programs, which consisted of prospecting, rock sampling, MMI soil sampling, SGH soil sampling, as well as ground magnetic surveying and then makes recommendations for further exploration.

This report was prepared at the request of Geologica Resource Corp. and was written under the guidelines of Canadian National Instrument 43-101 and in compliance with Form 43-101F1 (the "Technical Reports"). David Mark, P.Geo, served as the independent Qualified Person responsible for preparing the Technical Report and travelled with an assistant to the property from September 24<sup>th</sup> to 25<sup>th</sup>, 2020.

The Topley Property area is situated in the Babine Lake area of the Omineca Mining Division within north central British Columbia 58 km east of the town of Smithers. It presently consists of 7 claims totaling 2,706.5 hectares, the names and tenure numbers of which are given in Table 2. Access to the property is excellent since the Central Babine Lake Highway, #118, runs northerly through its center.

Six of the Topley Property claims are owned 100% by Decoors Mining Corp. and one claim is owned 100% by Glen Prior. Geologica Resource Corp. (Geologica) has entered into an option agreement with Decoors and a purchase agreement with Prior, to acquire a 100% undivided right, title, and interest in and to the Topley Property, subject to the following conditions.

- 1. With Decoors for its six Topley claims, the agreement, dated October 30, 2020, and amended November 1, 2020, states that over a period of 4 years, Geologica must pay Decoors a total of \$55,000, issue 1,000,000 shares, and carry out \$150,000 worth of work on the property.
- 2. With Prior for its one Topley claim, the agreement, dated April 14, 2021, states that Geologica must pay Prior \$2,500 and issue \$50,000 worth of shares over a 4-year period.

The report is also being prepared to support a proposed listing of Geologica Resource Corp. common shares pursuant to the policies of the CSE.

This report discusses exploration potential of the Topley Property, and recommendations for further exploration. These opinions and recommendations are intended to serve as guidance for future evaluation of the property and should not be interpreted as a guarantee of success.

The Topley Property occurs within the Stikine Terrane which is composed of Carboniferous to Middle Jurassic island-arc volcanic and sedimentary rocks plus several related plutonic suites. Extensive glacial deposits of variable thickness mask much of the bedrock in the region which is

considered to be principally underlain by Mesozoic layered rocks; the most widespread being clastic volcanic and sedimentary rocks of the Jurassic-aged Hazelton Group. Other rocks include sedimentary and volcanic rocks of the Middle to Late Triassic Takla Group and Carboniferous to Permian Asitka Group. These are intruded by plutonic rocks of various ages including Lower Jurassic 'Topley Intrusive Suite', early Cretaceous 'Omineca Intrusions', late Cretaceous rhyolite porphyry stocks and granodiorite porphyries, and early Tertiary 'Babine Intrusions'.

The rocks of both the Hazelton and Takla groups are exposed in several places on the Topley Property, particularly along Tachek Creek. The local outcrop occurrences consist of dark green augite porphyry flows, breccias, and tuffs with minor dark grey shales. The rocks of the Hazelton and Takla groups were intruded by the Topley monzonite of Early Jurassic age and again by 'Babine'-type porphyry of Upper Cretaceous 77 Ma. Rocks of the Asitka, Takla, and lower Hazelton groups are intruded by pink-coloured granitic rocks that make up the Topley Intrusive Suite (Schiarizza and MacIntyre 1999).

A Babine-type porphyry is the primary exploration target in the area. The Babine porphyry is primarily a quartz-biotite-feldspar porphyry of granodiorite composition and is the host rock in the Bell Copper and Granisle mines. The Topley Intrusives can be monzonites which often varies from quartz monzonite to monzonite with sporadic mineralization of chalcopyrite and molybdenite. None of the intrusion has been found to contain economic grades to date.

Three types of alteration occur on the property and are related to fracture-and fault-controlled zones of mineralization. These are (1) propylitic alteration with component minerals being chlorite and epidote and is the most widespread along Tachek Creek; (2) argillic/sericite alteration as altered feldspars in intrusive quartz monzonites which are associated with gossanous zones located along major fault zones; and (3) potassic alteration recognized in the northern part of Tachek Creek but with secondary biotite (component mineral in potassic alteration) not being observed. Minerals associated with the weak observed potassic alteration include magnetite and potassium feldspar. Pinkish zeolite and weak, very narrow barren calcite veinlets are rather common near faulted regions.

Four types of faults have been recognized on the property and these are oblique slip faults which are the most common, strike slip faults, normal faults, and reverse faults. Most of these have been mapped within the Tachek Creek area of the property where the most outcrop exists.

There are six MinFile occurrences on the property but the one which almost all the work has been done on is the Tachi Prospect which occurs east of the highway within the east central part of the claim group. Sulphide mineralization, consisting of pyrite, chalcopyrite, and molybdenite appears to be widespread marginal to the biotite-quartz feldspar porphyry dikes. In general, the molybdenum is restricted to potash feldspar rimmed fractures, while chalcopyrite occurs both in fractures and as disseminations in both the granitic rocks and the porphyries. Precious metal values were noted in the contact zones. Copper mineralization and related secondary copper oxide minerals and other sulphides observed on the Topley claims include, in order of abundance; malachite, chalcopyrite, magnetite, pyrite, molybdenite, azurite, and bornite. These minerals are consistent with a widespread copper/molybdenite porphyry system on the Topley claims. The



mineralized porphyry system extends, in areas mapped, from Tachek Creek north to Tachek Creek south, a north-south distance of approximately 1,125 metres.

Copper mineralization is hosted almost exclusively within Middle Jurassic Spike Peak Intrusive Suite quartz monzonite rocks. Three types of controls on copper mineralization were observed within the quartz monzonite intrusive rocks on the Topley claims and these are;

- 1. fracture controlled copper mineralization consisting of malachite and chalcopyrite.
- 2. fault-controlled copper mineralization consisting of chalcopyrite, malachite, molybdenite, azurite and associated magnetite.
- copper mineralization and sulphides (chalcopyrite, pyrite, molybdenite, and malachite)
  increasing marginal to porphyry and diabase dikes. Dikes and dike swarms usually occur in
  zones of weakness produced by earlier faulting and tend to concentrate copper
  mineralization.

Schists north of the highway contain numerous quartz veins up to two metres in width with the veins generally occupying planes of schistosity. Samples contained up to 2.2 grams per tonne silver, 0.005 to 0.01 gram per tonne gold and up to 0.473 per cent copper (Carter 1988).

The Babine Lake area has been historically well known for a significant number of porphyry-style mineral occurrences and/or deposits with the most notable deposits being the Granisle and the Bell Mines. Additional mineral potential in the area has been ranked extremely high. Mineral deposit types present in the region are classified as porphyry and epigenetic, characterized by disseminated, vein, and breccia hydrothermal systems.

The Topley Property has been extensively explored by various prospectors and mining companies for porphyry copper, molybdenum, and gold deposits since 1968 when mineralization was first discovered in Tachek Creek (Noranda 1969). Since that time, various explorers have carried out prospecting, rock sampling, soil geochemistry surveys, magnetic surveys, induced polarization and resistivity surveys, trenching, and diamond drilling.

The first claims of the property were staked in 2018 by both Decoors and Glen Prior. That year rock sampling and MMI soil sampling was carried out with the MMI sampling revealing anomalous results in copper and gold. In 2019, Decoors carried out test lines of SGH soil sampling which revealed an SGH-interpreted copper anomaly correlating with a gold anomaly. As a result, the SGH soil sampling was expanded in 2020 to picking up 515 samples on a 200-meter grid that covered most of the property. 305 samples were sent in to Actlabs for SGH analysis and interpretation.

The main feature of the SGH soil geochemistry surveying is an SGH-interpreted VMS anomaly, which has been labelled anomaly A, correlating with a copper anomaly and a gold anomaly located within the south-central part of the property within a redox cell. The suggested interpretation therefore is that this geochemistry signature is reflecting a copper and gold VMS deposit at depth.

The exploration work carried out so far on the Topley Property has supported the model of porphyry copper-molybdenite and/or volcanic massive sulphide (VMS) targets. It is the author's conclusion that the Topley project is a property of merit, and worthy of future exploration, as outlined in Section 26. Recommendations.

A 2021 program of finishing the SGH laboratory interpretation as well as detailed geological mapping and sampling of existing and new mineral showings is recommended. The budget for Phase 1 recommendations totals C\$120,550. Phase 2 is contingent on the results of Phase 1.

## 2 INTRODUCTION AND TERMS OF REFERENCE

This technical report summarizes the exploration history, geological information and recent work conducted by the property owners on the Topley Property porphyry copper-molybdenite and/or volcanic massive sulphide (VMS) targets. The property is south of Topley Landing within north central British Columbia approximately 58 km east of the town of Smithers British Columbia. Historical and recent property exploration efforts were directed towards porphyry copper mineralization located within the east central property area.

Geologica Resource Corp. contracted David Mark, P.Geo, the author of this report, to undertake a personal inspection of the Topley Property and prepare a Technical Report on the property (claims listed in Table 2) located in north central British Columbia. David Mark with an assistant visited the property from September 24<sup>th</sup> to 25<sup>th</sup>, 2020 accessing it by the Topley Granisle Highway. The access was limited due to adverse weather conditions. The work entailed the compilation of a geological summary and history of work conducted on the property and the preparation of a Technical Report as defined in National Instrument 43-101 and in compliance with Form 43-101F1 (the "Technical Reports"). This report summarizes the work carried out and describes mineralization on the property and on the adjacent properties. David Mark, P.Geo, served as the independent Qualified Person responsible for preparing the Technical Report.

This report is also being prepared to support a proposed listing by Geologica pursuant to the policies of the Canadian Stock Exchange. The property covers the Tachi mineral showing documented in the British Columbia provincial mineral database, MINFILE (Figure 2).

Geological, geophysical, and rock sampling data compiled by the author has led to recommendations for work on the Topley Property mineral claims. Results from previous exploration have been positive and a two-phase program of historical data compilation, soil geochemical sampling, IP/resistivity surveying, SkyTem airborne surveying, drilling is recommended. The budgets of Phases 1 and 2 have a combined total of C\$520,550.

#### **TABLE 1 - DEFINATIONS**

AAS atomic absorption spectroscopy				
Ag	silver			
Au	gold			
cm	centimeter			
CSE	Canadian Securities Exchange			
Cu	copper			
g	gram			
gpt	grams per tonne, equivalent to ppm			
ICP	inductively coupled plasma			
kg	kilogram			
km	kilometre			
m	metre			
mm	millimetre			
Ма	Million years			
Мо	molybdenum			
NAD	North American Datum			
opt	ounces per ton			
ppb	parts per billion			
ppm	parts per million, equivalent to grams per tonne			
QA/QC	Quality Assurance/Quality Control			
UAV	unmanned aerial vehicle			
UTM	Universal Transverse Mercator, coordinate system			
VMS	volcanic massive sulphide			

Data generated at the Topley Property utilizes SI (metric) units in this Technical Report unless otherwise noted. Assay and/or geochemical data may be presented as parts per million (ppm) and its equivalent grams per tonne (gpt) or ounces per ton (opt). Where relevant, conversions between different units used in this report were calculated utilizing the factors supplied by the BC government Ministry of Energy Mines website using the following conversion factors.

 1 meter
 39.370 inches

 1 meter
 3.28083 feet

 1 kilometer
 3,280 feet

 1 gpt
 1 ppm

1 ounce (troy) 31.1034768 grams 1 ounce (avdp) 28.3495 grams

1 troy ounce/ton 34.2857 grams per metric tonne = 34.2857 ppm

1 gram per metric tonne 0.0292 troy ounce per short ton

1 kilogram (kg) 32.151 ounces (troy) = 35.274 ounces (avdp) = 2.205 lbs 1 hectare 2.471 acres = 10,000 sq. metres = 0.00386 sq. miles



## **3 RELIANCE ON OTHER EXPERTS**

The author has relied 100% on information provided by Geologica Resource Corp for information pertaining to the legal ownership of claims on the Topley Property. This information is relied upon throughout the report in its entirety. To the best of the author's knowledge and experience the data is correct. However, the author disclaims responsibility for such information.

## 4 PROPERTY DESCRIPTION AND LOCATION

## 4.1 Property Area and Location

The Topley Property is situated within the Omineca Mining Division within north central British Columbia about 5 km south of Babine Lake and 1.5 km south of Fulton Lake. It is also 8 kilometres south-southwest of the small community of Topley Landing, 16 km due south of the village of Granisle, and 58 km east of the town of Smithers, which is the main supply center for the area. The property is located on NTS mapsheets 93L/09 and 93L/16 and BCGS mapsheets 93L.079 and 93N.080 centering at a latitude of 54°45'06.8" N and longitude 126°12'30.3" W (Figures 1,2, and 3). The correlating UTM NAD 83 coordinates are 679650 easting and 6070758 northing within zone 9.

## 4.2 LAND TENURE, LEGAL AGREEMENTS, AND OTHER ASSETS

The Topley Property presently consists of 7 claims totaling 2,706.535 hectares, whose names and tenure numbers are given in Table 2 below. The main part of the claim area is about 6 kilometres in an east-west direction by 5 kilometers in a north-south direction.

TABLE 2 - MINERAL CLAIMS OPTIONED BY GEOLOGICA RESOURCE CORP.								
<b>Tenure Number</b>	<b>Date Staked</b>	<b>Claim Name</b>	Owner	<b>Expiry Date</b>	Area (ha)			
1060516	May 09, 2018	TAC	Prior	Nov 29, 2028	37.34			
1060523	May 10, 2018	GD 1	Decoors	Oct 02, 2023	1418.9282			
1064764	Nov 30, 2018	GD 2	Decoors	Oct 02, 2023	503.8452			
1065832	Jan 17, 2019	GD U	Decoors	Oct 02, 2023	261.3213			
1073954	Jan 18, 2020	TOPLEY PLUG	Decoors	Oct 02, 2023	74.6585			
1074633	Feb 17, 2020	CORTINA	Decoors	Oct 02, 2023	242.5253			
1079091	Oct 10, 2020	GD 3	Decoors	Oct 02, 2023	167.9169			
				TOTAL	2,706.535			

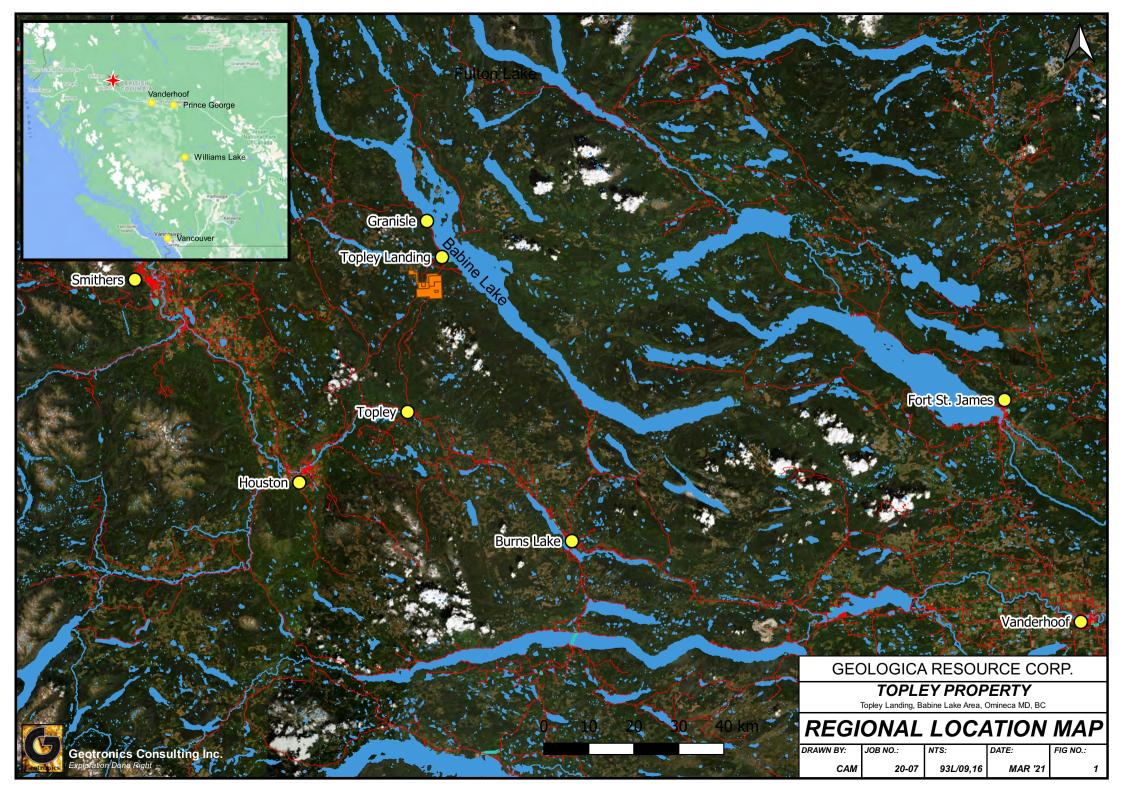
The Topley Property has not been legally surveyed.

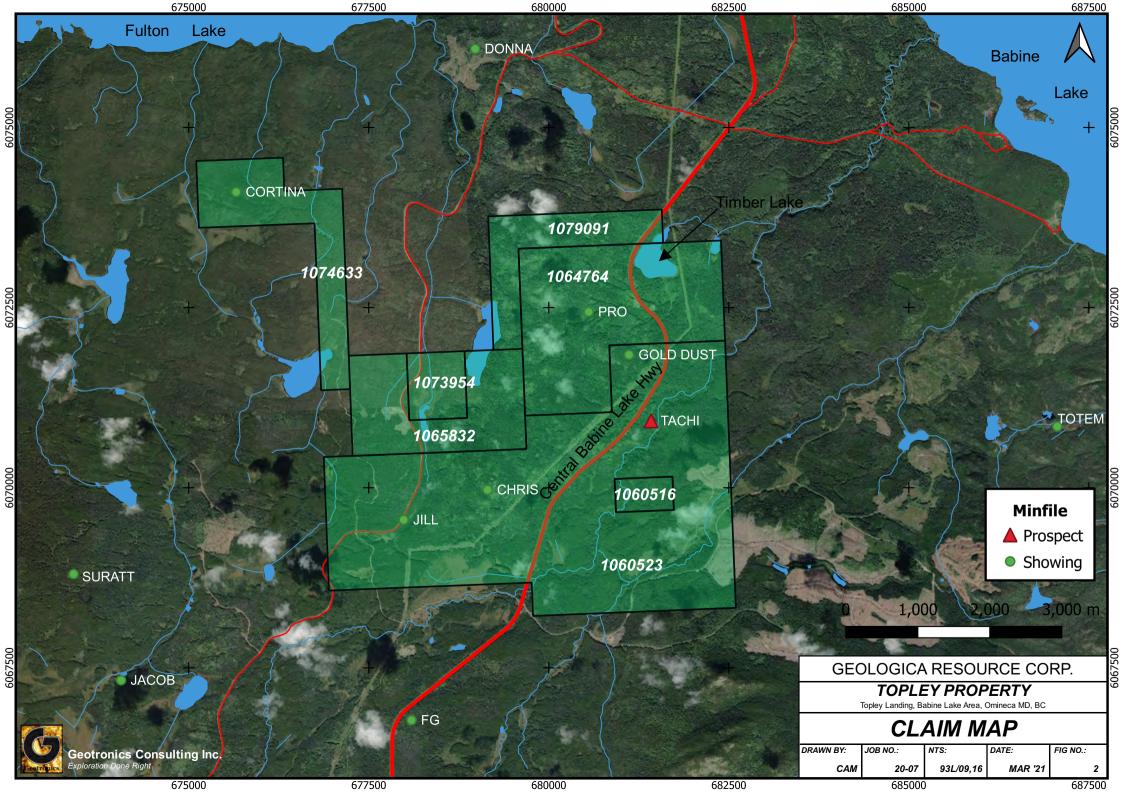
## 4.2.1 Purchase and Sale Agreement with Glen Prior

The TAC claim, with tenure number 1060516, is owned 100% by Glen Prior of Sherwood Park, Alberta, and is being purchased by Geologica Resource Corp with the following terms as per a purchase agreement dated April 14, 2021.

(1) A cash payment of \$2,500 made by Geologica to Prior upon the signing of the agreement.







- (2) Issuance of Geologica shares to Prior in Canadian dollar equivalents as follows.
  - i. on or prior to December 31, 2021 \$5,000
  - ii. on or prior to December 31, 2022 \$10,000
  - iii. on or prior to December 31, 2023 \$15,000
  - iv. on or prior to December 31, 2024 \$20,000

## 4.2.2 Option Agreement with Decoors Mining Corp.

The remaining 6 claims; with tenure numbers 1060523, 1064764, 1065832, 1073954, 1074633, and 1079091; and consisting of 143 cells, are owned 100% by Decoors Mining Corp. of Whitehorse, Yukon, and are being optioned to Geologica Resource Corp, as discussed below.

Geologica Resource Corp. (GRC) has entered into an option agreement dated October 30, 2020, and amended November 1, 2020, with Decoors Mining Corp. whereby GRC was granted an option to acquire 100% undivided right, title and interest in and to the Topley Property.

To keep the GRC's option in good standing and to exercise the option, thereby earning 100% interest in and to the property, Geologica is required to pay \$55,000, and issue 1,000,000 common shares as follows:

- i. \$5,000 upon signing of the option agreement with Decoors Mining;
- ii. \$50,000 by December 31, 2023;
- iii. an issuance of 250,000 common shares upon achieving a public listing of Geologica Resource Corp, and
- iv. a further issuance of 250,000 shares per year for the following three years by December 31<sup>st</sup> of each year.

In addition, Geologica Resource must spend a total of \$150,000 on the property as follows:

- i. \$15,000 on or before November 7<sup>th</sup>, 2020, which has been carried out,
- ii. \$25,000 on or before December 31st, 2020, which has been carried out, and
- iii. \$110,000 on or before December 31<sup>st</sup>, 2021.

Also, Decoors has been granted a net smelter royalty (NSR) of 2% with Geologica having an option to purchase ½ of the royalty, that is, 1%, for a cash payment of \$1,000,000.

## 4.2.3 <u>Assessment Work Requirements</u>

Exploration work must be carried out on the property to keep the claims in good standing and to retain ownership. When this work is applied to the claims and filed with the BC Government, it is termed "assessment work". There is no work required for the Prior claim until 2028. The assessment work required for the Decoors part of the Topley Property, which consists of 2,669.1954 hectares, is as follows:



- i. \$5/hectare/year for a total of \$13,346/year for the first two years
- ii. \$10/hectare/year for a total of \$26,692/year for the next two years
- iii. \$15/hectare/year for a total of \$40,038/year for the next two years
- iv. \$20/hectare/year for a total of \$53,384/year for every year thereafter.

The claims were staked in different years and months, and thus the amount of assessment work required for each year will be somewhat different than that shown above. By the end of 2021, \$24,267 will be needed to be spent on the property and this increases every year until October 10, 2026, when the assessment amount reaches \$53,384 per year and stays at this amount until the TAC claim comes due on November 29, 2028, and the required assessment work amount to keep it in good standing with the BC government increases \$747 to \$54,131/year for every year thereafter.

## 4.3 LOCATION OF MINERALIZATION AND FACILITIES

The known mineralization is shown mainly on the Topley Property geology map, Fig 5, which is after page 6. In addition, the main showing is plotted on the accompanying claim map, the rock sample maps and the geophysical maps. There are no active mines on the property nor any type of facilities.

## 4.4 Environmental Liabilities

The author is not aware of:

- I. Any environmental liabilities to which the Topley Property is subject.
- II. Any other significant factors and risks that may affect access, title, or the right or ability to perform work on the property.

#### 4.5 Permits and Land Use Agreements

No permits are required for the initial work that is recommended to be carried out on the property this year (2021). A permit will be required for any possible diamond drilling which could be carried out in 2022. Any future physical work disturbance will necessitate public consultations with potentially impacted groups.

#### 4.6 FACTORS AND RISKS

No other factors or risks are known that may affect access, title or the right or ability to perform work on the property.

## 5 <u>ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY</u>

## **5.1** Access

The property has excellent access since the Central Babine Lake Highway, which connects Topley on Highway 16 to Granisle on Babine Lake, runs northerly through its center as shown



on the access location map of Figure 2 and the claim map of Figure 3. Topley is 29 km from the southern property boundary and Granisle is 14 km from the northern property boundary. Much of the rest of the property can be reached by forestry roads.

## **5.2** LOCAL RESOURCES AND INFRASTRUCTURE

Smithers, which is a town of 6,000 population, is the main supply center for the property area, and is accessed by vehicle along 133 km of paved highway and 1½ hours of travel time. A more substantial supply center is Prince George, which has a population of 74,000 and is accessed by 308 km of paved highway and 3½ hours of travel time. Prince George is 780 km from the city of Vancouver.

Electricity is easily available since a powerline runs northerly through the property sub-parallel to the highway to the west.

## 5.3 Physiography

The Topley Property is located within the Nechako Plateau, which is a physiographic division of the Interior Plateau System. The Nechako Plateau consists generally of flat and gently rolling country with large areas of undissected upland which is covered by glacial till and which is typical of the property. There are local exceptions such as Tachek Creek canyon which contains incised gullies with steep sides.

The elevations vary from 820 meters within the northeastern part of the property, to 1,120 meters at the peak of a hill within the central part of the property resulting in an elevation difference of only 300 meters. Most of the property is composed of gently to moderately rolling hillside with the steepest part being in the northeastern area.

The vegetation of the property is forest-covered that varies from moderate to dense evergreen forests, mostly pine trees but also spruce and cedar, as well as deciduous trees being poplar, spruce and willow. There are also extensive swampy areas with much huckleberry and other undergrowth-type brush.

The main water sources are Tachek Creek, which flows northeasterly within the southeastern part of the property, and several smaller creeks and lakes that are located throughout the property.

## **5.4 CLIMATE**

The climate in the Topley Property area varies from a high in summer of around 30°C to a low in winter of around –30°C, though the high and low can reach 34°C and -44°C, respectively. However, during the summertime, the average temperature is about 20°C, and during the winter, about -10°C.

Annual rainfall is 308 mm, with a high of 53 mm in June and a low of 25 mm in April. The area experiences snowfall about half the year, peaking in January at about 39 mm and falling to 6.5



mm in October and April on either tail-end for a year total of 163 mm. Total precipitation for the year averages 471 mm.

#### **6 EXPLORATION HISTORY**

The following discusses the history prior to the current staking of the claims, the first three which were staked in 2018. Work on the property after the claims were staked is discussed under "Exploration".

The Babine Lake area has been historically well known for a significant number of porphyry-style mineral occurrences and/or deposits. The most notable deposits are the Granisle and the Bell Mines. Additional mineral potential in the area has been ranked extremely high, as the Babine Lake area is the fourth most prospective in the entire Skeena-Nass mineral potential project area (MacIntyre et al. 1995). MacIntyre et al. (1996a) noted that in terms of 1986 dollars, the estimated value of known in-ground mineral resources is \$1.96 billion and the value of the past production is estimated to be \$1.13 billion. Mineral deposit types present in the region are classified as porphyry and epigenetic, characterized by disseminated, vein, and breccia hydrothermal systems.

The Topley property has been extensively explored by various prospectors and mining companies for porphyry Cu, Mo, and Au deposits since 1968 when mineralization was first discovered in Tachek Creek (Noranda 1969).

Below is a brief outline of the exploration history of the Topley property area, summarized from various assessment reports.

## • 1968 – 1969: Noranda Exploration Ltd (Noranda)

Noranda staked 170 claims, carried out geological mapping, geochemical (soil and silt) and geophysical (induced polarization, magnetics, and electromagnetic) surveys, and drilled 32 holes: 6 diamond and 26 percussion (Table 2). Five of the percussion holes were abandoned and the assays for one diamond drill hole (DDH-01) could not be fined. In total, 2,401 m were drilled comprising of 874 m diamond and 1,527 m of percussion. Significant assay results obtained from the drill program included 0.62% Cu over 3.1 m from percussion hole 31 and 0.25% Cu over 3.1 m from percussion hole 32 (Noranda 1969).

#### • 1968 – 1969: Tro-Buttle Exploration Ltd

1267 soil samples were collected from a total of 75 line-km in search of a porphyry type deposit (Dirom 1969). Several samples had anomalous Cu and Mo values with one sample yielding up to 4.65% Mo.

#### • 1970: Taseko Mines Ltd

Taseko Mines Limited drilled three diamond drill holes with a cumulative depth of ~288 m. Taseko targeted the area of Noranda percussion holes # PDH-14, 31, and 32. These holes returned an average of ~0.07% Cu over their lengths (Table 3).



#### • 1970: Tro-Buttle Exploration Ltd

As a follow-up of the anomalies discovered in 1969, Tro-Buttle Exploration Ltd collected 680 soil samples from 39 line-kilometres covering their entire claims in 1970. Several samples had anomalous Cu and Mo values.

#### • 1972: Twin Peak Resources Ltd and Cobre Exploration Ltd

In 1972, Twin Peak Resources Ltd. completed an airborne magnetic survey over the Tachek Creek area covering an area of about 30 sq km. The results revealed several positive magnetic anomalies including a prominent northeasterly trend in the eastern portion of the study area and a more subtle northerly trend in the western part (Woolverton 1973).

## • 1973: Perry, Knox, Kaufman Inc.

In 1973, Geoterrex completed an 11 km time-domain induced polarization (IP) survey in search of disseminated style sulfide mineralization. Two anomalies were identified in the south and central areas of the property and recommended for follow-up drilling (Lloyd 1973). Three vertical diamond drill holes were completed and these intersected argillaceous siltstones containing up to 10% pyrite plus minor pyrrhotite and chalcopyrite.

#### • 1973: Amoco Petroleum Company Ltd

In 1973, Amoco Canada Petroleum Co. Ltd. carried out geochemical and geophysical surveys and drilled 3 diamond holes totalling 500 m. No results were reported (Strickland 2012).

### • 1982: Dancer Energy and Resources Ltd

Dancer Energy and Resources Ltd carried out soil sampling and geological mapping. Their significant results include 1% Cu and 0.9% Mo (Plicka 1982).

## • 1987 – 1988: Gerard Auger

Between 1987 and 1988, prospective work by Gerard Auger returned up to 214 ppm Cu, 1675 ppm Mo, and 1270 ppb Au from granitic rock samples (Carter 1988; Roik and Robinson 2013).

#### • 1989 – 1992: Nick Carter

Between 1989 and 1992, prospective work by Nick Carter returned interesting results with up to 196 ppm Cu, 994 ppm Mo, and 4900 ppb Au (Carter 1990, 1991, 1992). In 1990, a VLF-EM survey was completed over 12.5 km, but no significant anomalies were observed (Carter 1991). In 1991, percussion drill cuttings and drill core samples from Noranda's 1968 and 1969 drill programs were resampled and assayed. The results indicated a widespread low grades copper mineralization. The results also showed anomalous gold values in two areas of the property (Carter 1992).



#### • 1993: Cominco Ltd

In 1993, Cominco conducted an Induced Polarization/Resistivity survey on a property adjacent to the original Gold Dust claims to follow-up some of the previous alteration and sampling results. The results indicated the potential presence of a Cu-Mo porphyry system (Strickland 2012).

### • 1995 – 1999: Hudson Bay Exploration and Development Co. Ltd

Between 1995 and 1999, Hudson Bay Exploration carried out several exploration programs including a follow-up of Cominco's targets, 16 km of ground electromagnetic (EM) and magnetic surveys, and collection of 68 soil samples. The EM survey defined two parallel conductors, but no soil sample had any anomalous values (Strickland 2012). In 1998, an additional 16 km of geophysical surveying and line cutting was carried out and in 1999, 7 diamond drill holes were completed for a total of 1,094.5 m. Only one hole (LEN-004) yielded significant base and precious metals values including 0.7% Cu, 0.4% Zn, 0.7% Mn, 0.3% As, and 14.9 g/t Ag (Dunning 2000).

#### • 2006: NXA Inc.

In 2006, NXA Inc. conducted IP, magnetic, reconnaissance exploration, and geochemical soil surveying. The geophysical survey identified mineralization targets with coincident low magnetic susceptibility and high conductivity (low resistivity). The orientation of their interpreted anomalies did not conform to historical drilling targets (Strickland 2012).

### 2010 – 2014: Altiplano Minerals Ltd.

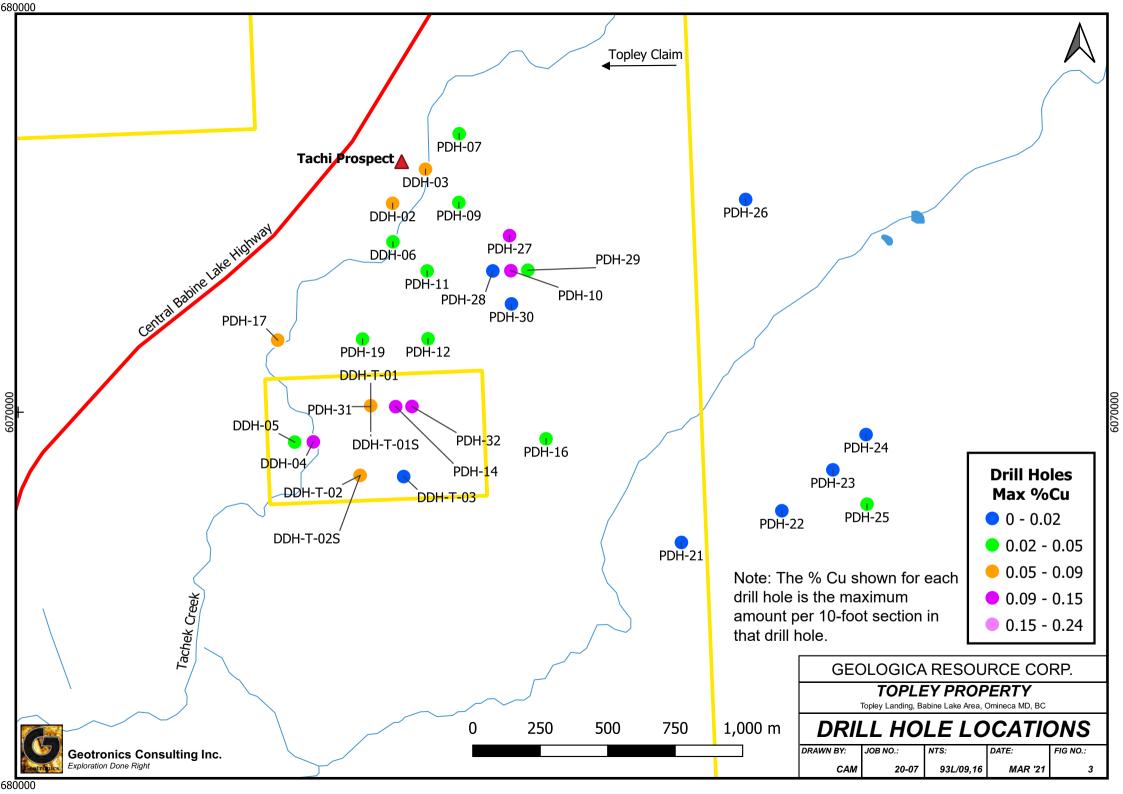
From 2010-2014 Altiplano Minerals Ltd conducted several exploration programs including geological mapping, trenching, rock sampling, and soil sampling within the Topley property. In total, 1,540 soil samples were collected.

### • 2010 – 2013: Riverside Resources Inc.

In 2013, Riverside Resources Inc. flew an airborne survey over their Flute and Lennac Properties. The Topley Property was included in their results.

#### • Historical Drill Holes

A number of historical drill holes encountered copper mineralization the location of which is shown on figure 3. This map shows the maximum amount of copper that each hole drilled through per 10-foot section and thus is only intended to give an illustration of how copper mineralization is distributed on the property.



## 7 GEOLOGICAL SETTING AND MINERALIZATION

## 7.1 REGIONAL GEOLOGY

The Babine Lake area is located within the Intermontane tectonic belt, and the west side of Babine Lake, where the Topley Property is located, is considered to be part of the Stikine (Volcanic Arc) Terrane. The Stikine Terrane itself is composed of Carboniferous to Middle Jurassic island-arc volcanic and sedimentary rocks plus several related plutonic suites. Extensive glacial deposits of variable thickness mask much of the bedrock in the region which is considered to be principally underlain by Mesozoic layered rocks; the most widespread being clastic volcanic and sedimentary rocks of the Jurassic-aged Hazelton Group. These are intruded by plutonic rocks of various ages including Lower Jurassic 'Topley Intrusive Suite', early Cretaceous 'Omineca Intrusions', late Cretaceous rhyolite porphyry stocks and granodiorite porphyries, and early Tertiary 'Babine Intrusions'. A simplified map of the regional geology can be found in Figure 4.

This area of the Stikine Terrane consists of the following groups (MacIntyre et al., 1987):

- 1. Hazelton Group (Early to Middle Jurassic): andesitic volcanic and volcaniclastic rocks and related marine sedimentary rocks
- 2. Takla Group (Middle to Late Triassic): augite basalt, andesite, and related marine sedimentary rocks.
- 3. Asitka Group (Carboniferous to Permian): island arc metavolcanic rocks and limestones.

These rock groups are then cut by what is interpreted to be the Late Triassic to Early Jurassic Topley Intrusive Suite which is considered to be co-magmatic with the volcanic successions (MacIntyre et al., 2001). Structurally, the Topley Property area is part of basin-and-range type horst and graben structures, and a variety of the known Stikine Terrane groups can be found.

The Topley Property area rocks appear to be primarily units from the previously noted Hazelton Group rocks. The Hazelton Group is further subdivided into four formations by MacIntyre et al. (1987 and 2001) as follows.

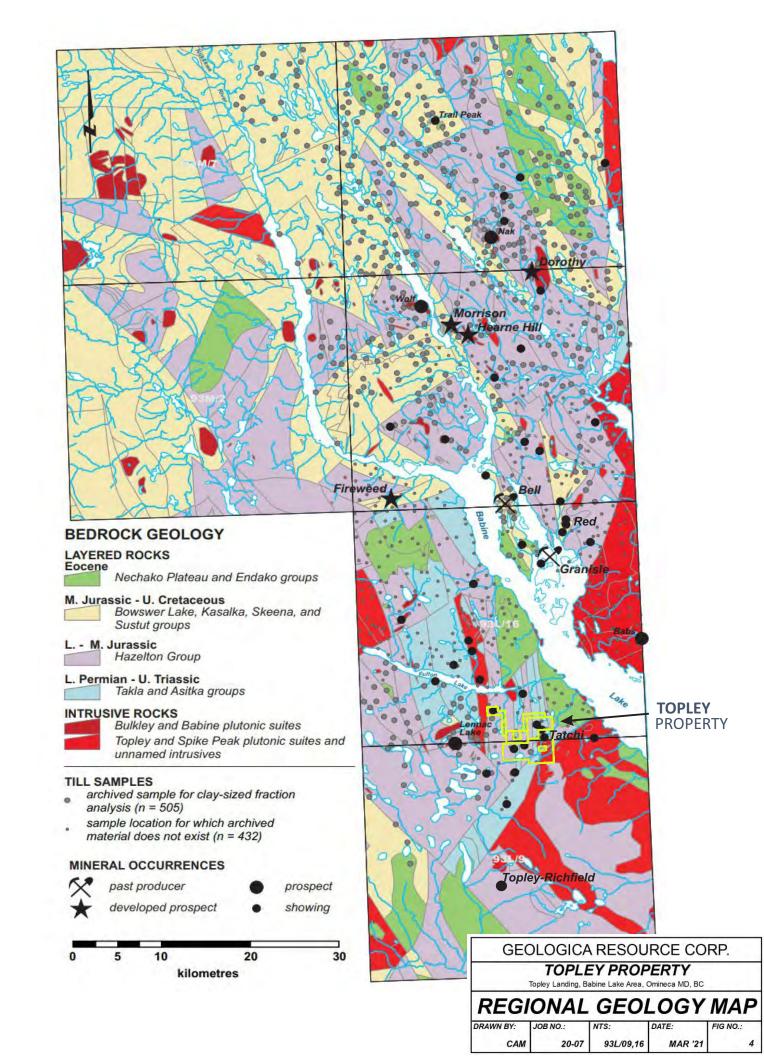
## 1. <u>Telkwa Formation (Lower Jurassic)</u>

- (a) polymictic conglomerates
- (b) porphyritic andesites
- (c) fragmental volcanic rocks
- (d) phyllitic maroon tuffs

#### 2. Nilkitkwa Formation (Early Jurassic)

- (a) red epiclastics and amygdaloidal flows
- (b) rhyolitic volcanic rocks
- (c) conglomerates, tuffs, siltstones
- (d) argillites, cherty limestones





## 3. Saddle Hill Formation (Early to Middle Jurassic)

- (a) pyroxene basalt flows
- (b) basaltic tuffs
- (c) tuffaceous sandstones
- (d) ash flow tuffs

## 4. <u>Smithers Formation</u> sandstones, siltstones, felsic tuffs

Notably, the Nilkitkwa Formation is known to host several types of mineralization, including mesothermal Au-Ag veins, Cu-Zn-Ag massive sulphide and the porphyry style deposits typical of the region.

From my analysis of the regional geology, the best-known style of mineralization in the Babine Lake area is porphyry copper mineralization associated with small stocks and dyke swarms of biotite-feldspar-porphyry of the Babine intrusions. More than a dozen of this type of deposit have been drilled over the past 50 years of which two, Bell Copper and Granisle as shown on the Regional Geology Map, have been developed as producing mines and one, Morrison, has drill-indicated reserves.

The Bell copper mine is also a significant producer of gold with past production and anticipated reserves totalling 68 million tonnes with a recovered and contained 17,755 kg (570,819 oz) of gold (Schroeter et al. 1989). Bell Copper produced 21,349 tonnes of copper and 29,000 ounces gold in 1990. This information concerning these nearby properties is not intended to imply similar production or reserves would ever be available from the Topley property.

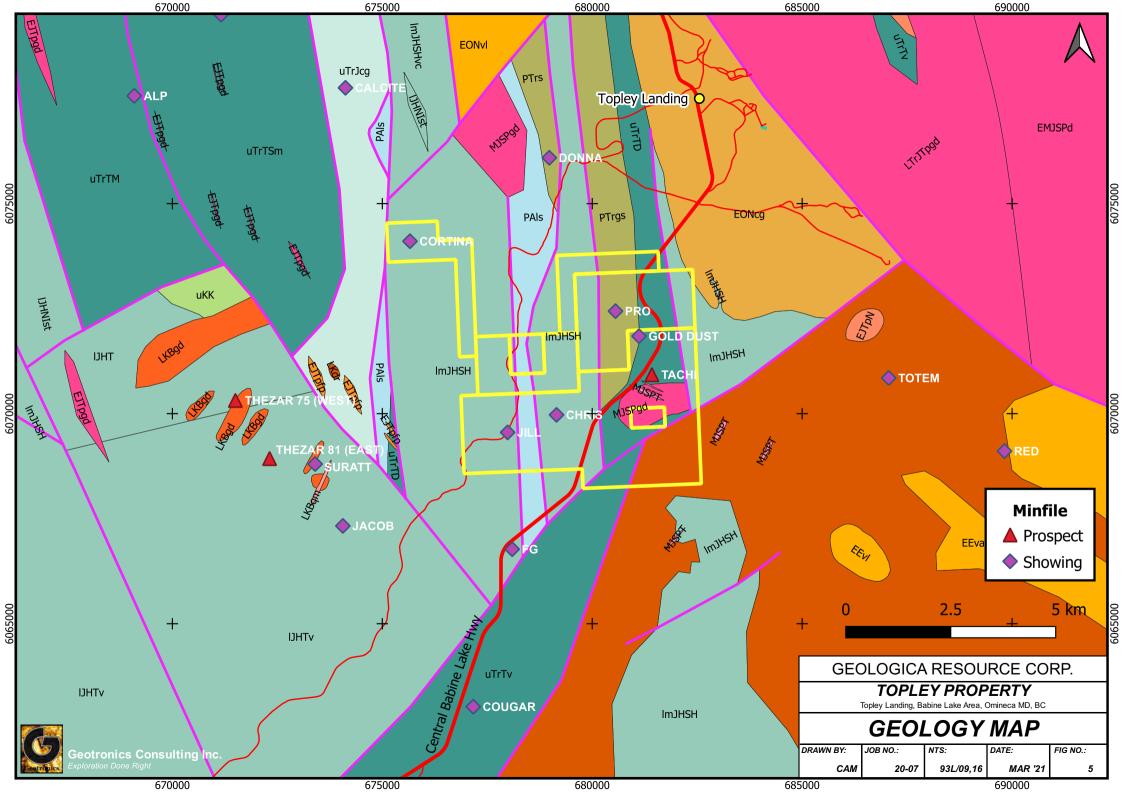
Copper-molybdenum mineralization is also known to occur in late phases of the Topley intrusions, as is evident on the Topley claim, and in late Cretaceous granodiorite porphyries. Other deposit types in the area include narrow veins with base and precious metals values, which commonly occur marginal to known porphyry deposits, and disseminated copper mineralization in Hazelton Group volcanic rocks (Carter 1992).

## 7.2 GEOLOGY OF TOPLEY PROPERTY AREA

The rocks of both the Hazelton and Takla groups are exposed in several places on the Topley Property, particularly along Tachek Creek. The local outcrop occurrences consist of dark green augite porphyry flows, breccia, and tuffs with minor dark grey shales. The rocks of the Hazelton and Takla groups were intruded by the Topley monzonite of Early Jurassic age and again by 'Babine'-type porphyry of Upper Cretaceous 77 Ma.

Rocks of the Asitka, Takla, and lower Hazelton groups are intruded by pink-coloured granitic rocks that make up the Topley Intrusive Suite (Schiarizza and MacIntyre 1999). This suite, as first defined by Carter (1981) during the historic work, includes quartz diorite to granodiorite intrusions that are Late Triassic to Early Jurassic in age. In the Topley Property area, the Topley Intrusive Suite includes a possible multi-phase 'Tachek' stock, which is well exposed in





#### EMJSPd | EARLY TO MIDDLE JURASSIC | diabase. LTrJTpgd | LATE TRIASSIC TO EARLY JURASSIC | **MINFILE** basaltic intrusive rocks granodioritic intrusive rocks Topley Intrusive Suite - Granodiorite to Monzonite Phase Spike Peak Intrusive Suite EONcg | EOCENE | conglomerate, coarse clastic sedimentary MJSPqd | MIDDLE JURASSIC | granodioritic intrusive Prospect rocks | Nechako Plateau Group - Newman Formation - Basal rocks Conglomerate Member Spike Peak Intrusive Suite - Ouartz Monzonite Phase EONvI | EOCENE | coarse volcaniclastic and pyroclastic MJSPT | MIDDLE JURASSIC | granodioritic intrusive Showing volcanic rocks rocks Nechako Plateau Group - Newman Formation - Breccia Member Spike Peak Intrusive Suite - Tachek Creek Phase IJHNIst | EARLY JURASSIC | argillite, greywacke, wacke, PAIs | EARLY PERMIAN | limestone, marble, calcareous conglomerate turbidites sedimentary rocks **Faults** Hazelton Group - Nilkitkwa Formation Asitka Group IJHT | EARLY JURASSIC | basaltic volcanic rocks PTras | EARLY PERMIAN TO MIDDLE JURASSIC | Hazelton Group - Telkwa Formation - Felsic to greenstone, greenschist metamorphic rocks Fault Intermediate Volcanic Member Deformed Asitka or Takla Groups - Metavolcanic Rocks IJHTv | LOWER JURASSIC | undivided volcanic rocks PTrs | PERMIAN TO TRIASSIC | chert, siliceous argillite, Hazelton Group - Telkwa Formation siliciclastic rocks Geology Shoemaker Formation LKBqd | LATE CRETACEOUS | granodioritic intrusive rocks uKK | LATE CRETACEOUS | andesitic volcanic rocks Bulkley Plutonic Suite - Biotite-Feldspar Porphyritic Phase Kasalka Group EEva | EOCENE | andesitic volcanic rocks Nechako Plateau Group - Endako Formation LKBgm | LATE CRETACEOUS | quartz monzonitic to uTrJcg | UPPER TRIASSIC TO EARLY JURASSIC | monzogranitic intrusive rocks conglomerate, coarse clastic sedimentary rocks EEvl | EOCENE | coarse volcaniclastic and pyroclastic Bulkley Plutonic Suite - Biotite-Quartz-Feldspar Porphyritic Phase Unnamed volcanic rocks LKdr | LATE CRETACEOUS | dioritic intrusive rocks uTrTD | LATE TRIASSIC | mudstone, siltstone, shale Nechako Plateau Group - Endako Formation Unnamed fine clastic sedimentary rocks EJTpfp | LATE TRIASSIC TO EARLY JURASSIC | feldspar Takla Group - Dewar Formation porphyritic intrusive rocks ImJHSH | LOWER TO MIDDLE JURASSIC | undivided uTrTM | LATE TRIASSIC | argillite, greywacke, wacke, Topley Intrusive Suite - Megacrystic Porphyry Dykes conglomerate turbidites volcanic rocks EJTpqd | EARLY JURASSIC | granodioritic intrusive rocks Takla Group - Moosevale Formation Hazelton Group - Saddle Hill Formation **Topley Plutonic Suite** ImJHSHvc | LOWER TO MIDDLE JURASSIC | volcaniclastic rock uTrTSm | LATE TRIASSIC | basaltic volcanic rocks Hazelton Group - Saddle Hill Formation - Intermediate Volcanic Takla Group - Savage Mountain Formation EJTpN | EARLY JURASSIC | coarse volcaniclastic and Member pyroclastic volcanic rocks LTrgd | LATE TRIASSIC | granodioritic intrusive rocks uTrTv | LOWER CRETACEOUS | undivided volcanic Topley Plutonic Suite - Nose Bay Intrusive Breccia Unnamed rocks Takla Group GEOLOGICA RESOURCE CORP. **TOPLEY PROPERTY** Topley Landing, Babine Lake Area, Omineca MD, BC **GEOLOGY LEGEND**

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CAM 20-07 93L/09.16 MAR '21 5a

uplifted fault blocks both southwest and southeast of Topley Landing. Age dating is required to determine whether this Intrusive Suite is truly "Topley" or the identical looking "Spike Peak" Intrusive Suite, which is commonly restricted to the eastern side of Babine Lake (MacIntyre et al., 2001). Volcanic rocks of similar ages to these Intrusions occur throughout the Babine porphyry copper district in western Nechako Project area within Map sheet 093L/16 – a Babine-type porphyry is the primary exploration target in the area.

The Babine porphyry is primarily a quartz-biotite-feldspar porphyry of granodiorite composition and is the host rock in the Bell Copper and Granisle mines. The Topley Intrusives can be monzonites and they often vary from quartz monzonite to monzonite; sporadic mineralization of chalcopyrite and molybdenite was historically encountered in Topley monzonites; none of the intrusion has been found to contain economic grade to date.

## 7.3 TOPLEY PROPERTY GEOLOGY

Principal lithologies within the claim area include chlorite and sericite schists which are exposed north of the Granisle highway. These are variably deformed and feature north-trending, steeply-dipping schistosities. Intercalated with the schists and bordering them on the west are mainly massive andesites (greenstones) which are locally weakly schistose.

Apparently argillaceous siltstones are part of this principally volcanic sequence and underlie the drift-covered area between the Topley granitic rocks and the Granisle highway - power lines on the Topley Property claims. These rocks are not exposed but were intersected by 3 historic holes drilled in 1973 by Amoco. Topley granitic rocks are exposed in two areas along Tachek Creek. In the northernmost portions of the Topley Property area, light grey to pink granodiorites and quartz monzonites features steeply-dipping west-northwest and east-northeast fractures. Crowded texture quartz-hornblende-biotite-feldspar porphyry dykes, 2-10 metres wide intrude the granitic rocks and trend west-northwest parallel to one of the principal fracture directions in the granitic rocks. A radiometric age of 176 Ma was obtained from one of these porphyry dykes (Carter, 1981).

The oldest rocks underlying the property are chloritic/sericitic schists and greenstone of the Early Permian to Middle Triassic Asitka and/or Takla Groups. The schists are variably deformed and feature north-trending, steeply dipping schistosities. Intercalated with the schists and bordering them on the west are mainly massive andesites (greenstones) which are locally weakly schistose. Chlorite and sericite schists in the northern parts of the claims contain numerous quartz veins ranging in width from several centimetres to 0.5 metres. The veins, which occupy northerly trending planes of schistosity, commonly pinch and swell but appear to be continuous along strike. Locally, the veins border on pegmatite with some potassium feldspar, but generally they are milky white with some possible manganese staining. Argillaceous siltstones are included in this volcanic and metamorphic sequence of rocks and underlie the drift-cover area between the Spike Peak Intrusive Suite (granitic quartz monzonite) and the Granisle highway-power line on the claims. These rocks are not exposed but were intersected by 3 historic diamond drill holes in 1973 (Amoco Canada Petroleum Company).



Intrusions of Late Triassic to Early Jurassic Topley Intrusive Suite rocks are exposed in the south-east corner of the property. These intrusive rocks were not looked at during the 2010 exploration program. Topley intrusive rocks are described as medium to coarse grained biotite hornblende-plagioclase granodiorite to quartz diorite (Macintyre et al., 2001).

Intrusions of Early to Middle Jurassic Spike Peak Intrusive Suite (generally granitic quartz monzonite) are exposed in two areas along Tachek Creek (north, south) and host most of the copper mineralization on the Topley property. In Tachek Creek north, light grey to pink granodiorite to quartz monzonite feature steeply dipping west-northwest and east-northeast fractures. Crowed texture quartz-hornblende-biotite-feldspar porphyry dykes, 2-10 metres wide, intrude the granitic rocks and trend west-northwest, parallel to one of the principal fracture directions within the granitic rocks. A radiometric age of 176 Ma was obtained from one of these porphyry dykes (Carter, 1981). Basic dykes, moderately to strongly magnetic and up to over 4 metres wide, were also noted cutting granitic rocks in Tachek Creek. These dykes, believed to be of post-mineral or Tertiary age, have chilled margins and some occupy the northerly trending fracture set. The southern exposure area in Tachek Creek features variably weathered, mineralized granitic rock cut by the fractures with the same orientation as those in the northern area. The contact between the granitic rocks and the volcanic-sedimentary sequence is not exposed and is based largely on data obtained from 1973 drilling.

The youngest rocks on the property are Lower to Middle Jurassic Hazelton Group volcanic rocks that unconformable overlie older rocks. The volcanic rocks include green andesite and maroon basalt and generally outcrop to the west of the Granisle Highway.

The following is a description of the geology along Tachek Creek where much of the work by Altiplano Minerals took place in 2012, partly because this is the area of the main mineralization of the Topley Property and partly because this is where the best bedrock exposure is located.

#### 7.3.1 Detailed Geology

The oldest rocks exposed along Tachek Creek are intrusive rocks of the Middle Jurassic Spike Peak Intrusive Suite (Quartz Monzonite Phase granodioritic intrusive rocks). The intrusive rock typically seen in the north and south regions is quartz monzonite (granitic) in composition. This quartz monzonite unit is generally medium-grained, weakly magnetic, moderately dark grey, pinkish to salmon coloured weathering. A greenish tinge to the intrusive rock is a result of alteration minerals consisting of chlorite/epidote and a patchy pinkish colour may be a result of potassium feldspar alteration. Estimated percentages of minerals within the quartz monzonite include approximately 80% feldspar, 15% quartz, and 5% biotite. The Spike Peak Intrusive Suite is cut by many younger (Early-Middle Jurassic?) porphyry and diabase dykes.

Two types of dykes occur within the northern part of Tachek Creek within the property. Firstly, the diabase dyke is most common, and it is generally fine-grained, moderately to strongly magnetic, and medium to dark grey, greenish in colour. Secondly, the quartz-

hornblende-biotite-feldspar porphyry dyke with approximately 40% feldspar is generally dark grey- black in colour.

Within the southern part of Tachek Creek, two types of dykes intrude the quart monzonite, and a third dyke (andesitic) intrudes what is thought to be a feldspar-hornblende-quartz eye porphyry dyke (dyke or possible small stock). First and most common is the feldspar-hornblende-quartz eye porphyry dyke. This dyke is feldspar rich and pinkish red in colour. A greenish tinge is due to chloritized hornblende. Estimated mineral concentrations include 85% feldspar, 12% hornblende, and 3% quartz eyes. Secondly, a crowed porphyry dyke with 65% feldspar, 30% quartz, and 5% biotite was observed and is a dark grey colour. Thirdly, an andesitic to mafic dyke intrudes the feldspar-hornblende-quartz eye porphyry dyke. This andesitic dyke is fine-grained, weakly magnetic, and grey-greenish in colour. The common diabase dykes are noticeably absent.

#### 7.3.2 <u>Alteration</u>

Three types of alteration occur on the property and are related to fracture-and fault-controlled zones of mineralization.

## 7.4 Propylitic

Propylitic alteration, with component minerals being chlorite and epidote, was recognized as the most widespread along Tachek Creek with weak to moderate being strongest to the southwest. Outcrops are noticeably altered to dark green to epidote green especially along fault planes and faulted zones.

#### 7.4.1.1 Argillic/Sericite

Argillic/Sericite-altered feldspars in intrusive quartz monzonites are associated with gossanous zones located along major fault zones. These zones usually contain high concentration of sulphides and strong iron staining (limonite), specular hematite which tend to mask most alterations. Alteration was generally observed to be weak to moderate argillic/sericite and observed in the north and south regions of Tachek Creek.

#### 7.4.1.2 Potassic

Patchy zones of weak potassic alteration were recognized in the northern part of Tachek Creek but secondary biotite (component mineral in potassic alteration) was not observed. Minerals associated with the weak observed potassic alteration include magnetite and potassium feldspar.

Pinkish zeolite and weak, very narrow barren calcite veinlets are rather common near faulted regions.

## 7.4.2 <u>Structure</u>

Many structural elements were mapped along Tachek Creek and include faults, fractures, dykes, and rare veinlets. The granitic quartz monzonite intrusive unit contained numerous faults. Four types of faulting were recognized and are listed below in order of importance:

#### 7.4.2.1 Oblique-slip faults



These are most common along Tachek Creek and display both a dip-slip and strike-slip component. These faults result from a combination of shearing and tension produced by compressional forces. Within the northern part of Tachek Creek, the oblique-slip faults generally trend approximately east-west with moderately steep and steep dips to the south and north. Other less common trends include northwest-southeast with a moderate dip to the southwest and northeast-southwest with a moderate dip to the southeast. Within the southern part of Tachek Creek, the oblique-slip faults again trend approximately east-west and are vertical or dip steeply to the north. One other less common trend is northeast-southwest with a fairly steep dip to the northwest.

#### 7.4.2.2 Strike-slip faults

These faults are caused by shearing forces. In the north a strike-slip fault trends northeast-southwest and dips moderately steeply to the southeast. This fault displaces (left-lateral) a narrow diabase dyke approximately 0.6 metres. At Tachek Creek south strike-slip faults generally trend northeast-southwest and dip moderately and steeply to the northwest.

#### 7.4.2.3 Normal faults

Normal faults are caused by tensional forces resulting in extension. Two normal faults within the northern part of Tachek Creek trend approximately east-west with moderate and steep dips to the south. One other normal fault also trends approximately east-west and dips steeply north. Within the southern part of Tachek Creek, a normal fault trends almost north-south and dips moderately east.

#### 7.4.2.4 Reverse faults

Two reverse faults were mapped within the northern part of Tachek Creek. A reverse fault is caused by compressional forces and results in shortening. One reverse fault trend approximately north-south and dips steeply to the west. The other fault trends northeast-southwest dipping moderately to steeply southeast.

Fractures were noted to be abundant along Tachek Creek. Fracturing was mapped as weak to strong and generally the quartz monzonite intrusive is moderately fractured. Strong fracturing and gouge typically occur marginal to fault zones. Fractures were not all mineralized, but the mineralized fractures generally contain weak to strong malachite and trace chalcopyrite. In the north region of Tachek Creek, mineralized fractures generally trend northeast-southwest and dip moderately to steeply southeast however, some fractures dip northwest. Other mineralized fractures trend approximately east-west and dip moderately to steeply north. A few mineralized fractures trend northwest-southeast and dip steeply to the southeast or are vertical. In Tachek Creek south mineralized fractures, in order of abundance, trend northeast-southwest, approximately east-west and north-south.

Dykes are common along Tachek Creek and are generally 30 cm to greater than 4 metres wide. Dyke contacts are generally sharp in contact with quartz monzonite and have chilled margins. Dyke swarms have been mapped but are not as common as individual dykes. In Tachek Creek north, the diabase dykes are most common and are up to approximately 4 metres in width where mapped. They generally trend east-west and dip moderately to the



north. Other diabase dykes trend northwest-southeast and dip moderately to the southwest and northeast-southwest dipping moderately to the northwest. Two quartz-hornblende –biotite feldspar porphyry dykes were mapped in the north zone and are 0.8 to 2 metres wide. They trend generally east-west and dip 56° to the south. One other porphyry trends northwest-southeast and is vertical. In the south Tachek Creek zone, a crowded feldspar-quartz-biotite porphyry dyke approximately 7 metres wide trends northeast-southwest and dips moderately to the northwest. A second dyke approximately over 40 metres wide is composed of feldspar hornblende-quartz eye porphyry. This dyke trends northwest-southeast and dips rather steeply to the northeast. An andesite dyke approximately 5 metres wide intrudes the feldspar hornblende-quartz eye porphyry dyke. This andesitic dyke trends northeast-southwest and dips steeply northwest.

Mineralized veinlets are rare in the quartz monzonite unit with two being mapped within the northern part Tachek Creek. All veinlets trend along fault planes and are 2-3 centimetres wide. A narrow quartz veinlet (3 cm wide) trends approximately north-south along a reverse fault plane and dips steeply to the west. A second quartz-carbonate veinlet trends approximately east-west along an oblique-slip fault plane dipping moderately to steeply north.

In general, the quartz monzonite intrusive unit that host copper mineralization at the Topley Property is moderately deformed by faulting and fracturing leaving open spaces for mineral deposition.

Basic dykes, weakly magnetic and up to 1 metre wide, were also noted cutting the granitic rocks in this exposure area. These dykes, believed to be of post-mineral or Tertiary age, have chilled margins and occupy the northerly trending fracture set. The southern exposure area in Tachek Creek features variably weathered granodiorite cut by the fractures with the same orientation as those in the northern area. The contact between the granitic rocks and the volcanic-sedimentary sequence is not exposed and is based largely on data obtained from 1973 drilling.

Chlorite and sericite schists in the northern parts of the claims contain numerous quartz veins ranging in width from several centimetres to 0.5 metre. The veins, which occupy northerly trending planes of schistosity, commonly pinch and swell but appear to be continuous along strike. Locally, the veins border on pegmatite with some K-feldspar, but generally they are milky white with some possible manganese staining.

Deposits with volcanogenic massive sulphide affinities and containing precious metals values include Topley-Richfield-10 km north of Topley, the Red prospect-5 km northeast of the dormant Granisle Mine, and the Fireweed silver-lead-zinc prospect-12 km west of the Bell Copper mine. This information concerning these nearby properties is not intended to imply similar mineralization occurring on the Topley property.

The author has therefore interpreted that the quartz monzonite intrusive units, whether they be Topley or Spike Peak, host the copper mineralization on the Topley Property. These intrusive units are moderately deformed by faulting and fracturing leaving open spaces for mineral deposition.



#### 7.5 Property Mineralization

Six MinFile occurrences are located within the Topley Property as shown on the claim map, figure 2, and on the property geology map, figure 4. All are classed as showings except for the one labelled Tachi, which is classed as a prospect. In the MinFile type of classification system this means it is more advanced in its development. All occurrences consist of sulphide mineralization, mainly pyrite and chalcopyrite, except for the Chris showing, which consists of limestone.

## 7.5.1 <u>Tachi Prospect (93L 144)</u>

The Tachi area is underlain by Permian to Triassic Takla Group rocks and Lower to Middle Jurassic Hazelton Group schistose volcanics comprised mainly of andesitic flows, tuff and breccia that strike northwards and dip steeply east. These rocks are intruded by granodiorite of the Middle Jurassic Spike Peak Intrusive Suite, which underlies the area in the area of the prospect.

The Spike Peak intrusions are comprised mainly of granodiorite to quartz monzonite. They are crosscut by biotite-quartz-feldspar porphyry dikes that have irregular, commonly brecciated contacts and strike predominantly east.

Alteration products include sericite on feldspars and incipient chloritization of biotite. More altered varieties of the intrusive exhibit porphyroblasts of potash feldspar plus epidote, chlorite, potash feldspar and magnetite in and marginal to numerous fractures.

Sulphide mineralization, consisting of pyrite, chalcopyrite, and molybdenite appears to be widespread marginal to the biotite-quartz feldspar porphyry dikes. In general, the molybdenum is restricted to potash feldspar rimmed fractures, while chalcopyrite occurs both in fractures and as disseminations in both the granitic rocks and the porphyries.

Copper mineralization and related secondary copper oxide minerals and other sulphides observed on the Topley claims include, in order of abundance; malachite, chalcopyrite, magnetite, pyrite, molybdenite, azurite, and bornite. These minerals are consistent with a widespread copper/molybdenite porphyry system on the Topley claims. The mineralized porphyry system extends, in areas mapped, from Tachek Creek north to Tachek Creek south, a north-south distance of approximately 1,125 metres.

Copper mineralization is hosted almost exclusively within Middle Jurassic Spike Peak Intrusive Suite quartz monzonite rocks. Three types of controls on copper mineralization were observed within the quartz monzonite intrusive rocks on the Topley claims.

1. Fracture controlled copper mineralization consisting of malachite and chalcopyrite is most common on the Topley claims. Less common are fractures containing molybdenite and azurite that were mapped in Tachek Creek north and to a lesser extent in Tachek Creek south. Magnetite is common in Tachek Creek north (disseminated/along fractures) and is a common constituent of potassic alteration zones in porphyry deposits. The hydrothermal deposition in fracture fillings indicate the presence of base metals and thus the author concludes there is a possibility of porphyry type deposition.



- 2. Fault-controlled copper mineralization consisting of chalcopyrite, malachite, molybdenite, azurite and associated magnetite was observed in both north and south Tachek Creek but is most common in the northern regions of Tachek Creek north. Numerous faulting on the Topley Property has localized high concentrations of copper mineralization along fault planes extending up to approximately 2 metres into the quartz monzonites on either side of the fault plane. These zones are typically gossanous and contain trace to 2 per cent disseminated chalcopyrite, weak to strong malachite (to a lesser extent azurite), and trace-1 per cent molybdenite. High concentrations of blebby magnetite are common within these faulted zones. Pinkish zeolite and very weak calcite fill fractures near strongly faulted zones.
- 3. Dikes and dike swarms usually occur in zones of weakness produced by earlier faulting and tend to concentrate copper mineralization. Here copper mineralization and sulphides (chalcopyrite, pyrite, molybdenite, and malachite) increase marginal to porphyry and diabase dikes. These dykes have sharp contacts and chill margins. Trace amounts of copper mineralization consisting of malachite and chalcopyrite were seen in diabase and crowded porphyry dikes as disseminations and along fractures.

Two types of rare, mineralized veinlets were mapped at Tachek Creek north. Firstly, a single quartz-chlorite veinlet approximately three centimetres wide contained trace chalcopyrite. The quartz ranges in texture from massive white quartz to vuggy-drusy quartz. Secondly, a single vuggy-drusy quartz carbonate veinlet mineralized with malachite and chalcopyrite was mapped and is two centimetres wide. Semi-massive to massive chalcopyrite stringers and blebs about 1-2 centimetres wide were observed in float within Tachek Creek north

Mineralization appears more widespread marginal to the younger porphyry dikes. Samples from granitic rocks contained low copper values (0.126-0.124 per cent), molybdenum values up to 0.17 per cent and a single value of 1.2 grams per tonne gold (Carter 1988)

Schists north of the highway contain numerous quartz veins up to two metres in width. The veins generally occupy planes of schistosity. Samples contained up to 2.2 grams per tonne silver, 0.005 to 0.01 gram per tonne gold and up to 0.473 per cent copper (Carter 1988).

## 7.5.2 **Pro Showing (93L 225)**

Lower Jurassic Hazelton Group rocks consisting of andesitic pyroclastics with associated argillaceous and siliceous sedimentary rocks are intruded by quartz diorite and associated diorite. Traces of chalcopyrite and molybdenite were found as disseminations and fracture fillings in the intrusive as well as 1.0 to 3.0 per cent pyrite (Carter 1988).

## 7.5.3 <u>Jill Showing (93L 242)</u>

The Jill area is underlain by Lower to Middle Jurassic volcanic rocks of the Hazelton Group. The volcanics are comprised mainly of andesite, andesitic flows, tuff and breccia. The volcanics are intruded by a Jurassic Topley Intrusion comprised of granodiorite and associated quartz-feldspar porphyry dikes. Pyrite and traces of chalcopyrite occur as



disseminations in the volcanics and the intrusion as well as in veins associated with the intrusion.

## 7.5.4 **Gold Dust Showing (93L 315)**

Copper mineralization and related secondary copper oxide minerals and other sulphides observed on the Topley claims include, in order of abundance; malachite, chalcopyrite, magnetite, pyrite, molybdenite, azurite, and bornite. These minerals are consistent with a widespread copper/molybdenite porphyry system on the Topley claims.

#### 7.5.5 Cortina Showing (93L 192)

Lower to Middle Jurassic Hazelton Group volcanics comprised mainly of andesitic to rhyolitic flows, tuff and breccia are intruded by a Cenozoic Babine Intrusion consisting of granodiorite and associated biotite-feldspar porphyry dikes. Chalcopyrite and pyrite occur as disseminations and as fracture fillings in the porphyry intrusion and marginal to the contact zone.

## 7.5.6 **Chris Showing (93L 307)**

Limestone outcrops 8.5 kilometres southwest of Topley Landing. The deposit is hosted by Lower Jurassic Telkwa Formation volcanic rocks. Five grab samples of limestone from the deposit averaged 77.87 per cent CaCO3, 0.74 per cent MgCO3, 0.244 per cent iron and 16.72 per cent insolubles.

## 8 MINERAL DEPOSIT TYPES

## 8.1 8.1 PORPHYRY COPPER, MOLYBDENUM, AND/OR GOLD DEPOSITS

The main mineral deposit types of interest on the Topley Property are porphyry copper, porphyry copper/gold, and porphyry copper/molybdenum which are the main types of mineralization known in the area. The three best known ones are the Bell Copper Mine and the Granisle Mine which are past producers, as well as the Lorraine deposit which contains minable and drill-indicated tonnage. The description of these three deposits is given below under "23 Adjacent Properties". Mineral deposit types present in the region are classified as porphyry and epigenetic characterized by disseminated, vein and breccia hydrothermal systems. A simplified model of a porphyry system deposit (Lowell & Guilbert, 1970) is illustrated below in Figure 6.

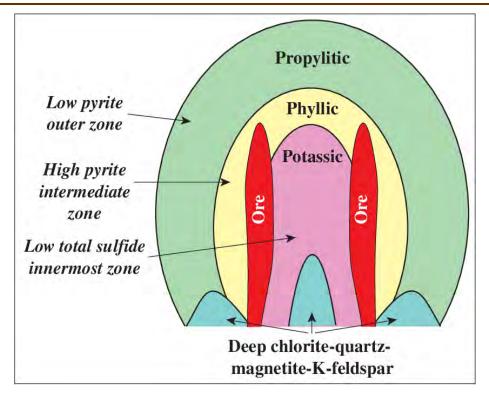


Figure 6- Hydrothemal alteration and sulphide zoning patterns in the Lowell-Guilbert model of porphyry copper deposits (after Lowell and Guilbert, 1970)

Panteleyev, (1995) describes the Porphyry Cu+/Mo+/-Au model in Selected British Columbia Mineral Deposit Profiles, Volume 1 - Metallics and Coal, Open File 1995-20, pages 87-92 as a Calcalkaline porphyry Cu, Cu-Mo, Cu-Au deposit type. Classic British Columbia examples include Brenda (092HNE047), Berg (093E 046), Huckleberrry (093E 037), and Schaft Creek (104G 015).

Host intrusions vary from coarse-grained phaneritic to porphyritic stocks, batholiths and dike swarms, with compositions that range from quartz diorite to granodiorite and quartz monzonite. There are commonly multiple emplacements of intrusive phases and a wide variety of breccias that modify the stock geometry. The deposits, as shown in the above figure 6, usually exhibit a lateral outward zoning of alteration and sulphide minerals from a potassic (K-feldspar and biotite) altered core through phyllic (quartz-sericite-pyrite) alteration to propylitic (chlorite-epidote-calcite). Less commonly argillic, and in the uppermost parts of some ore deposits, advanced argillic (kaolinite-pyrophyllite) alteration occurs. Characteristics of this deposit type are large zones, up to 10 km² in size, of hydrothermally altered rock containing stockworks of quartz veins and veinlets, closely spaced fractures and breccia zones containing pyrite and chalcopyrite +/- molybdenite, bornite and magnetite. Disseminated sulphide minerals are present but in minor amounts. Deposit boundaries are determined by economic factors that outline ore zones within larger areas of low-grade, concentrically zoned mineralization.

Ore controls include igneous contacts with the surrounding wallrock and internal contacts between intrusive phases; cupolas and the uppermost, bifurcating parts of stocks, dike swarms, early formed intrusive breccias and hydrothermal breccias. Ore minerals are

chalcopyrite; molybdenite, lesser bornite and rare (primary) chalcocite. Subordinate minerals are tetrahedrite/tennantite, enargite and minor gold, electrum and arsenopyrite. In many deposits late veins commonly contain galena and sphalerite in a gangue of quartz, calcite and barite.

Two main periods of deposit formation occurred in the Canadian Cordillera during the Triassic/Jurassic (210-180 Ma) and Cretaceous/Tertiary (85-45 Ma). Elsewhere deposits are mainly Tertiary but range from Archean to Quaternary.

British Columbia porphyry Cu/Mo  $\pm$  Au deposits range from <50 to >900 Mt with 0.2 to 0.5% Cu, 0.0 to 0.04% Mo, <0.1 to 0.6gm/t Au, and 1 to 3gm/t Ag. Median values for 40 B.C. deposits with reported reserves are: 115 Mt with 0.37% Cu, 0.01% Mo, 0.3gm/t Au and 1.3gm/t Ag.

Porphyry deposits contain the largest reserves of Cu, significant Mo resources and close to 50% of Au reserves in British Columbia.

## 8.2 VOLCANIC HOSTED MASSIVE SULPHIDE (VHMS) DEPOSITS

There is geological evidence that Volcanic hosted massive sulphide (VHMS) deposits may occur on the property. VHMS deposits occur within the area and these include Topley-Richfield-10 kilometres north of Topley, the Red prospect-5 kilometres northeast of the dormant Granisle Mine, and the Fireweed silver-lead-zinc prospect-12 kilometres west of the dormant Bell Copper mine. One of the best examples of a VHMS deposit is the Eskay Creek Mine which is a world class gold-silver-copper-lead-zinc deposit occurring within Hazelton Group rocks which also occur on the Topley Property. A diagram displaying a simplified model of a VMS system is shown below in Figure 7. According to Huston, et al, (2011), geological, geochemical, and isotopic data suggests that a significant subgroup of volcanic-hosted massive sulphide (VHMS) deposits has a major or dominant magmatic-hydrothermal source of ore fluids and metals. In other words, granites, or granitic-type rocks, play an important role in the massive sulphide ore-forming mineral deposits. These deposit-types are typically characterized by high Cu and Au grades with prime examples being those of the Neoarchean Doyon-Bousquet-LaRonde mining area of Quebec, and the Cambrian Mount Lyell mining area of Australia. These deposits are distinguished by aluminous advanced argillic alteration assemblages or metamorphosed equivalents intimately associated with ore zones. The evidence for the possibility of this type of deposit on the Topley Property is the Spike Peak quartz monzonite intrusive within the

Tachi mineral occurrence which would provide the magmatic-hydrothermal source for the ore fluids. There is also some massive sulphide mineralization known on the property.

The description of three local deposits is also given below under "23 Adjacent Properties".

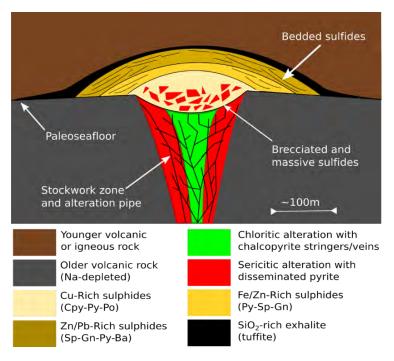


Figure 7 - (after Hannington, 2014)
Cross-section of a typical volcanogenic massive sulfide
(VMS) ore deposit as seen in the sedimentary record

## 9 **EXPLORATION**

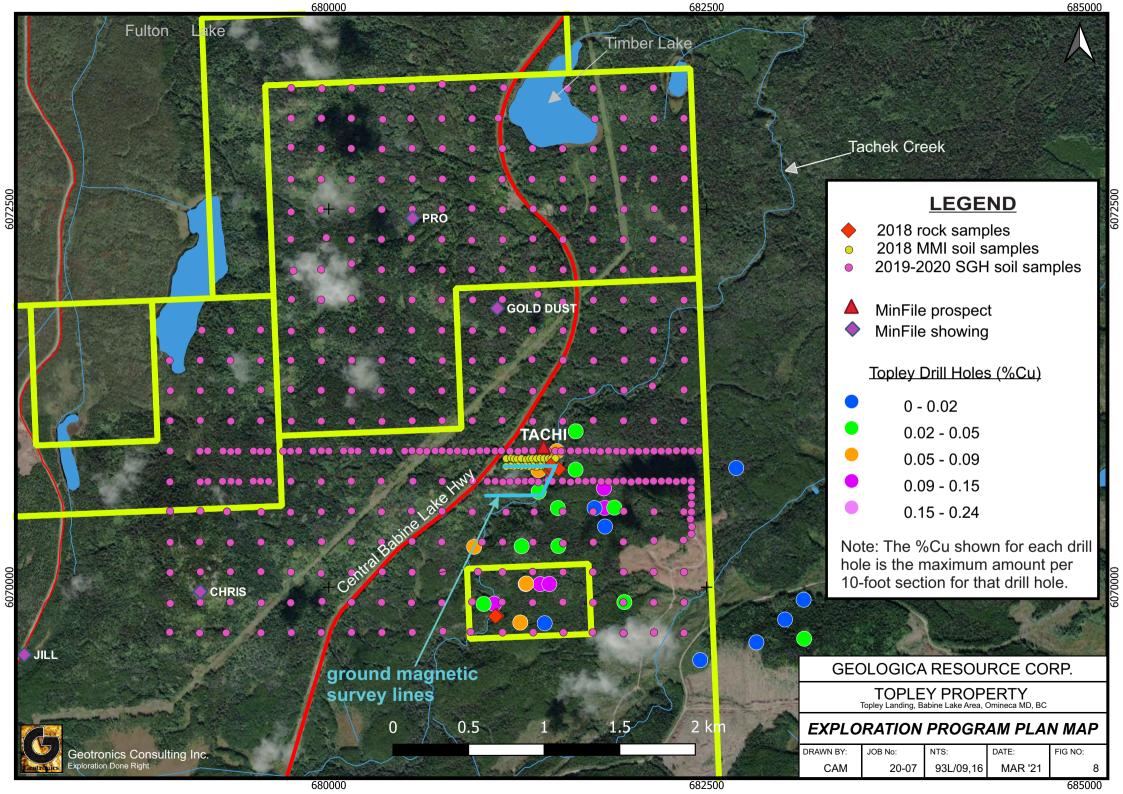
The first four Decoors claims were staked in 2018 and early 2019 and since that time, an exploration program was carried out in 2018, 2019, and 2020 by the owner, Decoors Mining Corp, on the property and consisted of rock sampling, MMI soil sampling, SGH soil sampling, and a minor amount of magnetic surveying. Prior acquired his claim in 2018 and carried out work that same year which consisted of rock sampling and the locating of roads and trenching that were overgrown and difficult to find.

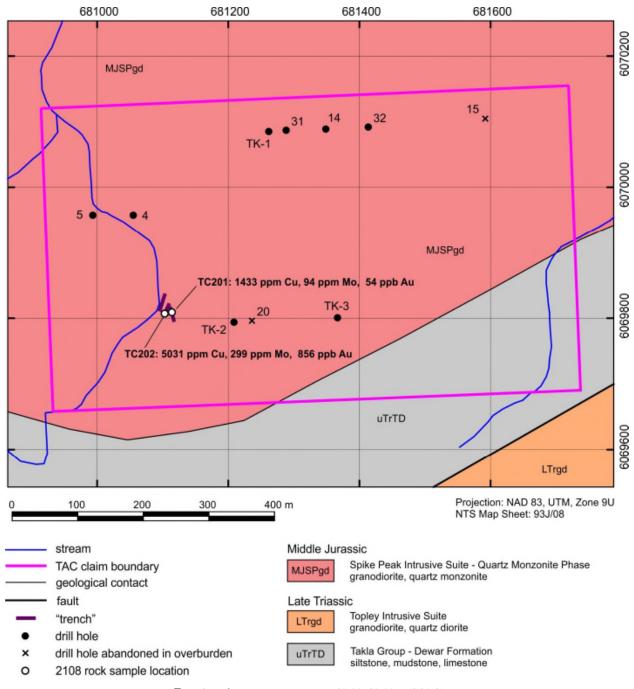
#### 9.1 ROCK SAMPLING

Rock samples were picked up by both Decoors and Prior on their respective properties in 2018 with Decoors picking up 5 samples, and Prior, 2.

#### 9.1.1 Prior Rock Sampling

Prior first located three trenches on his claim that in his report, states "are not actually trenches per se but rather linear trends of steep outcrop exposure that have undergone continuous sampling. There is no evidence of blasting or digging." He then picked up sample #TC201 from the northern end of trench 10-10 and samples #TC202 from the southern end of trench 10-09, as is shown on figure 9. These samples were submitted to





Trenches, from west to east, are 10-08, 10-09 and 10-10.

Figure 9. Prior Rock Sample Map

TSL Laboratories of Saskatoon, Saskatchewan for major oxide whole rock analyses and trace element ICP-MS analyses (aqua regia digestion).

Both samples were collected from a quartz monzonite of the Spike Peak intrusive suite. Sample TC201 returned 1,433 ppm Cu, 93.5 ppm Mo, 1.0 ppm Ag, 53.7 ppb Au, 1.74% Fe and 0.09% S (aqua regia digestion). Sample TC202 returned 5031 ppm Cu, 299.3 ppm Mo, 2.8 ppm Ag, 856.3 ppb Au, 2.16% Fe and 0.75% S (aqua regia digestion). The low iron and sulphur values are consistent with the general scarcity of pyrite observed in the rocks. The presence of 0.50% Cu in sample TC202 is of note as is the relatively high gold value (0.86 g/t Au).

#### 9.1.2 Decoor Rock Sampling

Five rock samples were collected by hammer and chisel from outcrop along Tachek Creek. The rock samples are described as follows.

- Minor orange-red oxidized weathered surface, minor green malachite staining on outside surface.
- Syenite with minor hematite staining and silicification in select areas
- Sulphide mineralization ranges from ~1-3% as pyrite>chalcopyrite, and magnetite present as much as 5%
- Higher concentrations of sulphide associated with fractures and magnetite
- Weathering limited to clay alteration of feldspar and rare green malachite
- Quartz syenite with veins and seams of quartz and magnetite ranging from thin mm-scale to massive cm-thick undulating seams, also occurring as disseminated grains throughout
- Fine disseminated chalcopyrite and pyrite locally around magnetite-quartz seams, ~1%
- Weakly oxidized and iron-stained surface with minor malachite staining
- Fine intermediate porphyry (dacite?) with quartz, biotite, and plagioclase phenocrysts
- Fine disseminated pyrite and chalcopyrite throughout, rare epidote grain. Sulphide mineralization ~3%.

The samples were collected by hammer and chisel. The samples were labeled and bagged on site. The samples were then shipped to SGS Laboratories in Vancouver for whole rock analysis is the determination of major element oxides of a rock sample. The samples were prepared and analysed with whole rock code ICP 90Q.

The copper results are shown on figure 10 and the gold results, figure 11. One rock sample is highly anomalous in Cu at 25,300 ppm and Au at 116 ppb. All samples are anomalous in copper.

#### 9.2 DECOORS MMI SOIL SAMPLING

MMI stands for mobile metal ions and describes ions, which have moved in the weathering zone that are weakly or loosely attached to surface soil particles. MMI, which requires special sampling and testing techniques, are particularly useful in responding to mineralization at depth probably in excess of 700 meters, though for gold, the depth is probably closer to 300



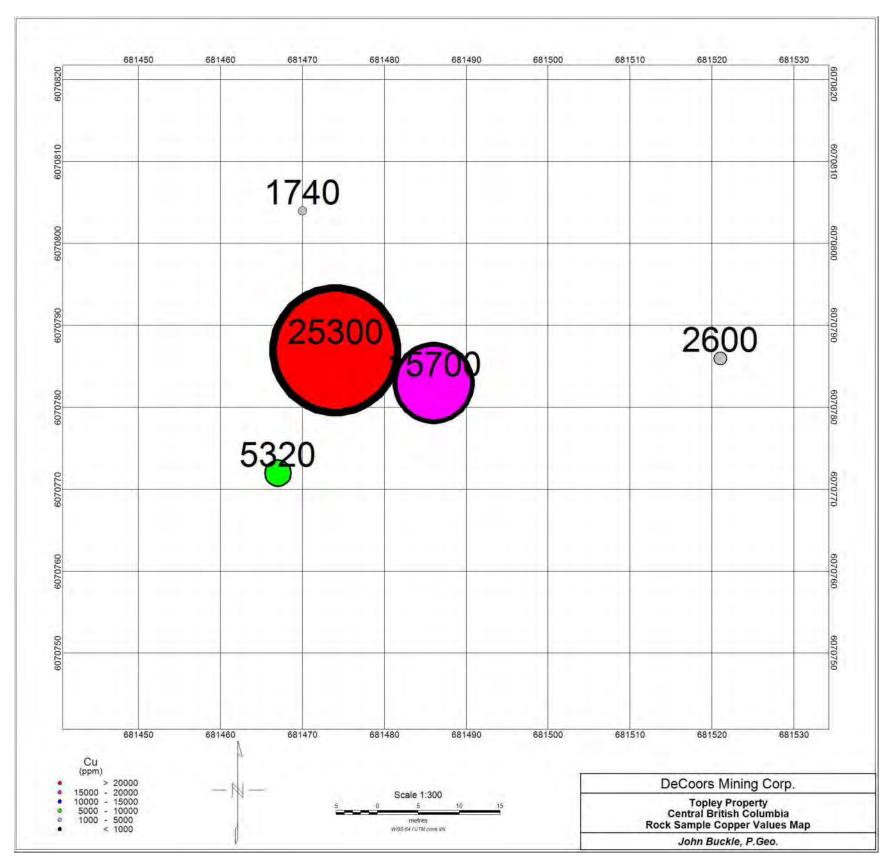


FIGURE 10 - DECOORS ROCK SAMPLE MAP - COPPER

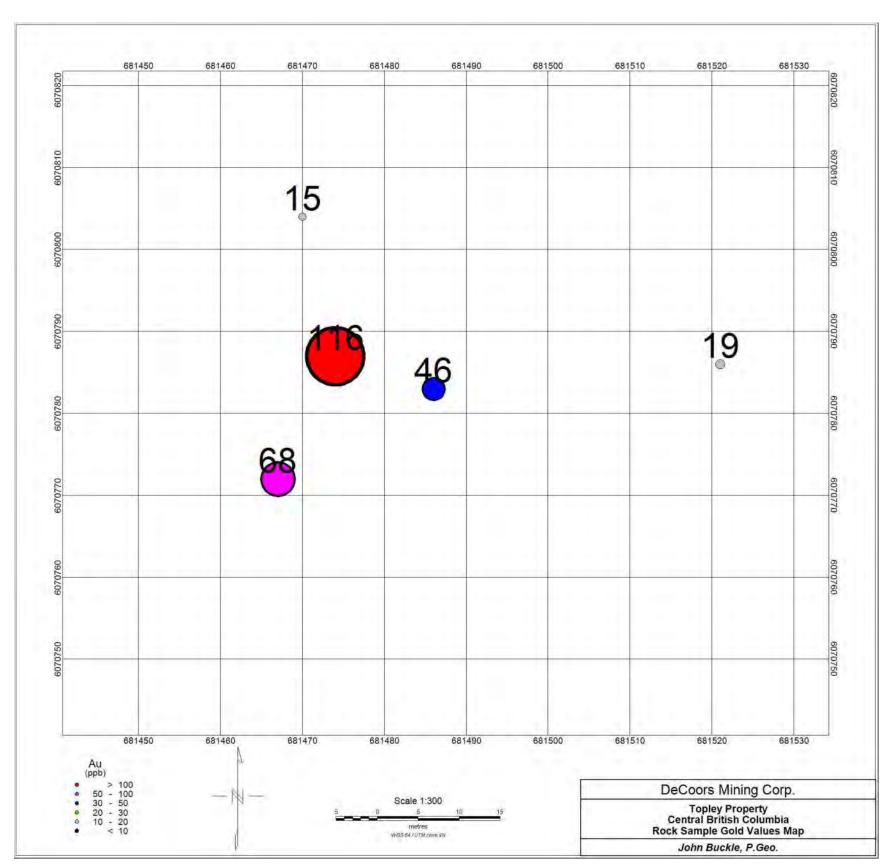


FIGURE 11 - DECOORS ROCK SAMPLE MAP - GOLD

meters. The testing uses proprietary partial extraction techniques with specific combinations of ligands to keep metals in solution. It also is not affected by glacial till, while standard soil sample techniques are. MMI is characterized in having a high signal to noise ratio and therefore can provide accurate drill targets.

Copper mineralization was noted in Tachek Creek and thus two lines of MMI soil sampling were run westerly from the creek in order to determine the extent of the copper mineralization. The lines, as shown within figures 8 and 9, were put in 50 meters apart with the samples being taken every 25 meters. Each line is 375 meters in length. The samples were picked up every 25 meters.

It is the author's opinion that the following MMI sampling procedure and testing procedure are consistent with best practices for MMI analysis.

The sampling procedure was to first remove the organic material from the sample site ( $A_0$  layer) and then dig a pit over 25 cm deep with a shovel. The sides of the pit were then cleaned with a plastic garden trowel to take away any contaminating effects of the metal shovel. Sample material was then scraped from the sides of the pit over the measured depth interval of 10 centimeters to 25 centimeters. About 250 grams of sample material were collected and then placed into a plastic Zip-loc sandwich bag with the sample location marked thereon. The MMI samples were bagged in the field, tagged, and sealed on-site. A total of 27 samples were picked up and these were transported by the company to SGS Minerals located at 3260 Production Way, Burnaby, BC.

At SGS Minerals, the testing procedure begins with weighing 50 grams of the sample into a plastic vial fitted with a screw cap. Next is added 50 ml of the MMI-M solution to the sample, which is then placed in trays and put into a shaker for 20 minutes. (The MMI-M solution is a neutral mixture of reagents that are used to detach loosely bound ions of any of the 53 elements from the soil substrate and formulated to keep the ions in solution.) These are allowed to sit overnight and subsequently centrifuged for 10 minutes. The solution is then diluted 20 times for a total dilution factor of 200 times and then transferred into plastic test tubes, which are then analyzed on ICP-MS instruments. Results from the instruments for the 53 elements are processed automatically, loaded into the LIMS (laboratory information management system which is computer software used by laboratories) where the quality control parameters are checked before final reporting.

Two colour contour plan maps were drawn up, one being on the copper results as shown below in figure 12, and one being of the gold results as shown below in figure 13. These were done for John Buckle's 2019 assessment report for the Topley Property. However, the following interpretation is the authors.

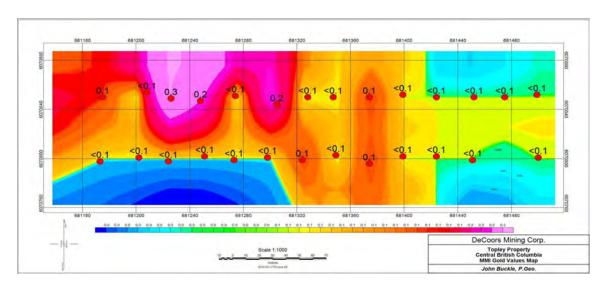


Figure 12 MMI Copper Plan Map – (Values in ppb)

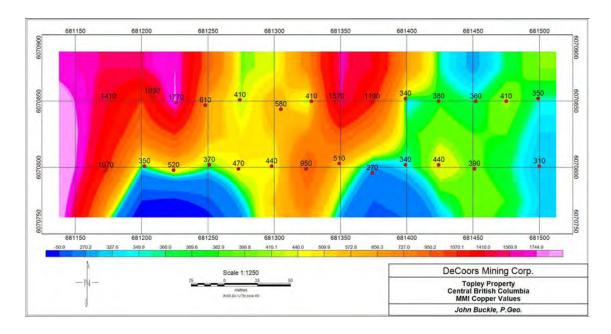


Figure 13 MMI Gold Plan Map – (Values in ppb)

The copper map shows two anomalies with one being within the western part of the grid area and one being within the central part. Gold anomalous results correlate directly with the copper anomalies as well as alongside them. In addition, though not shown within this report, zinc and molybdenum anomalous results occur with and alongside the copper and gold anomalous results. Though the survey area is too small for the author to make a conclusive interpretation, the causative sources of the anomalous MMI results could be from porphyry style mineralization, or possibly even VMS style mineralization, that strikes northerly. This survey is significant in that the western MMI gold and copper anomalies correlate directly with the eastern part of the SGH gold and copper anomaly.

In conclusion, both the MMI soil sampling and the rock sampling support the premise of potential copper-gold porphyry with anomalous copper and gold values in both soil and rock samples. Examination of outcrop in Tachek Creek support the potential for porphyry mineralization on the property. The historic work showed numerous occurrences of porphyry type mineralization. This was confirmed during the work described in this report. Previous work was hampered by deep glacial cover making traditional sampling methods ineffective. MMI is likely to be able to detect porphyry style mineralization beneath this cover.

# 9.3 SGH SOIL SAMPLING

The SGH soil sampling was carried out over a 2-year period. In 2019, the purpose was to test the capability of SGH at picking up copper and gold anomalies through a deep till where previous operators have found more traditional soil geochemistry surveys inadequate. In 2020, with the 2019 work deemed successful, SGH soil sampling was carried out over a wide area of the property using the recommended methodology of Actlabs.

Spatiotemporal geochemical hydrocarbon (SGH) sampling is a geochemical analysis that has been researched since 1996. Rather than sampling for particular elements of interest, this method examines the composition and distribution of hydrocarbons found in the soil. The hydrocarbons of interest are produced through the decomposition of bacteria and microbes that feed on metallic mineralization. This form of hydrocarbon production is an ongoing process that will form a flux or plume which extends upwards from the mineralization and can be sampled from a variety of surficial materials including soil, peat, humus, rock, till, snow, and even lake or sea sediments. An SGH survey can be used to identify mineralization at a depth range from 5 to 950 metres and is typically used in difficult terrain where other analytical methods have not been effective. SGH analysis has been successful at identifying a wide range of deposits, including gold, nickel, copper, uranium, SEDEX, VMS, polymetallic, REE, and kimberlite. Mineralization may be detected regardless of the host lithologies present, and in a variety of different settings and climates. In all cases, the hydrocarbon plume rises upwards from the mineralization and adheres to soil particles directly above the mineralization, provided that there has been no significant ground movement.

Decoors Mining Corp carried out SGH soil sampling on the Topley property in July 2019 with 3 crew members within the area of the northern part of the Tachi prospect. It consisted of 112 samples along 2 east-west lines located at UTM northings 6070700 and 6070900, respectively, as shown on the Exploration Map, figure 6. The lines are each 3,350 meters in length and have a sample spacing of 50 meters along the eastern parts of the lines and 100 meters along the western parts.

The 2020 work was carried out with a three-man crew in October 2020 consisting of 515 soil samples that covered almost the entire property. These were picked up at 200-meter centers. However, only 305 samples were sent to the lab which covered an area of 3,600 meters by 3,400 meters within the eastern two-thirds of the property.

For each sample site, a hole was dug to about 10 cm deep and then the scoop was flushed with new dirt at the sample site and cleaned, ensuring that there was no cross-contamination from the remnants of the previous sample site. A fist-sized sample of the A-horizon was then taken with the scoop, placed into pre-labelled Ziploc bag, and then into a backpack. At the end of the day, the samples were transferred to labelled rice bags. For each year, all samples were then sent to Actlabs at Ancaster, Ontario shortly after the field work was completed.

Activation Laboratories Ltd. (Actlabs) facility in Ancaster Ontario is certified ISO/IEC 17025:2017, is SCC GLP compliant and Health Canada licensed, Omafra Soil Testing Lab accredited as well as FDA registered and Licensed.

Actlabs carried out the SGH analysis of the samples. Based on their report, the overall precision of the samples collected was considered to be very good as demonstrated by samples taken from these surveys which were used for laboratory replicate analysis and were randomized within the analytical run list.

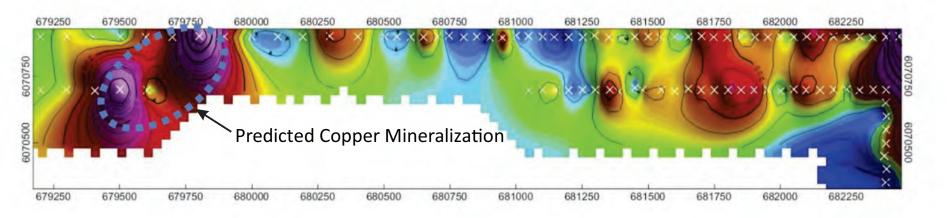
For the samples picked up in 2020, a template or groups of SGH Pathfinder Classes that are associated with VMS mineralization, copper, and gold templates were used at the basis for interpretation of the SGH survey. But for the 2019 samples, only the copper and gold targets were used since this was only a test of the method.

For the 2019 samples, SGH survey yielded a copper and gold anomaly which the Actlabs-defined SGH classes most important to describing a copper and gold signature are mostly present and describe the same location with fairly well-defined anomalies. In other words, it is likely that the copper-gold anomaly is reflecting copper/gold mineralization. It is located within the western part of the survey area possibly striking in a northeasterly direction. The minimum strike length is 600 meters with a width of 300 meters. This was considered encouraging especially taking into account that the anomaly occurs within an area of deep overburden. This is to the west of the main workings within the Tachek Creek area where overburden is much less, and outcrops are more abundant.

The 2020 SGH sampling was done over a much wider area and yielded 4 copper anomalies, 2 gold anomalies, and one main VMS (volcanic massive sulphides) anomaly, as is shown on figures 15, 16, and 17 which are maps produced by the author. The SGS data indicates that the SGH classes most important to describing copper, gold, and VMS signatures are mostly present describing the locations with well-defined anomalies. The author has grouped these anomalies into six main anomalies or anomalous zones and labelled them by the upper-case letters, A to F. In addition, an SGH anomaly map, figure 19, has been drawn in order to show correlations between copper, gold, and VMS signatures with the historical workings.

<u>Anomaly A</u>, which is actually an anomalous zone, is considered to be the most important anomaly since (1) it is a correlation of gold, copper, and VMS anomalies, and (2) it occurs essentially within the center of a SGH-defined redox cell. This anomalous zone strikes eastwest, has a minimum strike-length of 1,300 meters with it being open to the west, and has a width of 500 meters.

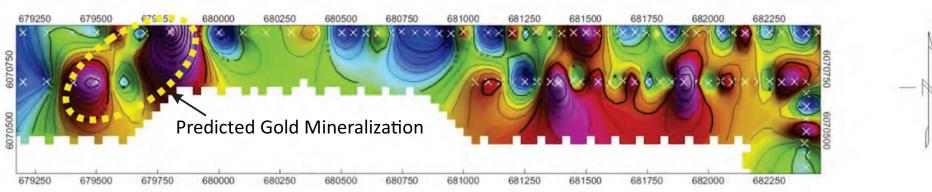






# SGH 2019 COPPER PLAN MAP

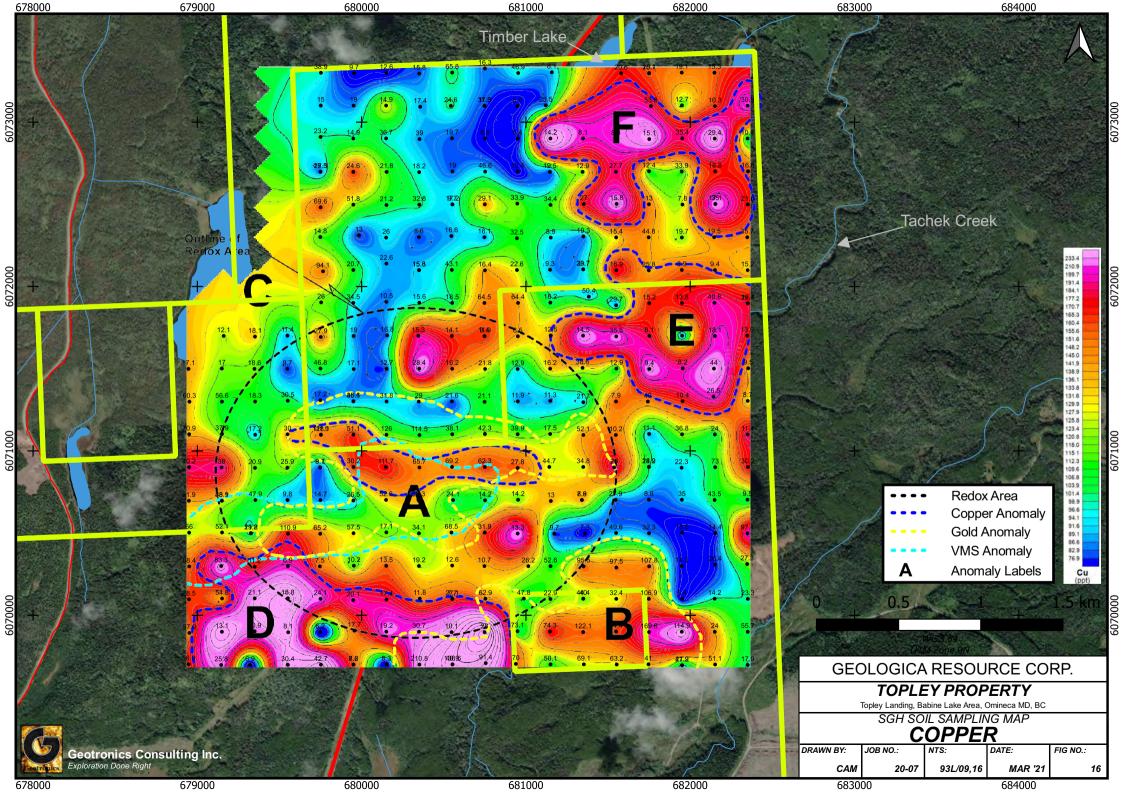
Figure 14

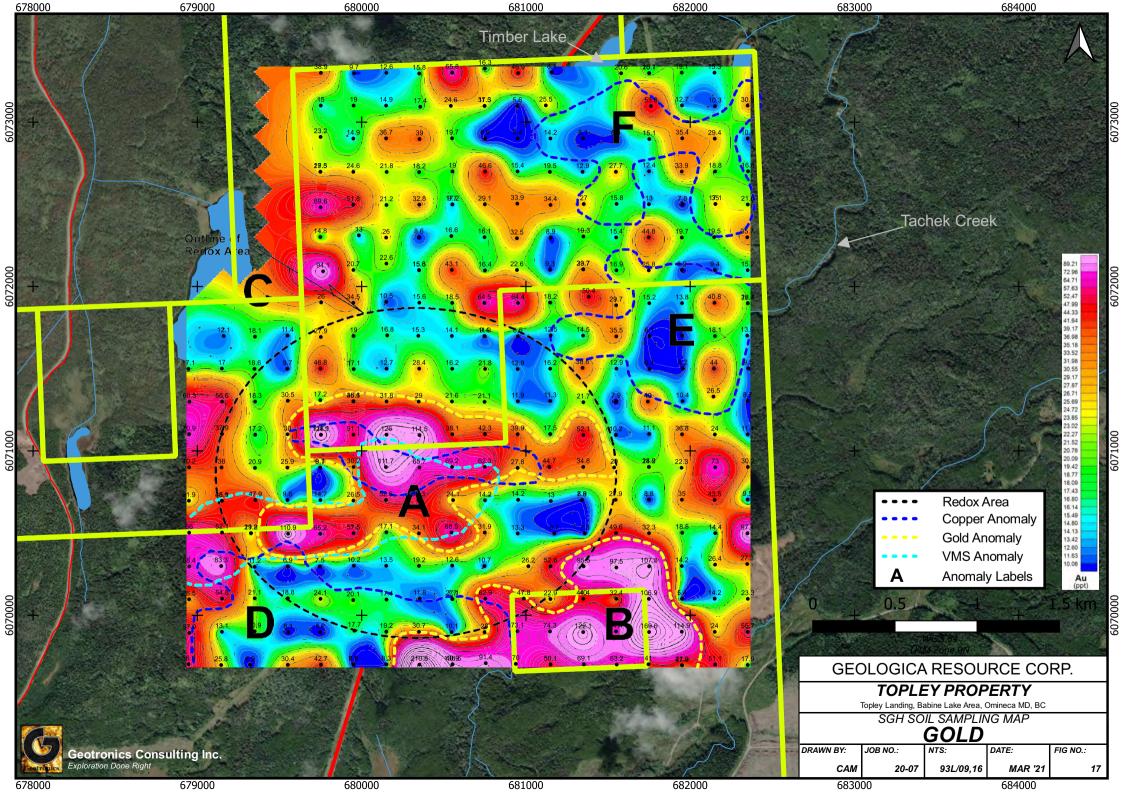


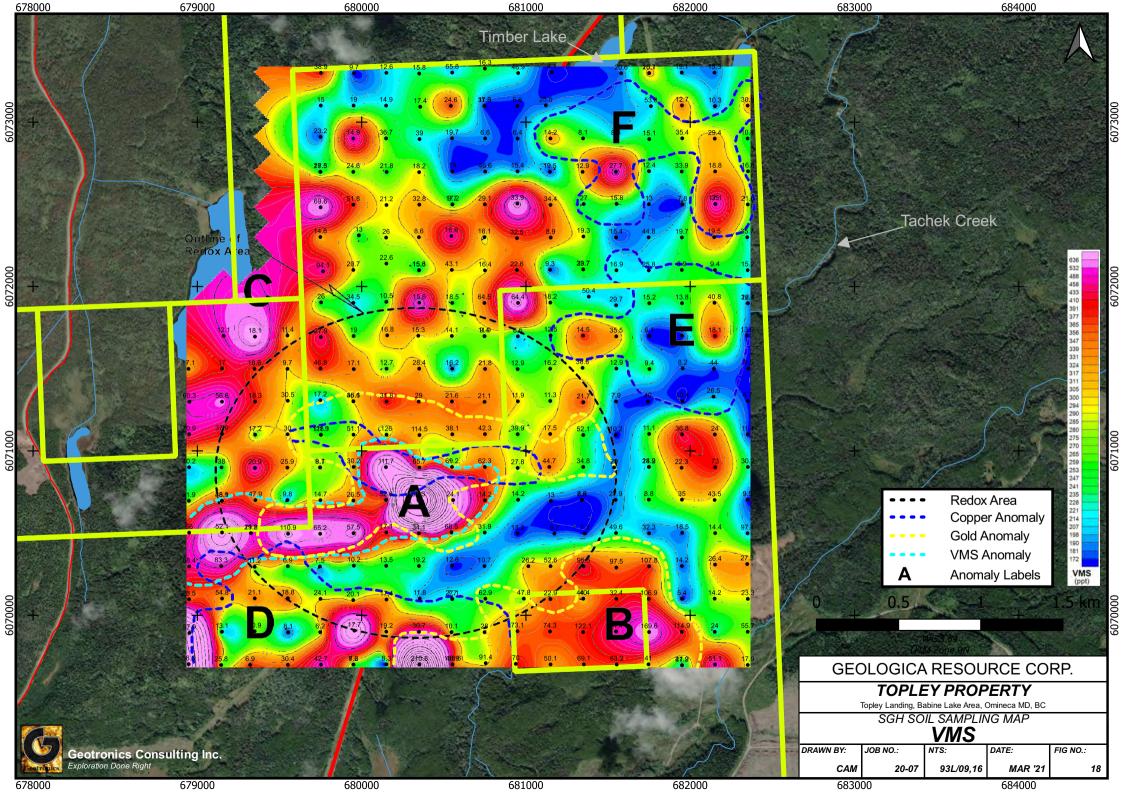


SGH 2019 GOLD PLAN MAP

Figure 15







Redox cells are usually caused by mineralization but can be caused by other sources as well. However, in this case, there is a correlation and partial correlation between copper, gold, and VMS anomalies. This therefore suggests that the causative source is copper and gold mineralization within a VMS deposit. It is also at depth which is needed to produce a redox cell. However, the size of the suggested deposit is not necessarily 1,300 meters by 500 meters since the way the copper, gold, and VMS deposits correlate with each other is complex. For example, taking the copper anomaly by itself suggests a much smaller deposit, but still substantial in size but the gold anomaly suggests a larger deposit.

The SGH anomaly map, figure 19, shows the copper and gold anomaly from the 2019 soil sampling to occur outside of the copper and gold anomalies from the 2020 soil sampling. This is caused by the 2020 work being done on a symmetrical grid over a much wider area with a greater number of samples. Consequently, the 2020 results are more accurate. For example, the 2019 work was not carried out over a wide enough area to discover and outline the redox cell.

The anomaly A area is underlain by deep overburden, but geological mapping of sparse outcrops shows the underlying rocks to be undivided volcanics of the Takla Group. This is supported by the airborne magnetic survey which shows the VMS anomaly occurs within a magnetic high which is likely due to the Takla volcanics.

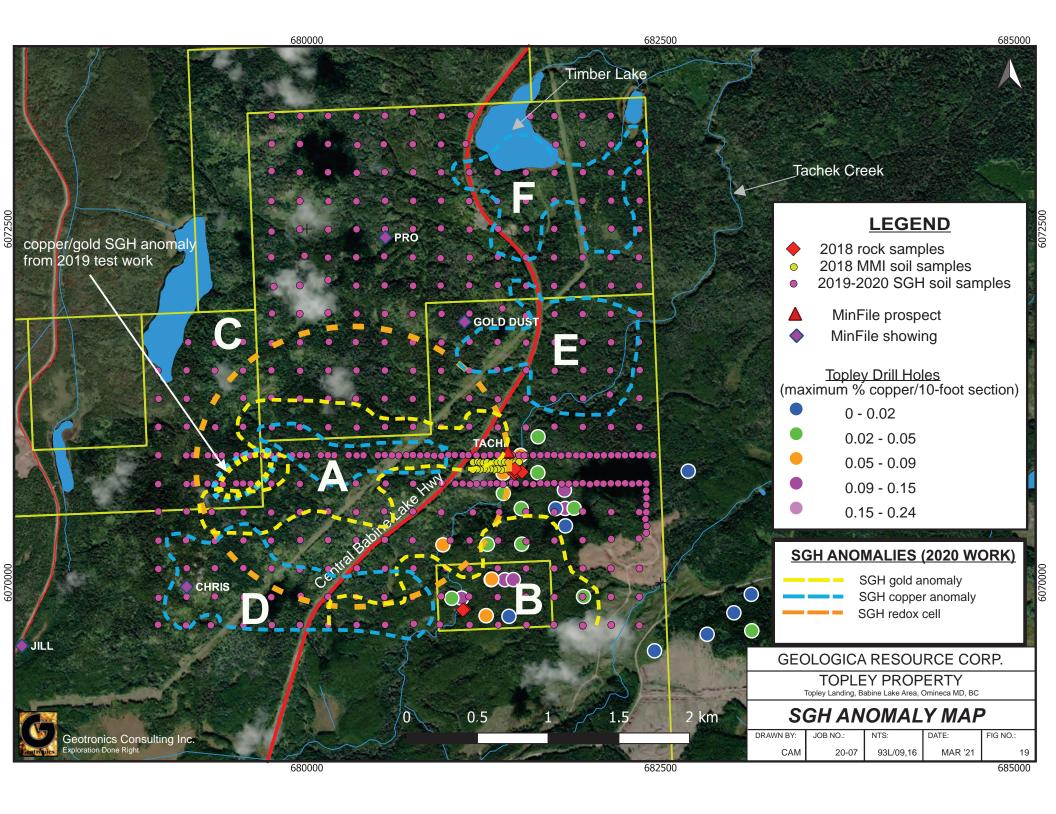
**Anomaly B** is a gold anomaly with a strong correlation with VMS and copper anomalies. It is lineal shaped striking east-west, having a strike length of about 900 meters and an average width of about 400 meters. Considering that anomaly B occurs largely outside of the redox cell probably can be interpreted to mean that the depth to the mineralization is shallower. This anomaly does correlate with known copper mineralization which was encountered in several drill holes as shown on figure 19. The underlying lithology is probably a mix of sediments and volcanics as is suggested by the geology map and the airborne magnetic map.

<u>Anomaly C</u> occurs northwest of the redox cell at the edge of the SGH survey area. It is a VMS anomaly correlating with weaker gold and copper anomalies. The size of this anomaly is unknown since it is open to the west. The strength of the gold and copper anomalies may increase in strength west of the survey area.

<u>Anomaly D</u> is a copper anomaly occurring within the southwest part of the survey area at the edge of the redox cell. This anomaly strikes east-west, as well, with a strike length of about 1,000 meters and an average width of about 500 meters. There is virtually no correlating VMS signature and partial correlation with gold anomaly B. The type of mineralization that the SGH interpretation is suggesting is probably some other type, perhaps porphyry copper. The underlying lithology is probably a mix of sediments and volcanics as is suggested by the geology map and the airborne magnetic map.

<u>Anomalies E and F</u> occur within the northeast part of the survey area and are SGH-suggested copper anomalies with little correlation with anomalous gold or VMS results. They are each irregularly shaped but average about 800 meters in diameter. The geology and airborne





magnetic maps suggest the underlying rock-type to be Takla volcanics, as well as possibly sediments. The style of mineralization may be porphyry copper since this is the dominant deposit type of the area.

The author, therefore, concludes that the SGH soil sampling has produced results with strong exploration interest, especially with anomaly A which suggests copper and gold mineralization occurring within a VMS deposit, probably at depth. The other anomalies could also be reflecting mineralization of economic interest within either porphyry copper deposits and/or VMS deposits. The author would like to point out however that though the SGH survey has produced a number of anomalies, not all, nor perhaps even any may be reflecting an economically viable deposit. Further work will be needed to be carried out over each of the anomalies in order to determine whether they are reflecting economic mineralization.

# 10 **DRILLING**

Geologica Resource Corp. nor the owners of the claims have conducted any drilling on the property.

# 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

#### 11.1 PRIOR ROCK SAMPLING

The 2 samples were collected using rock hammers to break the rocks into manageable sizes; the rocks were then placed in 12x20 poly sample bags, labelled with the appropriate field ID then tied off with flagging ape. The field location was flagged with the corresponding field ID.

Samples received at TSL Laboratories Inc. in Saskatoon, Saskatchewan were opened, sorted and dried prior to preparation. Rock samples were crushed using a primary jaw crusher to a minimum 70% passing 10 mesh (1.70 mm). A representative split sample was obtained by passing the entire sample through a riffler. The 250-gram sub-sample thus obtained was pulverized to a minimum 95% passing 150 mesh (106 microns). TSL is a Standards Council of Canada Accredited Laboratory – Scope of Accreditation 538.

For the whole rock analysis, a 0.2-gram sample was fused with lithium metaborate/tetraborate and then diluted with HNO<sub>3</sub>. The solution was analyzed ICP-AES for the major oxides, Ba, Ni, Sr, Zr, Y, Nb, Sc and loss on ignition (LOI). For the Multi-Element ICP-MS Analysis (aqua regia extraction) a 0.5-gram sample was digested with 3 ml of aqua regia (3:1 HCl/HNO<sub>3</sub>) at 95°C for 1 hour and then diluted to 10 ml with deionized water. The solution was analyzed by inductively coupled plasma mass spectrometry (ICP-MS) for 36 elements. Aqua regia digestion may fail to liberate significant proportions of several of the reported elements (depending on sample mineralogy) including Al, B, Ba, Ca, Cr, Fe, Ga, K, La, Mg, Mn, Na, P, Sn, Sr, Th, Ti, V and W.

Quality control procedures include, certified reference materials (standards) and blanks being inserted into the sample batches by TSL. The data obtained on these samples were reviewed by Glen Prior and no significant issues were detected.



In the authors opinion sample preparation, security, and analytical procedures were adequate and meet industry standards.

To the best of the authors' knowledge, there is no relationship between TSL Laboratories and either of Glen Prior or Geologica Resource Corp.

# 11.2 DECOORS ROCK SAMPLING

The 5 Decoors rock samples were collected using rock hammer and chisel and then labeled and bagged on site. The samples were subsequently shipped to SGS Laboratories in Vancouver for whole rock analysis in order to determine the major element and oxides of a rock sample. The samples were prepared and analysed with whole rock code ICP 90Q

The samples were tested with a four-acid digestion with a SGS method number GE\_ ICP40B (GE\_ICP40Q12). The following is description of the method:

- 1. Parameter(s) measured, unit(s): Silver (Ag); Arsenic (As); Barium (Ba); Beryllium (Be); Bismuth (Bi); Cadmium (Cd); Chromium (Cr); Cobalt (Co); Copper (Cu); Lanthanum (La); Lithium (Li); Manganese (Mn); Molybdenum (Mo); Nickel (Ni); Lead (Pb); Antimony (Sb); Scandium (Sc); Tin (Sn); Strontium (Sr); Vanadium (V); Tungsten (W); Yttrium (Y); Zinc (Zn); Zirconium (Zr), in ppm Aluminum (Al); Calcium (Ca); Iron (Fe); Potassium (K); Magnesium (Mg); Sodium (Na); Phosphorus (P); Sulphur (S); Titanium (Ti), in %
- 2. Typical sample size: 0.2 g
- 3. **Type of sample applicable (media):** Crushed and Pulverized exploration grade samples (rocks, soils and sediments)
- 4. **Sample preparation technique used:** Weighed representative samples are digested with HCl, HNO3, HF and HCLO4 and heated until dry. The residue is then dissolved in HNO3 and HCl.
- 5. **Method of analysis used:** The digested sample solution is analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES).
- 6. **Data reduction by:** Computer, online, data fed to SGS Laboratory Information Management System with secure audit trail.
- 7. **Figures of Merit:** This method has been fully validated for the range of samples typically analyzed. Method validation includes the use of certified reference materials, replicates, duplicates and blanks to calculate accuracy, precision, linearity, range, limit of detection, reporting limit, specificity and measurement uncertainty.
- 8. **Quality control:** Quality control materials include method blanks, replicates and reference materials and are randomly inserted with the frequency set according to method protocols at ~11%. Quality control materials will also include BRM (Barren



reference materials, or preparations blanks) and preparation duplicates if samples have been taken through the sample reduction process. Instrument calibration is performed for each batch or work order and calibration checks are analyzed within each analytical run.

To the best of the authors' knowledge, there is no relationship between SGS Canada Ltd. and either of Decoors Mining Corp. or Geologica Resource Corp. and all sample preparation, security, and analytical procedures were adequate by industry standards.

SGS Canada's laboratory at Production Way in Burnaby is accredited with the Standards Council of Canada as 'Accredited Laboratory No. 744', which conforms with requirements of CAN-P-1579 which are the guidelines for the Accreditation of Mineral Analysis Testing Laboratories, and CAN-P-4E (ISO/IEC 17025:2005) which are the general requirements for the competence of testing and calibration laboratories.

#### **12 DATA VERIFICATON**

Author has reviewed and analyzed data provided by the Issuer and Property owner as well as publicly available assessment reports by previous workers on or in the vicinity of the Topley Property and has taken reasonable steps to verify the information where possible. Some relevant information on the Property presented in this report is based on data derived from reports written by geologists and/or engineers who may or may not have been "qualified persons" (as defined in NI 43-101). The author has made every attempt to accurately evaluate and convey the content of those reports, and it is believed that the reports were written with the objective of presenting the results of the work performed, without any promotional or misleading intent. The author is satisfied that the analyses were done according to accepted industry practices.

The author believes that sufficient sites of significance were inspected and sampled to make a quality assessment of the Topley Property. There were no limitations on, or failure to conduct, the data verification outlined above. It is the author's opinion that the rock sample data, geological data and geophysical data are reasonable and of sufficient quality for the purposes used in this technical report.

# 13 MINERAL PROCESSING AND METALLURGICAL TESTING

The author of this Technical Report is not aware of any mineral processing and/or metallurgical testing analyses that have been carried out on the subject property or of any metallurgical problems that would adversely affect development.

# **14 MINERAL RESOURCE ESTIMATES**

There are no current NI 43-101 mineral resource estimates for the Topley Property.

# **15 MINERAL RESERVE ESTIMATES**

No mineral reserve estimates were calculated on the Topley Property.



#### **16 MINING METHODS**

There has been no work on mining methods at the Topley Property.

#### 17 RECOVERY METHODS

There has been no work on recovery methods at the Topley Property.

# **18 PROJECT INFRASTRUCTURE**

There has been no work on project infrastructure at the Topley Property.

# 19 MARKET STUDY AND CONTRACTS

There has been no work on market studies and there are no outstanding contracts at the Topley Property.

# 20 ENVIRONMENT STUDIES, PERMITTING AND SOCIAL COMMUNITY IMPACT

There have been no environmental studies, permitting any work involving social or community impact at the Topley Property.

# 21 CAPITAL AND OPERATING COSTS

There has been no work on capital and operating costs at the Topley Property.

# **22 ECONOMIC ANALYSIS**

There has been no economic analysis at the Topley Property.

# **23 ADJACENT PROPERTIES**

There are a number of mineral deposits and occurrences in the vicinity of the Topley Property, the most significant and relevant of which are summarized below. The descriptions are taken from information publicly disclosed by the owner or operator of the adjacent property and posted to the BC government's MinFile website and the locations are as shown on figure 3, the Regional Geology Map. The author has been unable to verify this information. This information is not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

# 23.1 PORPHYRY COPPER/MOLYBDENUM/GOLD

#### 23.1.1 Granisle Mine

The Granisle Mine, a past producer, is located 21 km north of the Topley Property on MacDonald Island.

This island is underlain by Lower Jurassic Telkwa Formation (Hazelton Group) volcanics comprised of green to purple, waterlain andesite tuffs and breccias with minor intercalated chert pebble conglomerates in the central and eastern parts of the island. These rocks

strike northerly and dip at moderate angles to the west and are overlain in the western part of the island by massive and amygdaloidal andesitic flows and thin bedded shales.

Copper mineralization at the Granisle mine is associated with a series of Eocene Babine Plutonic suite which occur in the central part of the island. The oldest is an elliptical plug of dark grey quartz diorite approximately 300 by 500 metres in plan. The most important intrusions are biotite-feldspar porphyries of several distinct phases which overlap the period of mineralization. The largest and oldest is a wide northeasterly trending dike which is intrusive into the western edge of the quartz diorite pluton. The contact is near vertical and several small porphyry dikes radiate from the main dike. This dike is bounded by two parallel northwest-striking block faults. The westernmost crosses the island south of the mine and the eastern fault extends along the channel separating the island from the east shore of Babine Lake.

An oval zone of potassic alteration is coincident with the ore zone with the main alteration product being secondary biotite. It is gradational outward to a quartz-sericite- carbonate-pyrite zone which is roughly coaxial with the ore zone. The pyrite occurs as disseminations or as fracture-fillings. Mafic minerals are altered to sericite and carbonate with plagioclase clouded by sericite. Beyond the pyrite halo, varying degrees of propylitic alteration occurs in the volcanics with chlorite, carbonate and epidote in the matrix and carbonate-pyrite in fractured zones. Clay mineral alteration is confined to narrow gouge in the fault zones.

The principal minerals within the ore zone are chalcopyrite, bornite and pyrite. Coarse-grained chalcopyrite is widespread, occurring principally in quartz-filled fractures with preferred orientations of 035 to 060 degrees and 300 to 330 degrees with near vertical dips. Bornite is widespread in the southern half of the ore zone with veins up to 0.3 metres wide hosting coarse-grained bornite, chalcopyrite, quartz, biotite and apatite. In addition, the mineralization contains gold and silver values. Also, molybdenite occurs within the ore zone, most commonly in drusy quartz veinlets which appear to be later than the main stage of mineralization. Magnetite and specularite are common in the north half of the ore zone where they occur in fractures with chalcopyrite and pyrite. Pyrite occurs in greatest concentrations peripheral to the orebody as blebs, stringers, and disseminations.

Mining at Granisle was suspended in mid-1982. Production from 1966 to 1982 totalled 52,273,151 tonnes yielding 69,752,525 grams of silver, 6,832,716 grams of gold, 214,299,455 kilograms of copper and 6,582 kilograms molybdenum. Unclassified reserves are 14,163,459 tonnes grading 0.442 per cent copper (Noranda Mines Ltd. Annual Report 1984). This information is not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

# 23.1.2 Bell Copper

The Bell Copper Mine, also a past producer, is located 28 km north of the Topley Property.

The Bell mine is a porphyry copper deposit hosted primarily in a biotite-feldspar porphyry stock of the Fosce Rabine Plutonic Suite. The stock is crosscut by the porthwest trending

stock of the Eocene Babine Plutonic Suite. The stock is crosscut by the northwest-trending Newman fault which juxtaposes the two groups that host the intrusion. These groups are the Lower Jurassic Saddle Hill Formation (Hazelton Group) and the Lower Cretaceous

Skeena Group. Telkwa Formation rocks are primarily fine-grained tuffs and andesites and the younger Skeena Group rocks are mostly fine-grained greywackes.

The copper mineralization occurs in a crescent-shaped zone along the western contact of the porphyry plug. Better grades of copper mineralization are contained in a 60 by 90-metre thick, flat-lying, blanket-like deposit which is connected to a central pipe-like zone, centred on the western contact of the intrusive. The pipe-like zone of copper mineralization is 150 metres in diameter and extends to a depth of at least 750 metres. Chalcopyrite and lesser bornite occur as disseminations in the rock matrix, in irregular quartz lenses and in a stockwork of 3-to-6-millimetre quartz veinlets which cut the feldspar porphyries and the siltstones. Molybdenite is rare and occurs in the feldspar porphyry in the northern part of the mineralized zone. Gold occurs as electrum associated with the copper mineralization. Specular hematite and magnetite are common in quartz veinlets and hairline fractures. There is also significant supergene enrichment with chalcocite coating chalcopyrite. A supergene chalcocite zone capped the deposit and extended to depths of 50 to 70 metres. Some gypsum together with copper-iron sulphate minerals and iron oxides were also present.

The ore zone has pervasive potassic (mainly biotitization) alteration with a surrounding concentric halo of chlorite and sericite-carbonate alteration (propylitic and argillic) which corresponds to the two-kilometre pyrite halo which surrounds the deposit. A late quartz-sericite-pyrite-chalcopyrite alteration has been superimposed on part of the earlier biotite-chalcopyrite ore at the western part of the orebody. Veinlets of gypsum are present in the upper part of the orebody. Anhydrite is a significant component in the biotite-chalcopyrite zone but is not present in other alteration facies.

By 1967, mineable reserves of 42 million tonnes of ore had been defined grading 0.50 per cent copper, 0.35 gram per tonne gold, and 1.0 gram per tonne silver, within an overall geological ore reserve of 116 million tonnes grading 0.48 per cent copper, 0.35 gram per tonne gold, 1.0 gram per tonne silver and less than 0.005 per cent molybdenum (Canadian Institute of Mining and Metallurgy Special Volume 15). Production began in 1972, and by December 31, 1990, approximately 71 million tonnes of ore had been processed. Reserves in the open pit and in the Extension Zone were (in 1990) 71,752,960 tonnes grading 0.23 gram per tonne gold, 0.46 per cent copper and 0.48 gram per tonne silver (Noranda Inc. Annual Report 1990). This information is not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

#### 23.1.3 Morrison Deposit

The Morrison deposit is located 21 kilometres north of the Bell Copper mine (093M 001) and 50 km north-northwest of the Topley Property just to the east of Morrison Lake.

Siltstone, silty argillite and minor conglomerate of the Middle to Upper Jurassic Ashman Formation (Bowser Lake Group) are host to small Eocene Babine Intrusions, including biotite-hornblende-plagioclase porphyry plugs, sills and dikes. The Morrison is a strongly zoned, annular porphyry copper deposit that is largely within the multiphase porphyry

plug. The main porphyry pluton is a faulted plug with nearly vertical contacts, which occupies a northwest-oriented elliptical area of 900 by 150 to 300 metres.

The Morrison deposit occupies the central part of a major graben that is a component of the regional northwest-trending block-fault system of this area. The western bounding fault is believed to be along Morrison Lake, and the eastern fault is approximately 800 metres east of the property. The most prominent structure at Morrison is the north-northwest trending, vertical Morrison fault, which is a linear zone of parallel shears and fractures, and which bisects the porphyry plug and copper zone. The fault is marked by intense clay-carbonate alteration and well-defined zones of carbonate-cemented gouge and breccia.

The Morrison copper zone is a vertical annular cylinder that conforms to the shape of the porphyry plug and is disrupted by the Morrison fault, which bisects the zone along its low-grade core. The copper zone is defined by external and internal boundaries marking the limits of rock that consistently grades greater than 0.3 per cent copper. In most places, the external boundary is relatively sharp and copper grades decline outward to less than 0.1 per cent within approximately 40 metres. Within the high-grade annulus, molybdenum averages approximately 0.01 per cent whereas gold and silver average 0.3 gram per tonne and 3 grams per tonne, respectively. Spotty occurrences of galena and sphalerite, in carbonate-cemented brecciated veins within and near the fault and in smaller parallel shears, contribute to relatively high yet uncommercial values of lead and zinc.

Chalcopyrite and pyrite are the main sulphides occurring along thin seams and veinlets as well as being disseminated within the porphyry plug matrix. Locally, minor to moderate amounts of bornite contribute significantly to copper grades; however, most of the high-grade sections owe their copper content solely to chalcopyrite. All rocks contain anomalous quantities of pyrite (greater than 1 per cent) but the most pronounced concentrations (5 to 15 per cent by volume) occur in three segments that surround the copper zone.

The hydrothermal alteration is characterized by biotite-chlorite zoning. Biotitization is directly related to copper grades; chloritization is strongest in peripheral, pyritized rocks. Intense clay-carbonate alteration is associated predominantly with the Morrison fault and related shears and is superimposed on the earlier biotitic and chloritic alteration. Minor epidote is found in all parts of the property but is most common in the outer chlorite-carbonate zone. Potassium feldspar is evident in very minor amounts in the inner, greater than 0.3 per cent copper portion of the copper zone; gypsum also occurs locally. Disseminated fine-grained apatite is anomalously abundant in the porphyry plug and in some large dikes.

The total mineable reserve, classified as proven and probable, at Net Smelter Return (NSR) cut-off-value of \$CDN5.60/t, is 224.25Mt with an average grade of 0.330% Copper, 0.163g/t Gold and 0.004% Molybdenum

The Morrison deposit and its concentric sulphide-silicate alteration zones were formed during a single hydrothermal episode that followed the emplacement and crystallization of most of the phases of the biotite-hornblende-plagioclase porphyry plug.



This property has been owned by Pacific Booker Minerals Inc. since 1992. Their website states that the total mineable reserve, classified as proven and probable, at a Net Smelter Return (NSR) cut-off-value of \$CDN5.60/t, is 224.25Mt with an average grade of 0.330% Copper, 0.163g/t Gold and 0.004% Molybdenum

These resource estimates are not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

# 23.2 VOLCANIC MASSIVE SULPHIDE (VMS)

#### 23.2.1 <u>Fireweed</u>

The Fireweed occurrence is located on the south side of Babine Lake 33 km northwest of the Topley Property. This information regarding the Fireweed occurrence is not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

In the occurrence area, Upper Triassic to Lower Jurassic Takla Group volcanic rocks, predominantly augite feldspar flows, outcrop along the west shore of Babine Lake south of the west arm. Maroon to green tuffs, sandstones, siltstones and shales of the Lower to Middle Jurassic Hazelton Group are exposed north, east and west of Babine Lake. Middle Jurassic to Upper Cretaceous marine to nonmarine clastic sediments, the Bowser Lake and Skeena groups (Kitsuns Creek Formation), are found adjacent to the Hazelton Group on the north shore and east and west of Babine Lake. Eocene Babine Intrusive plugs outcrop northwest and southeast of the property (Geological Survey of Canada Open File 2322).

The volcanics are commonly fine grained, maroon to green andesitic to dacitic tuffs and lapilli tuffs. Interbedded mudstones, siltstones and sandstones of a thick deltaic sequence appears to underlie much of the area and are thought to belong to the Kitsuns Creek Formation of the Lower Cretaceous Skeena Group. The sediments commonly strike 070 to 080 degrees and dip subvertically. Locally, the strike varies to 020-030 degrees at the discovery outcrop, the MN showing. Several diamond-drill holes have intersected sills of strongly altered feldspar porphyritic latite.

Skeena Group sediments are dominantly encountered in diamond drilling. The sediments are dark and medium to light grey and vary from mudstone and siltstone to fine and coarse-grained sandstone. Bedding can be massive, of variable thickness, changing gradually or abruptly to finely laminated. Bedding features such as rip-up clasts, load casts and crossbedding are common. The beds are cut by numerous faults, many of them strongly graphitic. Drilling indicates Skeena Group sediments are in fault contact with Hazelton Group volcanic rocks. Strongly sericitized and carbonatized latite dikes cut the sediments.

Mineralization generally occurs in one of three forms: 1) breccia zones are fractured or brecciated sediments infilled with fine to coarse grained, massive pyrite-pyrrhotite and lesser amounts of sphalerite, chalcopyrite and galena; 2) disseminated sulphides occur as fine to very fine grains which are lithologically controlled within coarser grained sandstones, and comprise pyrite, marcasite, sphalerite, galena and minor tetrahedrite



which are usually found interstitial to the sand grains; and, 3) massive sulphides, which are fine grained, commonly banded, containing rounded quartz-eyes and fine sedimentary fragments that occur as distinct bands within fine-grained sediments. The massive sulphides generally contain alternating bands of pyrite/pyrrhotite and sphalerite/galena. They are associated with the breccia zones and are commonly sandwiched between altered quartz latite dikes.

Alteration in the sediments occurs in the groundmass and appears associated with the porous, coarse sandstones. Common secondary minerals are quartz, ankerite, sericite, chlorite and kaolinite.

Three main zones have been identified by geophysics (magnetics, induced polarization) and are named the West, East and South zones. Three other zones identified are the 1600, 3200 and Jan zones.

The West zone is defined by an east trending, horseshoe-shaped induced polarization conductor. The original outcrop discoveries, the MN and the Sphalerite showings, lie at the westerly end of each of the prongs of the horseshoe. Drilling has defined a mineralized area 300 metres long which is open along strike and depth. Mineralization has been found in Skeena Group sediments to 200 metres depth. The bulk of the mineralization is hosted by coarse sandstone, in two parallel southwest plunging shoots, which are 30 to 60 metres wide combined.

Canadian United Minerals acquired the Fireweed claims in 1987 and began aggressive development over the next two years. This work included preliminary geological mapping, soil geochemistry, magnetometer and EM surveys and over 14,000 metres of NQ diamond drilling. The surface showing of the pyritic sandstone in the West zone assayed 344.0 grams per tonne silver over 9 metres (Property File Placer Dome - Callahan, 1988) and one drillhole sample assayed 2098.4 grams per tonne silver, 8.9 per cent lead and 2.8 per cent zinc (Property File Placer Dome - Callahan, 1989). Indicated reserves for the West zone are 584,500 tonnes grading 341.77 grams per tonne silver, 2.22 per cent zinc and 1.34 per cent lead or, at a higher cut-off, 399,124 tonnes grading 456.2 grams per tonne silver, 1.62 per cent lead and 2.7 per cent zinc (George Cross Newsletter No.66, 1989). ). These reserve estimates are for the nearby Fireweed Property and are not necessarily indicative of mineralization on the Topley Property which is the subject of this report.

Minnova Inc. optioned the property in 1990 and a year later conducted induced polarization and resistivity surveys.

A flat lying, funnel-shaped feeder zone near the eastern limits of the West zone covers an area 90 by 90 metres and extends to a depth of 75 metres but does not outcrop. Sandstone and mudstone interfinger throughout this area. Pyrrhotite, pyrite, sphalerite and chalcopyrite occur as massive sulphide mineralization associated with breccia and veins which cement mudstone and sandstone fragments that are millimetres to several metres in size. These zones of mineralization grade into unbrecciated or weakly veined areas. The sulphide content is variable and there are two distinct generations of veining. One contains massive sphalerite, the other massive pyrite and pyrrhotite. The breccia veins cut sericitized latite dikes. The feeder zone also contains minor gold and copper values. A



selected assay grades 124.1 grams per tonne silver, 7.25 per cent zinc, 3.32 per cent lead, 0.13 per cent copper and 0.8 gram per tonne gold across 6.2 metres (Exploration in British Columbia 1988, page B130).

The MN showing is hosted in fine to medium-grained sandstone with heavy manganese coating lying in the massive beds which dip subvertically with a local strike of 030 degrees. The sandstone is quartz-carbonate-sericite cemented. Minor pyrite, sphalerite and galena are associated with increased manganese content. Diamond-drill hole intersections returned assays of up to 68.6 grams per tonne silver, 3.5 per cent zinc, 0.6 per cent copper, 2 per cent lead and anomalous gold (George Cross Newsletter No. 37, 1988).

The Sphalerite showing is 300 metres to the north of the MN showing. Outcrop is characterized by a strong, rusty yellow stain with sphalerite stringers crosscutting mudstone and sandstone. Surface samples from this zone have assayed up to 20.24 grams per tonne silver and 24,511 parts per million (2.45 per cent) zinc (Property File Rimfire - Canadian United Minerals Inc., 1990).

The East zone has a strike length of at least 500 metres and a 40-metre thickness containing sulphide-cemented breccia and veining. This zone is 2.4 kilometres east along strike from the West zone. Mineralization is in the form of pyrite and pyrrhotite with lesser sphalerite and chalcopyrite. A diamond-drill hole intersection across 2.98 metres assayed 22.62 grams per tonne silver, 2.97 per cent zinc, 0.27 per cent copper and 0.47 gram per tonne gold (George Cross Newsletter No. 85, 1989).

The 1600 zone is 500 metres west of the MN showing (south prong of the horseshoe-shaped West zone) and consists of a number of parallel sulphide horizons up to 2 metres wide with a strike length of 600 metres. Three diamond-drill holes have tested the zone over a 150-metre strike with grades up to 3.26 grams per tonne gold, 269.3 grams per tonne silver, 11.1 per cent lead, 10.9 per cent zinc and 0.15 per cent copper over 4 metres (Property File Rimfire - Canadian United Minerals Inc., 1990).

The Jan zone is 1 kilometre west-northwest of the MN showing (north prong of the horseshoe-shaped West zone). The 3200 zone is 1 kilometre east of the West zone, and the South zone is 500 metres south-southeast of the 3200 zone.

#### 23.2.2 <u>Topley-Richfield</u>

The Topley-Richfield occurrence is located on the southwest slope of Tachek Mountain 18 km south-southwest of the Topley Property. This information regarding the Topley-Richfield occurrence is not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

The Topley Richfield property is underlain by Lower-Middle Jurassic Saddle Hill Formation rocks (Hazelton Group) in the eastern part of the Skeena Arch. Overburden in the area can be more than 50 metres thick. Mineralization is hosted primarily in pyroclastic rocks comprised of feldspar crystal tuff with lesser lithic tuffs, greywackes and thin beds of argillite. Pyroxene-bearing andesitic flows of the Early Jurassic Nilkitkwa Formation (Hazelton Group) are located on the western portion of the property.



Mineralization is structurally controlled and occurs in two alteration zones which strike north-northwest (350 degrees) and dip 45 degrees to the southwest. The zones range from 10 to 40 metres in width and are about 25 metres apart. They are characterized by pervasive silicification, brecciation, sideritic alteration and quartz and calcite veining. Bladed ankerite occurs commonly in calcite vugs. Pyrite is the most abundant sulphide with minor native gold, native silver, tetrahedrite, arsenopyrite, galena, sphalerite and chalcopyrite occurring as stringers, disseminations, and blebs.

Lenses containing stronger sulphide mineralization occur within the alteration zones and are called the B/C and D zones. These lenses vary in width from 1 to 5 metres apart and rake to the southwest. Two intersections in the B/C lens in 1980 assayed 5,486 grams per tonne silver over 20 centimetres, and 4.8 grams per tonne gold with 202 grams per tonne silver over 7.6 metres, respectively. Drill indicated reserves at Topley Richfield are 181,420 tonnes grading 4.25 grams per tonne gold and 191.96 grams per tonne silver.

#### 23.2.3 Red Showing

The Red occurrence is located 25 km north of the Topley Property to the west of Babine Lake.

The claims are underlain by Lower Jurassic Hazelton Group, Telkwa Formation volcanics comprised of andesitic to basaltic flows and tuff with intercalated greywacke, argillite, and graphitic shale. The volcanics are intruded by an Eocene Babine Intrusion comprised of porphyritic granodiorite. The Hazelton rocks are unconformably overlain by interbedded sandstone, shale, and mudstone of the Sustut Group. Also, north of the claims a medium-grained diorite with lesser hornblende porphyry were noted cutting interbedded andesite tuff and argillaceous siltstone with some banded greywacke.

Drilling near the central part of the property indicated it is underlain by an interbedded sequence of moderately dipping, fragmental andesites and black argillaceous, locally graphitic sediments. Drill intersections from intersections of up to 1.5 metres of disseminated, stringer and massive banded pyrrhotite, pyrite with minor chalcopyrite were found in the graphitic zones. Banding appears to be conformable with layering in the host rock. A basic dike was seen to cut the stringer and massive banded sulphides in addition to the more common post-mineral shearing and narrow carbonate filled fractures.

Sulphide mineralization also consists of disseminated pyrite with magnetite in the Hazelton rocks with minor disseminated and fracture filling pyrite and pyrrhotite in graphitic sections.

In 1966, Bethex reported a 0.3 metre quartz-carbonate vein occurring in the Hazelton rocks hosting galena, sphalerite, and chalcopyrite. The vein strikes 074 degrees dipping 75 degrees northeast in greywacke near the northwest corner of the Red 2 claim.

Drilling to 1994 in the southern part of the RED property has identified massive and stringer sulphides within a 30-metre-wide zone and extending over a strike length of more than 200 metres. That part of the sulphide zone tested to date is reflected by a moderate to strong HLEM conductor, an IP anomaly and a coincident magnetic high probably due to the pyrrhotite content.



This information regarding the Red Showing is not necessarily indicative of the mineralization on the Topley Property that is the subject of this technical report.

#### 24 OTHER RELAVENT DATA AND INFORMATION

The author is not aware of any other relevant information that could change the conclusions or recommendations of this report.

# 25 INTERPRETATION AND CONCLUSIONS

Porphyry copper-molybdenum sulphide mineralization with gold values occurs on the Topley Property as has been noted and mapped by previous geologists. This is the main mineral deposit type of exploration interest, especially considering that analogous deposits occur nearby. These deposits are the two past producers, being the Bell Copper Mine and the Granisle Mine, as well as the unmined Lorraine deposit.

Many of the characteristics of the Topley Property are similar to those of the three porphyry deposits. Porphyry style of mineralization occurs on the property mainly within granitic type of intrusives which on this property is quartz monzonite of the Spike Peak Intrusive Suite. In addition, the type of alteration that is associated with porphyry deposits has been noted throughout the outcrops, mainly within the Tachek Creek area. Faulting of different types, which is always important to the emplacement of mineralizing fluids, has also been mapped.

The other type of deposit that is known in the area and is thus a target on the Topley Property is volcanic hosted massive sulphides (VHMS). The property has the right rock-types as in volcanics and sediments as well as a nearby intrusive body which may be important as a heat engine (Huston, et al, 2011). In addition, massive sulphides, though limited, are known on the property along with associated alteration.

The SGH soil sampling strongly supports the possibility of a VMS or VHMS sulphide deposit occurring within the southwest corner of the SGH grid where occurs an SGH-interpreted VMS anomaly correlating with an SGH copper/gold anomaly which has been labelled A. Anomaly A occurs within an area of deeper overburden with scarce outcroppings that is to the west of the mineralization found within the Tachi showing which indicates the reason for it not being discovered. The property geology map suggests the underlying rock-types are mainly undivided volcanics of the Takla Group, as well as possibly sediments.

The SGH survey has also revealed additional anomalies as follows:

- 1. Anomaly B which is an east-west 900-meter-long gold anomaly correlating with copper and VMS anomalies as well as with known copper mineralization encountered within drill holes. Anomaly C is also a correlation of VMS, gold, and copper anomalous readings but is weaker and occurs at the northwest edge of the survey area. Both of these anomalies suggest gold and copper mineralization occurring within a VMS deposit.
- 2. Anomalies D, E, and F are primarily copper anomalies with little correlation with gold or VMS anomalies. D has a strike length of 1,000 meters and E and F are more circular and



have average diameters of about 800 meters. The possible causative source for each anomaly is a porphyry copper mineralization.

#### **24 RECOMMENDATIONS**

It is recommended that Geologica carry out additional exploration on the Topley Property. The past work has been successful in delineating target areas and therefore should be continued. An initial \$120,550 exploration program is recommended. See Table 3.

The priority area at the Topley Property is anomaly A, which is VMS/copper/gold anomaly occurring within the southwestern area to the west of Tachek Creek.

- Collect all past work carried out on the Topley Property and digitize all the results onto a
  base map. Extensive work has been carried out before the property was staked in 2018
  and is therefore valuable to the ongoing exploration of the property. This includes rereducing the Riverside airborne magnetic survey over the Topley property area and reinterpreting it.
- 2) Send in the remaining SGH soil samples to Actlabs for analysis and interpretation.
- 3) Carry out two lines of mobile metal ion (MMI) soil sampling across each of the copper, gold, and VMS anomalies. The property geology map as well as the airborne magnetic map suggest a north-south trend to the structure and lithology. However, the SGH results suggest an east-west trend to the possible mineralization. The two lines then should be run orthogonally to each other in order to help determine strike. The recommended sampling interval is 25 meters.
- 4) Carry out IP/resistivity surveying across the VMS/copper/gold anomaly within the southeastern part of the grid area. The direction to the lines will depend on the MMI results. The recommended electrode spacing is 50 meters.

TABLE 3 – EXPLORATION BUDGET	
ITEM	ESTIMATED COST
Compiling of all historical data and reducing airborne mag data	\$10,000
SGH laboratory costs, 210 @\$55/sample	\$11,550
MMI soil sampling, 2-man crew, 14 days @\$2,500/day	\$35,000
MMI laboratory costs, 400 @ \$45 each	\$18,000
IP/resistivity survey, 10 days @\$4,000/day	\$40,000
Data reduction	\$3,000
Interpretation and reporting	\$3,000
TOTAL	\$120,550

Note: The MMI soil sampling and the IP/resistivity survey include room, board, truck rental, and instrumentation.

The size and scope of the Phase Two program as well as the type of work is dependent on the results of Phase One. At this point the recommended work would be a helicopter SkyTEM survey which is capable of locating conductive bodies at depth and would be particularly useful in exploring for VMS-type deposits. Also recommended is diamond drilling of any exploration targets produced by the geological, geophysical, and geochemistry work. The estimated cost is about \$400,000.



#### **27 REFERENCES**

- Alrae Engineering Ltd. (1970): <u>Report on Geochemical Survey Totem and Babine Mineral Claims,</u>
  <u>Topley Landing Area</u>. BC Assessment Report #2727.
- Buckle, John, (2019), <u>Mobile Metal Ion Soil Geochemistry Survey and Rock Samples on the Topley Property in the Babine Lake Area, Central British Columbia, Omineca Mining Devision</u>, for DeCoors Mining Corp.
- Carson, David J. T, Jambor, John L, Ogryzlo, Peter L, Richards, Tom A (1970); <u>Bell Copper: Geology, Geochemistry and Genesis of a Supergene-Enriched, Biotitized Porphyry Copper Deposit with a Superimposed Phyllic Zone</u>; Paper within "Porphyry Deposits of the Canadian Cordillera" Canadian Institute of Mining and Metallurgy, Special Volume 15
- Carter, N. C; Regional Setting of Porphyry Deposits in West-Central British Columbia; Paper within "Porphyry Deposits of the Canadian Cordillera" Canadian Institute of Mining and Metallurgy, Special Volume 15
- Carter, N. (1988): <u>Geological Report on the Gold Dust I & II Mineral Claims</u>. BC Assessment Report #16874.
- Carter, N. (1990): <u>Geological and Geochemical Report on the Gold Dust II Mineral Claim</u>. BC Assessment Report #19556.
- Carter, N. (1991): <u>Geophysical Report (VLF-EM Survey) on the Gold Dust II Mineral Claim</u>. BC Assessment Report #20794.
- Carter, N. (1992): <u>Geological and Geochemical Report on Sampling of Diamond Drill Cores and Percussion Hole Cuttings Gold Dust II Mineral Claim</u>. BC Assessment Report #22025.
- Dunning, J. (2000): 1999 <u>Diamond Drill Program Report including the Len 3, 4, 6, 7, 8 and Ful 1, 2</u>
  <u>Mineral Tenures</u>. BC Assessment Report #26329.
- Dirom, G. (1969): <u>Geochemical Report: Topley, Babine & Totem Claims for Tro-Buttle Exploration Ltd</u>. BC Assessment Report #2095.
- Environment Canada (2013): <u>Canadian Climate Normals 1971-2000, Smithers B.C.</u> Retrieved February 28, 2020 from <a href="http://www.climate.weatheroffice.gc.ca">http://www.climate.weatheroffice.gc.ca</a>.
- Fahrni, K. C, Kim, H, Klein, G. H, Carter, N. C, (1970); <u>Granisle</u>; Paper within "Porphyry Deposits of the Canadian Cordillera" Canadian Institute of Mining and Metallurgy, Special Volume 15
- Ferbey, T., Levson, V.M., and Lett, R.E. <u>Till Geochemical Exploration Targets</u>, <u>Babine Porphyry Copper Belt, Central British Columbia</u>. Geoscience BC Report 2009-10. Open File 2009-4.
- Hannington, M.D. (2014). "Volcanogenic massive sulfide deposits". Treatise on Geochemistry (Second Edition). 13: 463–488



- Heberlein, David R. and Samson, Hugh. <u>An Assessment of Soil Geochemical Methods for Detecting Copper-Gold Porphyry Mineralization through Quaternary Glaciofluvial Sediments at the Kwanika Central Zone, North-Central British Columbia</u>. Geoscience BC Report 2010-03.
- Huston, David L, Relvas, Jorge M. R. S., Gemmell, J. Bruce, Drieberg, Susan: 2011, <u>The role of granites in volcanic-hosted massive sulphide ore-forming systems: an assessment of magmatic-hydrothermal contributions</u>, Miner Deposita, 46: pp 473-507
- Lloyd, J. (1973): A Geophysical Report on a Time Domain Induced Polarization survey on the Tachi and Tak Claim Group near Topley Landing, British Columbia for Perry, Knox, Kaufman, Incorporated. BC Assessment Report #4479.
- Lowell, J. D., and Guilbert, J. M., 1970, <u>Lateral and vertical alteration and mineralization zoning in porphyry ore deposits</u>. Economic Geology. Volume 65, pp. 373-408.
- Macintyre, D.G., Brown, D., Desjardins, P. and Mlallet, P., 1987a. Babine Project. In, Geological Fieldwork 1988 <u>A Summary of Field Activities and Current Research</u>: British Columbia Ministry of Employment and Investment, Energy and Minerals Division, Geological Survey Branch: pp. 201-202
- MacIntyre, D.G., Desjardins, P. and Tercier, P., 1989. <u>Jurassic Stratigraphic Relationships in the Babine and Telkwa Ranges</u>. In, Geological Fieldwork 1988 A Summary of Field Activities and Current Research: British Columbia Ministry of Employment and investment. Energy and Minerals Division, Geological Survey Branch; pp. 195-208
- MacIntyre, D.G., Webster, LC.L., and Bellefonaine, K.A., 1996a. <u>Babine Porphyry Belt Project:</u>
  <u>Bedrock Geology of the Fulton Lake Map Area (93L/16), British Columbia</u>. In. Geological Fieldwork 1995 A Summary of Field Activities and Current Research; British Columbia Ministry of Employment and Investment, Energy and Minerals Division, Geological Survey Branch: pp.11-36
- MacIntyre, D.G., Webster, I.C.L., and Bellefontaine, K.A., 1996b. <u>Bedrock Geology of the Fulton Lake Map Area, North-Central, BC. British Columbia</u>, Ministry of Energy, Mines and Petroleum Resources, Mineral Resources Division, Geological Survey Branch, Open File Report 1996-29.
- MacIntyre, D.G, Webster, I.C.L., and Villeneuve, M. (1996a): <u>Babine porphyry belt project: Bedrock geology of the Old Fort Mountain Area (93M/1), British Columbia</u>. Paper 1997-1, British Columbia Geological Survey Geological Fieldwork 1996.
- MacIntyre, D.G., Ash, C.H., Britton, J.B., Kilby, W., and Grunsky, E. (1995): Mineral Potential Assessment of the Skeena-Nass Area (93E,L,M,94D,103G,H, I,J,P,104A,B); In Geological Fieldwork 1994, Grant, B.and Newell, J.M., Editors, B.C. Ministry of Energy, Mines and Petroleum Resources, Paper 1995-1, pages 459-468.



- MacIntyre, D.G, Villeneuve, M.E. and Schiarizza, P. (2001): <u>Timing and tectonic setting of Stikine Terrane magmatism</u>, <u>Babine-Takla lakes area</u>, <u>central British Columbia</u>. Canadian Journal of Earth Sciences 38: 579-601.
- Malahoff, Brian T. <u>Geological and Geochemical Report on the GD Property</u>. Assessment Report #31660.
- Noranda Exploration Company Limited. (1969): Exploration Report, Tachi Option.
- Panteleyev, A. (1995): <u>Porphyry Cu+/-Mo+/-Au, in Selected British Columbia Mineral Deposit</u>

  <u>Profiles</u>, Volume 1 Metallics and Coal, Lefebure, D.V. and Ray, G.E., Editors, British
  Columbia Ministry of Energy of Employment and Investment, Open File 1995-20, p. 87-92.
- Plicka, P. (1982): Prospecting Report on Dan No. 1 Claim. BC Assessment Report #10862.
- Roik, M., and Robinson, S. (2013): <u>2013 Assessment Report on portions of the GD property, British Columbia, Canada</u>. Assessment Report #34333.
- Strickland, D. (2012): <u>Geological and Geochemical Report on the GD Property</u>. Assessment Report #33645.
- Tipper, H.W., and Richards, T.A. 1976. <u>Jurassic stratigraphy and history of north-central British</u> <u>Columbia</u>. Geological Survey of Canada, Bulletin 270.
- Woolverton, R.W. (1973): <u>Geophysical Report on the Jill Claims. BC Assessment Report</u> #4427.Anonymous (1940): British Columbia Ministry of Mines Annual Report, 1940; p. A72.
- Tipper, H.W., Woodsworth, G.J. and Gabrielse, H. (1981): <u>Tectonic Assemblage Map of The Canadian Cordillera And Adjacent Parts Of The United States Of America</u>; Geological Survey of Canada Map 1505A.



#### 28 CERTIFICATE OF AUTHOR - DAVID MARK, P.GEO

I, David Mark, P.Geo, as the author of the report entitled "Technical Report – Topley Property, Topley Landing, Babine Lake Area, Omineca MD, British Columbia" with an effective date of May 7, 2021, do hereby certify that:

- 1. I am a self-employed consulting geoscientist residing at 6204 125<sup>th</sup>, Street, Surrey, B.C., V3X 2E1.
- 2. I graduated with a Bachelor of Science degree in Geological Sciences from the University of British Columbia, Vancouver, British Columbia in 1968.
- 3. I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia (license #20608), in good standing since 1993.
- 4. I have worked continuously as a geoscientist for fifty-three years since my graduation from university and have been involved in exploration projects for gold (both placer and hard rock), base metals, diamonds, gravel, and silica sand in Canada, USA, Mexico, Cuba, Honduras, Mali, and Papua New Guinea. The type of work includes field work, data interpretation, and project management.
- 5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-10 1) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 6. I am responsible for all sections of the technical report titled Technical Report on the Topley Property", British Columbia and dated May 7, 2021, of which I am the author. This report is based upon a personal examination of all available company and government reports pertinent to the subject property. Where applicable, sources of information are noted in the body of the text or illustrations. I was on the property on September 24<sup>th</sup> and 25<sup>th</sup>, 2020.
- 7. As of the date of this report, I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose of which makes the Technical Report misleading. This report contains all scientific and technical information that is required to be disclosed.
- 8. I am independent of the issuer (Geologica Resource Corp.), and of the optionors of the subject property, applying the tests set out in section 1.5 of National Instrument 43-101. I have no interest in the property, which is the subject of this report, nor do I expect to receive any interest in this property or any other owned by the issuer or the optionors. I have had no prior involvement with the property that is the subject of this report.
- 9. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
- 10. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 07th day of May 2021 at Surrey, British Columbia

David Mark

David G. Mark, P.Geo

