Updated Technical Report and Mineral Resource Estimate on the Berg Project, British Columbia

PRESENTED TO
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Report to:

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Effective Date: **March 9, 2021**

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
AAS	atomic absorption spectrometry
Ag	silver
AND	andesite
asl	above sea level
Au	gold
CIM	Canadian Institute of Mining Metallurgy and Petroleum
CRM	certified reference materials
Cu	copper
CuEq	copper equivalent
Equity	Equity Exploration Consultants Ltd
G&T	G&T Metallurgical Services Ltd.
gpt	grams per tonne
IP	Induced Polarization
Kennecott	Kennco Explorations (Western) Ltd.
km	kilometres
m	metres
masl	metres above sea level
MIBC	methyl isobutyl carbinol
Mo	molybdenum
Na_2S	sodium sulphide
Na_2SiO_3	sodium silicate
NaCN	sodium cyanide
NaHS	sodium hydrosulfide
$NaHSO_3$	Sodium bisulfite
NI 43-101	National Instrument 43-101 Standards and Disclosure for Mineral Projects
NTS	National Topographic Service
PAX	potassium amyl xanthate
Pb	lead
PDRC	Placer Dome Research Centre
Placer Dome	Canex Placer Limited
PQBP	plagioclase-quartz-biotite porphyry
QDP	quartz diorite

Acronyms/Abbreviations	Definition
QMP	quartz monzonite porphyry
QP	Qualified Person
QPP	quartz-plagioclase porphyry
RDI	Resource Development Inc.
RDL	reported detection limit
RPD	relative percent difference
Sb	antimony
SGS	SGS Lakefield Research Limited
SIPX	sodium isopropyl xanthate
TCM	Thompson Creek Metals Company Inc.
Surge	Surge Copper Corp.
Terrane Metals Corp.	Terrane Metals
Tetra Tech	Tetra Tech Canada Inc.
TSX	Toronto Stock Exchange
UTM	Universal Transverse Mercator
Zn	zinc

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Surge Copper Corp. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Surge Copper Corp., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 EXECUTIVE SUMMARY

The Berg copper-molybdenum-silver Property is located in the Tahtsa Ranges of central British Columbia at latitude 53° 49' N and longitude 127° 22'W. The property is approximately 84 kilometres (km) southwest of Houston, British Columbia and 22 km northwest of Imperial Metals Corporation's Huckleberry Copper-molybdenum-silver Mine.

The Berg Property consists of 91 legacy and converted legacy claims and one mineral lease covering an area of approximately 34,798.2 hectares. Surge Copper holds an active interest in the property through an Option Agreement, with Thompson Creek Metals Company Inc. (TCM), a wholly owned subsidiary of Centerra Gold Inc., to acquire a 70% ownership of the Berg Property. A 1% Net Smelter Return royalty is held by Royal Gold on eight of the mineral claims and the one mining lease including those which host the main Berg deposit.

The potential for porphyry copper style mineralization at the Berg Property was first recognized by Kennco Explorations (Western) Ltd. (Kennecott), in the early 1960s. Kennecott's initial work demonstrated that the Berg Property exhibited deep effects of surface leaching and revealed the widespread presence of supergene mineralization, a feature not common in the Canadian Cordillera.

Geology and Mineral Resource Estimate

The Berg property is a classic calc-alkaline Cu-Mo porphyry deposit, with mineralization forming an annulus along the contact between a 50 Ma quartz monzonite stock and the hornfelsed Hazelton Group volcanic rocks and quartz diorite which it intrudes. The historic resources comprise two highly fractured mineralized zones in the northeast and south portions of the annulus.

Hypogene mineralization is characterized by several generations of veining. Disseminated mineralization is only important in the central part of the stock and in the adjacent quartz diorite where fracture intensities are low. Earliest veins contain much of the copper and molybdenum mineralization. Associated alteration envelopes are either potassic or non-existent, implying equilibrium with the potassically-altered wall rocks. Later veins are typically poor in Cu±Mo sulphides and are associated with phyllic and propylitic alteration assemblages.

A well-developed supergene enrichment blanket is superimposed on the hypogene mineralization. Three mineralogically distinct supergene zones have been recognized: supergene sulphide (covellite, chalcocite and digenite), supergene oxide (malachite/azurite, cuprite, tenorite and native copper) and leached capping. The presence or absence of these zones is determined by several factors including: fracture intensity, abundance of hypogene sulphides and topography. Topography has the greatest effect on supergene profile development with thin zones of leaching and supergene mineralization near valley floors, and thicker leached and supergene zones beneath ridges and on steep slopes away from the valley floors.

Drilling during 1965 and 1966 by Kennecott delineated two main mineralized zones: a northeast zone containing primary (hypogene) and some supergene mineralization, and a south zone containing widespread supergene and less continuous hypogene mineralization. In 1972, exploration and development of the property were taken over by Canex Placer Limited (Placer Dome) under an agreement with Kennecott. By 1980, a total of 119 diamond drill holes totaling 20,127.9 metres (m) had been completed on the property. Placer Dome had also completed numerous resource estimates, metallurgical tests, environmental studies, and financial analyses on the Berg Property since the joint venture was formed. Placer Dome's development plans envisaged an open pit operation accessing an estimated historical (NI-43-101 non-compliant) resource of 238 million tonnes above a 0.3% CuEq cut-off, averaging 0.39% Cu, 0.05% MoS_2 and 2.84 gpt Ag (Schroeter and Panteleyev, 1986).

Between 2007 and 2008, 60 drillholes totaling 22,948.51 m were completed by Terrane Metals Inc. which were used to estimate two independent NI 43-101 Mineral Resource Estimates in 2008 (Harris and Stubens, 2008) and 2009 (Harris and Labrenz, 2009). These mineral resource estimates are now considered to be historical and have been superseded by the updated mineral resource estimate presented in this report.

The most recent drilling program was completed in 2011 which included 36 inclined drillholes totaling 10,678.6 m for a total of 53,754.05 m in 215 holes completed on the deposit to date. The results of the 2011 drilling have not previously been incorporated into a revised mineral resource estimate. This program was designed to:

- confirm the grades indicated by historical drilling;
- refine the deposit's geological model; and
- expand the extent of the known mineral deposit outside the limits of the existing resources.

This drilling has better defined the geometry of the Berg Stock, which is one of the main controls on mineralization. Drilling in 2011 has also better defined the quartz diorite-andesite contact in the Northeast Zone portion of the deposit. Concentric zones of Cu-Mo mineralization have been determined to extend outwards to approximately 150 m (West Zone) and to 300 m (Northeast Zone) from the Berg Stock. The deposit has also been shown to have excellent vertical continuity with significant mineralization intersected greater than 550 m below surface.

Overall, results from the 2011 drilling, as well as resampling of historic drill core compare reasonably well with copper and molybdenum grades reported from previous drilling. Historical holes were drilled vertically, lack drillhole orientation data, and lack supporting data for trace element geochemistry and silver assay data. This historical data should eventually be phased out and replaced with modern drilling data to allow for advanced studies on the deposit.

Drilling completed in 2011 has added confidence to the tabulated resource of the deposit, in particular throughout the Northeast Zone where previous drilling focused on supergene mineralization. Drilling in most areas of the Berg deposit is still wide-spaced and mineralization is open to depth and outwards from the Berg Stock. The block model has been constrained to a conceptual open pit shell, and is reported as a mineral resource estimate subject to a 0.20% CuEq cut-off in Table 1-1.

Table 1-1: Mineral Resource Estimate for the Berg Deposit by Category, with Effective Date of March 9, 2021

Category	Cut-off (%CuEq)	Tonnes	Cu (%)	Mo (%)	Ag (gpt)	CuEq (%)
Measured	0.20	207,229,000	0.34	0.03	3.02	0.45
Indicated	0.20	402,757,000	0.24	0.03	3.01	0.35
Measured and Indicated	**0.20**	**609,986,000**	**0.27**	**0.03**	**3.01**	**0.38**
Inferred	**0.20**	**28,066,000**	**0.22**	**0.02**	**3.75**	**0.30**

1) CuEq calculated using metal prices of $3.10 /lb Cu, $10.00 /lb Mo, and $20 /oz Ag. Recoveries were applied to correspond with estimated individual metal recoveries based on limited metallurgical testwork for production of a copper and molybdenum concentrate; the leach zone (Cu = 0%, Mo = 61%, and Ag = 52%), supergene zone (Cu = 73%, Mo = 61%, and Ag = 52%), and hypogene zone (Cu = 81%, Mo = 71%, and Ag = 67%). Smelter loss was not applied.
2) A cut-off value of 0.20% CuEq was used as the base case for reporting mineral resources that are subject to open pit potential. The resource block model has been constrained by a conceptual open pit shell, however, economic viability can only be assessed through the completion of engineering studies defining reserves including PFS and FS. Resource classification adheres to CIM Definition Standards; it cannot be assumed that all or any part of Inferred Mineral Resources will be upgraded to Indicated or Measured as a result of continued exploration.

3) Dry bulk density has been estimated based on 2,996 in situ specific gravity measurements collected between 2007 and 2011. Values were applied by geology model domain (n = 18) representing the weathering profiles and major lithological units; values ranged from 2.38 t/m³ to 2.74 t/m³.
4) There are no known legal, political, unnatural environmental, or other risks that could materially affect the potential development of the mineral resources.
5) All numbers are rounded. Overall numbers may not be exact due to rounding.

Metallurgy and Mineral Processing

Many test programs have been conducted on the resource since 1970. The most recent test programs were performed by G&T Metallurgical Services Ltd. (G&T), SGS Lakefield Research Limited (SGS) and Resource Development Inc. (RDI) between October 2007 and January 2012. The programs were aimed at developing the flowsheet to produce copper and molybdenum concentrates from the supergene and hypogene samples from the Berg deposit. The programs included head characterization, mineralogical analysis, material hardness determination and bench open circuit, locked cycle and pilot plant flotation tests.

The results from these test programs indicate that the oxidation degree of the supergene samples is much higher than the hypogene samples. The hypogene mineralization is expected to be moderately hard. The supergene materials are softer than the hypogene materials.

Conventional flotation process, comprising of primary grinding, rougher flotation, bulk rougher concentrate regrind, and three stages of bulk cleaner flotation followed by conventional copper and molybdenum separation, can be used to produce marketable copper concentrate and molybdenum concentrate from the mineralization.

The supergene and hypogene materials yield different metallurgical performances. The hypogene mineralization is more amenable to the flotation recovery and separation treatment, compared to the supergene mineralization. The 2008 and 2009 locked cycle tests show that for the supergene mineralization, the metal recoveries to the bulk copper-molybdenum concentrates are 81% for copper, ranging from 69 to 87%, and 67% for molybdenum, ranging from 20 to 92% respectively. For the hypogene mineralization, the metal recoveries to the bulk copper-molybdenum concentrates are 83% for copper, ranging from 78 to 88%, and 85% for molybdenum, ranging from 73 to 95% respectively.

Recommendations

It is recommended that Surge advance the Berg deposit to an advanced project stage which would include collection of geotechnical data, hydrogeological data and additional metallurgical data in order to support a Preliminary Economic Assessment. Development of a structural geology and geometallurgical model should be added to the block model. Engineering studies required to complete this work would be evaluated in a gap-analysis and series of option studies.

Regional targets within the Berg Property should be continued to be evaluated. Based on exploration results collected to date, prospective targets for further exploration include the northern and eastern extents of the Bergette prospect, the Sibola prospect and various gold showings in the Tahtsa/Serenity area.

Further metallurgical test work is recommended to optimize process conditions and improve target metal recovery and concentrate quality.

The recommended program is shown in Section 19.

2.0 INTRODUCTION

The Berg Property (the "Property" or "Project") is located in the mountainous Tahsta Range in west central British Columbia and is situated approximately 107 km south of the Town of Smithers, 308 km west of the City of Prince George, and centered approximately 84 km southwest of Houston, BC. The Property covers 91mineral claims and one mining lease that total 34,798.2 hectares.

In December 2020, Surge Copper Corp. (Surge) entered into an Option Agreement (the "Agreement") with Thompson Creek Metals Company Inc. ("TCM) a wholly-owned subsidiary of Centerra Gold Inc. ("Centerra"), to acquire up to 70% ownership in the Property (refer to the Company News Release dated December 15th, 2020). Surge Copper trades on the Toronto Venture Stock Exchange (TSX-V) trading under the symbol SURG. Surges head office is located at 888-700 West Georgia Street, Vancouver, B.C. V7Y 1G5.

2.1 Terms of Reference

Surge has retained Tetra Tech Canada Inc. (Tetra Tech) to produce an updated mineral resource estimate and National Instrument 43-101 (NI 43-101) Technical Report for the Berg Property. The work has been undertaken to incorporate drilling completed by Thompson Creek Metals on the Property which includes 36 inclined drillholes, totaling 10,677.6 metres which were completed between July 2 and October 6, 2011. The report supersedes the previous Technical Report prepared for the Berg Property by Harris and Labrenz (2009).

This Technical Report conforms to the standards set out in National Instrument 43-101 Standards and Disclosure for Mineral Projects (NI 43-101), has been prepared in accordance with Form 43-101F1 and incorporates the Canadian Institute of Mining Metallurgy and Petroleum (CIM) Definitions Standards.

The Berg deposit refers to the defined mineralized body which is subject of the mineral resource estimate in this document. The Berg Property refers to the mineral claims that are subject to the Option Agreement between Surge and TCM, which includes the Berg deposit and other regional mineral showings and prospects within the Tahtsa Ranges.

2.1.1 Report Authors

In accordance with NI 43-101 guidelines, the QPs for this report are Mr. Cameron Norton, P.Geo., Senior Geologist, Mr. John (Jianhui) Huang, Ph.D., P.Eng., Senior Metallurgical Engineer, and Mr. Daniel Lui, P.Geo., Senior Geologist. Mr. Norton, and Mr. Huang are with Tetra Tech, and Mr. Lui is with Equity Exploration Services.

Mr. Cameron Norton, P.Geo., completed a site visit to Surges's core storage facility in Prince George from February 10-12, 2021. During this visit, Mr. Norton reviewed the drill core, including reviewing the various lithologies, alteration, and mineralization styles. Mr. Norton also collected independent verification samples. Mr. Norton is the QP for the preparation of sections 1 through 11, 12.1-12.2, 14 through 17, and co-author of Sections 18 and 19.

Mr. Lui, visited the Berg Property on August 13th, 2019 and examined 2008 drill core along with the historical Berg Camp. Mr. Lui is responsible as QP for the preparation of Sections 12.3.

Mr. John (Jianhui) Huang, Ph.D., P.Eng., has not visited the Property. Mr. Huang is responsible as QP for the preparation of Sections 13 and is author of Sections 18.1 and 19.2.

2.1.2 Effective Date

The Effective Date of March 9, 2021, applied to this report reflects the cut-off date by which all scientific and technical information was received and used for the preparation of the Technical Report and the mineral resource estimate. The most recent drillhole assays were collected in 2011 and reviewed by Tetra Tech in the winter of 2021. Independent check assay samples collected by the QP were received from the laboratory on February, 22 2021.

2.1.3 Reporting of Grades by Copper Equivalent

Throughout the report, reference is made to copper equivalent (CuEq) grade to aid in assessment of the polymetallic nature of the mineralization.

The CuEq value was formulated in support, of the mineralized grade shells and calculation of mineral resource estimate. The calculation uses metal prices of US$ 3.10/lb per copper (Cu), US$ 10/lb per pound molybdenum (Mo), and US$ 22 per ounce silver (Ag), and using results of limited metallurgical testwork completed between 2007 and 2012 (summarized in Section 13.0).

Assuming these stated metal prices and recoveries, the CuEq calculation is:

Leach Cap: CuEq = 1.97*Mo% + 0.005*Ag gpt

Supergene: CuEq = Cu% + 2.696*Mo% + 0.0067*Ag gpt

Hypogene: CuEq = Cu% + 2.828*Mo% + 0.0078*Ag gpt

No smelter charge reduction and no metal losses are applied to this calculation.

2.2 Site Visits

In accordance with NI 43-101 guidelines, personal inspections to the property have been undertaken by some of the report authors as described in table 2-1 below. Mr. Cameron Norton visited the core storage facility in Prince George from February 10-12th 2021 to inspect the drill core. Due to current winter weather conditions on site, a Tetra Tech QP was unable to perform a current personal inspection however, Mr. Daniel Lui, an independent geologist with Equity Exploration visited the property in August 2020. As such, this report relies upon the recently completed site visit by Mr. Daniel Lui, P.Geo, of Equity Exploration.

Qualified Person	Date of Most Recent Site Visit
Daniel Lui	August 13th 2019 (Berg Property)
Cameron Norton	February 10-12th 2021 (Prince George Core Facility)
John Huang	Not Visited

2.2.1 Property Visit

Daniel K. Lui conducted a site visit to the Berg Property on August 13th, 2019. 2008 drill core and the historical Berg camp were examined. No evidence of recent exploration work was noted.

2.2.2 Core Facility Visit

Between February 10-12th, 2021, Mr. Norton visited Surges core storage facility in Prince George British Columbia to review the drill core and to conduct independent data verification. Work completed as part of this site visits is discussed in Section 11.0.

2.3 Units of Measurement

All measurements used in this report are in metric, unless otherwise explicitly stated.

Property locations are reported using Universal Transverse Mercator (UTM) projection and the World Geodetic System 1984 (WG84) datum. Vertical cross-sections across the Berg deposit refer to a local grid system based on UTM (WGS84) whereby only the final four digits of the UTM co-ordinate are used (for example: Section 3,300E represents a vertical section running north-south centered on UTM co-ordinate 603,300E).

3.0 RELIANCE ON OTHER EXPERTS

3.1 Project Background, History, Ownership, and Tenure

Information for sections 4 to 6 of this report are based on information from Surge.

Information regarding mineral tenure described in Section 4.0, relied on information provided by Surge and the BC Ministry of Mines Mineral and Placer Titles database. The Geology QP has no reason to believe the information is not true or accurate as of the effective date of this Technical Report.

3.2 Geological Setting, Exploration, Drilling

Tetra Tech has relied upon Surge for information pertaining to the geological setting of the Property, along with the history of exploration and drilling. The Geology QP reviewed the data presented in these sections and compared this data against geological reports provided by Surge to verify there is no material issues and there is a reasonable basis for reliance. Information on these technical areas provided by Surge forms the basis of Sections 7, 9, and 10.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Berg Property is located in the Tahtsa Ranges, a 15 to 20 kilometre wide belt of mountains within the Hazelton Mountains. The Hazelton Mountains lie along the eastern flank of the Kitimat Range of the Coast Mountains and form part of the Skeena Arch. The Tahtsa Ranges represent a transitional zone between the rugged, predominantly granitic Coast Mountains to the west and the rolling hill region of sedimentary and volcanic rocks that underlie the Nechako Plateau to the east. The center of the Berg Property lies at 53º 47' 53.02"N and 127º 24' 51.27"W, or 5,962,220 mN and 604,444 mE, UTM Zone 9, WGS 84. The Berg deposit is centered at approximately 603,450 mE, 5,962,920 mN (Figure 4-1).

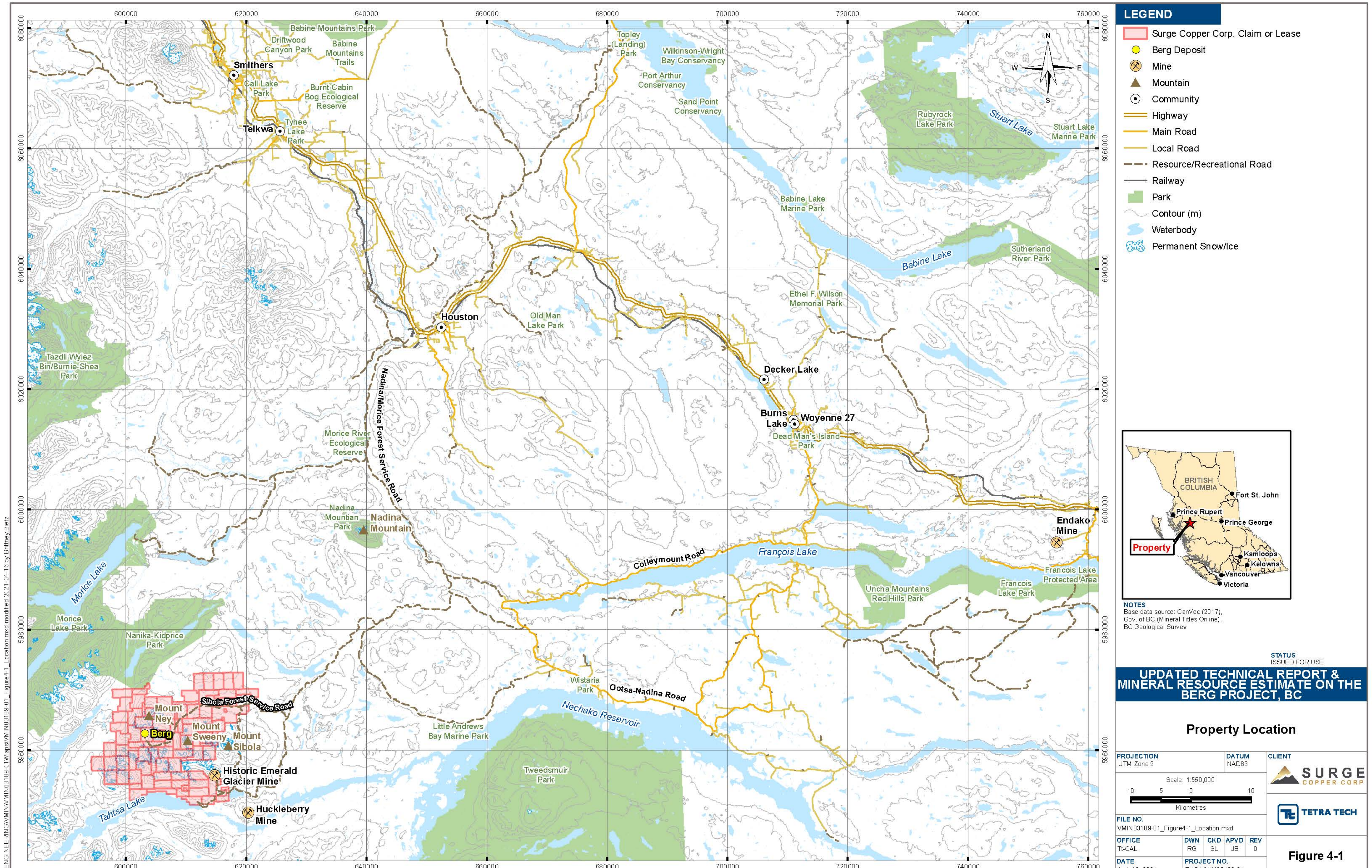
4.1 Surge Copper Option Agreement with Thompson Creek Metals

On December 15, 2020, Surge Copper announced the signing of a Definitive Option Agreement (the "Option Agreement") with Thompson Creek Metals, a wholly owned subsidiary of Centerra Gold, pertaining to the Project. Under this agreement, Surge Copper was granted the exclusive option to acquire 70% ownership of the Project by reaching certain milestones and making certain payments as outlined below:

1. Issuing $5,000,000 (Canadian) in common shares of Surge.
2. Incurring expenditures on the Project of not less than $8,000,000 within five years of entering into the agreement, with a $2,000,000 commitment within 24 months.

Upon meeting the above commitments, a 70%:30% Surge Copper and Thompson Creek Metals will be deemed to have formed a joint venture with respect to the Project.

Figure 4-1: Property Location Map



4.2 Mineral Tenure

The property consists of 91 mineral claims and one mining lease covering an area of approximately 34,798.2 hectares (Figure 4-2). Except for mineral claim 1071719 which covers the southern portion of the Bergette prospect, and is 100% owned by Surge, all other mineral claims are currently registered to Thompson Creek Metals Company Inc., a wholly owned subsidiary of Centerra Gold Inc. The claims are listed in Table 4-1.

Figure 4-2: Mineral Tenure Map

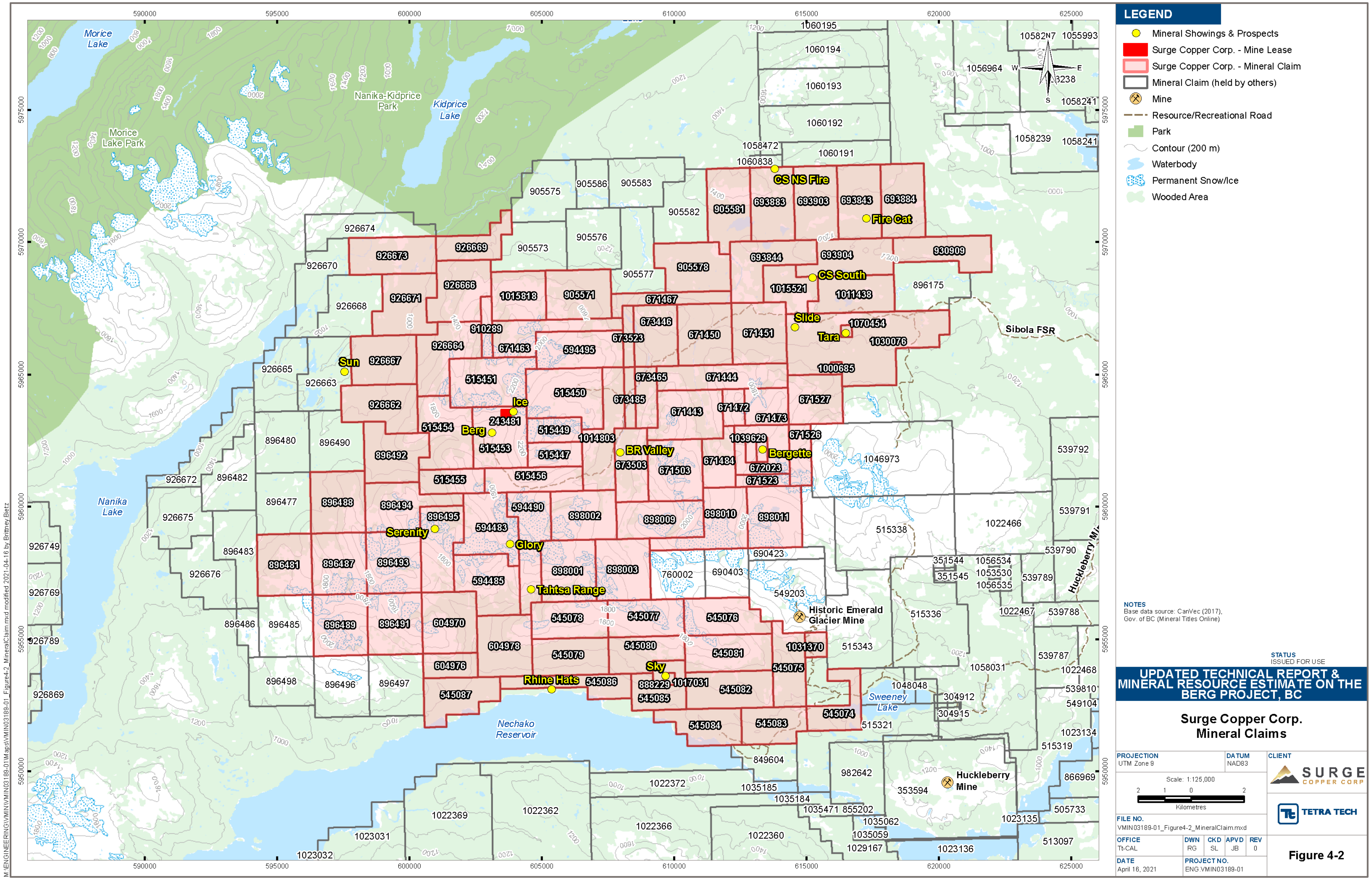


Table 4-1: Mineral Tenure for the Berg Property

Date Issued (YYYYMMDD)	Good to date (YYYYMMDD)	Tenure Type	Tenure Subtype	Tenure ID	Claim Name	Surface Area (ha)
2019/AUG/18	2021/AUG/18	Mineral	Claim	1070454		19.083
1968/AUG/27	2021/AUG/27	Mineral	Lease	243481		16.81
2005/JUN/28	2022/OCT/15	Mineral	Claim	515447		191.004
2005/JUN/28	2022/OCT/15	Mineral	Claim	515449		190.966
2005/JUN/28	2022/OCT/15	Mineral	Claim	515450		572.74
2005/JUN/28	2022/OCT/15	Mineral	Claim	515451		553.588
2005/JUN/28	2022/OCT/15	Mineral	Claim	515453		477.444
2005/JUN/28	2022/OCT/15	Mineral	Claim	515454		496.524
2005/JUN/28	2022/OCT/15	Mineral	Claim	515455		229.252
2005/JUN/28	2022/OCT/15	Mineral	Claim	515456		343.875
2006/NOV/10	2024/NOV/30	Mineral	Claim	545074	SOUTH 1	287.097
2006/NOV/10	2024/NOV/30	Mineral	Claim	545075	SOUTH 2	363.541
2006/NOV/10	2024/NOV/30	Mineral	Claim	545076	SOUTH 3	401.641
2006/NOV/10	2024/NOV/30	Mineral	Claim	545077	SOUTH 4	401.638
2006/NOV/10	2024/NOV/30	Mineral	Claim	545078	SOUTH 5	401.639
2006/NOV/10	2024/NOV/30	Mineral	Claim	545079	SOUTH 6	401.758
2006/NOV/10	2024/NOV/30	Mineral	Claim	545080	SOUTH 7	344.357
2006/NOV/10	2024/NOV/30	Mineral	Claim	545081	SOUTH 8	459.149
2006/NOV/10	2024/NOV/30	Mineral	Claim	545082	SOUTH 9	459.285
2006/NOV/10	2024/NOV/30	Mineral	Claim	545083	SOUTH 10	325.421
2006/NOV/10	2024/NOV/30	Mineral	Claim	545084	SOUTH 11	363.702
2006/NOV/10	2024/NOV/30	Mineral	Claim	545085	SOUTH 12	229.649
2006/NOV/10	2024/NOV/30	Mineral	Claim	545086	SOUTH 13	306.169
2006/NOV/10	2025/NOV/30	Mineral	Claim	545087	SOUTH 14	401.881
2008/NOV/18	2022/NOV/30	Mineral	Claim	594483	BERG C	477.785
2008/NOV/18	2022/NOV/30	Mineral	Claim	594485	BERG D	477.996
2008/NOV/18	2022/NOV/30	Mineral	Claim	594490	BERG A	477.839
2008/NOV/18	2022/NOV/30	Mineral	Claim	594495	BERG I	458.028
2009/MAY/26	2022/NOV/30	Mineral	Claim	604970		478.144
2009/MAY/26	2022/NOV/30	Mineral	Claim	604976		191.323
2009/MAY/26	2022/NOV/30	Mineral	Claim	604978		478.237
2009/NOV/19	2025/NOV/30	Mineral	Claim	671443		477.370
2009/NOV/19	2025/NOV/30	Mineral	Claim	671444		458.138
2009/NOV/19	2025/NOV/30	Mineral	Claim	671450		477.065
2009/NOV/19	2025/NOV/30	Mineral	Claim	671451		477.065
2009/NOV/19	2025/NOV/30	Mineral	Claim	671463		381.640
2009/NOV/19	2025/NOV/30	Mineral	Claim	671467		228.927
2009/NOV/19	2025/NOV/30	Mineral	Claim	671472		114.563
2009/NOV/19	2025/NOV/30	Mineral	Claim	671473		229.125

Table 4-1: Mineral Tenure for the Berg Property

Date Issued (YYYYMMDD)	Good to date (YYYYMMDD)	Tenure Type	Tenure Subtype	Tenure ID	Claim Name	Surface Area (ha)
2009/NOV/19	2025/NOV/30	Mineral	Claim	671484		248.324
2009/NOV/19	2025/NOV/30	Mineral	Claim	671503		477.578
2009/NOV/19	2025/NOV/30	Mineral	Claim	671523		95.525
2009/NOV/19	2025/NOV/30	Mineral	Claim	671526		191.013
2009/NOV/19	2025/NOV/30	Mineral	Claim	671527		381.859
2009/NOV/20	2025/NOV/30	Mineral	Claim	672023		305.605
2009/NOV/24	2026/NOV/30	Mineral	Claim	673446		381.653
2009/NOV/24	2026/NOV/30	Mineral	Claim	673465		190.919
2009/NOV/24	2026/NOV/30	Mineral	Claim	673485		95.460
2009/NOV/24	2026/NOV/30	Mineral	Claim	673503		343.840
2009/NOV/24	2026/NOV/30	Mineral	Claim	673523		95.413
2010/JAN/04	2022/NOV/30	Mineral	Claim	693843		457.507
2010/JAN/04	2022/NOV/30	Mineral	Claim	693844		476.804
2010/JAN/04	2022/NOV/30	Mineral	Claim	693883		457.514
2010/JAN/04	2022/NOV/30	Mineral	Claim	693884		457.507
2010/JAN/04	2022/NOV/30	Mineral	Claim	693903		457.509
2010/JAN/04	2022/NOV/30	Mineral	Claim	693904		438.644
2011/AUG/11	2022/NOV/30	Mineral	Claim	888229	SOUTH 15	95.669
2011/SEP/11	2020/NOV/30	Mineral	Claim	896481	BERGW2	477.912
2011/SEP/11	2021/NOV/30	Mineral	Claim	896487	BERGW8	477.912
2011/SEP/11	2021/NOV/30	Mineral	Claim	896488	BERG W11	477.678
2011/SEP/11	2021/NOV/30	Mineral	Claim	896489	BERGW10	478.146
2011/SEP/11	2021/NOV/30	Mineral	Claim	896491	BERGW6	478.145
2011/SEP/11	2021/NOV/30	Mineral	Claim	896492	BERG W15	458.401
2011/SEP/11	2021/NOV/30	Mineral	Claim	896493		477.912
2011/SEP/11	2021/NOV/30	Mineral	Claim	896494	BERG W15	458.590
2011/SEP/11	2021/NOV/30	Mineral	Claim	896495	BERG W17	458.739
2011/SEP/19	2021/NOV/30	Mineral	Claim	898001	BERG EXT 1	477.954
2011/SEP/19	2021/NOV/30	Mineral	Claim	898002	BERG EXT 2	458.634
2011/SEP/19	2021/NOV/30	Mineral	Claim	898003	BERG EXT 3	477.953
2011/SEP/19	2021/NOV/30	Mineral	Claim	898009	BERG EXT 4	458.655
2011/SEP/19	2021/NOV/30	Mineral	Claim	898010	BERG EXT 5	477.784
2011/SEP/19	2021/NOV/30	Mineral	Claim	898011	BERG EXT 6	477.766
2011/OCT/06	2022/NOV/30	Mineral	Claim	905571	BERG N1	457.828
2011/OCT/06	2022/NOV/30	Mineral	Claim	905578	BERG N6	476.809
2011/OCT/06	2022/NOV/30	Mineral	Claim	905581	BERG N7	476.584
2011/OCT/12	2022/NOV/30	Mineral	Claim	910289	BERG W21	95.405
2011/OCT/31	2022/NOV/30	Mineral	Claim	926662	BERG NW1	458.224
2011/OCT/31	2022/NOV/30	Mineral	Claim	926664	BERG NW2	477.126

Table 4-1: Mineral Tenure for the Berg Property

Date Issued (YYYYMMDD)	Good to date (YYYYMMDD)	Tenure Type	Tenure Subtype	Tenure ID	Claim Name	Surface Area (ha)
2011/OCT/31	2022/NOV/30	Mineral	Claim	926666	BERG NW4	476.883
2011/OCT/31	2021/NOV/30	Mineral	Claim	926667	BERG NW7	458.055
2011/OCT/31	2021/NOV/30	Mineral	Claim	926669	BERG NW6	286.020
2011/OCT/31	2021/NOV/30	Mineral	Claim	926671	BERG NW8	476.932
2011/OCT/31	2021/NOV/30	Mineral	Claim	926673	BERG NW10	457.669
2011/NOV/24	2022/NOV/30	Mineral	Claim	930909	BERG NE1	400.476
2012/JUN/24	2022/NOV/30	Mineral	Claim	1000685	BERGETTE 1	19.088
2012/JUL/24	2021/NOV/30	Mineral	Claim	1011438	BERG NE2	419.695
2012/NOV/26	2021/NOV/30	Mineral	Claim	1014803	BERGETTE 2	477.439
2012/DEC/27	2022/NOV/30	Mineral	Claim	1015521	BERG NE3	286.138
2013/JAN/08	2021/NOV/30	Mineral	Claim	1015818	BERG N11	381.524
2013/FEB/19	2022/NOV/30	Mineral	Claim	1017031	SOUTH 16	19.135
2014/AUG/06	2021/NOV/30	Mineral	Claim	1030076	BERG NE4	1,278.660
2014/OCT/04	2021/NOV/30	Mineral	Claim	1031370	SOUTH 17	76.521
2019/OCT/10	2025/DEC/10	Mineral	Claim	1071719	BERGETTE	76.4
2019/NOV/30	2025/DEC/10	Mineral	Claim	1073028	EAST BERGETTE	1,222.43
Total						34,798.2

4.3 Surface Ownership and Land Access Agreements

Surface rights over the Berg Property are owned by the Province of British Columbia. Permits must be obtained from the Ministry of Energy, Mines and Petroleum Resources prior to carrying out further exploration on the Berg Property.

No major environmental liabilities have been noted by the authors. There is an access trail leading to the property dating from the historic drilling programs that may require reclamation in the future. There are also drill access roads on the property from historic and recent drilling since 2007, and a temporary camp/core storage yard which were established in 2007 and that will require reclamation in the future.

To the extent known there are no other significant factors and risks that may affect Access, title or the right or ability to perform work on the property.

4.4 Royalties and Liens

A 1% net smelter return royalty is held by Royal Gold on eight of the mineral claims and the one mining lease, including those which host the deposit on the main Berg Property (Table 4-2).

Table 4-2: List of Mineral Claims Subject to a 1% NSR

Royal Gold 1% NSR Titles		
Title	**Tenure Number**	**Hectares (ha)**
Mineral Lease	243481	16.8
Mineral Claim	515447	191.0
Mineral Claim	515449	191.0
Mineral Claim	515450	572.7
Mineral Claim	515451	553.6
Mineral Claim	515453	477.4
Mineral Claim	515454	496.5
Mineral Claim	515455	229.3
Mineral Claim	515456	343.9
Total		**3,072.2**

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Climate

The weather, typical of mountainous terrain along the east flank of the Coast Mountains, can be unsettled with rapid changes. Seasonal temperatures vary from 15ºC in winter to 20ºC during the summer. The mean daily temperatures for July and January are approximately 15ºC and -9ºC, respectively. The region is in the rain shadow of the Coast Mountains and thus receives only 40 to 50 cm of precipitation annually. In winter, snow is generally less than 2 m deep on the valley floors, but deeper snow can accumulate in creek gullies and on north and east-facing slopes giving rise to small permanent snowfields. The Berg Property is snow covered between mid-November and late-May, thereby limiting exploration activities to the summer months. The nearby Huckleberry mine operated year-round when it was in operation.

High winds are common in the area and occasionally reach gale force. Exploration reports also indicate that dense fog sometimes envelopes the area for days at a time and reduces visibility to metres.

5.2 Physiography

The Berg deposit is located in the Tahtsa Range, a 15 to 20 km wide belt of mountains within the Hazelton Mountains. The Hazelton Mountains lie along the eastern flank of the Kitimat Ranges of the Coast Mountains and form part of the Skeena Arch. The Tahtsa Ranges represent a transitional zone between the rugged, predominantly granitic Coast Mountains to the west and the rolling hill region of sedimentary and volcanic rocks that underlie the Nechako Plateau to the east.

The Berg deposit occurs in an above tree level alpine environment. Terrain above 1,550 m elevation is alpine in nature, forested with white spruce and pine between 1,350 and 1,550 m and by white spruce and fir below 1,350 m.

The Tahtsa Ranges are further subdivided into the Tahtsa, Sibola, Whitesail, and Chikamin Ranges, of which the Berg deposit is hosted in the Sibola Range. These are separated by major valleys whose bottoms range in elevation from 800 to 950 m. Mt. Ney is the highest peak in the Tahtsa Ranges at 2470 m and is 4 km northeast of the Berg Property. A number of other mountain and ridges are 2000 m or more in elevation and occur as serrate peaks modified by cirque glaciation.

5.3 Local Resources

5.3.1 Community Services

Personnel for construction, exploration, mining and support are available in local northern BC communities such as Prince George, Terrace, Smithers and Houston. Prince George and Terrace are approximately five hours drive from the property while Smithers and Houston are approximately three, and two hours drive from the property, respectively. Except for Houston, each of these communities has daily scheduled flights to Vancouver and elsewhere.

Helicopter services are available from Smithers and Houston.

5.3.2 Infrastructure

Infrastructure available for the Berg Property consists of the Morice Tahtsa and Sibola Mainline Forest Service Roads, allowing road access to approximately 22 km from the Berg deposit. The remaining length of the Berg access road has been decommissioned having only light wooden creek crossings capable of supporting an ATV or snowmobile.

Sufficient low-relief terrain resides within the Property for siting of infrastructure for mining or process operations, such as waste disposal facilities, haul roads and plant site. Land use for exploration and mining purposes is governed by the Mineral Tenure Act, the Mines Right of Way Act, the Mines Act and other applicable laws of the Province of British Columbia.

A rail route parallels Highway 16 linking Prince George and Prince Rupert.

5.3.3 Power

There is currently no power available on the property.

The nearest source of electric power is the Huckleberry Mine transmission line, approximately 22 km to the east.

5.3.4 Water

An abundance of water as lakes, rivers and groundwater is available in valleys and base level elevation. Melting of mountain snow and ice lenses found at elevation supply overland flow and perched groundwater flow in the warmer months of June through September. The shallow groundwater flow contributed to the leaching and supergene enrichment found on the property. Artesian water flow is observed from uncapped historical drilling holes on the main slopes of the Berg cirque.

5.4 Property Access

Access to the property by road is currently limited. Site access is currently achieved by helicopter support, with staging areas from the nearby forest service roads.

South from BC Highway 16 south of Houston, from the Morice River Road, the Morice/Nadina FSR (Huckelberry Mine Road) is an all season gravel road which was upgraded to provided access to the Huckleberry Mine. At kilometre marker 100.5, the Sibola FSR is accessed to the west; the Sibola FSR is largely decommissioned and permits only quad access for majority of the 22 km path to the property boundary. This path passes the north flank of Sibola Peak and follows Kidprice Creek south and west to its headwater on a pass at an elevation of 1,740 m above sea level (asl).

From there the trail continues to the Berg Camp, located on a tributary to the north fork of Bergeland Creek, about 6 km northwest of the pass at 1,555 m asl. This is the route used for historical road access to the Berg deposit. The southern portion of the Property can be reached via the Sweeny Lake Road which departs from the Huckleberry Mine road at ~113 km and continues to Tahtsa Lake. This road connects to a series of logging access roads that reach the southwestern corner of the property.

The route is generally free of snow between July and October.

5.5 Topographic Reference

The Berg deposit is centered at approximately 603,450 mE, 5,962,920 mN (UTM WGS 84 Zone 9), and is located on the National Topographic Service (NTS) mapsheet 093E/14W.

6.0 HISTORY

The Tahtsa Ranges were first prospected in the early 1900's after gold was discovered near Sibola Mountain. Prior to the late 1920's, several lead-zinc-silver, gold-tungsten and copper showings had been staked. In 1948, the Lead Empire Syndicate restaked claims originally located by Cominco Ltd. in 1929 over several lead-zinc occurrences. These are now recognized as part of the Berg porphyry system.

6.1 Berg

The potential for porphyry copper style mineralization at Berg was first understood by Kennco (Kennecott), based on their experience in the southwestern United States. Increased exploration expenditures in 1964 enabled bulldozer trenching and diamond drilling that demonstrated the deep effects of surface leaching and revealed the widespread presence of supergene mineralization, a feature not common in the Canadian Cordillera. Subsequent work shows that rocks are leached in places to depths in excess of 30 metres, and these rocks are underlain by an extensive "blanket" of supergene copper enrichment.

Drilling by Kennecott during 1965 and 1966 delineated two main mineralized zones; a northeast zone that contains primary (hypogene) and some supergene mineralization, and a south zone with widespread supergene mineralization. At the end of the 1966 field season, the property consisted of 108 mineral claims on which there had been a total of 3,886 m of diamond drilling in 23 holes. During 1967, a 3,325 metre drill program tested the south zone on a widely-spaced grid and three holes explored areas peripheral to the main area of interest. From 1968 to 1970 the property was dormant but metallurgical testing was done on composite samples of drill core. In 1971, three additional holes were drilled in the northeast zone. At the end of the 1971 exploration program a total of 49 diamond drill holes of mainly NQ and BQ core had been completed with a total length of 7,875.8 m.

In 1972, exploration and development of the property were taken over by Canex Placer Limited (Placer Dome Inc.) under agreement with Kennecott. From 1972 to 1975, Placer Dome drilled an additional 52 drill holes of NQ and PQ core totaling 9,689.4 m. The PQ holes were utilized to collect metallurgical samples and to address low core recovery issues from previous years. Another 8 HQ core holes totaling 1,099.0 m were drilled in 1980.

A total of 119 diamond drill holes for 20,127.9 m had been completed on the Berg Property to 1980. A limited amount of pre-2007 drill core is still cross-stacked on the property at the old camp site, but most of the mineralized sections have been consumed for metallurgy test work and core box identification is sometimes difficult due to deterioration over the years.

Between 1982 and 2007, there was no active exploration on the project, although Placer had arranged for/or conducted in-house revised resource estimates, additional economic analyses, conceptual mine layouts, and environmental reports. No mining activity has occurred on the property. Detailed descriptions of these activities can be found in the June 2008 NI 43-101 Technical Report by Harris and Stubens titled "*Technical Report — Mineral Resource Estimate, Berg Property, Tahtsa Range, British Columbia*", and in the June 2009 NI 43-101 Technical Report by Harris and Labrenz titled "*2009 Mineral Berg 2017 Aeromagnetic and Geological Mapping Surveys January, 2018 Thompson Creek Metals Company Inc. 9* Resource Estimate on the Berg Copper-Molybdenum-Silver Property, Tahtsa Range, British Columbia".

In 2006, Placer Dome was purchased by Barrick Gold, who sold the Canadian assets to Goldcorp Inc. Terrane Metals Corp. (Terrane) purchased certain Canadian assets from Goldcorp, including their share of the Berg Project. In September 2006, Terrane purchased Kennecott's share of the Berg Joint Venture to become 100% owners.

An exploration program consisting of 11,288.8 metres of diamond drilling in 29 holes and a pole-dipole IP survey was performed in 2007 by Terrane. A subsequent follow-up exploration program was carried out on the property in 2008 by Terrane, consisting of 11,659.6 metres of diamond drilling in 31 holes and a total field ground magnetic survey performed in the deposit area to determine the geophysical characteristics of the deposit. Both the 2007 and 2008 programs were carried out by Equity Exploration Consultants Ltd. (formerly Equity Engineering Ltd.) under contract to Terrane Metals Corp., from a camp constructed in the drill area. Environmental baseline studies commenced in 2007 and continued into 2008 and were implemented by AMEC Earth and Environmental. This work included review of environmental data for the project site and collection of long lead time data including water quality, hydrology, meteorology, and acid rock drainage/mine leachate test work.

In 2010 TCM purchased Terrane and, in 2011, drilled 36 diamond drill holes for 10,677.6 m. The program was carried out by Equity under contract to Berg Metals from the re-established Berg Camp within the drill area. The program was successful in providing data to refine the deposit's geological model and test prospective areas outside the limits of previous drilling (Harris and Peat, 2011).

Exploration activities which have been completed by since 2011 are described in Section 9 of this report.

On October 20,2016, Thompson Creek Metals Company Inc. was acquired by Centerra Gold Inc. TCM continues as a subsidiary of Centerra Gold.

In December 2020, Surge Copper Corp. (Surge) entered into an Option Agreement with Thompson Creek to acquire up to 70% ownership in the Property.

Numerous regional mineral prospects exist within the current property bounds. The following sections recount historical exploration activities conducted on these prospects prior to Surge's involvement in the Project.

6.2 Previous Estimates

A Mineral Resource Estimate was previously reported for the Berg Project in 2009 by Equity Exploration (Harris and Labrenz, 2009). This work included all drilling results up to and including the 2008 campaign, based CuEq calculations on current metal price trends and projected metallurgical performance based on limited testwork. Geological modelling was completed using Vulcan software, and the block model was developed using Vulcan. The 2009 Mineral Resource Estimate was reported at a 0.30% CuEq cut-off and is summarized in Table 6-1 below.

The 2009 resource statement is superseded by the current resource statement and is no longer relied upon.

Table 6-1: Previous Mineral Resource Estimate, Effective Date June 2009

Category	Tonnes (millions)	Cu (%)	Mo (%)	Ag (gpt)	Cu lbs (millions)	Mo lbs (millions)	Ag oz (millions)
Measured	53.3	0.48	0.030	4.5	559	36	7.7
Indicated	452.7	0.28	0.038	3.7	2,783	376	53.7
Measured and Indicated	**506.0**	**0.30**	**0.037**	**3.8**	**3,342**	**412**	**61.4**
Inferred	**144.6**	**0.23**	**0.033**	**2.5**	**739**	**107**	**11.7**

1) Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. Mineral Resources have been tabulated at 0.30% copper equivalent cut-off grade. Copper equivalent grades are calculated using metal prices of US$ 1.60/lb Cu, US$ 10/lb Mo, and US$ 10/oz Ag and take into account forecast metallurgical recoveries into separate copper and molybdenum concentrates.

6.3 Additional Prospects

The below prospects occur outside of the Berg Mineral Resource Estimate boundary, however, they occur on the broader continuous claim blocks which comprise the Berg Property.

6.3.1 Bergette

The Bergette Prospect, located 10.3 km to the east-northeast (figure 4-2) of the Berg Deposit forms part of the broader Berg Project and has seen intermittent exploration since its discovery. While it does not contain any mineral resources, or contribute to the Berg Deposit, it represents an important prospect on the Property. It was initially prospected, and silt sampled by Kennecott Explorations during their exploration programs in the region between 1961 and 1964 (Church, 1971); the results of this work were moderately encouraging and from 1971 to 1973 a program of drilling, mapping and soil sampling was undertaken by Granges Exploration. Geologic mapping by Church (1971) showed the area to be underlain by volcanic and sedimentary rocks of the Hazelton Group intruded by the Sibola Stock, a composite granodiorite intrusion with both equigranular and porphyritic phases.

Soil sampling during the 1971 and 1972 programs demonstrated that mineralization at Bergette is marked by a strong Cu-Mo response in soil (Reid, 1971), which extends over a 2 x 5 km northeast-trending zone (Reid, 1972). Responses are strongest over the core of the Bergette mineralization, but are continuous both north and south along strike, suggesting that the mineralized system is larger than what is currently outlined by drilling and rock sampling.

In 1973, an 11.3 line-km frequency domain IP survey was completed over Bergette, extending 1,600 m to the north up Bergette Valley. The survey identified several IP anomalies to the east and northeast of the main Bergette mineralization, however, the depth of penetration for the survey was only 100 - 150 m with gaps in the survey over geochemical anomalies (Hallof and Goudie, 1973). Several shallow drill holes testing the IP anomalies surrounding the main Bergette mineralization were proposed, though no reported work was done to follow-up on this survey. Several of these IP anomalies extend onto the Property.

In 1977, a report was prepared for New Frontier Exploration Inc., by Granges personnel summarizing the findings of the early 1970s exploration programs and recommending additional soil sampling, mapping and drilling (Shear, 1977). No recorded work was undertaken to implement the recommendations of the report.

6.3.2 Tahtsa Range, Serenity

While they do not contain any mineral resources or contribute to the Berg Deposit, Tahtsa Range and Serenity represent important prospect on the Property. The Tahtsa Range Showing (093E 007) lies just over 4 km to the south-southeast of the Berg deposit (Figure 4-2) and was historically reported to be a series of northeast-trending, steeply-dipping quartz veins with pyrite, chalcopyrite, galena, specular hematite and trace amounts of gold (Duffell, 1957). The area was worked in 1984 as the Smokey Pines claim block by Ryan Exploration, with a four-man crew conducting two days of mapping and taking 34 grab samples (Hooper, 1984). The 1984 work was designed to follow-up on a series of trench samples taken in 1982 that reportedly returned up to 12,000 gpt Ag from the “Saddle Showing”, several hundred metres west of the location of the Tahtsa Range MINFILE showing location. Note that primary records from this 1982 trenching program have not been located, and information about it is taken from Hooper (1984). Though the 1984 program failed to replicate the extremely high silver grades reported from the earlier work, they did confirm the presence of a steeply-dipping, northeast-trending vein system with samples containing up to 0.56% Cu, 47 gpt Ag and 0.75 gpt Au. Hooper (1984) also traversed and took rock samples in the creek valleys to the northwest and south of the Tahtsa Range Showing. Samples to the south were anomalous in copper and zinc but were generally low grade. Samples from the area to the northwest returned significant copper, zinc and silver values with up to 1.2% Cu, 1.8% Zn and 269 gpt Ag from select samples of mineralized veins and float. Additional work to follow-up on the mineralized veins was recommended but never conducted.

6.3.3 Lead Empire, Set, Lost, Ice

While it does not contain any mineral resources or contribute to the Berg Deposit, the Lead Empire represents an important prospect on the Property. The Lead Empire Showing (MINFILE 093E/014) lies approximately 1.2 km to the northeast of the Berg deposit (Figure 4-2). This area was first staked by W.H. Padmore in 1948 and 1951 to cover the stockwork veins and shear zones associated with a diorite or gabbro stock. Mineralization includes vein-hosted galena, sphalerite, pyrite and molybdenite, in addition to covellite, chalcopyrite and disseminated pyrite. Mineralization was also noted to contain minor gold and silver content although no values are known. Work completed in the 1951-52 seasons focused mostly on claim access and included trail cutting and cabin construction along with some stripping and trenching (Duffell, 1957).

Further work was completed during the 1969-71 field seasons when the LOST, ICE, SET and IT claims were staked by Sierra Empire Mines Ltd ("Sierra Empire"). In 1969, Sierra Empire surveyed historical surface workings, conducted geological mapping, bulldozed 29 trenches (totaling 925 m) to bedrock, constructed 2.4 km of road and drilled 17 holes for 976 m (EMPR, 1969). The following year, further surface geological mapping, 1.6 km of road construction and 150 m of trenching was completed (EMPR, 1970). In 1971, another eight drill holes totaling 1,529 m was completed (EMPR, 1971).

Unfortunately, there are no records for this work, however it appears from air photos that the focus of this work was completed up to two kilometres northeast of the Lead Empire MINFILE occurrence, though at least one road was constructed to within one kilometre from the MINFILE location. Furthermore, MacIntyre (1985) denotes Pb-Zn mineral occurrences in both the MINFILE location and proximal to the extensive road workings to the northeast.

The Lead Empire area was prospected during the 2016 field program with no significant results (Branson and Guestrin, 2016).

6.3.4 CS, NS, Fire, Smoke Mountain, Fire Cat

While they do not contain any mineral resources or contribute to the Berg Deposit, the CS, NS, Fire, Smoke Mountain, and Fire Cat represent an important prospects on the Property. The CS and NS showings (MINFILE 093E/090) lies on the northern boundary of the Property approximately 15.0 km from the Berg deposit (Figure 4-2) and was previously worked as part of the Smoke Mountain (Belik, 1974; Walker, 1974) and Fire (Ditson, 1990; Linden, 1991; Lui, 2007) claims. The first publicly recorded work is a 9.3 line-km dipole-dipole IP survey that identified four or five anomalous zones (Walker, 1974) that were followed-up with 646 m of diamond drilling over seven holes (Belik, 1974). Belik (1974) reported minor chalcopyrite and molybdenite along with carbonate, gypsum, magnetite/hematite and chlorite alteration, but did not include assay results. Additional surface work and resampling of the 1974 drill holes was completed by Placer Dome in 1990 and 1991 (Ditson, 1990; Linden, 1991).

Of note is that numerous silt and soil samples collected in 1990 contain elevated gold values. Resampling of the drill core returned up to 1,530 ppm Cu over 1.7 m and 0.15 gpt Au over 2.4 m in DH74-3, and 0.48 gpt Au over 1.0 m in DH74-1. No further work on the claims was recommended due the lack of economic mineralization. However, it was noted that porphyry style mineralization and alteration is restricted to the northern contact of the Kasalka intrusion and the Jurassic Hazelton Group volcanic rocks, though it appears this was not the target of the 1974 drilling and has not been fully tested at depth.

The area southeast of the CS Showing was staked as the Fire Cat claims by Patti Walker of Smithers, BC, and optioned by Rimfire Minerals Corporation, who conducted a program of mapping, rock, soil and silt sampling in

2007. Lui (2007) concluded that copper mineralization at the main Fire Cat (and nearby Hulk) Showing is related to hydrothermal fluid flow along lithological contacts and does not have characteristics of porphyry style mineralization. In addition to the moderate copper values at the Fire Cat and Hulk showings (0.1–1% Cu) a gold-in-soil anomaly was noted near the southern end of the Property, and follow-up work was recommended in the form of a grid soil survey over the area.

No further work has been conducted on these showings.

6.3.5 CS South, Tara, Slide

The CS South area is located approximately 4.0 km south of the CS and Fire showings, 7.0 km north of Bergette and west of the Tara Showing (MINFILE 093E/091). It is traversed by the historical haul road from the Sibola FSR to the Berg deposit (Figure 4-2) and was previously worked as the Slide claims during the 1970s when owned by Hudson's Bay Oil and Gas Corporation. Exploration by Hudson's Bay consisted of 11 percussion drill holes and a ground-based magnetometer survey covering approximately 4 km^2. Work was centered on a small quartz diorite plug belonging to the Bulkley Plutonic Suite (Figure 7-1); it is not clear if the existence of this plug was known prior to the initial exploration, though its presence would provide a likely explanation for targeting of work in this area.

The first five holes were drilled in 1974 and, despite revealing low base metal contents, Kilby (1974a) concluded that as only two of the holes had reached bedrock, the program was not a complete test of the mineralization potential of the area. The following year, a magnetometer survey showed the presence of a 1 x 1 km magnetic high corresponding to a quartz diorite body. A further six percussion holes were attempted, none of which reached bedrock (Hall, 1975a).

An additional five diamond drill holes were completed by Noranda in 1975 on their Sibola Property, located on what is now the Tara Showing. The holes contained only minor mineralization, with two 10-foot samples returning >0.1% Cu (Belik, 1975).

A geological and sampling program done on the Sibola Property in 1991 described the Tara Showing as comprising minor chalcopyrite and malachite associated with a weak stockwork of drusy quartz veinlets and local, irregular shaped zones of intense bleaching and silicification, approximately 200 m east of the most easterly 1975 Noranda drill hole. The best rock assay returned 0.13% Cu, 137 ppb Au and 42.7 ppm Ag, with two other samples returning anomalous Au, As and Sb. Trenching the overburden to the north, east and southwest was recommended, but was never carried out (Belik, 1991).

Approximately 200 m south of the Tara Showing, a Tertiary felsic stock within a broad quartz-sericite-pyrite alteration zone with good exposure in the creek canyon was identified. In the canyon, altered rocks are typically pale greenish grey to white and contain abundant finely disseminated pyrite with a quartz-sericite-clay matrix with patchy silicification imparting a spotted Dalmatian-type texture to altered units. At the southern end of the canyon, a late stage, steeply-dipping, hydrothermal breccia body exposed over 12 m contains angular to rounded, altered, pyritic, felsic fragments up to 10 cm hosted in a brown-weathering, crystalline, pyritic carbonate matrix. Geochemical results collected from the canyon were not encouraging (Belik, 1991).

6.3.6 Sky, Rhine Ridge

The Sky Showing (MINFILE 093E/098) occurs in the south-eastern corner of the Berg Property, 10 km northwest of the Huckleberry Mine (Figure 4-2).

Following initial government mapping of the region in the 1930s and 1960s, two field programs were undertaken in 1988 and 1989. In 1988, Geostar Mining Corporation undertook a program consisting of reconnaissance soil sampling along contour lines with minor accompanying prospecting. Pardoe (1988) notes the significance of a large gossan and reports anomalous copper, silver, lead and molybdenum from isolated rock sampling. The results of the soil survey were quite encouraging with well-defined copper-silver and lead-zinc anomalies as well as sporadic enrichment in gold. A follow-up program was recommended and conducted by Canadian-United Minerals in 1989; this program consisted of tightly focused soil sampling, detailed mapping and extensive rock sampling of the mineralized zones. Harrison (1989) concluded that the Au-Ag-Cu-Pb-Zn mineralization is associated with massive pyrite-arsenopyrite veins, and that vein formation was most likely related to hydrothermal fluids exsolved from the porphyry body during cooling. Additional work was recommended to explore for additional veining in the surrounding area, but never carried out.

A single silt sample from the area downslope of the Sky Showing was analyzed as part of the 2008 QUEST-WEST project (Jackman, 2009). The sample is strongly anomalous in copper, zinc, arsenic, lead and molybdenum, suggesting the stream sediments were sourced from well-mineralized bedrock. Interestingly, the drainage indicated as the source for the sample does not flow directly over the 1988/1989 work area, but instead drains a lower portion of the slope below this showing.

6.3.7 Sun

The Sun Zone is located 6 km west of the Berg deposit, downstream along Bergeland Creek (Figure 4-2). The area was first explored for mineral potential by Placer Development Ltd., in 1980 to determine if the ground had any viable exploration targets, as the area was being considered as a potential storage site for tailings from the Berg deposit. Outcrop is limited in the area and, as such, the 1980 program consisted of soil sampling and ground geophysics. Examination of the limited outcrop that is present shows a lack of any sulphide or other mineralization (Cannon and Pentland, 1980). Results of the soil survey show several minor anomalies, the best of which is a Cu-Mo-Ag-Pb-Zn zone near the northeastern corner of the grid. It is worth noting that the entire area is covered by a thick layer of glacial till, and thus any soil anomalies are likely reflective of transported material. In the case of this anomaly, it is also downstream of the Berg deposit and transport of material from that source must be considered as a potential source of the soil anomaly. Follow-up soil sampling was conducted in 1981 and is reported to have extended the anomaly slightly to the north and west (Smee, 1991), though the original data is not available for this survey and these results have not been verified. Similarly, results of the IP and magnetometer surveys showed several minor anomalies but did not present any highly compelling targets for future work.

An additional follow-up survey was conducted in 1991 by Placer Dome, to determine conclusively if the soil anomaly is the result of bedrock mineralization or simply derived from transported material from the Berg deposit. Smee (1991) examined the anomalous zone with a variety of techniques, subjecting it to several extraction methods and assessing variation in metal content with soil profile depths, coming to the conclusion that the anomaly was formed in situ (as opposed to as the result of hydromorphic transport), but that its source material had been transported downstream from the Berg deposit as a result of catastrophic flooding events. Further work was not recommended.

Several highly anomalous silt samples from this area are included in the 2008 QUEST-WEST database (Jackman, 2009), though the mineralization in these samples is believed to be sourced from the Berg deposit itself, as opposed to a downstream source near the Sun Zone.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

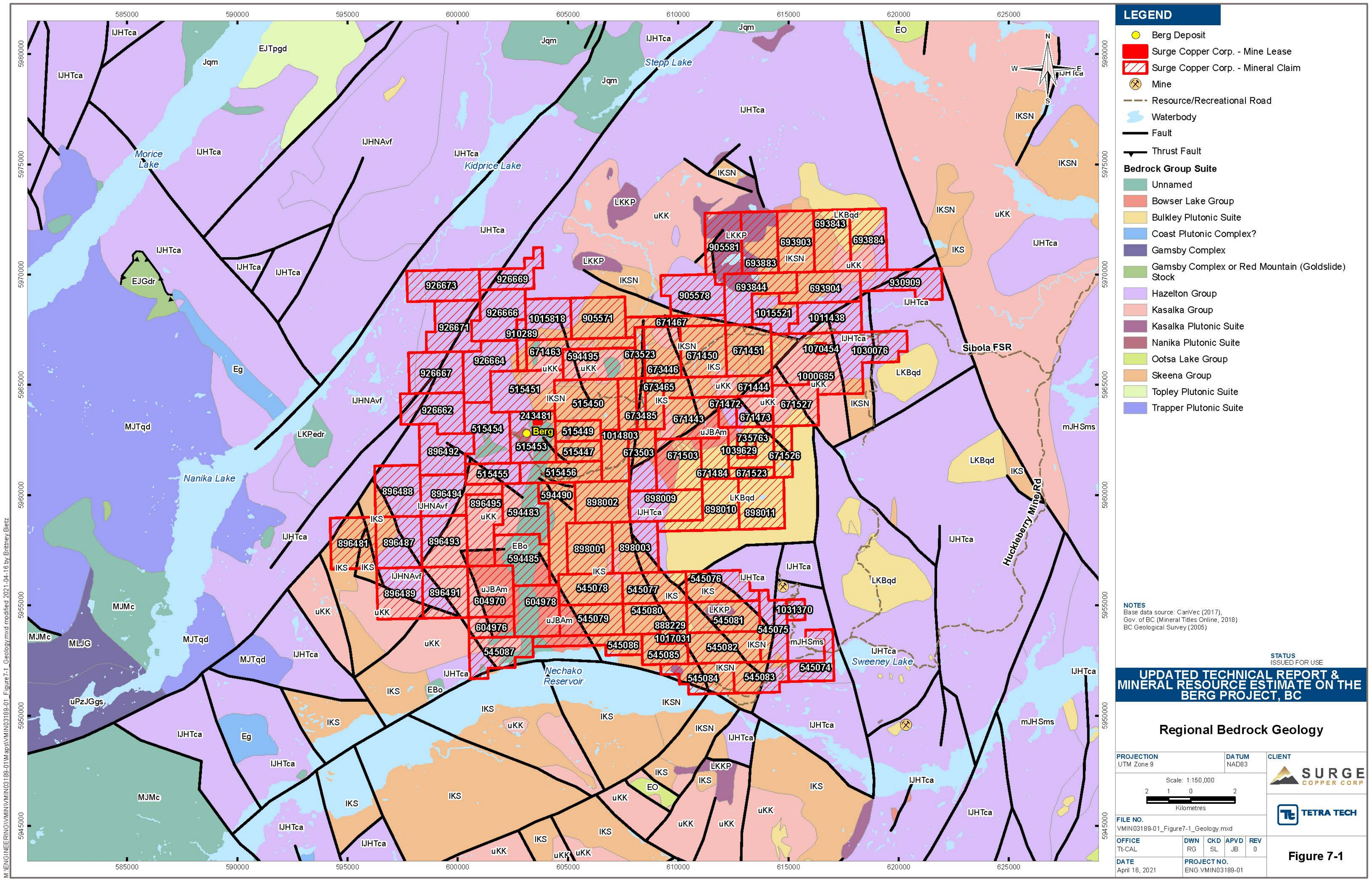
The following descriptions of Regional and Local Geology have been extracted and modified from Harris and Stubens (2008), Harris and Labrenz (2009) and Neilsen (2017).

7.1 Regional Geology

The Berg Property is centered on one of several Early to Middle Eocene (52 Ma to 47 Ma) composite quartz monzonite stocks that intrude Middle Jurassic Hazelton Group and Lower Cretaceous Skeena Group rocks in the area. Hazelton Group rocks are well exposed west of the Berg Stock (Figure 7-1). They consist of a sequence of green, grey, red and maroon lithic tuffs, tuff breccias and flows of andesitic composition. Skeena Group rocks overlie the Hazelton Group and are exposed mainly east of the property. Amygdaloidal and vesicular andesites and basalts make up the lower part of the Skeena Group succession. Many of the flows exhibit trachytic texture that distinguishes them from the underlying Hazelton Group. Sandstones, siltstones and conglomerates comprise the upper part of the succession.

The contact between the Skeena Group and the Hazelton Group is not exposed in the property area as it is everywhere intruded by a quartz diorite believed to be of Eocene age. An exposure of the contact on a cliff face north of the property is strongly epidotized and rocks on both sides are hydrothermally altered. Kasalka Group rocks unconformably overlie the Skeena Group north of the property. Best exposures occur at Mount Ney, 6 km north of the Berg Stock. Here the succession consists of a basal conglomerate member that has a distinctive red to maroon colour. Overlying the conglomerate is a predominantly volcanic sequence of white, grey and pale green rhyolite and dacite flows and flow breccias with interbedded crystal and crystal vitric tuff (Technical Report Mineral Resource Estimate, 2008).

Figure 7-1: Regional Geology



7.2 Berg Deposit Geology

The Property lies within the Stikine Terrane and is underlain by Jurassic to Cretaceous volcanic and sedimentary sequences intruded by Cretaceous to Eocene granitic bodies. The Berg deposit described herein has been well studied and based upon research conducted on the geology, alteration and mineralization by Panteleyev (1976, 1981), Heberlein and Godwin (1984), and Heberlein (1995).

Two main intrusive bodies are exposed in the Property area. The largest consists of a north-trending, elongate body of quartz diorite (Unit QDR) that intrudes the contact between Hazelton Group and Skeena Group east of the mineralized area. The intrusion extends from about 750 m north of the Berg Stock to over 6.5 km to the south (see Figure 6-2). It ranges in width from 600 m on the property area to over 2 km at its southern extremity. Compositional and textural zonation of the quartz diorite is evident with a central core of pink quartz monzonite exposed 1.6 km south of the camp that grades outwards into quartz diorite and hornblende quartz diorite. Porphyritic phases are also present.

The other prominent intrusion in the deposit area is the Berg Stock, a multi-phase composite quartz monzonite stock that intrudes the Hazelton Group andesitic rocks. It is broadly cylindrical and approximately 600 to 750 m in diameter with typically sharp, subvertical contacts. Locally these contacts are complex with brecciated xenoliths of andesitic rocks with diffuse clast boundaries. Panteleyev (1976, 1981) subdivided this composite stock into four main phases:

1. A core of pre-mineral, very coarsely porphyritic quartz monzonite (Unit QMP);

Photo 7-1: QMP Unit

2. A pre-mineral coarse-grained plagioclase-biotite-quartz porphyry (Unit PBQP) that wraps around the northern flank of the QMP core;

Photo 7-2: PBQP Unit

3. A northwest trending, pre-mineral medium-grained porphyritic quartz-plagioclase porphyry (Unit QPP) that extends to the west from the southern and western portion of the QMP core; and

4. A narrow, subvertical and northeast-trending late-to post-mineral quartz-feldspar porphyry (Unit QFP) dyke or zone of dyking that cuts across each of the above phases and also cuts quartz diorite along trend and northeast of the stock.

Unit QMP is characterized by very coarse-grained plagioclase, quartz, biotite and commonly megacrystic orthoclase. The quartz in particular, is distinctive and commonly comprising coarse resorbed crystals with subrounded and wormy boundaries and with poikilitic intergrowths of plagioclase. Feldspars and biotite are euhedral and minor hornblende is typically replaced by biotite.

The PBQP is a slightly finer-grained quartz monzonite than the QMP with a typically darker grey to brown matrix containing plagioclase, quartz and biotite with rare orthoclase. Biotite is roughly twice as abundant and typically finer-grained than in the QMP, comprising 2 mm books compared with the 4 - 6 mm books in unit QMP. Internal contacts and cross-cutting relationships within the Berg Stock between the PBQP and the QMP are poorly understood due to lack of drilling, but contacts with the andesitic country rocks appear to be largely subvertical.

Unit QPP is also quartz monzonitic in composition and has the finest grain size of the Berg Stock phases. This leucocratic phase is medium-grained comprising mainly of plagioclase and quartz with notably absent or rare orthoclase and biotite. The QPP also exhibits characteristically strong and pervasive sericite alteration and local fine secondary biotite. This unit appears to cut the QMP and appears to have a strong degree of structural control in its emplacement forming a west-northwest trending subvertical keel along the southern margin of the stock.

The QFP dyke forms the backbone of the northeast-trending ridge that transects the Berg deposit. This dyke is also very coarse-grained, closely resembling the QMP with coarse-grained plagioclase, biotite, resorbed and subrounded quartz, hornblende and common orthoclase megacrysts. Distinctive and characteristic coarse-grained crystals of sphene are also present. Epidote commonly replaces orthoclase and chlorite. Calcite and pyrite are also present as alteration products, particularly after mafic minerals. Quartz-molybdenite veining and chalcopyrite are rare within the QFP. This unit is also the only phase of the Berg Stock that intersects the quartz diorite. This dyke narrows or bifurcates to only a few metres wide where it has been intersected by drilling at the southwest and northeast margins of the stock.

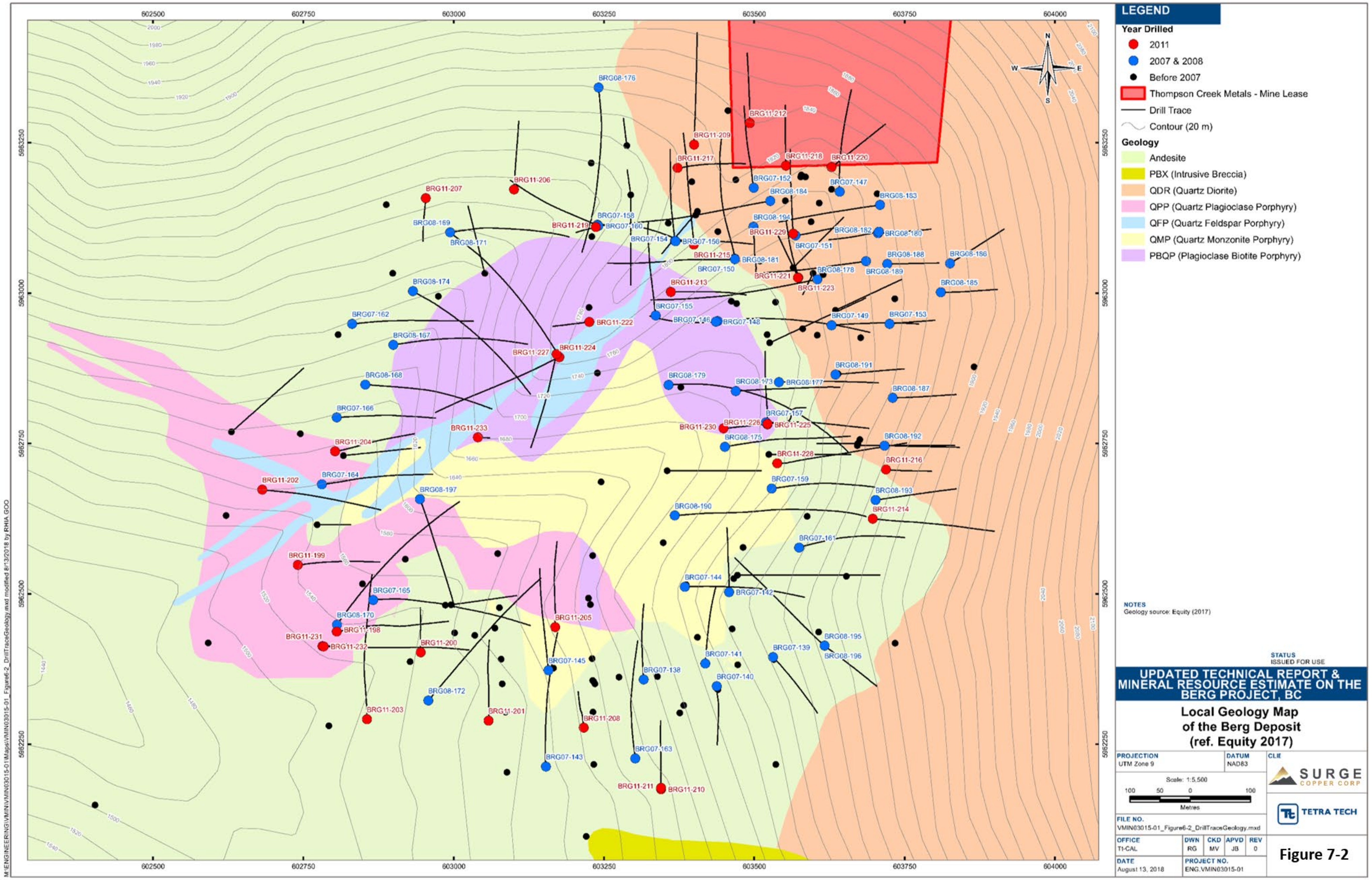
Dark green, typically fine-grained to aphanitic andesite dykes (Unit AND) cut all units. These dykes are typically very narrow and comprise plagioclase and hornblende with accessory magnetite and calcite amygdales. They are likely to be steeply-dipping or subvertical and appear to be coincident with narrow zones of faulting and clay±sericite alteration, particularly along dyke contacts.

Photo 7-3: **AND Unit**

These various intrusive phases intrude Hazelton Group volcanic and sedimentary rocks; comprising dominantly subaerial medium to coarse-grained andesitic lapilli tuffs (Units ANTF and ANLT) and lesser flows (Unit ANDF), breccias and volcaniclastic sediments (Unit GRWK). Minor shale (Unit SHAL), siltstone (Unit SLST), chert (Unit CHRT) and limestone (Unit LMST) are also present. Outside the area influenced by the quartz diorite and Berg Stock, the Hazelton Group rocks vary from dark grey to grey-green, purple and red with obvious textures and bedding (Technical Report Mineral Resource Estimate, 2008).

Mapping and sampling results to date suggest the Serenity-Tahtsa South area could be the top of a porphyry system that is spatially related to the north-south trending Boundary Stock (Eocene); however, the target area lacks a prominent limonite-jarosite zoned gossan as seen in the upper parts of the Berg deposit, 6 km to the north along trend. The Bergette target area lies within the Sibola Stock (Late Cretaceous) about 10 km east of the Berg deposit within a parallel N-S oriented regionally anomalous aeromagnetic trend (Assessment Report, 2018).

Figure 7-2: Local Geology Map of the Berg Deposit



7.2.1 Structure

Structures at the deposit consist of poorly developed open folds with north to northeast axial trends causing local dips of 10° to 30°. Fractures and Miocene basalt dykes parallel this structural trend that may have acted as the principal structural control for the emplacement of intrusions in the area. This relationship is supported by the pronounced elongation of the quartz diorite intrusion (Harris and Stubens, 2008).

Presence of QFP dykes are possibly hosted within steep northeast-trending structures which may represent early mineralization related conduits or be strictly post-mineralization. Numerous post-mineralization dykes, such as the QFP have been logged in drill core. Geophysical surveys over the deposit do not suggest that there are any major dislocating faults which transect the Berg deposit, however, little work has been completed to characterize local deposit scale structure.

7.2.2 Alteration

At hand-specimen scale the quartz diorite, comprising the intrusive body into the Hazelton and Skeena Group of the Berg Property, is fine-grained and pale grey or dark grey-brown where hornfelsed or biotite-altered. This unit is a fine-grained rock consisting of plagioclase, hornblende, biotite and quartz overprinted by biotite, chlorite and minor epidote alteration. Where the quartz diorite is mineralized, quartz veining, chalcopyrite, pyrite and molybdenite are present in association with biotite alteration. This grades outwards into biotite-chlorite±epidote alteration with pyrite overprinting primary magnetite. A well-developed thermal aureole up to 120 m wide occurs on both sides of the intrusion and into Hazelton Group andesitic rocks in the deposit area. The western contact of the quartz diorite and Hazelton Group andesitic rocks is subvertical and diffuse in nature in the deposit area due to the nature of the hornfelsing and overprinting alteration. Hornfelsed rocks are typically brownish purple due to the abundance of secondary biotite.

Within the alteration aureoles of the various intrusive phases, primary textures are largely obscured, or rocks are recrystallized and dark grey or brown in colour. Relict clasts and phenocrysts are locally recognizable within the alteration halos. This succession strikes roughly north and dips shallowly to moderately to the east and is tops-up.

Alteration and mineralization at Berg is localized in and adjacent to the quartz monzonite Berg Stock. Hydrothermal alteration zones are spatially related to the central quartz monzonite stock and extend up to 1000 m from the intrusive contact. Alteration types are divided into potassic, phyllic, argillic and propylitic facies whose diagnostic mineral assemblages vary with lithology. Potassic alteration is expressed as pervasive orthoclase alteration in unit QMP, orthoclase on fracture/veinlet selvages and pervasive fine-grained biotite in the matrix of the PBQP, and pervasive fine-grained biotite alteration and replacement of mafic minerals in the quartz diorite and andesite. A subzone of biotite alteration with anhydrite veining lies proximal to the inner contact of this biotite-altered one against the Berg Stock. This phase of alteration is also associated with the replacement of plagioclase phenocrysts in the Berg Stock.

A phyllically-altered zone is dominantly controlled by fractures with quartz and pyrite and is best developed in all units around the margins of the Berg Stock. Where fracture densities are greatest this fracture selvage-controlled alteration can be pervasive as in the QPP and in portions of the QMP. Similar to the biotite alteration zone, propylitic alteration is also concentrically zoned about the Berg Stock. A transitional zone of biotite-chlorite alteration lies inboard of a zone of chlorite-epidote-carbonate-albite as biotite decreases. Primary magnetite is also present, particularly within the biotite-chlorite zone, where not completely sulphidized to pyrite and chalcopyrite. Fracture-controlled retrograde chlorite-epidote-carbonate alteration is also present overprinting other alteration facies as the hydrothermal system collapsed. Chlorite, epidote, calcite and hematite are present in the late-mineral QFP dykes and carbonate-chlorite-sphalerite-pyrite veins are likely also related to this retrograde event (Technical Report Mineral Resource Estimate, 2008).

A cap of pervasive kaolinite-clay±silica (argillic alteration) overprints potassic and phyllic alteration within the supergene zone and is likely related to acidic solutions formed from the breakdown of pyrite (Technical Report Mineral Resource Estimate, 2008).

Thus far, a porphyry target has not been identified in the Serenity Valley, however, two targets have been identified based on alteration and mineralization mapping. These targets sit at the headwall of the Bergeland Valley and at the confluence of Tahtsa Creek and an unnamed creek draining the Tahtsa Valley (Assessment Report, 2018).

7.2.3 Mineralization

Mineralization is related to hydrothermal activity associated with the intrusive granitic bodies of the Berg Stock and consists of both polymetallic vein and porphyry styles. Such mineralization is extensive throughout the region, and similar examples of both vein and porphyry systems have been mined within several kilometres of the Property boundary, including at the Emerald Glacier (polymetallic veins) and Huckleberry (porphyry) mines.

Mineralization at the main Berg deposit is localized in and adjacent to the two Eocene intrusions in the area; quartz diorite and quartz monzonite of the composite Berg Stock. Three phases of porphyry mineralization and their relative ages were identified during relogging in 2017 of 1,555 m of drill core collected from the 2011 campaign. The relogging program concluded that cross-cutting vein relationships and the distribution of alteration assemblages identified at least three porphyry intrusion events (QPP-P1, PBQP-P2, and QMP-P3) despite their similar mineralogy. QPP-P1 is strongly altered, with only relict phenocrysts and contains the highest vein density of all the porphyry bodies. PBQP-P2 is also altered, but to a lesser degree, and has lower vein density. QMP-P3 hosts the fewest veins and is the least altered of the intrusive bodies within the Berg composite stock, and includes well preserved igneous biotite books. Previous logging had identified sericitic alteration within QMP-P3, with the 2017 relogging program suggesting this is instead supergene-related clay (2017 Assessment Report). The Berg Stock is the prime control on cooper-molybdenum mineralization at the Berg Property as the deposit forms an annulus around the stock. Mineralization occurs in a highly fractured zone superimposed on hornfelsed Hazelton Group andesitic volcanic rocks, the adjacent quartz diorite intrusion, and, to a lesser degree, the Berg Stock (Figure 7-2) (Harris and Stubens, 2008).

Copper and molybdenum mineralization (photo 7-4) occur primarily in potassically-altered rocks related to the earlier phases of the Berg Stock (QPP-P1 and PBQP-P2), with most hypogene mineralization occurring in several generations of quartz-sulphide veins. The earliest veins appear to be the most copper- and molybdenum-rich. Associated alteration envelopes are either potassic or non-existent, implying equilibrium with the potassically-altered wall rocks. Later veins are typically poor in Cu ± Mo sulphides and are associated with phyllic and propylitic alteration assemblages. Calcite ± gypsum ± quartz-sphalerite-pyrite ± galena veins are a common late vein type and contain up to 1,020 gpt Ag. This argentiferous mineralization is particularly prevalent within the PBQP-P2 in the West Shell and to a lesser extent with PBQP-P2 in the North Shell.

Photo 7-4: Typical Copper and Molybdenum Mineralization

A well-developed supergene enrichment blanket is developed above the hypogene mineralization and is subdivided into three mineralogically distinct zones: (1) supergene sulphide (covellite, chalcocite and digenite), (2) supergene oxide (malachite/azurite, cuprite, tenorite and native copper) and (3) leached capping. The presence or absence of these zones is determined by several factors including fracture intensity, abundance of hypogene sulphide and topography. Topography has the greatest effect on supergene profile development. Three different profiles corresponding to ridge-top, slope and valley floor environments are recognized (Neilsen, 2017). In the ridge-top environments the supergene profile is complex, consisting of a strong leached and oxidized zone underlain by a thick but poorly enriched supergene sulphide zone. In the valley floor environments, where the water table is at or close to the surface, leaching is minimal and fresh hypogene minerals occur at surface. The most complex profile is developed on steep slopes, where highly variable water table levels and a high rate of ground water migration have coupled to produce a strongly enriched supergene sulphide zone overlain by a zone of supergene oxide. The boundary between the supergene and underlying hypogene zones can be commonly, but not consistently defined by the upper limit of gypsum fracture-filling. Supergene oxide mineralization is also strongly developed on the margins of, and commonly within, post-mineral andesite dykes where they transect the supergene zone. The chemical contrast of the carbonate-bearing andesite dykes and the QFP dykes with the acidic cupriferous leachate appears to have resulted in the precipitation of the supergene oxide minerals, chiefly tenorite, malachite and azurite. Supergene mineralization is less commonly present on the QFP dyke contacts.

Photo 7-5: Supergene Mineralization

8.0 DEPOSIT TYPES

(The following has been extracted from Nielsen, 2017)

The Berg deposit is a classic calc-alkaline copper-molybdenum porphyry deposit of Eocene age. These deposits are typically associated with commonly zoned and/or multi-phase granodiorite to quartz monzonite intrusions and volcanic or sedimentary country rocks. These deposits are marked by complex alteration zones that are usually centered about the intrusive complex. The alteration systems are typically comprised of a potassic core enveloped by an overlapping peripheral zone of propylitic alteration. These alteration assemblages can be overprinted by zones of phyllic and/or argillic alteration that are either zonal in distribution (between the potassic and propylitic zones) or structurally-controlled.

Copper and molybdenum mineralization are more abundant in the potassic core while pyrite is more prevalent in the propylitic and phyllic zones. The abundance of pyrite in these systems can result in the formation of strongly acidic groundwaters that, under appropriate climactic conditions, generate argillically-altered leached caps and supergene Cu mineralization. Ore mineralization consists of: chalcopyrite, chalcocite, covellite, digenite, bornite, molybdenite and locally Cu oxide minerals. The sulphides are hosted in quartz veinlet stockworks, veins, breccias, disseminations and replacements. The oxides are found close to surface in the Leached Cap and Supergene Zones.

9.0 EXPLORATION

No exploration has been completed on the Berg property by Surge Copper. Significant exploration which has been undertaken historically by previous operators is presented below.

9.1 Previous Operator Exploration 2011-2020

9.1.1 Berg

In 2014, TCM contracted UTM Exploration Services Ltd., of Smithers, BC to conduct a 21-day prospecting and sampling program of the Berg claims. The program involved predominantly expansive, wide reaching reconnaissance work on all of the "soon to lapse" peripheral claims surrounding the main Berg deposit. Approximately 24,939 hectares were acquired from 2011 to 2014 requiring ongoing active exploration. The design and intention of the 2014 program was to physically examine other areas that showed potential for new mineralization and extensions to known mineralization.

A 2015 surface exploration program was conducted by Equity Exploration Consultants Ltd. on behalf of Berg Metals. A crew of four people were on-site for approximately five weeks, and conducted geological mapping and rock, soil and silt sampling on eight separate zones outside the main Berg deposit.

In 2016 Equity Exploration Consultants were also retained to conduct field exploration at Berg. Work on the Property consisted of camp construction, 17.4 line-km of Induced Polarization (IP) geophysical surveying, geological mapping, rock, soil and till sampling over approximately a four-week period.

In 2017 an exploration program at Berg was carried out by Equity under contract to TCM, between July 19 and September 11, 2017. The program was spilt into three phases. The first phase comprised a review of Berg core to determine if further exploration work was required at the deposit. The second phase comprised geological mapping of the Tahtsa-Serenity map area by a crew of three people (refer to Section 9.3). A small camp (Tahtsa Camp) was established in a south-facing alpine cirque at the foot of the southern spur of Mt. Ney, referred to as "Tahtsa Valley" for the Tahtsa-Serenity mapping. This camp was taken down September 6, 2017. The third phase consisted of evaluating regional magnetic anomalies, through focused geological mapping and prospecting. Where feasible, the geological mapping of the Tahtsa and Serenity Valleys proceeded on foot, with the more outlying areas accessed by helicopter.

Additionally, a mineralogical program consisting of 237 samples were analyzed by Terraspec from various locations around the Berg Property and a targeted magnetic susceptibility program on 253 samples was completed to characterize the various lithogies and alteration styles observed on the property (Nielson, 2017).

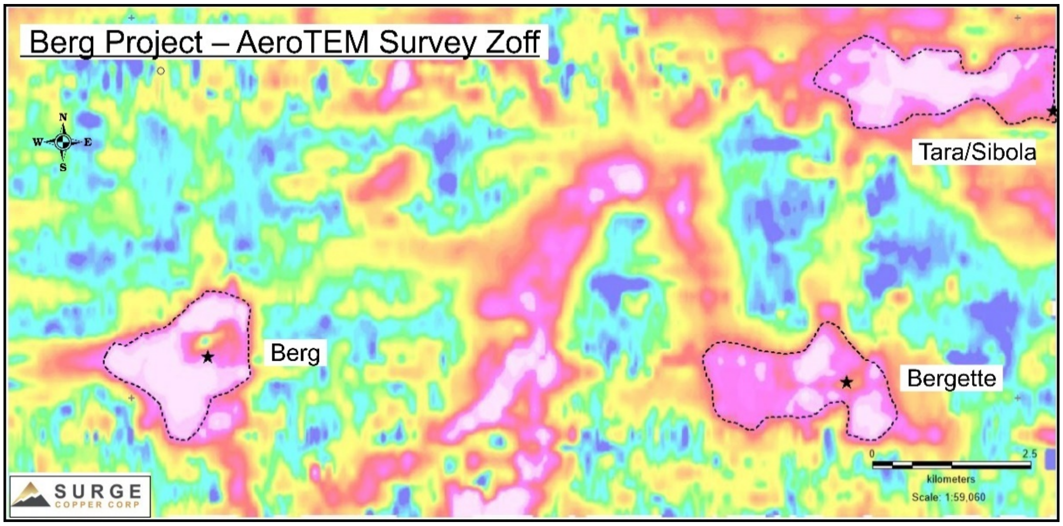
9.2 Other Mineral Prospects and Showings

9.2.1 Bergette

Surge Copper has recently consolidated the claim holdings over the Bergette Prospect (Figure 4-2) so the target can now be evaluated as a whole, under one ownership structure. Bergette is currently the most extensively explored area on the entire Berg claim block outside the main Berg deposit itself. Exploration conducted prior to 2010 for the prospect is described in Section 6.1, and work completed by TCM is described below.

An airborne AeroTEM III survey flown over the Berg and Bergette areas in 2010 shows Bergette has a similar size resistivity response (Z1-Off) as the Berg deposit (Figure 9-1 below). The Tara/Sibola prospect to the north of Bergette also shows a very prominent anomaly in the airborne survey.

Figure 9-1: Data from a 2010 airborne Aerotem III survey showing Z1-Off results (in nT/s).



Known mineralization at Bergette is hosted within a large (6 km²) gossan which itself contains a 4 km² copper in soil anomaly that remains open to the east. Most historic work and drilling occurred within two zone within the west side of the copper in soil anomaly, a Southern Zone and a Northern Zone. The eastern side of the copper in soil anomaly remains under explored.

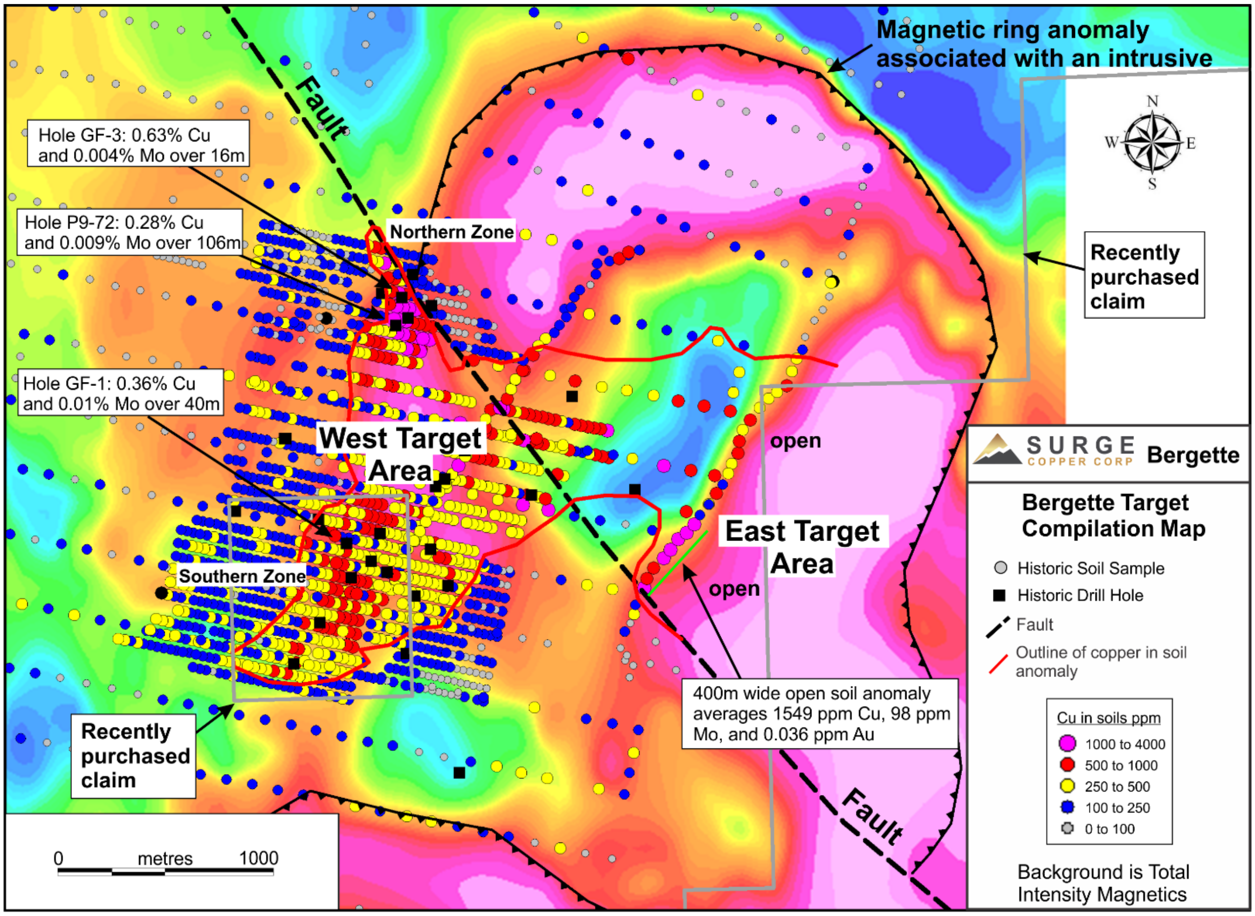
The Southern Zone is a fractured and vuggy breccia zone that is hosted by the Sibola Stock and healed/filled with gypsum, pyrite, molybdenite, chalcopyrite, pyrite, magnetite and epidote. This was the largest zone of mineralization defined by the historical drilling, and contains zones grading 0.3% Cu over tens of metres. The Northern Zone comprises sets of mineralized fractures that extend over a much larger part of the Sibola Stock and are responsible for much of the gossan in the area (Church, 1971). These fractures are typically filled with quartz, pyrite and chalcopyrite with rare occurrences of molybdenite and other copper sulphide minerals. Where these fracture sets are well-developed, they are associated with intervals, up to tens of metres thick, that consist of vein-hosted and disseminated copper sulphide minerals and mantled by barren country rock. For example, a 1972 percussion drill hole (P9-72, collared approximately 1 km north of the breccia zone within the Southern Zone; Table 7-1) returned 0.45% Cu over 12.2 m within a 64.0 m zone hosting 0.32% Cu. Highlights from percussion and diamond drilling conducted between 1971-1973 include 0.29% Cu over 70.1 m (GF #1), 0.24% Cu over 88.39 m (GF #4), 0.15% Cu over 203.76 m (GF #2), 0.74% Cu over 12 m (GF #3), 0.42% Cu over 30.48 m (P9-72) and 0.45% Cu over 12.2 m (P9-72). A compilation of significant historical drill results are shown in Table 9-1.

Table 9-1: Significant Historical Bergette Drilling Intercepts (Nielson, 2017)

Year	Hole ID	From (m)	To (m)	Interval (m)	Cu (%)	Mo (%)	Ag (oz/t)
1971	GF-1	170.69	240.79	70.10	0.29	0.011	0.02
1971	incl.	219.46	240.79	21.33	0.43	0.008	0.02
1971	GF-2	5.49	209.25	203.76	0.15	0.003	0.02
1971	incl.	45.72	76.20	30.48	0.2	0.002	0.02
1971	incl.	176.78	182.89	6.10	0.34	0.003	0.02
1971	GF-3	36.58	48.77	12.19	0.74	0.005	0.04
1971	GF-4	106.68	195.07	88.39	0.24	0.012	0.03
1971	incl.	106.68	112.78	6.10	0.38	0.001	0.02
1971	incl.	152.4	195.07	42.67	0.34	0.020	0.04
1972	P2-72	45.72	51.82	6.10	0.12	0.044	-
1972	P2-72	67.06	70.10	3.04	0.26	0.009	-
1972	P9-72	6.10	70.10	64.00	0.32	0.010	-
1972	incl.	18.29	48.77	30.48	0.42	0.010	-
1972	incl.	39.62	48.77	9.15	0.54	0.008	-
1972	P9-72	100.58	112.78	12.20	0.45	0.011	-
1972	P11-72	45.72	54.86	9.14	0.25	0.005	-

Recent compilation work shown in Figure 9-2 shows a prominent magnetic ring structure at Bergette that has been truncated by a northwest trending fault. This fault also offsets and divides the Bergette copper in soil anomaly into a West Target area and an East Target area. The West Target area is well constrained by historic soil sampling whereas the East Target area remains open for expansion and has seen no historic drilling. The East target area contains a 1.25 km long copper in soil anomaly that is open to the east and includes a 400m wide section with soil values averaging 1549 ppm Cu, 98 ppm Mo, and 0.036 ppm Au. This zone of very high Cu in soils correlates well with a magnetic high interpreted to represent the eastern contact of the Sibola Stock (inner part of the magnetic donut shaped feature). The presence of high copper in soils corresponding with the projected contact of the intrusion, makes for an excellent target for “contact style” mineralization within wallrocks adjacent to the main stock, such as that seen at the Berg, Huckleberry, and Ox deposits.

Figure 9-2: Compilation Map of the Bergette Target showing copper in soil values and historic drill hole collars overlain on airborne total intensity magnetics.



9.2.2 Tahtsa Range, Serenity

The Tahtsa Range Showing (093E 007) lies just over 4 km to the south-southeast of the Berg deposit (Figure 4-2) and was historically reported to be a series of northeast-trending, steeply-dipping quartz veins with pyrite, chalcopyrite, galena, specular hematite and trace amounts of gold (Duffell, 1957). Historical work conducted in this area prior to 2014 has documented presence of Cu-Zn +/- Ag grades unreproduced occurrence of Au mineralization from a northeast-trending and steeply-dipping vein systems with rock samples in the northwestern area known as the Saddle Showing up to 1.2% Cu, 1.8% Zn and 269 gpt Ag (Hooper, 1984). Follow-up work in 2015 at this showing confirmed presence of polymetallic Cu-Zn-Pb-Ag-Au mineralization, and a broader geochemical anomaly with elevated Cu, Mo, Pb, Zn, Ag, Au, and Sb values (Swanton, 2015).

A silt sample collected as part of the QUEST-WEST project (Jackman, 2009) reported strongly anomalous Mo-Cu-Ag-Pb from the drainage south of the Tahtsa Range Showing.

Exploration conducted prior to 2010 for the prospect is described in Section 6.2, and work completed from 2011 to 2019 is described below.

As follow-up to historical work which identified Cu-Zn +/- Ag and possible gold mineralization, a prospecting and soil sampling was completed in the Tahtsa-Serenity area in 2015. Resampling of the “Saddle Showing” confirmed high grade mineralization with the best sample returning 13,140 gpt Ag, >20.0% Pb, 1.04% Cu, 6.20% Zn, and 5.72 gpt Au. Within the Serenity Cirque and northwest of the “Saddle Showing”, several rock grabs from northeast-trending and steeply-dipping polymetallic veins were collected containing up to 2.25% Cu and 1.23% Zn. To the south along the east-west trending creek, rock grabs from previously unsampled outcrops returned assay values from 100–1,220 ppm Cu. Contour soil sampling above the creek confirmed the presence of a copper-bearing hydrothermal system of unknown size and extent, revealing a 1.5 x 0.75 km zone of elevated Cu, Mo, Pb, Zn, Ag, Au, and Sb (Swanton, 2015).

Also, in 2015, a set of magnetite-epidote veins with isolated occurrences of chalcopyrite, extending over 300-400 m, were discovered approximately one kilometre north of the Serenity Cirque, two and a half kilometres south of the Berg deposit, and within a couple hundred metres of the Berg access road. These veins are weakly anomalous in Cu (50–200 ppm) and slightly enriched in As and Zn (100–300 ppm and 50–70 ppm, respectively). Though the metal contents of the veins are low, they may represent a distal part of the Berg porphyry system or another center of mineralization (Swanton, 2015).

In 2016 a limited campaign of prospecting was conducted in various areas within the Tahtsa-Serenity drainage system (Branson and Guestrin, 2016). This mapping defined a ~1000 m gossan zone centered on the confluence of Tahtsa Creek and the south-flowing unnamed creek that originates in the Tahtsa cirque. Rock and soil samples from this area returned anomalous Au, Cu, and Mo. The Saddle showing was visited but not sampled, as this had been done the previous year (Swanton, 2015).

In 2017, Equity on behalf of TCM, undertook a geological mapping program of the Tahtsa-Serenity area with the aim of investigating the magnetic anomaly surrounding the Serenity Valley and the argentiferous veins at the Tahtsa Range showing. The program concluded that the magnetic anomaly is likely related to topographically high magnetic intrusive rocks and adjacent hornfelsed sedimentary rocks. The argentiferous veins at the Tahtsa Range were found to be subvertical and NNE-striking (10- 30°), which Nielson (2017) concluded is not compatible with the hypothesis that these veins are porphyry-related D-veins (Branson and Guestrin, 2016; Swanton, 2015).

9.2.3 Lead Empire, Set, Lost, Ice

The Lead Empire area was prospected during the 2016 field program with no significant results (Branson and Guestrin, 2016).

A description of prior exploration on this prospect is described in Section 6.3.

9.2.4 CS South, Tara, Slide

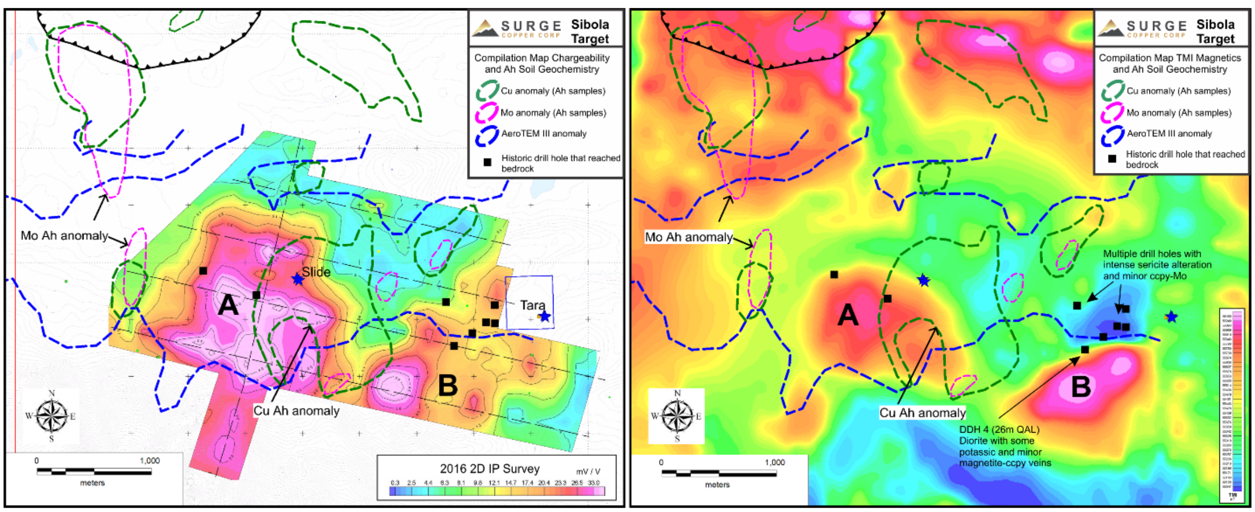
In 2015, a total of 454 Ah horizon soil samples were collected in the CS South area and three distinct multi-element anomalies were identified, with the largest approximately 3.0 x 0.75 km in size. Further work was recommended due to its proximity to an airborne-detected conductor with a similar response to the Berg deposit (Swanton, 2015).

In 2016 a single prospecting and mapping traverse was carried out in the CS South area. No significant mineralization was encountered (Branson and Guestrin, 2016). A 17.4 line-km IP survey was completed in the CS South zone to follow-up on three distinct multi-element geochemical anomalies from Ah sampling completed in 2015 (Swanton, 2015). Four roughly east-west lines were initially completed and produced a high chargeability and low resistivity response. As a result, a fifth north-south cross-line was surveyed to define the center of the response and better characterize the anomaly. The anomaly was determined be 1,500 m x 1,000 m and at least 400 m in depth, dipping to the east and centered at 614,045 mE, 5,966,380 mN. The anomaly is coincident with an oval shaped 1,300 m x 900 m high magnetic and EM response from a helicopter-borne survey completed in 2010 (Branson and Guestrin, 2016).

Geophysical data and limited historic drilling suggest the Slide and Tara targets are related to the same large porphyry related alteration system, and collectively this zone is referred to as the Sibola Target. Limited historic drilling shows the target area is covered by 4 to 50 metres of overburden with multiple drill holes hitting intense sericite alteration with or without pyrite-chalcopyrite-molybdenite, and minor secondary potassium feldspar, biotite, and magnetite.

A compilation map of the Sibola Target is shown in Figure 9-3. An IP survey over the area shows a 2 km by 2 km chargeability anomaly that is open to the south. Two prominent magnetic highs correspond with zones of high chargeability (labeled A and B on the Figure) and remain largely untested. The nearest drill hole to target B intersected altered diorite with patchy zones of potassic alteration and magnetite-chalcopyrite veinlets, highlighting the potential of the target.

Figure 9-3: Compilation Maps of the Sibola Target. Left induced polarization chargeability with historic drillholes, the outline of the AeroTEM airborne geophysical anomaly, and anomalous Ah soil geochemistry. Right, total magnetic intensity airborne magnetics.



9.2.5 Sky, Rhine Ridge

The Sky Showing (MINFILE 093E/098) occurs in the south-eastern corner of the Berg Property, 10 km northwest of the Huckleberry Mine (Figure 4-2). It is marked by an extensive gossan related to a swarm of porphyritic quartz monzonite to granite dykes and intrusive bodies, which were emplaced into sedimentary and volcanic rocks of the Cretaceous Skeena Group (Harrison, 1989). The gossan is the result of widespread pyritic alteration along the contacts of these dykes in association with arsenopyrite. Anomalous copper, silver, lead and molybdenum mineralization has been observed from rock sampling (Pardoe, 1988) with some sporadic gold mineralization noted in soils.

In 2015 a soil and prospecting grid was sampled several hundred vertical metres below the Sky showing. Prospecting and soil sampling on the lower portion of the grid showed no evidence of mineralization. The upper portion however hosts a 2 km long soil anomaly directly downslope from the veins of the Sky Showing. Follow-up work was recommended to fill in the gap between the 1988 and 2015 sampling areas (Swanton, 2015).

Sampling on Rhine Ridge in 2015 returned moderately anomalous Cu-Pb-Zn values (>100 ppm in select samples) and follow-up work was recommended (Hutter et al., 2014).

A description of historical exploration on this prospect is described in Section 6.6.

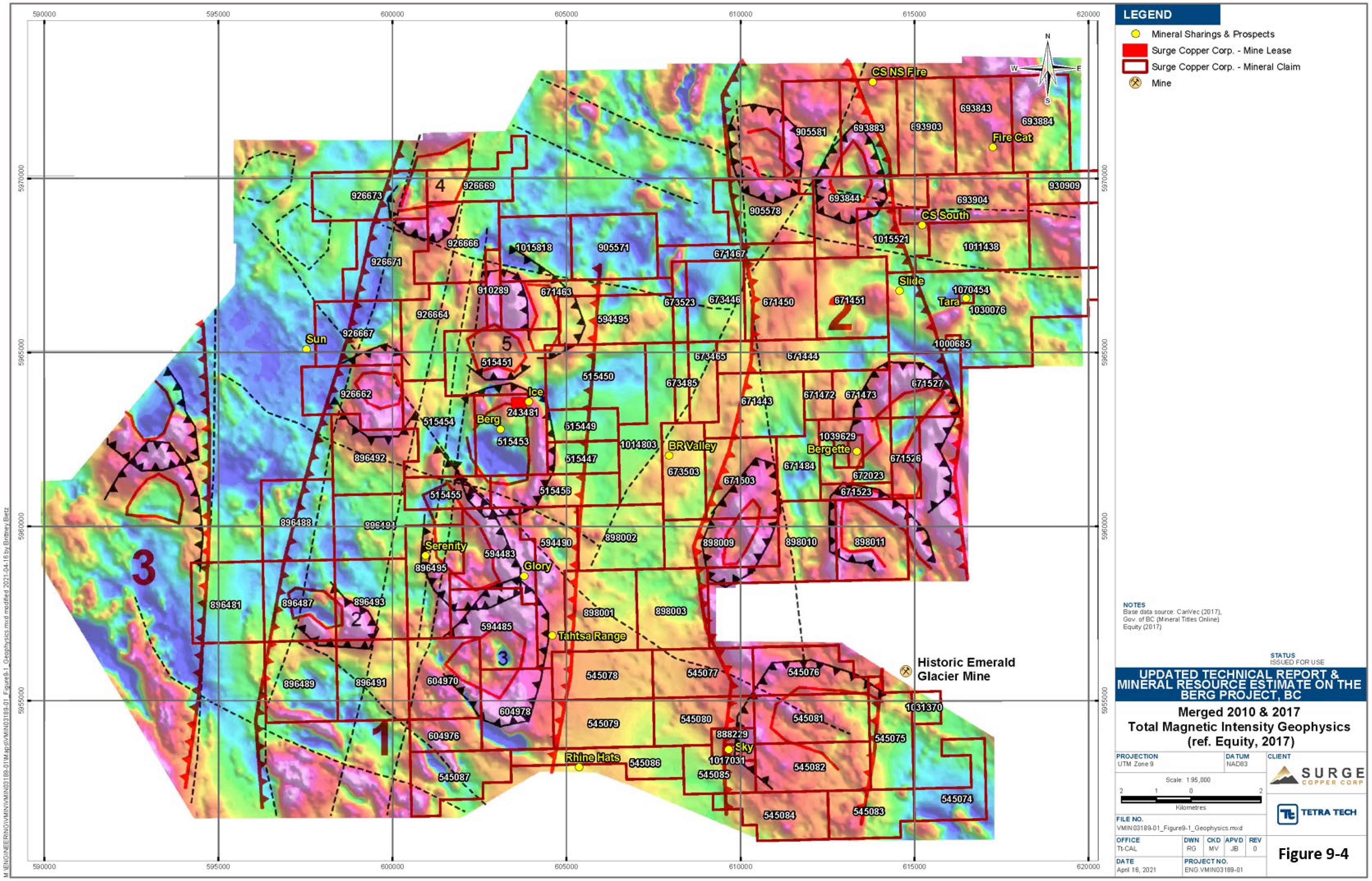
9.2.6 Other Work

Terrane Metals conducted an airborne geophysical (magnetic and EM) survey in 2010 over an area of ~130 km² covering what is now the east-central portion of the current Property. The survey encompassed the Berg, Bergette, BR Valley and CS South areas as they are defined in the current report. Results of the survey showed a clearly defined conductivity anomaly over the Berg deposit, with similar anomalies in the Bergette and CS South areas. In addition to the broad conductors defined over these zones, several strong linear conductors were identified paralleling both the BR Valley and the unnamed valley to the east (Labrenz, 2010).

During March 3 to 12, 2017, Geotech Ltd., carried out a helicopter-borne geophysical survey over the Berg Property that extended the coverage completed in 2010 over the Berg Property. The survey results were merged and levelled with the 2010 coverage (Figure 9-4).

In the summer of 2017, Equity, on behalf of TCM, conducted a regional target evaluation program which investigated 13 magnetic anomalies from the aeromagnetic survey completed earlier in 2017. Two targets were interpreted to be most prospective for follow-up work, these being: target 12 (target had not been named in 2017 Assessment report) consisting of an altered pyritic diorite which is cross-cut by quartz-molybdenite veinlets; and, targets 3/4/6 (Bergette) which form a cluster of low magnetic anomalies and strong limonitic alteration.

Figure 9-4: Merged 2010 and 2017 Total Magnetic Intensity Geophysics (ref. Equity, 2017)



10.0 DRILLING

No drilling has been completed on the Berg property by Surge Copper. Significant historical drilling has been undertaken on the project, and is presented below.

10.1 Previous Operator Drilling

10.1.1 Berg Deposit Drilling Summary

Previous drill programs on the Property have been carried out by Kennecott (1964-1971), Sierra Empire (1972), Placer Dome (1972-1980), Terrane (2007-2008), and Berg Metals (2011). A summary of the drilling completed on the current Berg deposit area to date is shown in Table 10-1.

Table 10-1: Summary Drilling – 1964 - 2011

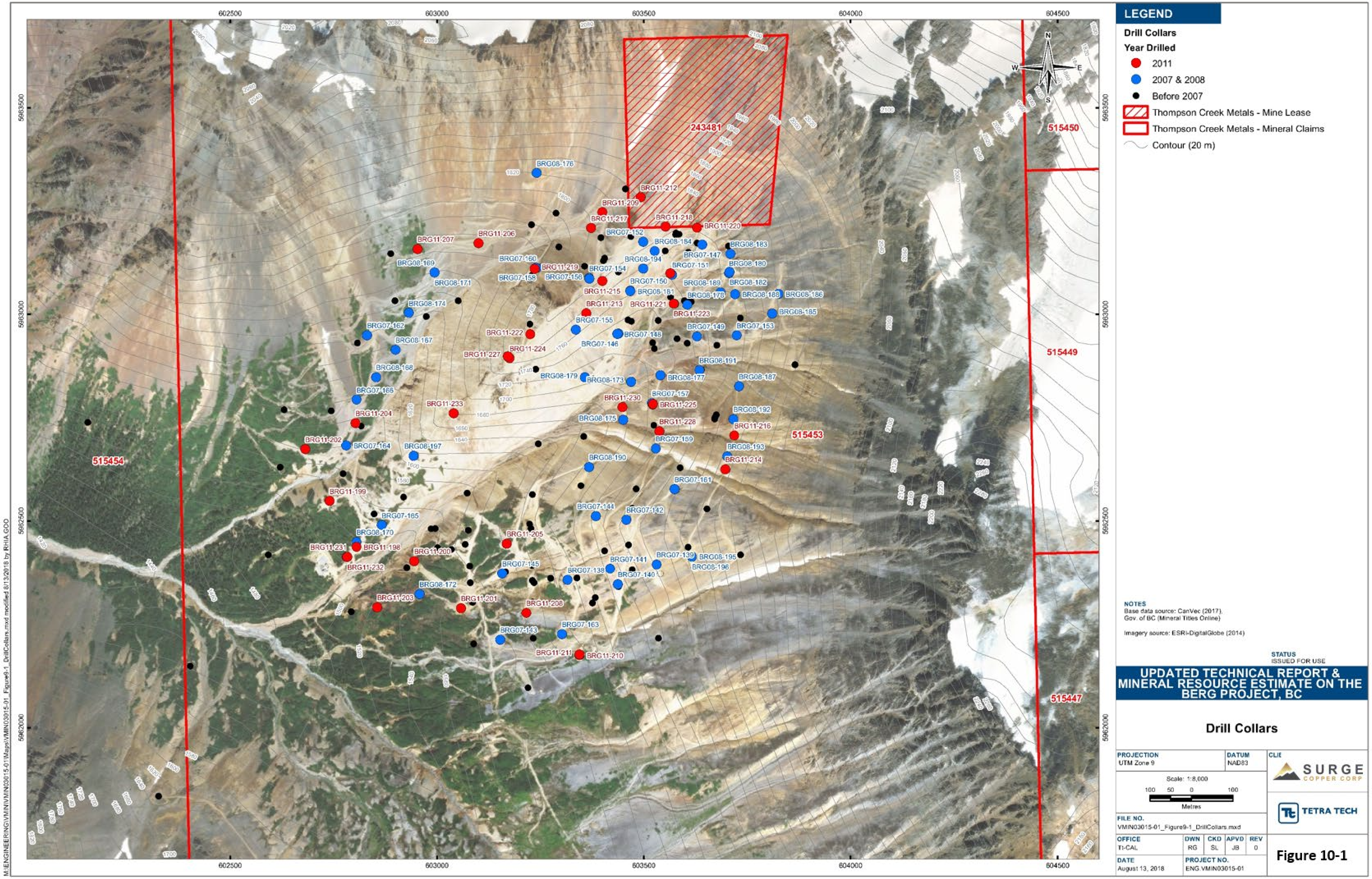
Company	Date	No. of Holes	Total Metres	Core Size	No. of Samples	Deposits/ Zones	Status for Resources Estimate
Kennecott	1964	7	969.71	NX	297		
Kennecott	1965	6	1,236.14	BX	374	Berg, NE, S	Two drillcores not used (10, 11)
Kennecott	1966	10	1,680.20	NQ	534	Berg, NE, S	
Kennecott	1967	22	3,324.95	NQ	995	Berg, S	Two drillcores not used (63, 65)
Kennecott	1971	3	664.77	NQ	202	Berg, NE	
Sierra Empire	1972	10	1,463.65		499		
Placer Dome	1972	14	3,465.24	NQ	1,011		
Placer Dome	1973	12	3,313.02	NQ	986		
Placer Dome	1974	19	1,843.75	PQ	583		
Placer Dome	1975	8	1,067.39	PQ	339		
Placer Dome	1980	8	1,099.08	HQ	330		
Terrane	2007	29	11,288.90	HQ, NQ	5,347	Berg Stock, NE S, and W	
Terrane	2008	31	11,659.61	HQ, NQ	5,841		
TCM	2011	36	10,677.64	HQ, NQ	6,140	Berg, NE	Holes, lithologies and assays included
TOTAL		215	53,754.05	-	23,478		

10.1.2 Thompson Creek Minerals Drilling – 2011

TCM undertook an extensive drilling program on the Berg property from July to October 2011, to advance from prior exploration and drilling programs that had occurred between 1964 and 2008 (Figure 10-1). In 2011, a total of 36 inclined drillholes totaling 10,677.6 m were completed with the purpose to increase the drilling density present at the Berg Deposit, confirm historical assay grades, and test prospective areas outside the limits of previous drilling.

Diamond drilling was subcontracted to Apex Diamond Drilling Ltd., of Smithers, BC, who provided two skid-mounted drills, a Zinex A-5 and a Hydracore 2000. Geotechnical logging included recovery, RQD, magnetic susceptibility, specific gravity, discontinuity characteristics, uniaxial compressive strength (including point load testing) and weathering grade. This drilling has better defined the geometry of the Berg Stock which is one of the main controls on mineralization.

Figure 10-1: Drill Collars



10.1.3 Logistics

10.1.3.1 Drillcore Records

All 2011 drillcore is being stored in a cold storage warehouse facility in Prince George to allow access for metallurgical testing. All logs and analytical results are reported in the 2011 Annual Assessment Report (Harris, 2012) and have been compiled into a digital database. Tetra Tech merged the 2011 data into the pre-existing drillhole database which contained data up to and including the 2008 drilling results.

10.1.3.2 Drill Collar Surveys

A magnetic declination of 19°30’E was used for all orientation and compass measurements. Casings were removed, and hole collars were marked with 4” by 4” post and surveyed by McElhanney Consulting Services Ltd., of Smithers, BC, using a differential GPS system. All holes were surveyed with a Reflex downhole survey instrument.

Photo 10-1: Shows a typical collar marker from the 2011 drilling campaign (BRG11-215)

10.1.3.3 Significant Intercepts in Drillcore

Significant intersections in the northeast, south, and west zones of the Berg Property are summarized in Tables 10-2 through 10-4, in the Assessment Report prepared by Equity Exploration Consultants Ltd., in 2012.

In 2011, 14 holes were drilled into the Northeast Zone area to infill previous drilling. Significant intersections from 2011 drilling in the northeast zone are summarized in Table 10-2 (Equity Exploration Consultants Ltd., Report, 2012).

Table 10-2: Significant Intersections in the Northeast Zone of the 2011 Drilling Program

Hole	From (m)	To (m)	Sample Length (m)	Cu (%)	Mo (%)	MoS_2 (%)	Ag (gpt)	Comment
BRG11-209	13.2	64	50.8	0.181	0.005	0.008	2	Supergene Zone
	49	82	33	0.211	0.008	0.013	2	Supergene/Hypogene Zone
BRG11-212	12	111.5	99.5	0.195	0.006	0.01	4.2	
	12	36.54	24.54	0.227	0.007	0.012	2	Supergene Zone
BRG11-213	15	359.36	344.36	0.277	0.048	0.081	4.1	Entire hole
including	15	142.57	127.57	0.303	0.016	0.027	3.7	Supergene Zone
	142.57	337.5	194.93	0.263	0.071	0.118	4.2	Hypogene Zone
BRG11-215	54	404.16	350.16	0.41	0.031	0.051	8.3	
	54	134.35	80.35	0.557	0.036	0.06	13.9	Supergene Zone
including	55.5	84.48	28.98	1.02	0.035	0.059	29.4	
BRG11-215	134.35	313.31	178.96	0.403	0.033	0.056	8.1	Hypogene Zone
BRG11-216	41.5	119.63	78.13	0.483	0.008	0.014	10.5	Supergene Zone
	119.63	201	81.37	0.24	0.005	0.009	6.8	Hypogene Zone
BRG11-217	19.67	301.45	281.78	0.398	0.02	0.033	5.6	
including	19.67	92.2	72.53	0.417	0.017	0.029	4.3	Supergene Zone
and	92.2	193.32	101.12	0.447	0.024	0.041	6.5	Hypogene Zone
BRG11-218	9	105.5	96.5	0.255	0.011	0.019	5.9	
including	9	41.68	32.68	0.33	0.018	0.03	5.6	Supergene Zone
BRG11-220	9	111	102	0.216	0.006	0.009	2.8	
	9	68.15	59.15	0.254	0.006	0.01	3.7	Supergene Zone
BRG11-221	15	350.22	332.22	0.457	0.039	0.064	5.6	
including	15	132	114	0.581	0.025	0.042	5.4	Supergene Zone
and	132	233	101	0.5	0.046	0.077	6.7	Hypogene Zone
BRG11-223	27	178.31	151.31	0.499	0.017	0.029	4.8	Supergene Zone
BRG11-226	26.7	402.03	375.33	0.186	0.029	0.049	2.4	
including	26.7	68.3	41.6	0.293	0.009	0.015	1.9	Supergene Zone
and	155.14	226.02	70.88	0.233	0.036	0.061	2.5	Hypogene Zone
BRG11-228	33	294.56	261.56	0.35	0.035	0.058	5.3	
including	33	83.9	50.9	0.445	0.048	0.08	6.1	Supergene Zone
and	218.5	282.5	64	0.35	0.035	0.058	5.3	Hypogene Zone
BRG11-229	15.5	325.37	309.87	0.459	0.016	0.027	4.6	Entire hole

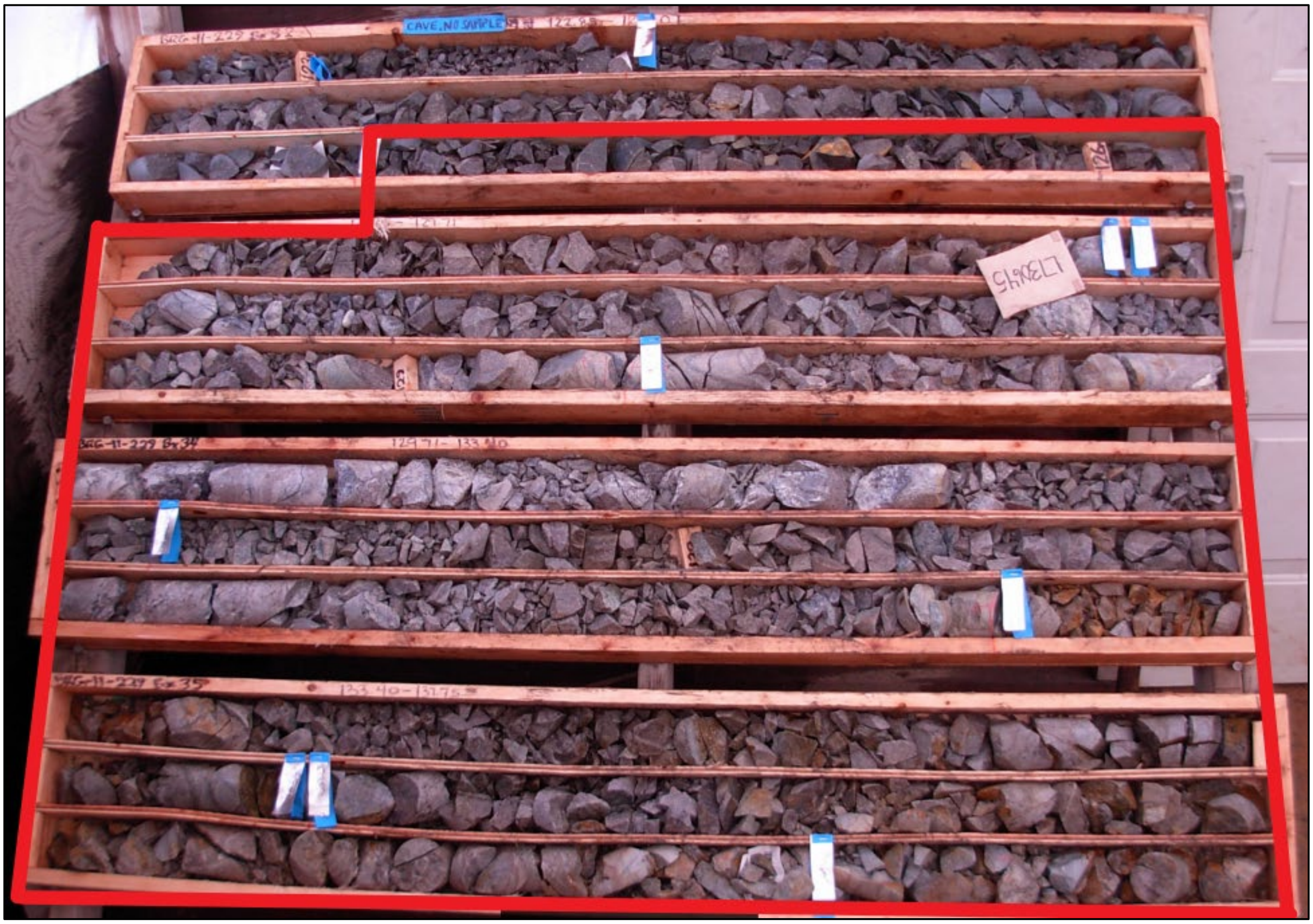
Table 10-2: Significant Intersections in the Northeast Zone of the 2011 Drilling Program

Hole	From (m)	To (m)	Sample Length (m)	Cu (%)	Mo (%)	MoS_2 (%)	Ag (gpt)	Comment
including	15.5	191.48	175.98	0.634	0.02	0.033	4.8	Supergene Zone
BRG11-230	10.6	350.52	339.92	0.182	0.033	0.054	3.3	Entire hole
including	10.6	33.8	23.2	0.308	0.009	0.015	2.1	Supergene Zone
and	225.02	350.52	125.5	0.206	0.064	0.106	4.4	Hypogene Zone

Drilling in the Northeast Zone has defined a generally subvertical contact for the PBQP of the Berg Stock and a subvertical contact for the quartz diorite. Pinched between these two intrusions is a 50 to 100 m wide wedge of andesite. The contact between the quartz diorite and the andesite can be difficult to demarcate due to the degree of pervasive biotite alteration in two relatively mafic units and a diffuse contact zone with partially-digested xenoliths or rafts of andesite within the quartz diorite. Late- to post-mineral QFP dykes in the Northeast Zone are likely related to, or hosted in, a steep northeast-trending structure that transects this area. Post-mineral andesite dykes are more prevalent in this zone and have been mapped striking south-easterly, although it is possible that they also follow the northeast-trend.

The Berg Stock strongly controls mineralization in the Northeast Zone with concentric and overlapping Cu and Mo shells wrapping around the stock for approximately 800 m. The inboard Mo shell varies from 150 to 200 m wide and extends from 50 to 100 m into the PBQP phase of the Berg Stock. The outer limit of significant Mo mineralization is roughly bounded by the quartz diorite contact but this is likely due to distance from the stock as opposed to the change in lithology. The Cu shell is approximately 300 m wide with the better grade material hosted within the andesite wedge and the quartz diorite, while the stock contact marks the limit of higher grade hypogene Cu mineralization. Supergene Cu mineralization, however is more prevalent in the stock and likely formed by downslope groundwater transport. The Cu shell is largely open outwards from the stock, although the eastern limits of the Northeast Zone are locally bounded by a phyllic envelope of bleaching and sericite±chlorite±epidote alteration with quartz-pyrite veining. Copper and molybdenum mineralization remain open to depth with significant mineralization defined from surface to 350 to 450 m depth throughout the zone, although hole BRG08-194 intersected Cu-Mo mineralization greater than 850 m below surface without defining a bottom.

Photo 10-2: Significant Intersection in Drillhole BRG11-229 in Northeast Zone, highlighting 14 metres grading 1.06% Cu, 0.016% Mo, and 0.13%CuOx from 125.25 to 139.25 metres (downhole)



Twelve holes were drilled in the South Zone of the Berg deposit in 2011. These holes were drilled to infill previous drilling. Significant intersections from 2011 South Zone drilling are summarized in Table 10-3 (Equity Exploration Consultants Ltd. Report, 2012).

Table 10-3: Significant Intersections in the South Zone of the 2011 Drilling Program

Hole	From (metres)	To (metres)	Interval (metres)	Cu (%)	Mo (%)	MoS2 (%)	Ag (gpt)	Comment
BRG11-198	7.50	39.50	32.00	0.187	0.014	0.023	3.1	Supergene Zone
	71.50	350.52	279.02	0.211	0.020	0.034	4.2	
including	174.50	311.43	136.93	0.235	0.024	0.041	4.5	Hypogene Zone
	239.33	311.43	72.10	0.261	0.025	0.041	6.2	Hypogene Zone
BRG11-199	77.67	349.30	271.63	0.186	0.035	0.059	4.7	Hypogene Zone
including	210.23	349.30	139.07	0.195	0.045	0.075	3.6	
BRG11-200	9.00	46.47	37.47	0.251	0.013	0.022	4.2	Supergene Zone
	92.93	251.46	158.53	0.258	0.024	0.040	6.8	Hypogene Zone
including	204.25	251.46	47.21	0.360	0.041	0.068	13.2	
BRG11-201	12.00	350.22	338.22	0.309	0.022	0.037	4.1	Entire hole
including	10.00	107.00	97.00	0.281	0.004	0.007	3.1	Supergene Zone
	204.31	251.22	46.91	0.467	0.032	0.053	8.3	Hypogene Zone
	309.13	350.22	41.09	0.309	0.022	0.037	4.1	Hypogene Zone
BRG11-203	117.00	450.80	333.80	0.195	0.027	0.045	4.4	Hypogene Zone
including	196.51	346.33	149.82	0.254	0.027	0.045	4.5	
and	196.51	240.08	43.57	0.326	0.015	0.025	5.4	
	316.33	450.08	133.75	0.149	0.047	0.078	5.0	
BRG11-205	33.10	224.67	191.57	0.388	0.043	0.071	3.4	Supergene Zone
including	33.10	83.00	49.90	0.627	0.069	0.116	4.9	
BRG11-208	12.00	350.52	338.52	0.278	0.020	0.033	5.2	Entire hole
	12.00	75.50	63.50	0.264	0.012	0.021	8.3	Supergene Zone
	24.70	193.76	169.06	0.294	0.021	0.035	5.5	Supergene/Hypogene Zone
	229.76	350.52	120.76	0.289	0.022	0.036	3.8	
BRG11-211	12.00	399.29	387.29	0.212	0.008	0.013	4.8	Entire hole
	12.00	77.00	65.00	0.159	0.002	0.004	3.1	Supergene Zone
	274.03	326.03	52.00	0.369	0.012	0.020	6.7	Hypogene Zone
BRG11-214	31.75	111.00	79.25	0.386	0.003	0.004	6.5	Supergene Zone
BRG11-232	95.55	285.63	190.08	0.208	0.019	0.032	5.1	
	366.91	493.47	126.56	0.289	0.036	0.059	5.9	Hypogene Zone

Drilling thus far has defined a complex contact geometry for the Berg Stock in the South Zone. The south-eastern contact of the stock between sections 3300 E and 3500 E largely dips to the south and away from the core of the stock. West of section 3300 E the contact is subvertical or dips inward towards the core of the stock. The central phase of the stock (unit QMP) is cut by a south-southeast trending keel of unit QPP in this area. The south-southeast trending keel is cored by PBQP and alteration patterns without a hard contact between the QPP and PBQP suggest that the QPP is an altered zone of the PBQP. This south-southeast trending keel is locally brecciated with clasts of andesite, QMP, quartz veins and dykes of QFP and QPP in a quartz monzonite matrix. This keel of QPP, the QMP and the andesite in this area are also cut by east-trending late- to post-mineral KQMP dyking.

The contact between the Berg Stock and the Hazelton Group andesites exerts the strongest control on concentric mineralization in the South Zone area. As in the Northeast Zone, an inner shell of Mo mineralization is overlapped by an outer shell of Cu mineralization. These shells wrap around the stock for approximately 900 m, are from 150 to 300 m wide and remain open to depth about 500 m below surface. Hypogene Cu grades are truncated at the Berg Stock while hypogene Mo grades partially overlap from 50 to 100 m into the stock. Significantly, 2011 drilling has extended mineralization to the southwest in this zone associated with the QPP and adjacent andesite in holes BRG11-198, -199 and -232. Hypogene and supergene Cu mineralization in the South Zone is still largely open and extends up to 250 m outward from the stock contact. In the south-eastern portion of the South Zone, mineralization is bounded by a phyllic envelope of bleaching and sericite alteration with quartz-pyrite veining. Supergene Cu mineralization is locally found above weak hypogene mineralization in the Berg Stock and has probably migrated downslope and from outside of the Berg Stock.

Photo 10-3: Significant Intersection in Drillhole BRG11-205 in South Zone, highlighting 18.4 metres of 0.87% Cu, 0.088% Mo, and 0.10% CuOx from 33.1 to 51.5 metres (downhole)

Five holes were drilled in the West Zone of the Berg deposit in 2011 to infill previous drilling. Significant intersections from 2011 drilling are summarized in Table 10-4 (Equity Exploration Consultants Ltd. Report, 2012).

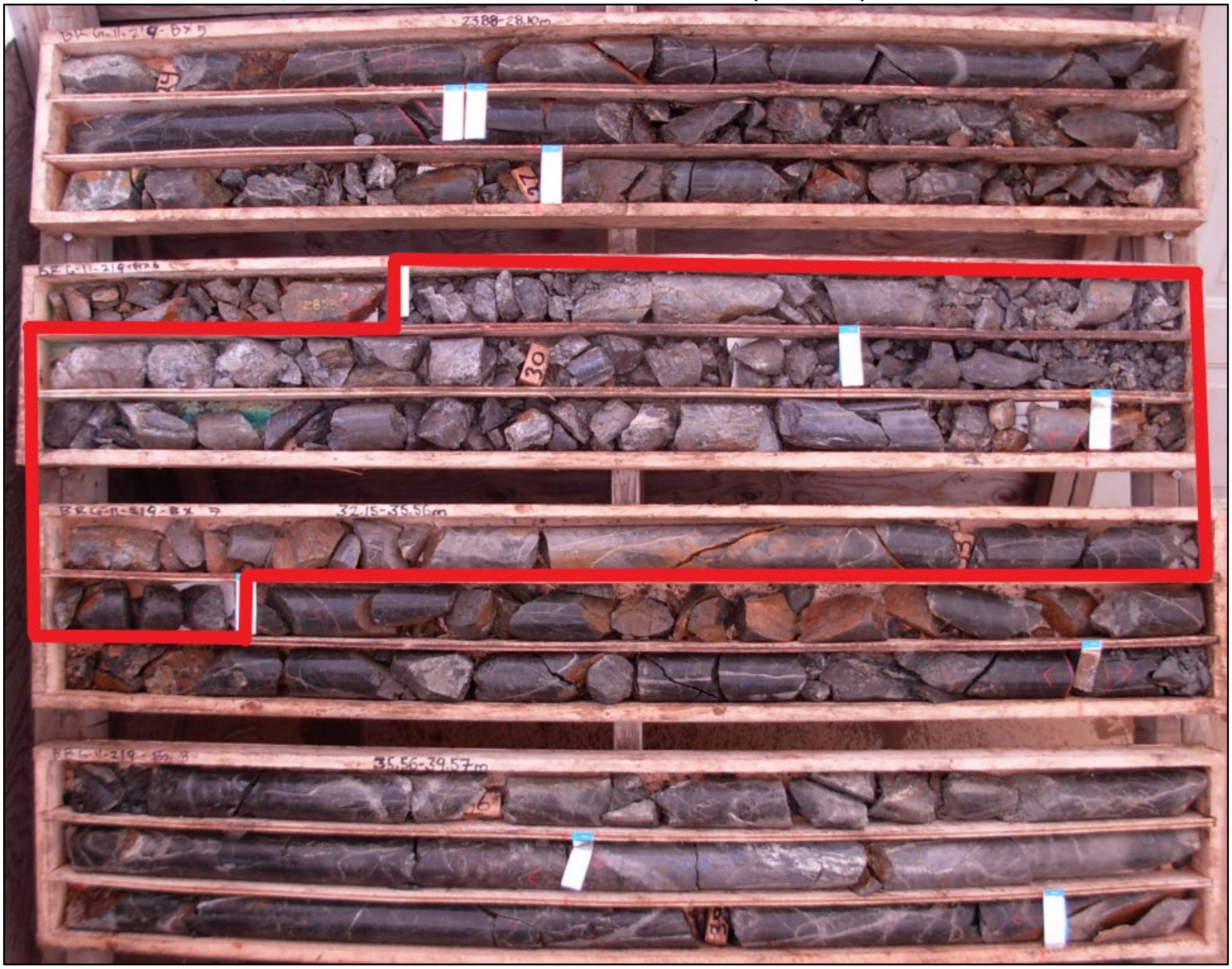
Table 10-4: Significant Intersections in the West Zone of the 2011 Drilling Program

Hole	From (metres)	To (metres)	Interval (metres)	Cu (%)	Mo (%)	MoS2 (%)	Ag (gpt)	Comment
BRG11-202	5.90	93.54	87.64	0.199	0.010	0.017	5.5	Supergene Zone
including	6.55	41.35	34.80	0.384	0.020	0.033	10.0	Hypogene Zone
	192.47	251.18	58.71	0.228	0.043	0.072	11.4	
	339.18	352.35	13.17	0.320	0.034	0.056	3.2	
BRG11-204	14.89	349.30	334.41	0.253	0.032	0.053	5.9	Entire hole
including	26.89	110.82	83.93	0.369	0.036	0.061	3.3	Supergene Zone
	197.00	311.29	114.29	0.291	0.039	0.066	9.9	
including	197.00	229.06	32.06	0.480	0.043	0.071	11.4	
BRG11-206	12.00	90.50	78.50	0.215	0.009	0.016	4.9	Hypogene Zone
BRG11-207	27.00	117.83	90.83	0.186	0.005	0.009	1.4	Supergene Zone
	162.87	349.91	187.04	0.248	0.023	0.038	3.8	Hypogene Zone
including	204.87	349.91	145.04	0.269	0.026	0.043	4.4	
BRG11-219	6.00	69.00	63.00	0.562	0.070	0.117	60.5	Entire hole

Drilling in the West Zone indicates that the contact between the Berg Stock and the Hazelton Group andesitic rocks is subvertical in nature. The West Zone is broadly bordered to the south by the subvertical QFP dyke complex. As in the Northeast Zone, the Berg Stock contact, which is defined by the PBQP, strongly controls hypogene mineralization in the West Zone with concentric Cu and Mo mineralization straddling the Berg Stock contact for approximately 650 metres. The Cu mineralization extends up to 50 m into the PBQP while the inner limit of the Mo shell stretches up to 120 m into the PBQP. The outer boundaries of the Mo and Cu shells are largely unconstrained, and the shells are at least 150 and 200 m wide, respectively extending up to 140 m away from the stock. Hypogene Cu and Mo mineralization also remain open to depth in the West Zone, continuing to at least 400 m below surface. Significant mineralization intersected in holes BRG11-202 and -204 indicate that mineralization is associated with the western extension of the QPP, akin to QPP-hosted mineralization in the South Zone.

The thickness of the supergene zone is quite variable in the West Zone ranging from a few tens of metres to over 150 m thick. The variability in thickness of the supergene zone suggests that there is a local structural control to the development of the supergene mineralization in the West Zone. Biotite alteration (biotite alteration is indistinguishable from biotite hornfels at the mesoscopic scale) within andesite is less well-developed in the West Zone. Also, of particular note is the abundance of significant Ag mineralization in this zone related to quartz-calcite-sphalerite-pyrite-specularite±galena veining.

Photo 10-4: Significant Intersection in Drillhole BRG11-219 in West Zone, highlighting 5.05 metres of 3.14% Cu, 0.342%Mo, and 0.07% CuOx from 28.33 to 33.28 metres (downhole)

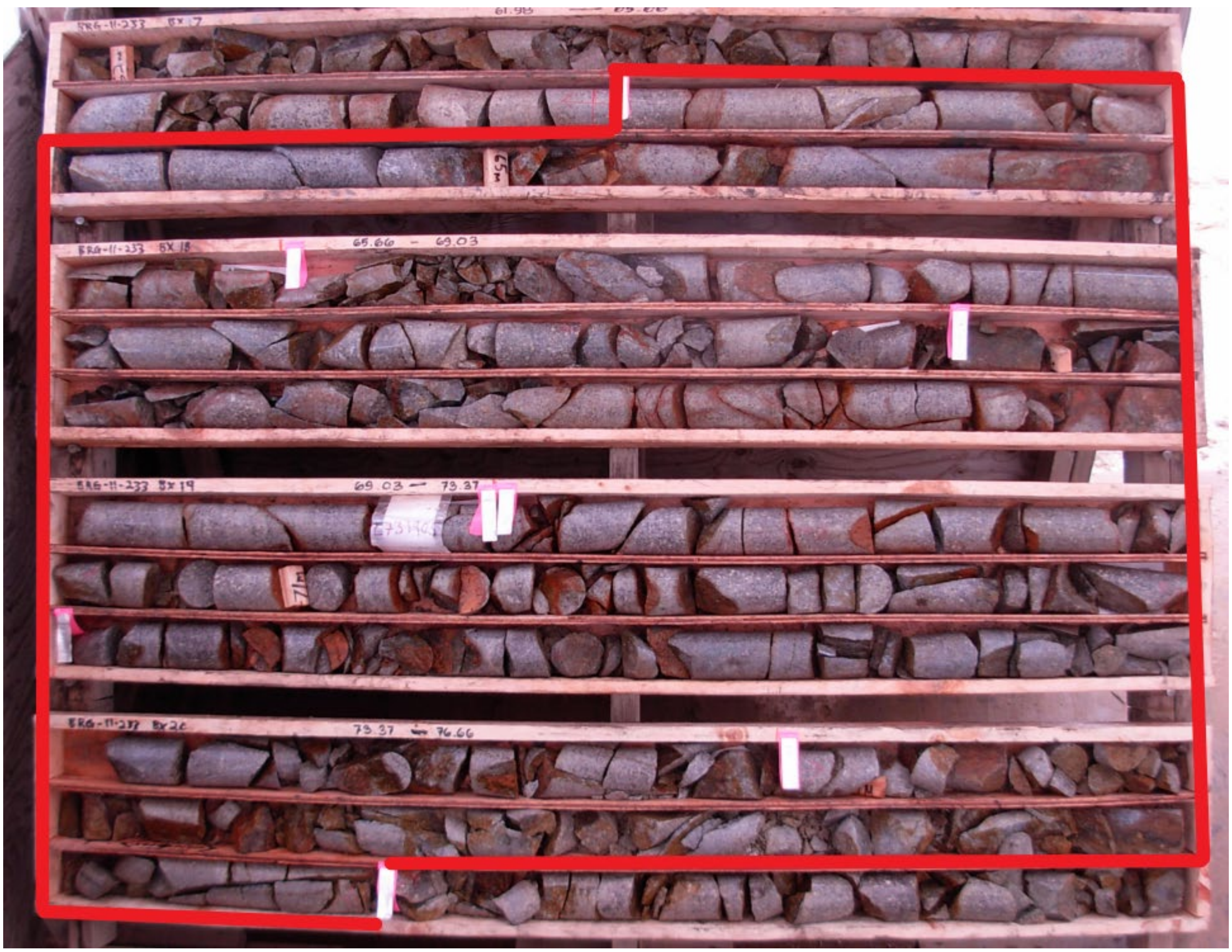


Four holes were drilled in the central portion of the Berg Stock in 2011. This area has been poorly tested by previous drilling and the 2011 drilling was designed to test undrilled volumes and confirm and update the extent of previously-identified mineralization. Significant intersections from 2011 drilling are summarized in Table 10-5 (Equity Exploration Consultants Ltd., Report, 2012).

Table 10-5: Significant Intersections in the Berg Stock Zone of the 2011 Drilling Program

Hole	From (metres)	To (metres)	Interval (metres)	Cu (%)	Mo (%)	MoS2 (%)	Ag (gpt)	Comment
BRG11-222	3.00	350.22	347.22	0.157	0.014	0.023	5.6	Entire hole
including	11.00	30.00	19.00	0.369	0.007	0.011	3.8	Supergene Zone
BRG11-224	13.10	51.71	38.61	0.256	0.009	0.015	3.9	Supergene Zone
	96.50	413.94	317.44	0.122	0.010	0.017	3.2	Hypogene Zone
BRG11-227	7.00	51.10	44.10	0.208	0.010	0.016	3.4	Supergene Zone
	239.69	298.40	58.71	0.091	0.007	0.011	3.9	Hypogene Zone
BRG11-233	4.57	116.95	112.38	0.216	0.005	0.008	7.3	Supergene Zone
	180.02	300.38	120.36	0.125	0.007	0.011	4.6	Hypogene Zone

Photo 10-5: Significant Intersection in Drillhole BRG11-333 in Berg Stock, highlighting 0.33% Cu, 0.008% Mo, and 0.06% CuOx from 63.9 to 75.9 metres (downholes)



10.1.4 Low Recovery Areas in the 2011 Drilling Program

From a total of 4,223 intervals in drill holes of the 2011 drilling program, the average recovery rate was 86% when only including recovery rates of between 0%-100% (3528 of the 4223 sample intervals) and excluding recovery rates < 0% (erroneous calculations in field log spreadsheet) (5 sample intervals) or > 100% (423 sample intervals).

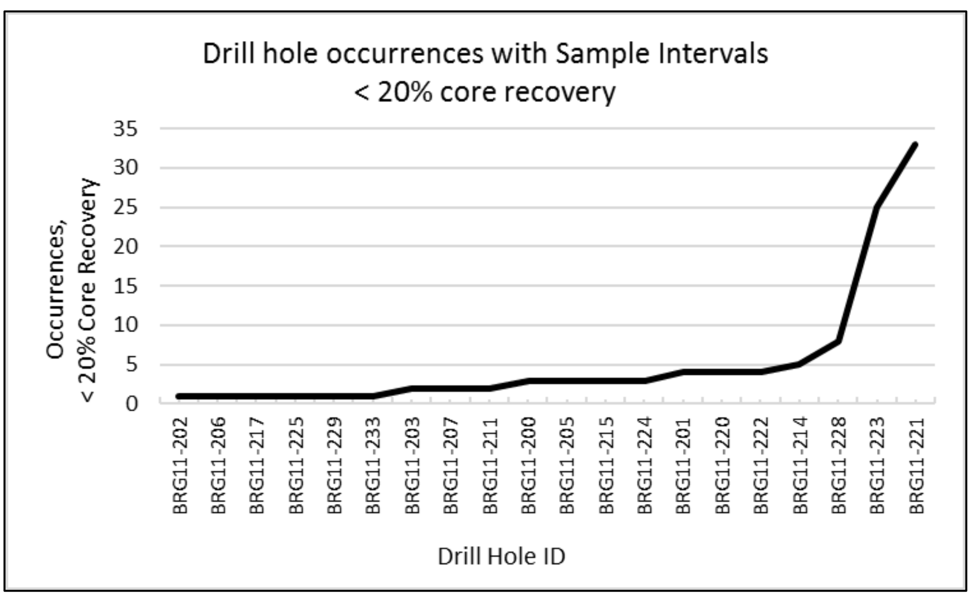
Table 10-6: Drill Holes with Core Recovery of Less than 20% in the 2011 Drilling Program

Hole ID	Occurrences of Sample Intervals with <20% Core Recovery	Hole ID	Occurrences of Sample Intervals with <20% Core Recovery
BRG11-202	1	BRG11-205	3
BRG11-206	1	BRG11-215	3
BRG11-217	1	BRG11-224	3
BRG11-225	1	BRG11-201	4
BRG11-229	1	BRG11-220	4
BRG11-233	1	BRG11-222	4
BRG11-203	2	BRG11-214	5
BRG11-207	2	BRG11-228	8
BRG11-211	2	BRG11-223	25
BRG11-200	3	BRG11-221	33

Low recovery rates of less than 20% were found to have occurred in 107 sample intervals within 20 (out of a total of 36) drill holes (Table 10-6). An average of 9% core recovery occurred within the sample intervals having less than 20% core recovery. Drill holes with more occurrences of sample intervals (more than four occurrences in one drill hole) having less than 20% core recovery were BRG11-201, -220, -222, -214, -228, -223, and -221.

Particularly, drill holes BRG11-223 and BRG11-221 have significant occurrences (25 and 33 sample intervals, respectively) of less than 20% core recovery. Therefore, these drill holes would be recommended for a future redrilling program.

Figure 10-2: Occurrences of Drill Holes with Core Recovery of Less than 20% in the 2011 Drilling Program



10.2 Historical Drill Core Storage

Drill core from 2007, 2008 and pre-1980 is stored on the property below the original Berg Camp (Photo 10-6). Drill core from 1980 is located on a spur road in the camp area. Historical drill core is reasonably well preserved such as an early hole "DDH-15" (Photo 10-7) which was observed at the Berg Camp.

Drill logs and documentation for core prior to 2007 are not held by Surge and were not available for review by the QP.

Photo 10-6: View of Berg core storage at the original Berg Camp located on the southern portion of the Berg deposit

Photo 10-7: Historical drill hole DDH 15 and core from 200-227.5 feet depth

11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

The following sections describe the sample collection, handling, preparation and analytical methods employed during the 2011 drilling program. The QP was not witness to these activities and is using professional reliance on the work as documented on the 2011 annual assessment report (Harris, 2012). The QP has inspected the drill core and has collected independent samples, as described in Section 12.

Description of the sample collection, handling, preparation and analytical methods employed during the 2007 and 2008 drilling campaigns are described in previous NI 43-101 Technical Reports by Harris and Stubens (2008) and Harris and Labrenz (2009) and is not repeated here. The QP has read the descriptions contained in these reports.

11.1 Sample Collection and Sample Security

The supergene, upper portion of most holes was drilled with HQ tools, reducing to NQ core in the more competent hypogene mineralization. Core was logged at a core facility near the camp area, and geological, geotechnical and magnetic susceptibility data recorded.

Samples were measured and identified with aluminum tags to respect geological contacts, then were split with a hydraulic hand splitter. Approximately half of the split samples were placed in a sample bag, labelled and sealed to await transport to the lab. The remaining material was placed back into the core box. Once a sufficient amount of samples had been collected on site, they were delivered to ALS Labs in Terrace BC lab by commercial courier in sealed rice bags.

All 2011 core is being stored in a warehouse facility in Prince George to allow access for metallurgical testing. Drill core from 2007, 2008 and pre-1980 is stored on the property below camp; 1980 drill core is located on a spur road in the camp area.

11.2 Assay Analytical Methods

Core samples were submitted to the ALS Minerals Prep Lab in Terrace, BC and shipped to the ALS Mineral Analytical Lab located in North Vancouver. ALS Laboratories is an ISO 9001:20000 accredited laboratory. Upon receipt, the samples were weighed, crushed and pulverized to 70% passing 2 mm, then to 85% passing 75 µm.

- Trace element analysis was conducted on every second sample using the following method:
  - 51 element, aqua regia digestion, ICP-MS, RDL = variable (ME-MS41)
- Ore grade elemental analysis was conducted on each sample using the following methods:
  - Cu, aqua regia digestion, ICP-AAS, RDL = 0.001% (CU-AA46)
  - Mo, aqua regia digestion, ICP-AAS, RDL = 0.001% (MO-AA46)
  - Ag, aqua regia digestion, ICP-AAS, RDL = 1ppm (AG-OG46)
  - Soluble copper using atomic absorption (AAS), RDL = 0.001% (Cu-AA05)
- Limited Au analysis was completed by 30g fire assay (AA).

11.3 Specific Gravity and Bulk Density Measurement Methods

The average bulk density measured from 955 samples in the 2011 drilling program is 2.69 g/cm^3, with a minimum of 2.20 g/cm^3 and maximum of 3.18 g/cm^3. Outside the 95% percentile, nine outliers measure less than 2.19 g/cm^3 and ten outliers measure greater than 3.14 g/cm^3, totaling 19 outliers that are not included in reported bulk density calculations. Figure 11-2 shows the bulk density of all 974 measurements collected during the 2011 program, including outliers.

Figure 11-1: Bulk Density Frequency in the 2011 Drilling Program

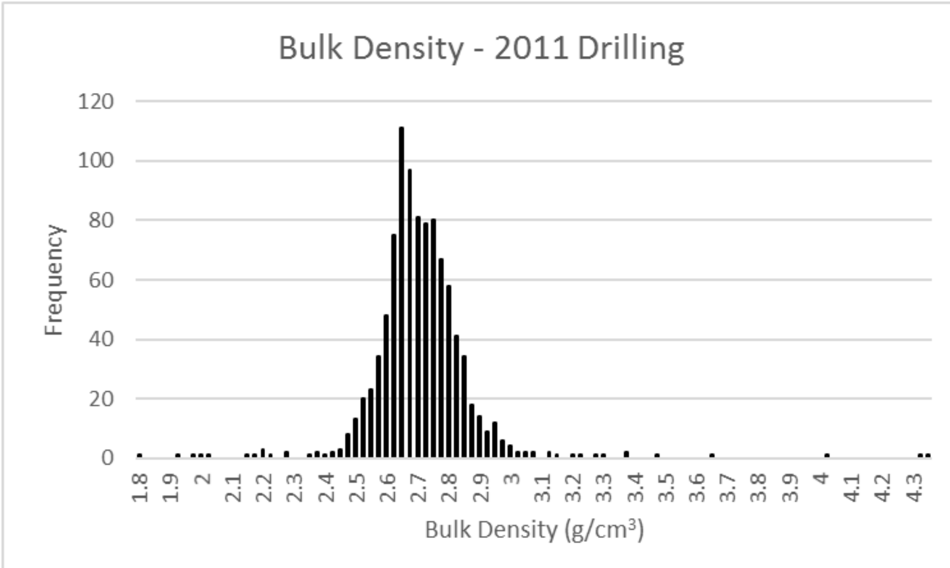
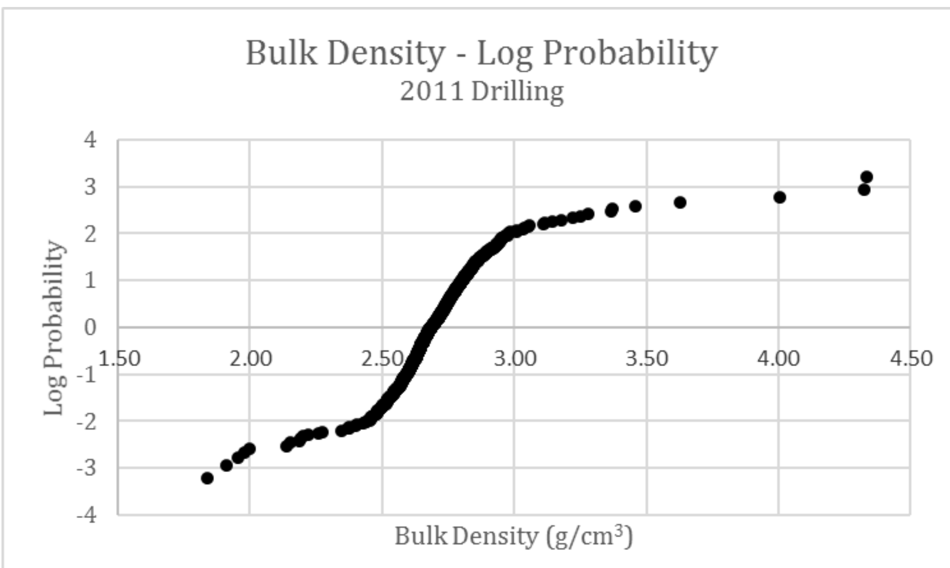


Figure 11-2: Log-Probability of Bulk Density Measured in the 2011 Drilling Program



11.3.1 Collection of Geotechnical Measurements

Core was geologically and geotechnically logged, split and sampled. Geotechnical logging included recovery, RQD, magnetic susceptibility, specific gravity, discontinuity characteristics, uniaxial compressive strength (including point load testing) and weathering grade.

11.4 Quality Control of Laboratory Analysis

QA/QC included the insertion and continual monitoring of numerous standards and blanks into the sample stream at a frequency of 1 per 40 samples, and the collection of duplicate samples at random intervals within each batch at a frequency of 1 per 40 samples.

11.4.1 Certified Reference Materials

Seven certified reference materials (CRM) were used to check for analytical accuracy. Four CRMs (Hyp High, Hyp Low, Sup High, Sup Low) were prepared by Smee & Associates Consulting Ltd., (tabulation and certification) in collaboration with CDN Resource Laboratories Ltd. (lab preparation), from shipments of samples from Terrane Metals Corp., to CDN Resource Laboratories Ltd., on July 8, 2008. The four CRMs were prepared to have four homogeneous pulps suitable for use as assay standard reference materials. Two CRM's (Cu126 and Cu133) were prepared by WCM Minerals in Burnaby, BC, and one CRM (CDN-CM-1) was prepared by CDN Resource Laboratories Ltd. in Langley, BC, Canada. The number of analyses completed for each CRM is outlined in Table 11-1.

Table 11-1: Number of Analyses of Silver, Copper, and Molybdenum Completed for each CRM

CRM	Ag	Cu	Mo
Cu126	14	14	14
Cu133	13	13	13
CDN-CM-1	0	15	15
Hyp High	87	87	87
Hyp Low	92	92	92
Sup High	46	46	46
Sup Low	40	40	40

11.4.1.1 Silver Concentrations from Six Standard Reference Materials

Six CRMs were selected to evaluate analytical accuracy for Silver. A total of 87 Hyp High, 92 Hyp Low, 46 Sup High, 40 Sup, 14 Cu126, and 13 Cu133 were analyzed. Five sample failures were measured outside of three standard deviations. Each of the six sets of CRM results were standardized (z-scored) and plotted, shown in Figure 11-3 and 11-4, with the assay results for Ag and the expected error range of +/- two and three standard deviations. The five sample failures outside three standard deviations included one Cu126, two Hyp High, one Hyp Low, and one Sup Low standard reference materials.

Figure 11-3: Six Standard Reference Materials, standardized values for Silver

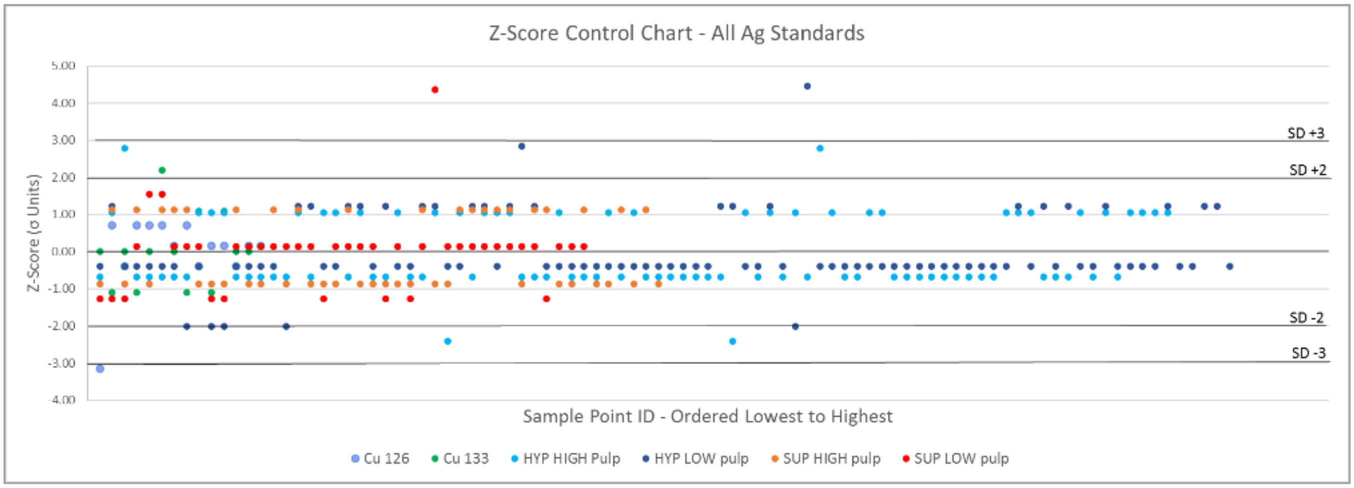
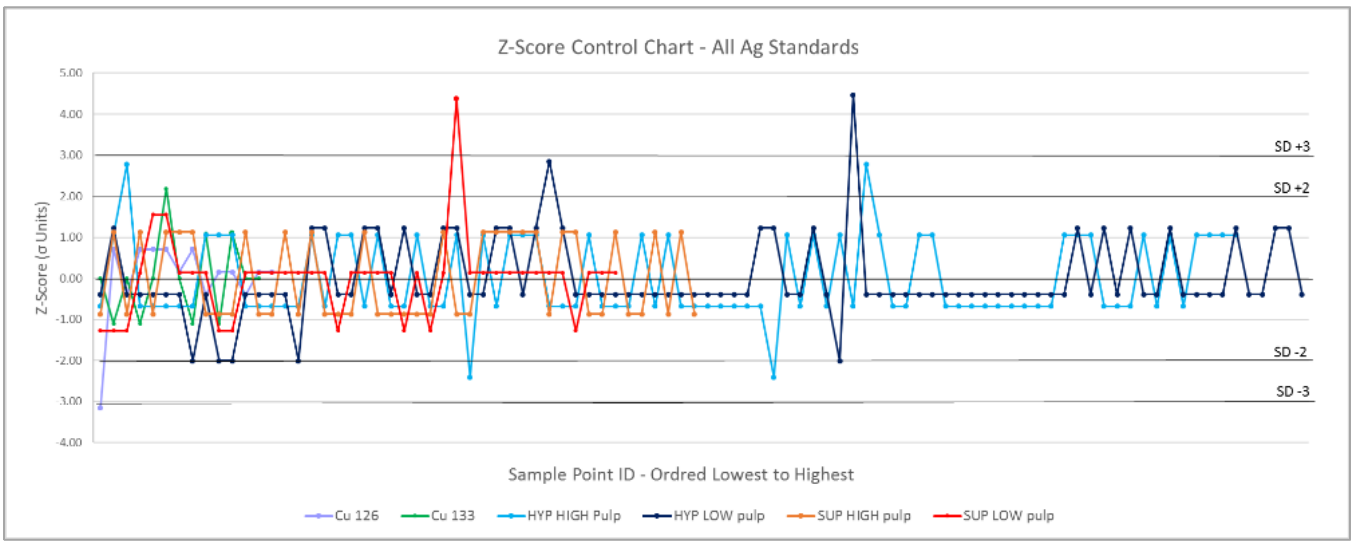


Figure 11-4: Six Standard Reference Materials, Standardized Values for Silver (line graph)



11.4.1.2 Copper Concentrations from Seven Standard Reference Materials

Seven CRMs were selected to evaluate analytical accuracy for copper. A total of 87 Hyp High, 92 Hyp Low, 46 Sup High, 40 Sup, 14 Cu126, 13 Cu133, and 15 CDN-CM-1 were analyzed. Three sample failures were measured outside of three standard deviations. Each of the seven sets of CRM results were standardized (z-scored) and plotted, shown in Figure 11-5 and 11-6, with the assay results for Cu and the expected error range of +/- two and three standard deviations. The three sample failures outside three standard deviations included one Cu126, one Hyp Low, and one Sup Low standard reference materials.

Figure 11-5: Seven Standard Reference Materials, Standardized Values for Copper

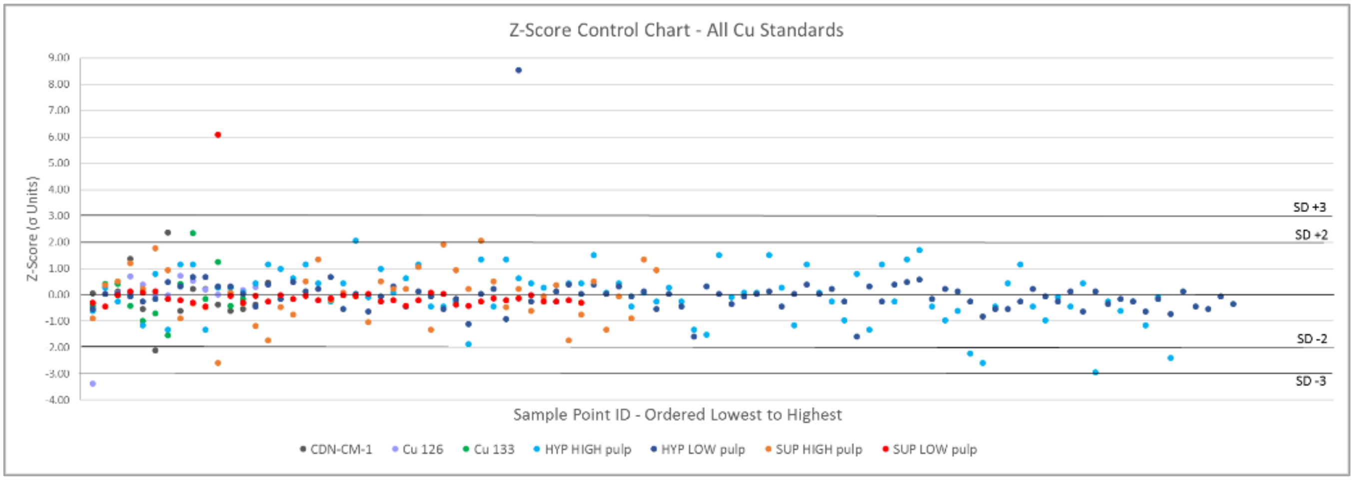
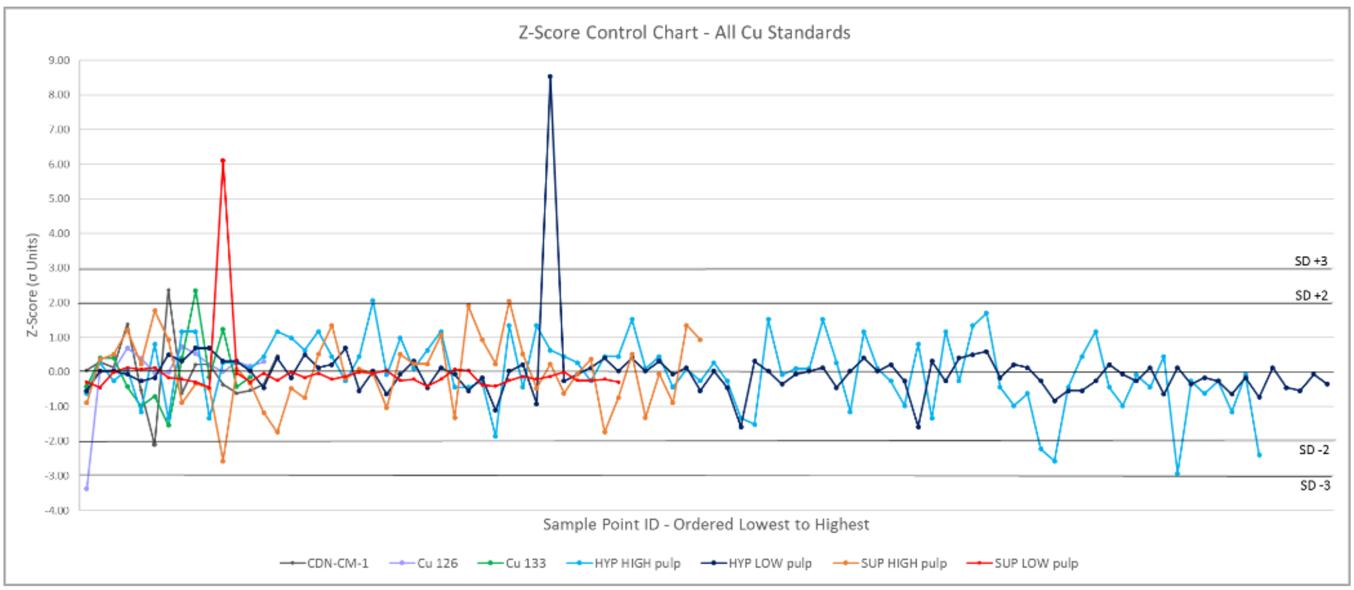


Figure 11-6: Seven Standard Reference Materials, Standardized Values for Copper (line graph)



11.4.1.3 Molybdenum Concentrations from Seven Standard Reference Materials

Seven CRMs were selected to evaluate analytical accuracy for molybdenum. A total of 87 Hyp High, 92 Hyp Low, 46 Sup High, 40 Sup, 14 Cu126, 13 Cu133, and 15 CDN-CM-1 were analyzed. Four sample failures were measured outside of three standard deviations. Each of the seven sets of CRM results were standardized (z-scored) and plotted, shown in Figure 11-7 and 11-8, with the assay results for Mo and the expected error range of +/- two and three standard deviations. The four sample failures outside three standard deviations included one Cu126, one Hyp Low, one Sup High, and one Sup Low standard reference materials.

Figure 11-7: Seven Standard Reference Materials, Standardized Values for Molybdenum

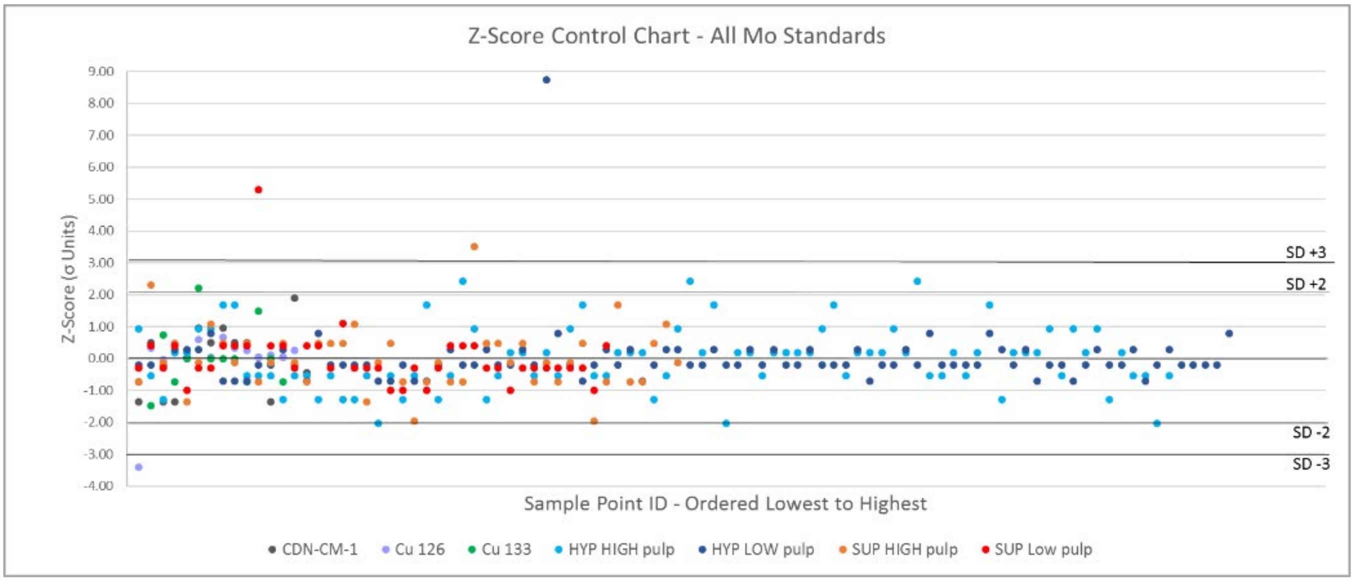
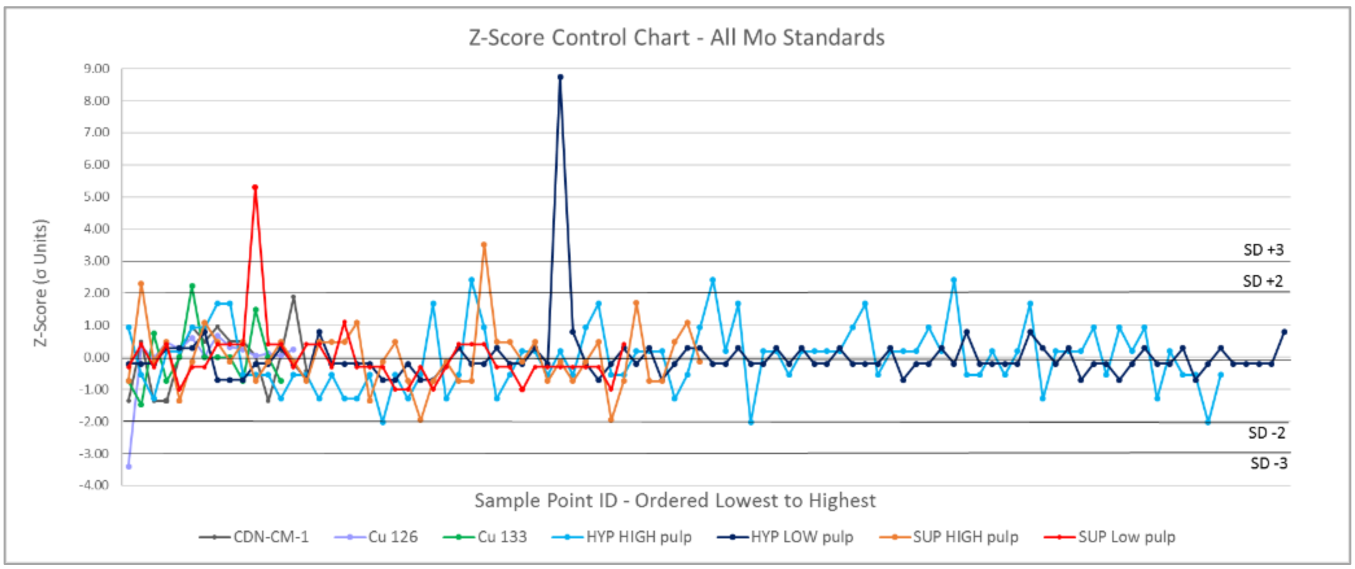


Figure 11-8: Seven Standard Reference Materials, Standardized Values for Molybdenum (line graph)



11.4.2 Field and Preparation Duplicates

Duplicate samples were collected randomly from drill core (field duplicates) and from sample pulps (preparation duplicates). These samples were analyzed and compared to the original assay grade to assess the precision of analytical methods.

Generally, a high margin of error is expected from field duplicates, where it is desired to measure 90% of the sample population to have less than 30% relative percent difference (RPD). Conversely, preparation duplicates are desired to have much lower margin of error where 90% of samples should have less than 10% RPD.

On average, the field duplicate data reported a RPD of 21.6% for silver, 8.8% for copper, and 23.5% for molybdenum, and the pulp duplicates reported RPD values of 16.1% for silver, 6.4% for copper, and 13.7% for molybdenum.

Figure 11-9 depicts the RPD distributions by percentile rank showing that although average RPD values are within desired ranges and copper measures over 90% of samples to have less than 30% RPD, only approximately 70% of the samples returned RPD values within the desired ranges (<30% RPD) for silver and molybdenum. Sample pairs having average value less than 5x of the reported detection limit have been removed from this analysis (5xRDL: Cu=0.005%, Mo=0.005%, and Ag=5ppm). Additionally, Figure 11-10 shows that of the samples outside of the desired range of 30% RPD, respectively, grades are not in excess of 110 ppm Ag, 0.75 % Cu, or 0.13% Mo.

Duplicate scatter plots of silver, copper, and molybdenum are shown in Figure 11-10 for field duplicates.

Figure 11-9: Field Duplicates, Percentile Rank vs. Relative Difference for Silver, Copper, and Molybdenum

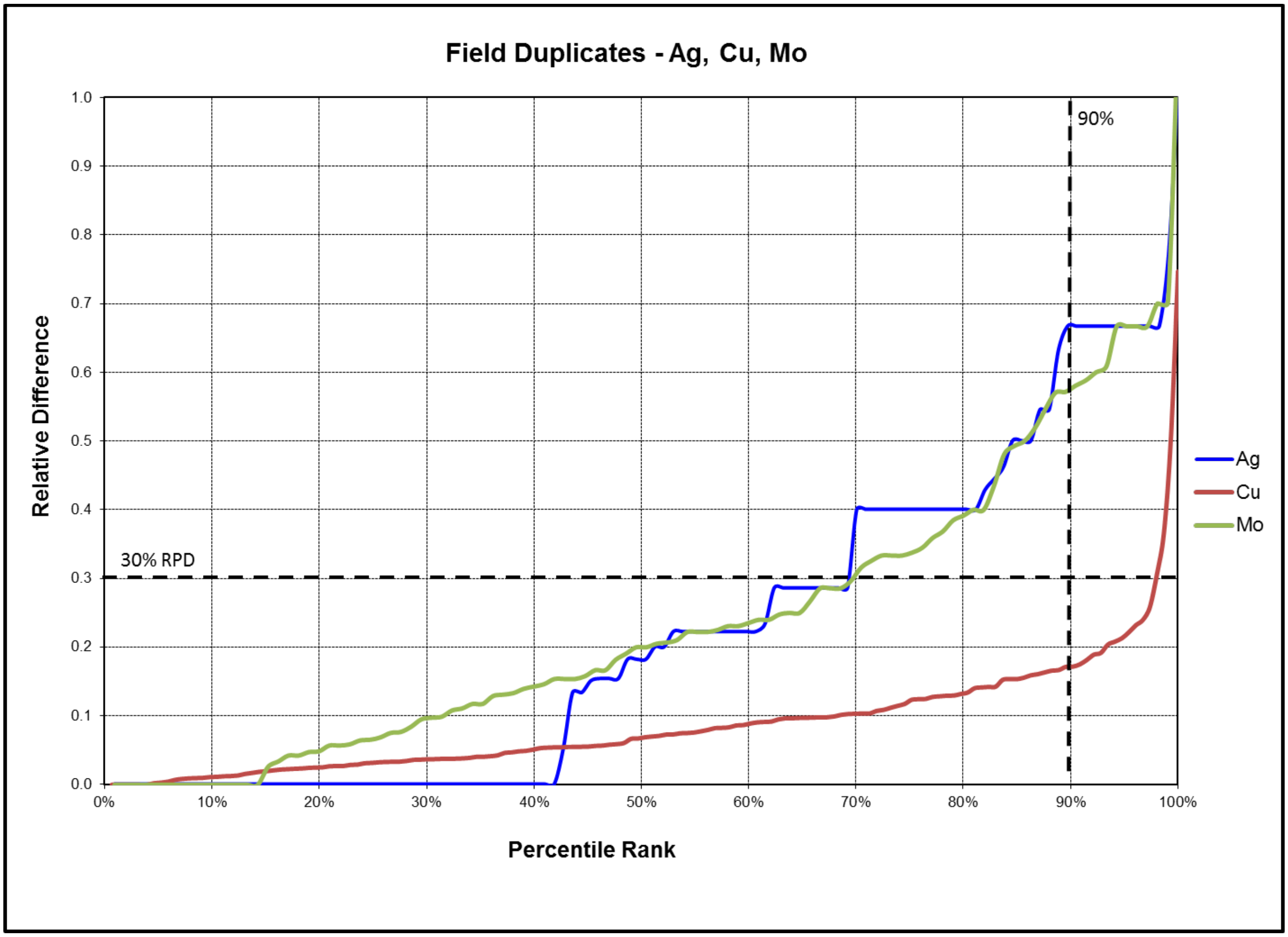


Figure 11-10: Field Duplicates Analytical Performance for Silver, Copper, and Molybdenum

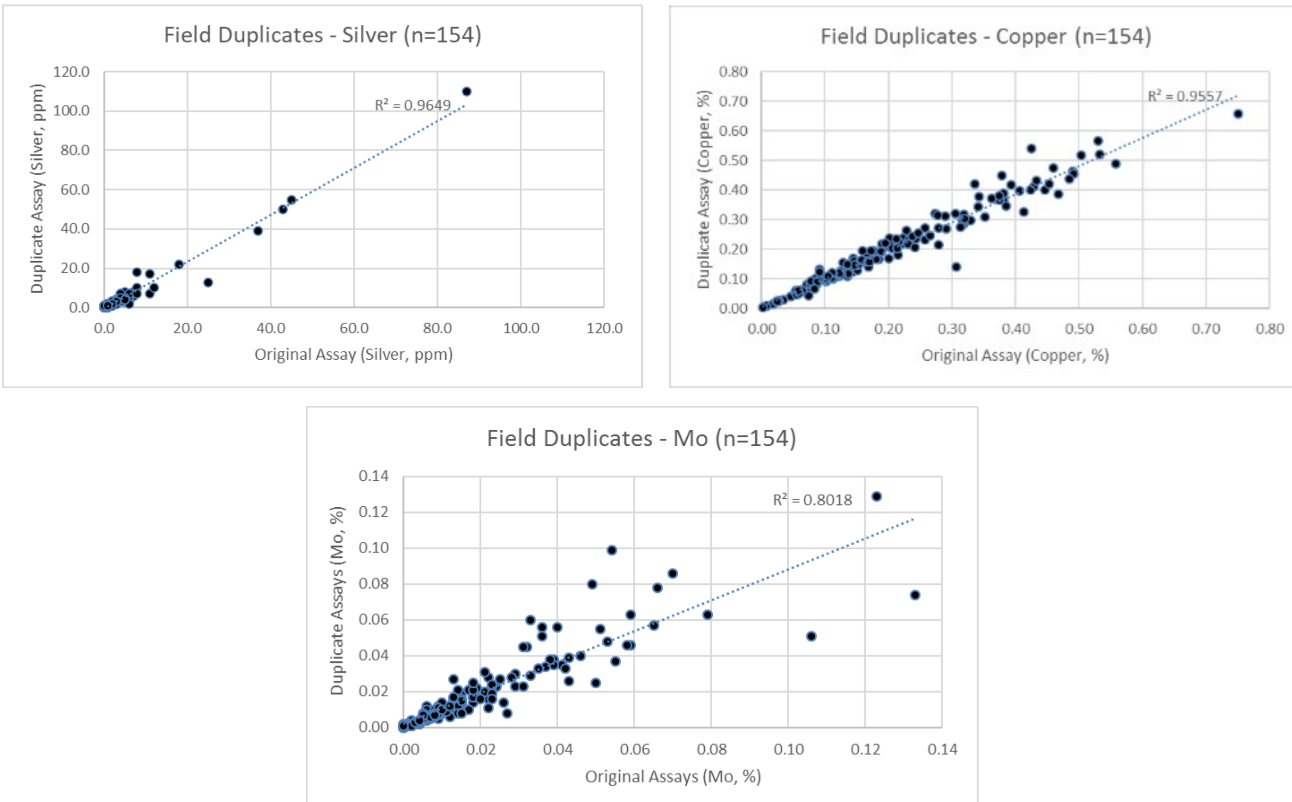


Figure 11-11 depicts the RPD distributions by percentile rank showing that although average RPD values are within desired ranges and copper measures over 90% of samples to have less than 10% RPD, only approximately 65% of samples returned RPD values within the desired range (<10% RPD) for molybdenum and approximately 55% for silver. Sample pairs having average value less than 5x of the reported detection limit have been removed from this analysis (5xRDL: Cu=0.005%, Mo=0.005%, and Ag=5ppm). Additionally, Figure 11-12 shows that of the samples outside of the desired range of 10% RPD, respectively, grades are not in excess of 39 ppm Ag (except for one anomalous value of 548 ppm), 1.30 % Cu, or 0.17% Mo.

Duplicate scatter plots of silver, copper, and molybdenum are shown in Figure 11-10 for field duplicates and Figure 11-12 for pulp duplicates.

Figure 11-11: Prep Duplicates, Percentile Rank vs. Relative Difference for Silver, Copper, and Molybdenum

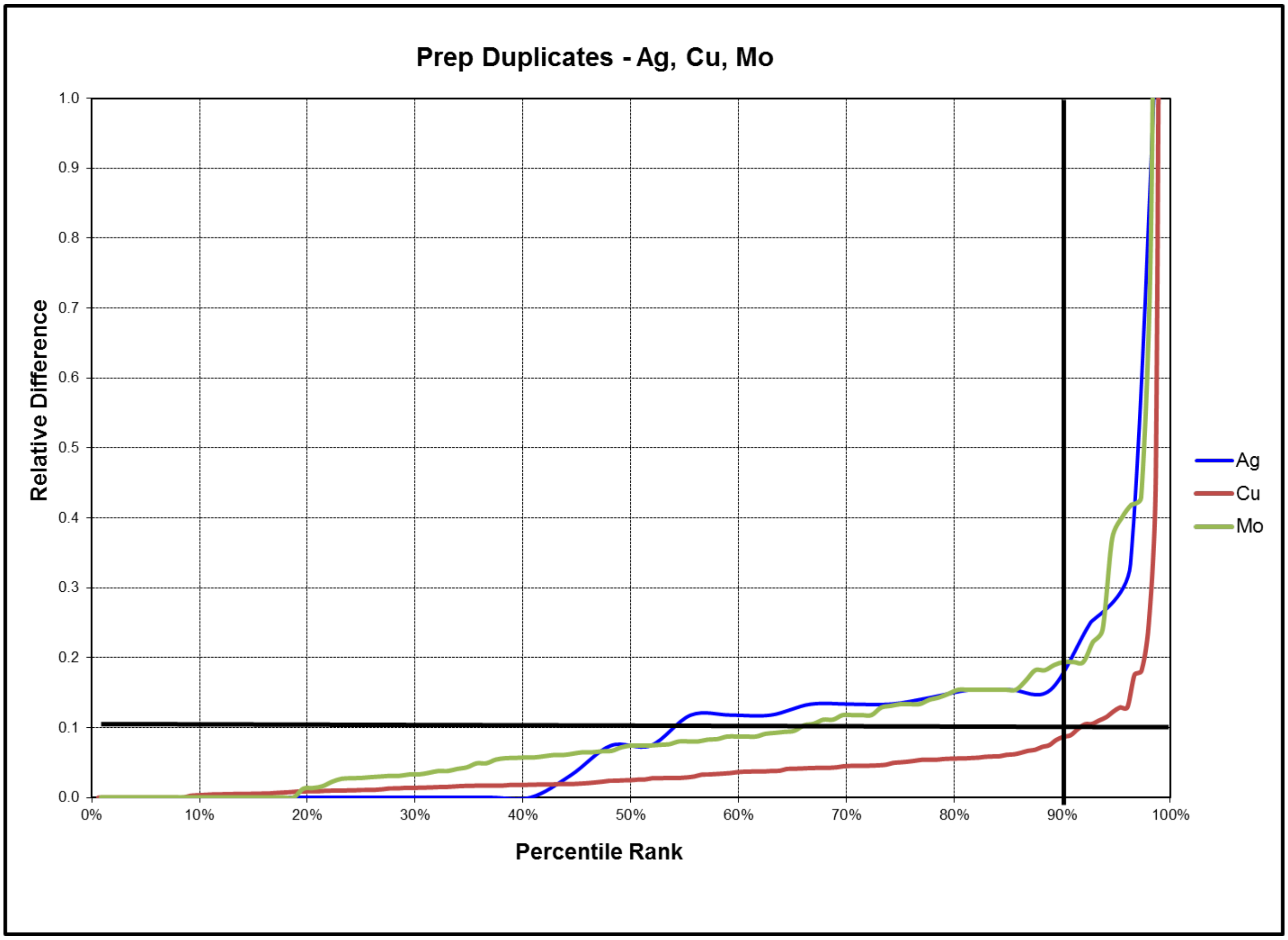
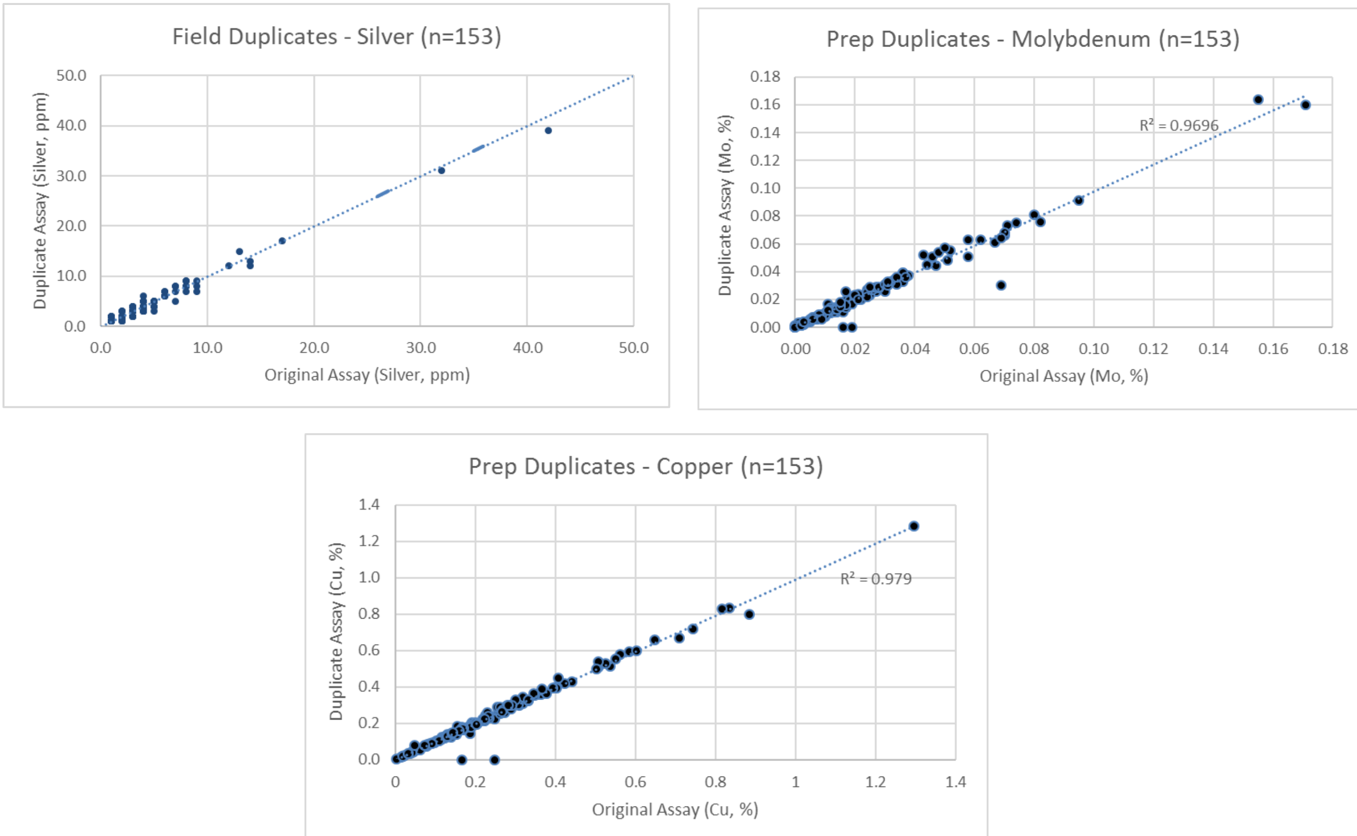


Figure 11-12: Prep Duplicate Analytical Performance for Silver, Copper, and Molybdenum



11.4.3 Blanks

Blank material was used to test for sample contamination. The blank was certified to be barren of silver, copper, and molybdenum, and was used to detect anomalous concentrations.

The results of the assessment indicate that all samples reported no detectible concentrations of silver or molybdenum greater than five times the respective detection limit, shown in Tables 11-2. The assessment, however, reports seven occurrences of five times the detection limit, ranging between 60 – 990 ppm, for concentrations of copper (Figure 11-13). A summary of the drill hole, sample ID locations and copper values for the seven occurrences of five times the detection limit are provided in Table 11-2.

Figure 11-13: Blank Values for Silver

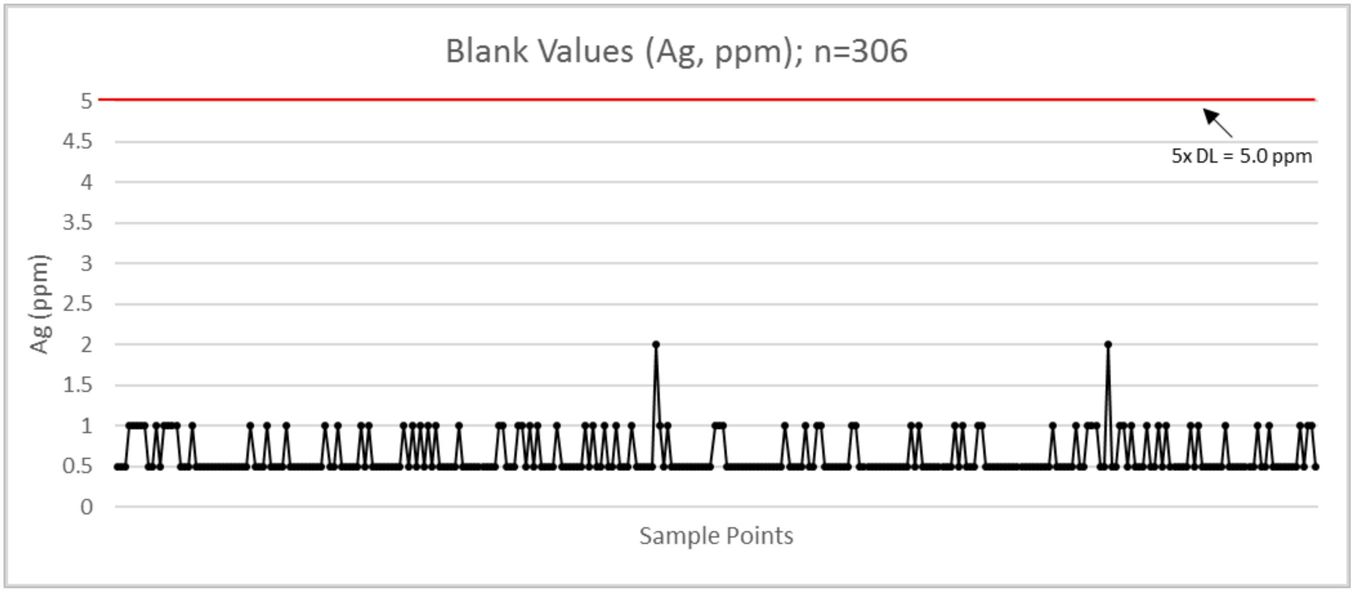


Figure 11-14: Blank Values for Copper

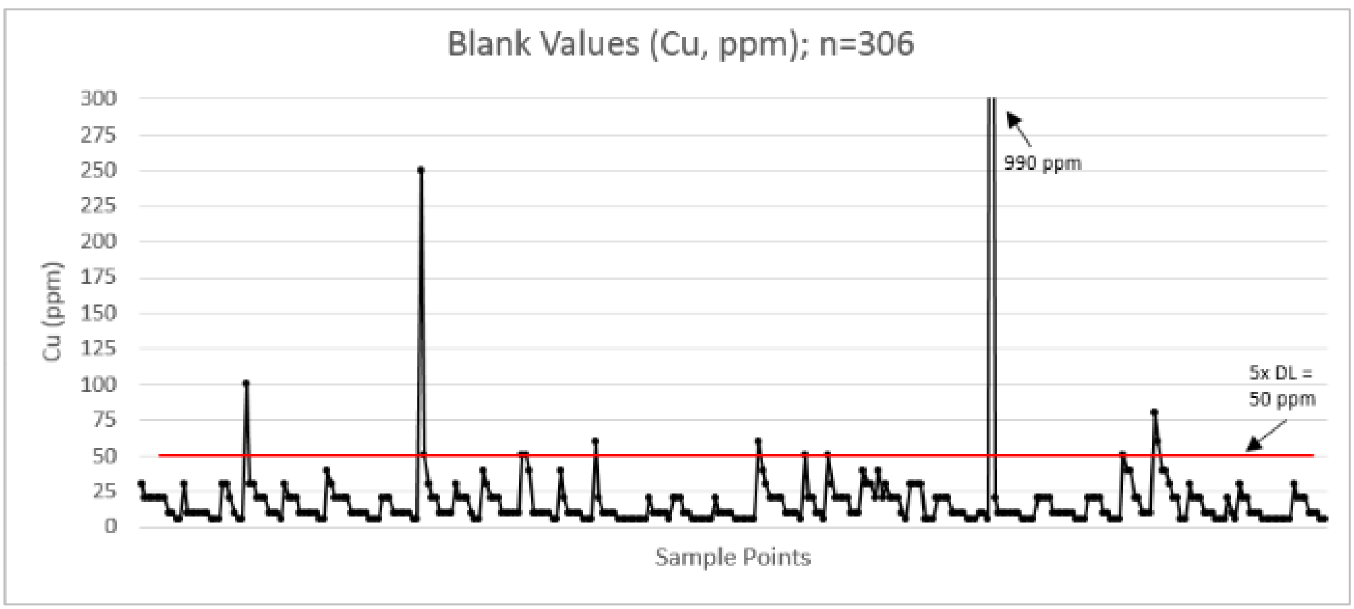
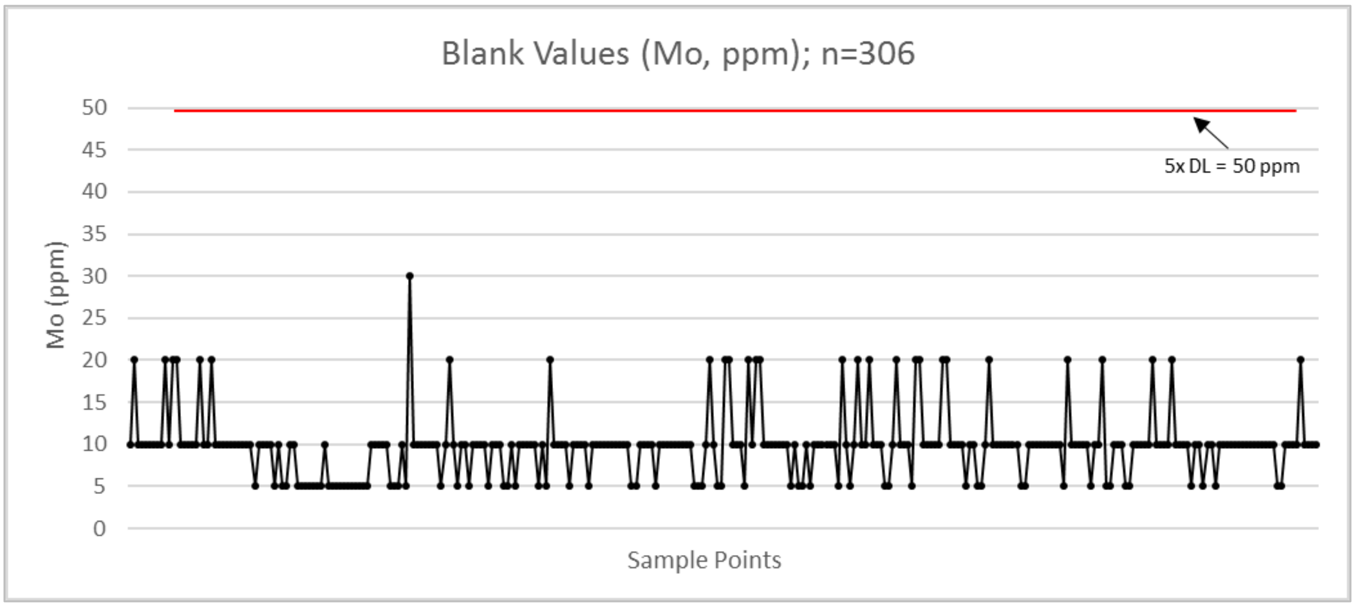


Table 11-2: Certified Blank Sample Insertions, Measurements of Cu > 5x Detection Limit

Drill Hole ID	Sample ID	Certificate	Cu (ppm)
BRG11-224	L730350	TR11191716	990
BRG11-205	L726850	TR11160905	250
BRG11-201	L726410	TR11135483	100
BRG11-229	L730650	TR11201109	80
BRG11-215	L729530	TR11170681	60
BRG11-210	L727230	TR11169935	60
BRG11-229	L730690	TR11201109	60

Figure 11-15: Blank Values for Molybdenum



11.5 QP Opinion of Sample Collection, Preparation, Analysis and Security

The methods implemented by during the 2011 drilling for sample collection, preparation and analysis were developed using standard industry practices. Analytical results for QAQC insertions were monitored by Equity Exploration, an independent geological firm. The procedures maximize use of sample volumes to measure physical and chemical parameters relevant to current and future project studies. The analytical laboratory selected is a recognized accredited laboratory which adheres to recognized ISO, ASTM or internally reproducible Standards. Sample handling and processing was completed with appropriate chain of custody and storage was in a secure facility. Analysis of the field and prep duplicates indicate good precision for copper data, however, less precise data for molybdenum and silver. Future programs should identify sources for this potential variation.

The QP confirms the collection, analysis and security is reliable and suitable for mineral resource estimation.

12.0 DATA VERIFICATION

12.1 Audit of the Geological Database

Surge provided Tetra Tech access to the Berg dataroom containing various records from work completed on the project since 2008. This information was accessed and reviewed prior to the core review site visit conducted in February 2021. Drill logs and geological cross-sections pertaining to the 2011 drill core documented in the 2011 Assessment Report prepared by Equity Exploration Consultants Ltd (Equity) was reviewed to gain understanding of the recent drillhole program. Assay certificates were also reviewed and compared against the digital drilling database.

Tetra Tech has reviewed the historical database (pre 2008) validation conducted by Harris and Stubens (2008), who thoroughly reviewed and cross validated the database, and found no concerns with their validation process.

12.1.1 Audit Outcomes

Data Completeness

Tech spot checked the post 2008 assay, collar, and lithology data present within the database with assay certificates, and original logs and found the database to be reliable and accurate.

Silver Assay Data

As previously reported in Harris and Stubens (2008) and Harris and Labrenz (2009), historical drilling conducted prior to 1990 (Placer Dome) does not contain data for silver analyses, representing 26 % of the current assay data. This also applies to acid-soluble copper data (CuOX). A value of zero has been applied to these missing values which is likely to result in unduly underrepresentation of actual silver grades and silver distribution.

Where silver data exists for recent drilling, it was noted that the selected silver grades used in the database are reported based on results of ore grade analysis with lower reported detection limit of 1 gpt, and accepted range of low range analytical error of 5 gpt. Average silver grades from drilling within the Cu-Mo mineralized zone range from below detection up to 1,020 gpt, with an average grade of 3.3 gpt. Many of the samples with assay records fall near to and within the range of analytical error. Given the narrow range between detection limits and reported grades, as higher range of error exists for the silver data. Future drilling campaigns should seek to acquire ore grade silver data with a lower reportable detection limit.

Use of Unverified Historical Data

A total of 21,447 sample assay results are currently being used in the database for mineral resource estimation (this exclude the Sierra Empire hole and four Kennecott holes, as described in Harris and Stubens (2008). Of these, 6,374 samples (30%) are from historical drilling and 15,072 (70%) are from recent drilling since 2007. An extensive resampling program of the available historical core was conducted in 2008 (Harris and Stubens) consisting of 178 samples, which concluded that a generally good correlation existed between the historical records and the resampling assay results.

Twin Drillholes

The QP is not aware of any formal twinned drillholes that have been completed on the Property since 2007 to directly test or verify historical drilling completed prior to 2007.

Historical Drillhole Orientation

The dominant drillhole orientation of drilling completed prior to 2007 was in a vertical direction. Additionally, downhole deviation measurements were not collected for these early holes. It is anticipated that some, if not significant, deviation will occur within these drillholes due to the variable rock hardness and orientations of geological contacts.

It was recognized in 2007 that the vertical drillhole orientation did not adequately intersect the subvertical contacts observed within and surrounding the Berg stock. The majority of drilling completed since, and including, the 2007 campaign have been inclined and were surveyed for downhole deviation. The surveying indicated that some deviation did occur within the drillholes.

Database Amendments

Drillhole BRG11-230, completed in 2011, shows a significant and possibly unrealistic deviation in azimuth at depth 274 m. This measurement was removed, and the hole orientation corrected.

In 2008, data verification of historical drillhole records (Harris and Stubens, 2008) identified 14 drillhole records that were not suitable for use in mineral resource estimation and were excluded from the database. These holes include ten historical holes drilled by Sierra Empire (series S13 through S24) due to poor assay reconciliation and lack of historical core to resample, and four holes drilled by Kennecott (BRG-010,011,063 and 065) due to having core recoveries of <10%.

There were no other significant concerns identified in the database.

12.2 QP Core Review Site Visit, February 10-12, 2021

A site visit to the core storage facility located in Prince George, BC, was completed from February 10th-12th 2021, by Mr. Cameron Norton, P.Geo., Senior Geologist with Tetra Tech Canada Inc. (Tetra Tech). The storage facility currently houses drill core and pulp rejects from the 2011 drilling campaign with an enclosed, refrigerated and locked facility.

The purpose of the site visit was to allow review and sample collection by Mr. Norton to support independent data verification objectives. Drillholes were selected to enable review of the major lithologies logged during the 2011 drilling campaign (QDP, AND, QPP, QMP, and PQBP) and to view how the weathering/leaching characteristics of each rock are expressed within the leach zone and supergene enrichment zone. The lithology coding system included in the database were andesite (AND), quartz diorite (QDP), quartz-plagioclase porphyry (QPP), quartz monzonite porphyry (QMP), and plagioclase-quartz-biotite porphyry (PQBP).

Nine samples were collected by the QP from the 2011 drill core comprising various length intervals for the purposes of auditing the Berg geochemical data set. The samples were cut, logged, tagged and transported in sealed bags by the QP, and delivered to courier for shipment to Act Labs located in Kamloops, BC. One QA/QC standard reference material sample was also inserted into the shipment. The samples were submitted for the following analyses:

- Multi-trace element – Total Digestion ICPOES

The results of the independent sample analysis were compared to the length weighted average grade of the original samples, and the results are shown in Table 12-1. A relative percent difference (RPD) assessing was used to evaluate the performance of the independent samples. The results of the assessment generally confirm the original assay grades for copper assays with RPD from -45% to +19%, however, greater variability was observed for Mo assays showing RPD of -40% to +67%, and Ag assays showing RPD of -150% to +27%. The original and duplicate assay results for copper, molybdenum and silver are also presented in figures 12-1, 12-2 and 12-3 respectively.

The observed grade variability is attributed to the verification sample size of ¼ NQ core, which is being compared against a more representative original sample size of ½ of the NQ core. Visually, the observed results correlate well with the drill core, copper mineralization within the drill core appears to occur as finer disseminations, and molybdenum mineralization appears more concentrated as wispy stringers. Finely disseminated mineralization is expected to have a more even grade distribution amongst duplicate samples, then stringer style mineralization which less likely to be as evenly distributed within the drill core. Silver mineralization was not observed within the drill core, and the greater relative percent differences may be the result of a nugget effect.

Figure 12-1: Quarter Core Check Assay Duplicates Results-Copper

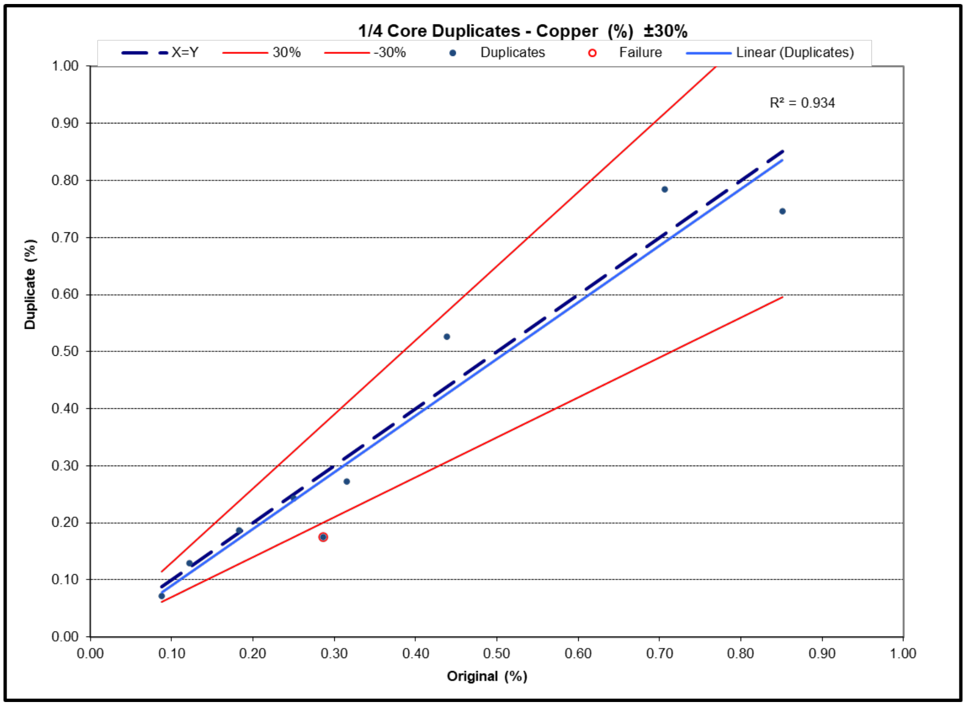


Figure 12-2: Quarter Core Check Assay Duplicates Results-Molybdenum

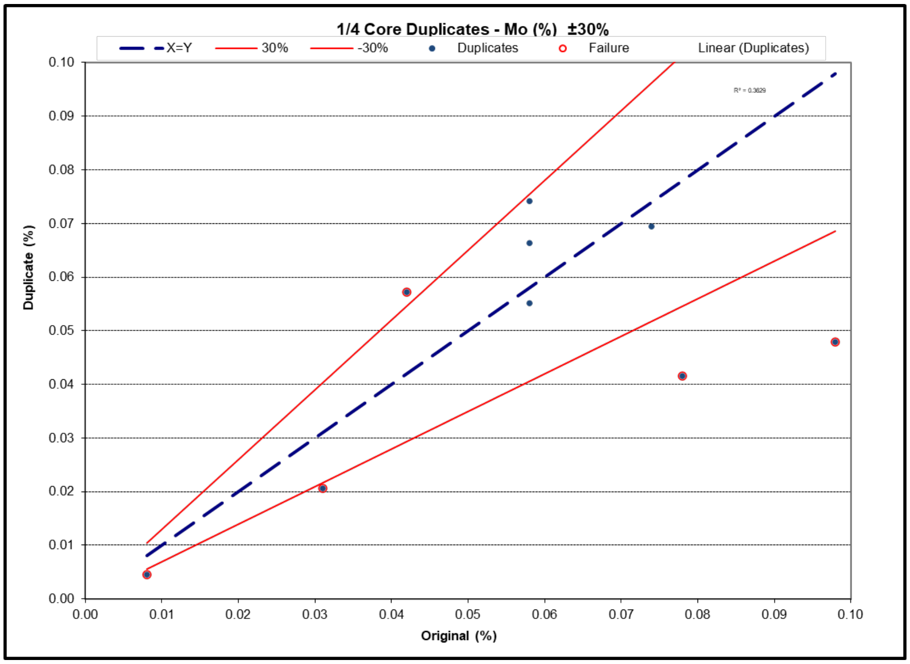


Figure 12-3: Quarter Core Check Assay Duplicates Results-Silver

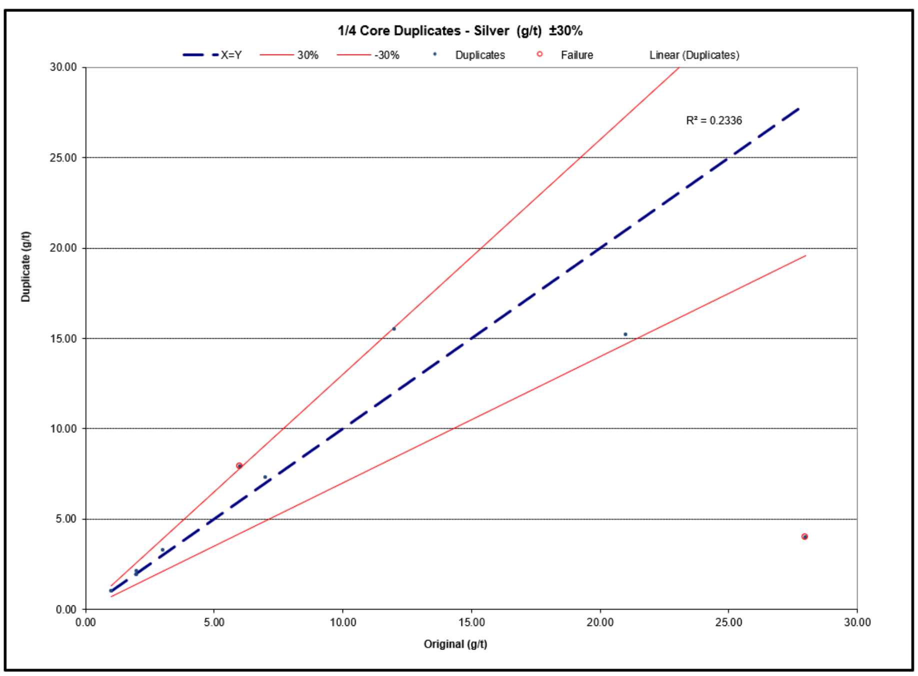


Table 12-1: Independent Sample Analysis Comparison with Original Assay Data

Hole ID	From (m)	To (m)	Original Sample Number	TT Sample Number	Cu Results (%)			Mo Results (%)			Ag Results (g/t)		
					Cu	C	R.P.D. %	Mo (orig)	Mo (dup)	R.P.D %	Ag (orig)	Ag (dup)	R.P.D %
BRG11-221	140.00	142.00	L731060	E5678460	0.438	0.53	19%	0.06	0.07	15%	12.00	15.50	25%
BRG11-221	167.00	169.00	L731077	E5678461	0.315	0.27	-15%	0.10	0.05	66%	3.00	3.30	10%
BRG11-221	191.00	193.00	L731091	E5678462	0.851	0.75	-13%	0.06	0.06	0%	7.00	7.30	4%
BRG11-230	88.82	90.82	L731706	E5678463	0.122	0.13	6%	0.08	0.04	67%	1.00	1.00	0%
BRG11-230	204.00	205.29	L731777	E5678464	0.183	0.19	4%	0.04	0.06	40%	2.00	1.90	-5%
BRG11230	216.26	218.26	L731784	E5678465	0.088	0.07	-23%	0.01	0.00		21.00	15.20	-32%
BRG11230	255.02	257.02	L731808	E5678466	0.25	0.24	-4%	0.03	0.02	-40%	2.00	2.10	5%
BRG11230	283.02	285.02	L731824	E5678467	0.706	0.78	10%	0.07	0.07	0%	6.00	7.90	27%
BRG11230	321.02	323.02	L731847	E5678468	0.286	0.18	-45%	0.06	0.07	15%	28.00	4.00	-150%

Photo 12-1: Internal view of the Temperature Controlled Core Storage Facility, Prince George, BC

12.3 QP Property Site Visit, June 26, 2018

Author Lui conducted a site visit to the Property on August 13th, 2019. In this visit, selective intervals of drill core from 2008 drilling by Terrane Metals Corporation were examined. The project area was accessed by helicopter from the town of Smithers, B.C. In addition, the condition of the historical Berg camp, core storage facilities, and on-site equipment was examined. An aerial photograph of the Berg camp taken on August 13th, 2019 looking southwest is shown in Photo 12-2.

Photo 12-2: Aerial photograph of the Berg camp taken on August 13th, 2019 looking southwest. Source: D. Lui (2019).

12.4 QP Opinion on Data Verification

The QP has audited the field data and drilling logs, compared digital analytical data to laboratory certificates, and conducted independent sample verification following a site visit. The QP is satisfied that the geological database accurately reflects field observations and laboratory analysis and is adequate to support mineral resource estimation.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The Berg Property represents a significant copper/molybdenum resource that has been classified into three distinct types of mineralization: oxide (leached), supergene (chalcocite enriched), and hypogene (primary).

Many test programs have been conducted on the resource since 1970. The most recent test programs were performed by G&T Metallurgical Services Ltd. (G&T), SGS Lakefield Research Limited (SGS) and Resource Development Inc. (RDI) between October 2007 and January 2012. The programs were aimed at developing the flowsheet to produce copper and molybdenum concentrates from the supergene and hypogene samples from the Berg deposit. The programs included head characterization, mineralogical analysis, material hardness determination and bench open circuit, locked cycle and pilot plant flotation tests.

The results from these test programs indicate that the oxidation degree of the supergene samples is much higher than the hypogene samples. The hypogene mineralization is expected to be moderately hard. The supergene materials are softer than the hypogene materials.

Conventional flotation process, comprising of primary grinding, rougher flotation, bulk rougher concentrate regrind, and three stages of bulk cleaner flotation followed by conventional copper and molybdenum separation, can be used to produce marketable copper concentrate and molybdenum concentrate from the mineralization.

The supergene and hypogene materials yield different metallurgical performances. The hypogene mineralization is more amenable to the flotation recovery and separation treatment, compared to the supergene mineralization. The 2008 and 2009 locked cycle tests show that for the supergene mineralization, the metal recoveries to the bulk copper-molybdenum concentrates are 81% for copper, ranging from 69 to 87%, and 67% for molybdenum, ranging from 20 to 92% respectively. For the hypogene mineralization, the metal recoveries to the bulk copper-molybdenum concentrates are 83% for copper, ranging from 78 to 88%, and 85% for molybdenum, ranging from 73 to 95% respectively.

The test results are summarized in the following sections.

13.1 Metallurgical Test Work Results

13.1.1 Historical Test Work

Test programs in the 1970s and 1980s, including a pilot plant test, explored the metallurgical performances, and determined mineralogical characteristics and the hardness of some of the samples. The related test reports are listed below:

- J.W. Britton, Britton Research Ltd., Metallurgical Tests on Copper/Molybdenum Ore from the Berg Property, June 1, 1970.
- B.D. Lam, Placer Development Limited's Metallurgical Research Centre (PDLMRC).
- Preliminary Report, Metallurgical Testing and Work Index Determination, November 1971.
- J.A. King, PDLMRC Report #l, Metallurgical Testing of Drill Core Composite #1 and Work Index Determination, April 2, 1973.
- J.A. King, PDLMRC Report #2, Metallurgical Testing of Drill Core Composite #2 and Work Index Determination, April 9, 1973.

- J.A. King, PDLMRC Report #3, Metallurgical Testing of Drill Core Composite #3 and Work Index Determination, April 8, 1973.
- J.A. King, PDLMRC Report #4, Bottle Leach Tests on Composites #1, #2, and #3, April 5, 1973.
- B.D. Lam, PDLMRC Report 85, Metallurgical Testing of Drill Core Composite #5 and Work Index Determination, June 10, 1975.
- J.A. King, PDLMRC Report #7, Flotation Pilot Plant Treatment of Selected Sections of Berg Drill Core, March 18, 1976.
- B.D. Lam, PDLMRC Report #8, Recovery of MoS_2 from Pilot Plant Cu/Mo Concentrates, March 18, 1976.
- B.D. Lam, PDLMRC Report #11, Froth Flotation Testing of Berg Drill Core Composites, April 1, 1981.

During 1981 and 1991, Gie Medina, who was one of metallurgists at Placer Dome Inc., conducted a comprehensive review of the historical testwork. In the review, Gie Medina concluded that:

- The oxide material containing more than 0.1% oxide copper was not amenable to flotation, since the copper recovery is low, at approximately 60%. Only relatively high grade material (more than 0.50% Cu) should be processed.
- Due to the intimate association between different sulphide minerals (pyrite, chalcopyrite, and molybdenite) and the presence of chalcocite coated pyrite in the supergene zone, both copper and molybdenum concentrates would be difficult to upgrade. As a result, the best copper concentrate grade was expected to be only approximately 22 to 23% Cu. Fine regrind size to less than 30 µm would produce marketable grade copper and molybdenum concentrates.
- It would be extremely difficult to maintain the molybdenum concentrate grade above the required 90% MoS_2 minimum without a very fine grind size (37 µm) and 14 to 16 stages of cleaning flotation. All indications showed that this concentrate would probably require leaching process to reduce copper content to the required minimum.
- The optimum primary grind was approximately 80% passing 145 µm. However, a coarser primary grind size of 80% passing 175 µm was recommended for the plant design in terms of economic view.
- Collector consumption, like most types of porphyry deposits, would be very low. A total collector addition of 15 gpt would be adequate even if the weakest xanthate is used.
- The optimum rougher flotation pH value would be approximately 8 - 8.5.
- The recovery of copper, molybdenum, and silver varied with the degree of oxidation, mineralization, and head grade.
- The majority of the silver was associated with sulphide minerals, mainly chalcopyrite, chalcocite, and pyrite.

Historical test data shows that the average ball mill work index ranged from 9 to 10 kWh/t for oxide zone samples, from 11 to 13 kWh/t for supergene samples, and from 14 to 15 kWh/t for hypogene materials. The data was generated using the comparative grindability determination method.

The review by Gie Medina indicated that the very fine and intimate copper-pyrite-molybdenite association made it very difficult to produce marketable grade molybdenum concentrate. A fine concentrate regrinding to approximately finer than 37 µm and multi-stage cleaning flotation would be required to effectively separate molybdenum from copper. Even though the molybdenum concentrate would probably have to be leached to reduce its copper content to the required minimum.

Tests performed by Britton Research in June 1970 and by Placer Dome Research Centre (PDRC) in March 1976 showed that a marketable grade molybdenum concentrate could be produced from bulk Cu-Mo concentrate. Although the two laboratories used different samples and testing techniques, the results were practically similar. Table 13-1 provides a summary of the results.

Table 13-1: Copper-Molybdenum Separation Test Results – 1970 and 1976

Laboratory	Calc. Head (%)		Cu Concentrate (Cu %)		Mo Concentrate (Mo %)	
	Cu	Mo	Grade	Recovery	Grade	Recovery
Britton	0.53	0.035	20.4	82.1	54.1	65.5
PDRC	0.57	0.038	20.5	84.1	54.6	62.2

In 1981, PDRC conducted further copper-molybdenum separation tests on various individual samples. Table 13-2 shows open-cycle test results on the composite samples employing three cleaning stages in copper-molybdenum bulk flotation circuit and two cleaning stages in molybdenum separation circuit. Although two stages of cleaner flotation in the molybdenum circuit is obviously inadequate, the produced molybdenum concentrate grades ranged from 35 to 38% Mo at recoveries of 53 to 72% Mo, without heating the pulp in molybdenum rougher flotation circuit.

Table 13-2: Copper-Molybdenum Separation Test Results – 1981

Composite	Cu/Mo Separation Test Conditions	Calculated Head (%)		Cu Concentrate (Cu %)		Mo Concentrate (Mo %)	
		Cu	Mo	Grade	Recovery	Grade	Recovery
9#	2 cleaners, room temp.	0.37	0.045	19.9	85.4	38.0	67.9
10#	2 cleaners, room temp.	0.50	0.062	15.7	61.6	36.6	70.8
11#	2 cleaners, room temp.	0.51	0.033	18.6	78.2	35.6	53.4
9# (Test 1)	2 cleaners, room temp.	0.36	0.048	26.1	82.5	37.4	71.7
9# (Test 2)	2 cleaners, heated	0.37	0.047	27.5	83.0	43.1	68.2
9# (Test 3)	2 cleaners, heated	0.37	0.038	27.5	79.2	46.0	70.3

9#: Supergene/Primary Mineralization from Proposed Stage 1 Pit
10#: Oxidized Mineralization from Proposed Stage 1 Pit
11#: Oxidized/Supergene & Primary Mineralization from Proposed Stage 2 Pit

To improve the molybdenum concentrate grade, Tests No. 2 and 3 explored the possibility of destroying the retained reagents by heating the pulp. Large head samples (60 kg for Test No. 2 and 80 kg for Test No. 3) were used to obtain sufficient bulk concentrate for the molybdenum cleaner flotation. The test results showed that heating process prior to molybdenum cleaner flotation would improve the molybdenum concentrate grade considerably without adversely and significantly affecting molybdenum recovery. The copper content of the molybdenum concentrate produced in these tests was high (3.5% Cu).

Although the grade of the molybdenum concentrate produced was still considered low, it is expected that upgrading of the molybdenum concentrate to the required grade (50% Mo) would be possible with further optimizing process conditions and increasing cleaner flotation stages.

In 1976, PDRC conducted 15 copper-molybdenum separation tests on the bulk copper-molybdenum concentrates produced from pilot plant tests. The results are summarized in Table 13-3.

Table 13-3: Copper and Molybdenum Separation Test Results – 1976

Composite	Test #	Calculated Head (%)		Molybdenum Concentrate			
				Grade (%)		Recovery (%)	
		Cu	MoS_2	Cu	MoS_2	Cu	MoS_2
PP 1-2	H-1	28.7	2.36	0.43	96.1	0.03	85.5
PP 1-2	H-2	28.1	2.38	0.47	96.5	0.04	87.2
PP 3-4-5	1	20.4	1.30	5.84	30.8	1.09	90.1
PP 3-4-5	2	20.4	1.18	4.32	45.3	0.47	85.1
PP 3-4-5	3	20.4	1.29	3.28	57.8	0.34	95.6
PP 3-4-5	4	20.2	1.30	4.40	57.3	0.47	95.1
PP 3-4-5	5	20.1	1.34	1.04	79.1	0.07	77.0
PP 3-4-5	6	20.0	1.38	1.26	79.9	0.09	78.6
PP 3-4-5	7	19.9	1.28	1.28	74.9	0.08	74.0
PP 3-4-5	8	20.3	1.38	1.02	78.1	0.07	78.4
PP 3-4-5	9	20.2	1.21	0.87	74.9	0.06	82.6
PP 3-4-5	10	20.5	1.25	0.48	83.5	0.03	85.9
PP 3-4-5	11	20.1	1.18	0.55	84.4	0.03	76.0
PP 3-4-5	12	20.0	1.28	0.31	86.9	0.02	73.6
PP 6-7-8	M-1	19.3	2.36	0.43	91.0	0.05	93.8

The tested procedures included one stage of regrinding and two or three stages of cleaner flotation, using sodium sulphide (Na_2S), sodium silicate (Na_2SiO_3) and sodium cyanide (NaCN) as copper and slime suppressants. Four of the tests (Tests 10, H-1, H-2, and M-1) generated good results. The test results indicated the molybdenum concentrate could be upgraded to over 90% MoS_2 with stage recoveries higher than 90%. The copper content in the molybdenum concentrate was approximately 0.4 to 0.5%.

13.1.2 2007–2008 Test Work (G&T)

Between October 2007 and March 2008, a preliminary test program was conducted by G&T on four supergene and hypogene mineralization composites. The test program investigated mineralogical characteristics, metallurgical responses to conventional flotation processes, and resistance of the mineralization to ball mill grinding. Under the test conditions developed, four locked cycle flotation tests were carried out to study the effect of flotation middlings on metallurgical performance. The test results are summarized in following sections.

13.1.2.1 Head Characteristics

The results of chemical analysis on the four composites are summarized in Table 13-4.

Table 13-4: Head Assay Results

Composite	Cu (%)	Fe (%)	Mo (%)	S(-2) (%)	Pb (%)	Zn (%)	Bi (ppm)	As (%)	Cu(ox) (%)
Low Cu Oxide Supergene	0.37	2.16	0.029	1.63	<.01	0.025	99	<.01	0.046
High Cu Oxide Supergene	0.37	2.85	0.025	1.78	<.01	0.02	107	<.01	0.056
Low Grade Hypogene	0.31	4.69	0.034	4.21	<.01	0.01	50	<.01	-
High Grade Hypogene	0.38	4.41	0.041	4.79	<.01	0.01	25	<.01	-

The results indicate that the oxidation degree of the supergene samples is much higher than the hypogene samples. The upper zone (supergene) contained less molybdenum in comparison with the lower zone.

A mineralogical determination was conducted on the Low Cu Oxide Supergene and High Grade Hypogene composites. The results, shown in Table 13-5, indicate that chalcopyrite is the dominant sulphide mineral. The total sulphide mineral content in the supergene sample is approximately 4.8%, much lower than the 7.0% in the hypogene sample. Molybdenum occurs as molybdenite.

Table 13-5: Main Mineral Distribution of Head Samples

Composite	Cp (%)	Bn (%)	Ch (%)	Md (%)	Py (%)	Gn (%)
High Grade Hypogene	1.11	0.01	<0.01	0.06	5.9	92.9
Low Copper Oxide Supergene	0.87	<0.01	0.09	0.05	3.9	95.1

Note: Cp: chalcopyrite; Bn: bornite; Ch: chalcocite; Md: molybdenite; Py: pyrite; Gn: Gangues

At a grind size of 80% passing 158 µm (hypogene) and 170 µm (supergene), the two composites produce very similar mineral liberation levels for copper and molybdenum minerals. The liberation level for molybdenite ranges from 66% to 71%, higher than copper minerals varying from 50% to 55%.

The study also indicates that a coarse primary grind size of 80% passing 200 µm could result in a poor copper metallurgical performance, due to the low liberation of copper minerals.

13.1.2.2 Grindability

A grindability determination test showed that the Bond ball mill work index of the Low Grade Hypogene composite is 18.4 kWh/t, which indicates a hard ball mill grinding resistance.

Comparative work index tests were conducted on the four master composites. The test results in Table 13-6 show that the supergene composites are softer than the hypogene composites.

Table 13-6: Comparative Work Index

Composite	Comparative Work Index (kWh/t)
High Grade Hypogene	18.6
Low Grade Hypogene	17.7
Low Copper Oxide Supergene	15.5
High Copper Oxide Supergene	11.2

13.1.2.3 Copper and Molybdenum Bulk Flotation – Bench Tests

G&T investigated the effect of primary grind size, rougher flotation pH, regrind size, and cleaner flotation pH on the copper and molybdenum metallurgical performance of the supergene and hypogene samples. The collectors used in the test program were potassium amyl xanthate (PAX) and fuel oil. The effect of adding A3302 on the molybdenum flotation was also explored. The frother used was methyl isobutyl carbinol (MIBC). Lime was added to adjust pulp pH.

The test results indicated that the hypogene mineralization had better metallurgical responses than the supergene mineralization. On average, approximately 91% copper and 92% molybdenum were recovered from rougher flotation concentrates for the High Grade Hypogene composite, while approximately 86% copper and 82% molybdenum were concentrated for the Low Copper Oxide Supergene composite.

Average mass recovery of rougher concentrates of the High Grade Hypogene composite and the Low Copper Oxide Supergene composite were approximately 13% and 10%, respectively.

Primary Grind Particle Size

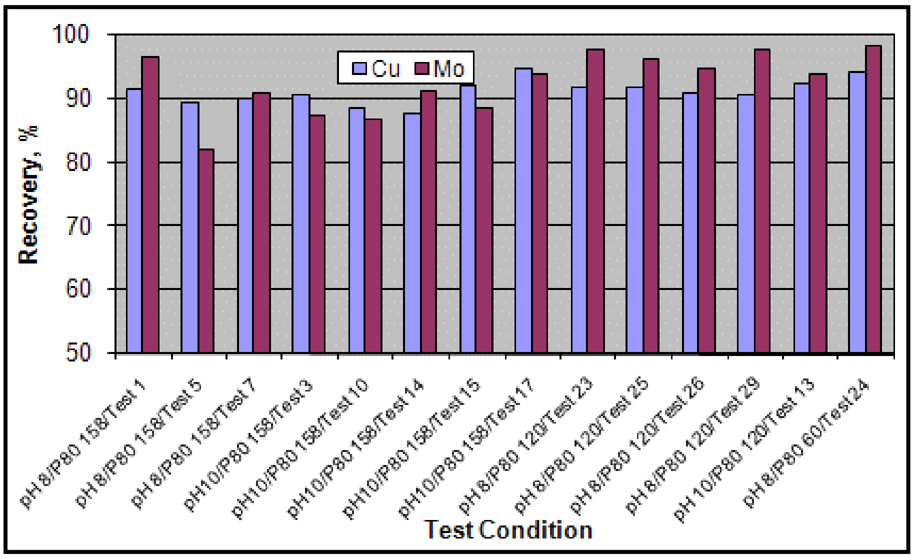
It appears that copper recovery improved with an increase in grinding fineness. However, the improvement of copper recovery was not significant when primary grind size was finer than 80% passing 100 µm. The test results seem to indicate that the supergene mineralization was more sensitive to primary grind size, compared to the hypogene mineralization.

For molybdenum recovery, the effect of primary grind size on the High Grade Hypogene composite was more significant in comparison with the Low Copper Oxide Supergene composite.

The test results are plotted in Figure 13-1 and Figure 13-2.

Figure 13-1: Metal Recovery vs. Primary Grind Size – High Grade Hypogene

Individual Tests



Average

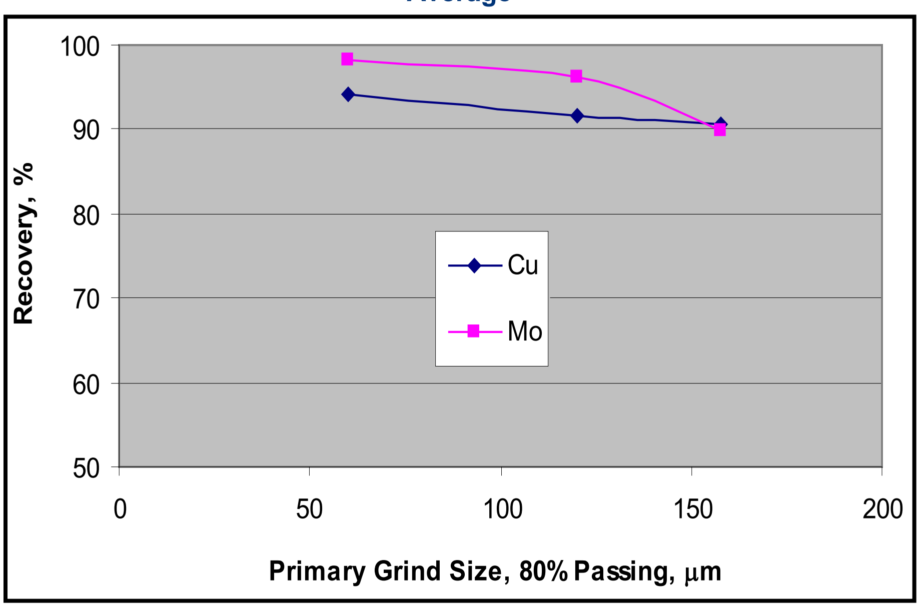
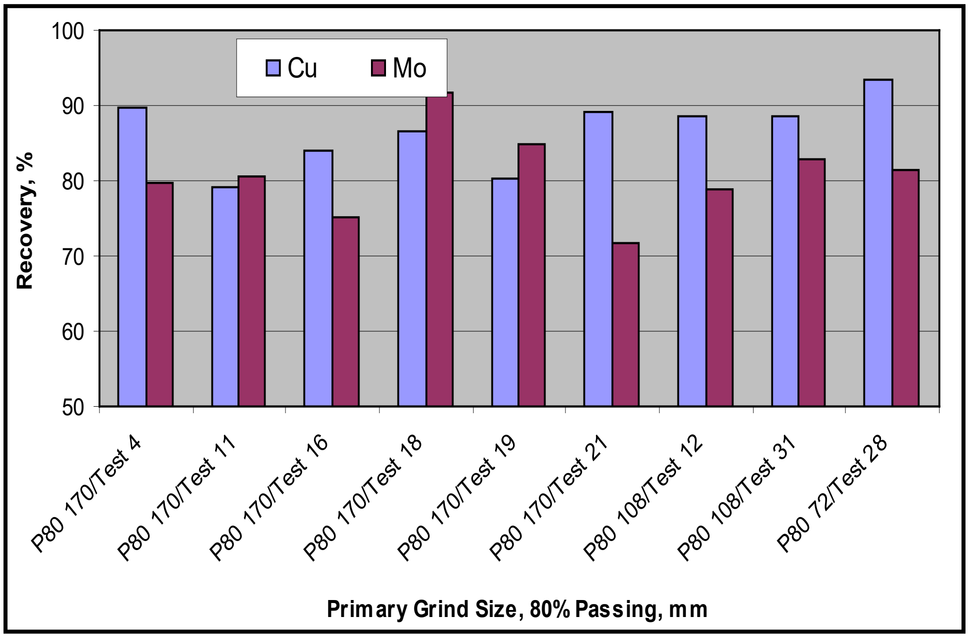
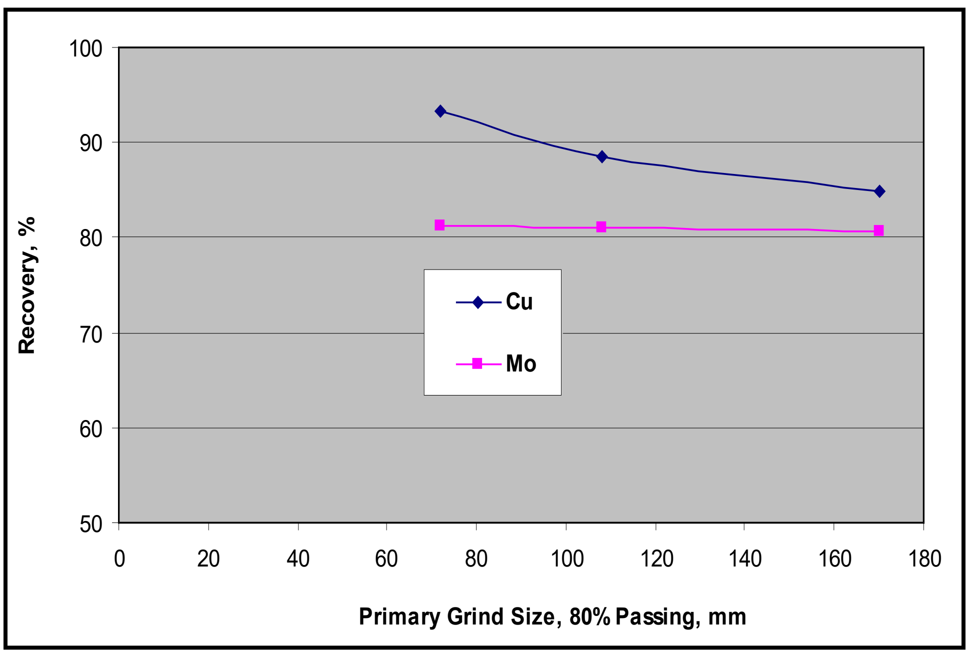


Figure 13-2: Metal Recovery vs. Primary Grind Size – Low Copper Oxide Supergene

Individual Tests



Average



Rougher Flotation pH

The test results show that within the tested pH range from the natural pH to pH 10, pulp pH did not significantly affect copper recovery for both the supergene and hypogene mineralization. When the pH value was above 10 by adding lime, molybdenum flotation of the Low Copper Oxide Supergene composite was slightly suppressed.

Regrind Particle Size and Cleaner Flotation pH

The batch cleaner flotation tests also investigated the effect of regrind size and cleaner pH on the metallurgical performance of the supergene and hypogene samples. The tested pulp pH ranged from 10 to 11.5. The regrind sizes varied from 80% passing 56 to 10 µm for hypogene composite and 38 to 9 µm for supergene composite.

Concentrates containing higher than 25% Cu were produced from the two mineral samples. The results indicate that regrind size and slurry pH had a substantial impact on metal recovery and concentrate grade.

Copper grade of the bulk concentrate generally increased with a decrease in regrind size of bulk rougher concentrate. A fine regrind size, approximately 80% passing 20 µm, was required to generate a concentrate containing more than 25% Cu for both hypogene and supergene mineral samples.

Cleaner flotation pulp pH was also one of the important factors affecting metallurgical performance, particularly copper grade of the final concentrate. To obtain a higher than 25% Cu concentrate, it is necessary to upgrade reground rougher concentrate at a pH of higher than 11.0, particularly for the supergene material.

An increase in regrind fineness also improved the recovery of molybdenum. However, an increase in slurry pH significantly suppressed the recovery of molybdenum minerals at the conditions tested.

A3302 Collector

To improve molybdenum recovery, a cleaner scavenger flotation was incorporated in the first cleaner flotation with adding A3302 collector. This resulted in a significantly improved molybdenum recovery.

13.1.2.4 Copper and Molybdenum Bulk Flotation – Locked Cycle Tests

Four locked cycle tests were conducted on three different composites: High Grade Hypogene, Low Grade Hypogene, and Low Copper Oxide Supergene. The bench scale tests investigated only copper and molybdenum bulk flotation. The test results are shown in Table 13-7.

Table 13-7: Locked Cycle Test Results

Composite (Test)	Product	Grade (%)		Recovery (%)		
		Cu	Mo	Mass	Cu	Mo
Low Grade HG (Test 32)	Head	0.33	0.035	100.0	100.0	100.0
	Cu/Mo Bulk Concentrate	29.0	2.73	0.9	82.7	72.9
	1st Cleaner Scavenger Tailings	0.10	0.067	10.9	3.5	20.8
	Rougher Scavenger Tailings	0.05	0.003	88.2	13.8	6.3
High Grade HG (Test 30)	Head	0.39	0.040	100.0	100.0	100.0
	Cu/Mo Bulk Concentrate	26.0	2.53	1.3	86.5	81.6
	1st Cleaner Scavenger Tailings	0.15	0.055	8.4	3.2	11.6
	Rougher Scavenger Tailings	0.04	0.003	90.3	10.3	6.7
High Grade HG (Test 20)	Head	0.39	0.046	100	100	100
	Cu/Mo Bulk Concentrate	30.9	1.00	1.1	90.3	24.9
	1st Cleaner Scavenger Tailings	0.12	0.26	11.0	3.5	60.9
	Rougher Scavenger Tailings	0.03	0.007	87.9	6.3	14.2
Low Cu Ox, SG (Test 33)	Head	0.39	0.033	100.0	100.0	100.0
	Cu/Mo Bulk Concentrate	26.1	1.60	1.3	85.1	61.4
	1st Cleaner Scavenger Tailings	0.20	0.056	9.6	4.8	16.3
	Rougher Scavenger Tailings	0.04	0.008	89.1	10.1	22.2

Bulk copper-molybdenum concentrates with a grade over 26% Cu were produced from these samples. Middlings recirculation did not significantly impact copper and molybdenum metallurgical performance.

Copper recoveries were approximately 83% for the Low Grade Hypogene composite, over 87% for the High Grade Hypogene composite, and 85% for the Low Copper Oxide Supergene composite.

The supergene and hypogene materials yielded different molybdenum metallurgical performances. The hypogene materials responded better to the tested flowsheet than the supergene material. The molybdenum recoveries reporting to the copper/molybdenum bulk concentrates were 73% for the low grade hypogene sample and 82% for the high grade hypogene sample, and 61% for the supergene sample.

Test 20 generated a poor molybdenum recovery. Most of molybdenum was lost into the first cleaner tailings. The poor result may be caused by insufficient collecting ability and flotation retention time for the molybdenum minerals at the first cleaner stage, due to a slow flotation kinetic of the molybdenum minerals and a high pH at the cleaner flotation stage.

Compared with Test 20, Test 30 produced encouraging results for molybdenum recovery. Test 30 modified the test conditions by reducing the cleaner flotation pH to 10, introducing a cleaner scavenge flotation, and adding A3302 for improving molybdenite flotation.

13.1.3 2009 Bench Scale and Pilot Plant Test Work (G&T)

In 2009, G&T conducted a further test program on the additional samples from both supergene and hypogene zones.

13.1.3.1 Head Characteristics

Coarse-crushed and drill core samples were used to make 10 composites of supergene and hypogene samples for bench open circuit and locked cycle flotation tests and bulk composites for pilot plant tests and generation of bulk concentrate for bench copper-molybdenum separation tests.

The head grades of the 10 composites and pilot plant samples are listed in Table 13-8.

Table 13-8: Head Assay of Test Samples

Sample	Element/Content (%)				
	Cu	Fe	Mo	S (-2)	S (total)
Supergene Lo Cu Lo Mo	0.21	4.95	0.014	2.75	3.23
Supergene Lo Cu Avg Mo	0.20	3.55	0.045	2.53	2.6
Supergene Avg Cu Avg Mo	0.42	2.00	0.033	1.60	1.61
Supergene Hi Cu Avg Mo	0.79	3.71	0.034	1.82	1.84
Supergene Hi Cu Hi Mo	0.66	3.20	0.089	1.91	2.23
Hypogene Hi Cu Hi Mo	0.20	2.90	0.023	2.38	2.59
Hypogene Lo Cu Avg Mo	0.21	1.36	0.041	2.30	2.46
Hypogene Avg Cu Avg Mo	0.32	3.83	0.042	2.59	2.80
Hypogene Hi Cu Avg Mo	0.56	2.74	0.067	2.74	2.82
Hypogene Hi Cu Hi Mo	0.54	2.99	0.075	3.51	3.71
Supergene PP Composite*	0.39	3.41	0.033	2.36	2.51
Hypogene PP Composite*	0.29	3.45	0.060	3.25	3.44

* Pilot plant feed samples

The specific gravity of the material was measured to be 2.64 for the supergene sample and 2.68 for the hypogene sample.

As in the previous sample set tested, the samples showed similar mineralization and high ratio of pyrite to copper sulphides. At a grind size of 80% passing 100 µm, the mineralogical analysis indicated that copper and molybdenum are expected to be sufficiently liberated for target metal recovery by rougher flotation. The mineralogical analysis also indicated that the rougher concentrate could need to be reground to between 80% passing 10 and 30 µm for concentrate upgrading. The mineralogical composition of three composites is summarized in Table 13-9.

Table 13-9: Mineralogical Composition of Three Composites

Sample	Mineral Content (%)					
	Chalcopyrite	Bornite	Chalcocite/ Covellite	Molybdenite	Pyrite	Gangue*
Supergene Hi Cu Avg Mo	1.01	0.01	0.31	0.16	6.0	92.9
Supergene Hi Cu Hi Mo	1.08	0.01	0.34	0.14	5.4	93.0
Hypogene Low Cu Low Mo	0.59	0.02	0.01	0.03	3.6	95.7

Note: Non-sulphide Gangues.

13.1.3.2 Grindability

Two samples, labelled as Supergene and Hypogene, were submitted to SGS for MacPherson autogenous grindability, as wells as ball mill grindability testing. As summarized in Table 13-10, the mineral samples may generally be considered as moderately hard with the hypogene sample being slightly harder than the supergene sample. The MacPherson test results indicate that a pebble crusher would unlikely be required in a SAG milling circuit.

Table 13-10: MacPherson Grindability Test Results

Sample	MacPherson Grindability		Bond Ball Mill Work Index, BWi (kWh/t)
	Gross Specific Energy Requirement (kWh/t)	Work Index, AWi (kWh/t)	
Supergene	8.6	15.0	14.2
Hypogene	9.9	15.5	15.4

13.1.3.3 Copper and Molybdenum Bulk Flotation – Bench Tests

The tested bulk flotation flowsheet comprised of primary grinding to approximately 80% passing 100 microns, rougher flotation, rougher concentrate regrind to 80% passing 10 to 30 µm followed by three stages of cleaner flotation. Fuel oil was added to primary grinding as a molybdenum mineral collector while PAX was added in rougher and cleaner flotation to float the copper sulphides. Rougher flotation was conducted at the natural pH (approximate pH 8) and cleaner flotation was run at pH between 10 to 11. Cytec 3302 was added to the cleaner scavenger circuit for improving molybdenum flotation.

13.1.3.4 Copper and Molybdenum Bulk Flotation – Locked Cycle Tests

Locked cycle tests were run on the six composites that cover the expected range of copper and molybdenum head grades and on the two bulk supergene and hypogene samples for the pilot plant tests. The recoveries and grades of the bulk copper-molybdenum concentrates produced from the supergene and hypogene composites are summarized in Table 13-11. Cytec 3302 was added to the bulk cleaner scavenger in some of the tests, but it did not affect the flotation performance.

Table 13-11: Locked Cycle Bulk Flotation Test Results

Sample	Test ID	Feed Grade (%)		Bulk Concentrate Grade (%)		Recovery (%)	
		Cu	Mo	Cu	Mo	Cu	Mo
Supergene Lo Cu Lo Mo	21	0.21	0.014	16.5	0.31	69	20
Supergene Med Cu Med Mo	23	0.42	0.033	30.6	2.40	87	92
Supergene Hi Cu Hi Mo	20	0.66	0.089	25.7	3.32	86	81
Hypogene Lo Cu Lo Mo	17	0.20	0.023	15.5	2.25	78	88
Hypogene Med Cu Med Mo	18	0.32	0.042	24.8	3.61	80	83
Hypogene Hi Cu Hi Mo	19	0.54	0.075	28.0	4.31	88	95
Supergene PP Composite*	-	0.38	0.031	22.8	1.9	80	81
Hypogene PP Composite*	-	0.28	0.057	26.0	5.8	85	92

* Pilot plant feed samples

13.1.3.5 Copper and Molybdenum Bulk Flotation – Pilot Plant Tests

The 2009 test work conducted pilot plant tests to verify the metallurgical performances of the mineralization and generate bulk concentrates for copper and molybdenum separation tests. The pilot plant test results are summarized in Table 13-12.

Table 13-12: Pilot Plant Test Results

Sample	Test ID	Feed Grade (% or gpt)			Bulk Concentrate Grade (% or gpt)			Recovery (%)		
		Cu	Mo	Ag*	Cu	Mo	Ag*	Cu	Mo	Ag
Supergene Composite	P1	0.39	0.033	7	13.4	0.7	141	68.2	50.4	58
	P2				15.0	1.3	188	68.1	70.8	60
Hypogene Composite	P3	0.29	0.060	10	22.2	4.7	357	82.3	88.4	71
	P4				20.6	3.2	310	76.3	81.0	65
	P5				15.4	2.4	264	79.9	77.1	67
	P6				24.2	5.6	379	84.1	91.0	68

* gpt

The metallurgical performance of the hypogene composite in the pilot plant bulk flotation was similar to that from the locked cycle tests. The pilot plant results for the supergene composite, however, were poor, particularly in the bulk cleaner flotation. The reasons for the poor performance were not known. Extending the cleaner flotation circuit did not improve the performance and did not produce acceptable concentrate grades.

Silver recovery in the bulk concentrate was tracked in the pilot plant tests at 65 to 71% for the hypogene composite and 58% to 60% for the supergene composite.

13.1.3.6 Copper and Molybdenum Separation Flotation – Bench Tests

The hypogene bulk concentrate produced in the pilot plant campaign, assaying 22.3% Cu and 4.86% Mo, was used in copper-molybdenum separation tests.

The separation flotation did not produce a high grade concentrate (>50% Mo) and recovery at the same time. The best results obtained under the tested separation conditions were 48% Mo grade at a molybdenum recovery of only 30% due to molybdenum losses in cleaner flotation, particularly in the first cleaner flotation.

A series of tests was subsequently conducted to improve the molybdenum flotation performance, including:

- Additional upgrading of the bulk concentrate;
- Scrubbing of the bulk concentrate with hypochlorite and acetone;
- Regrinding of the separation feed and in the separation circuit in the order of 80% passing 30 µm; and
- Optimizing reagent regime, such as increasing fuel oil and sodium hydrosulfide (NaHS) additions and the use of cyanide to suppress copper minerals.

The best results were obtained with high fuel oil and NaHS dosages, addition of cyanide and with the inclusion of regrinding of the molybdenum rougher concentrate. These test conditions (Test #46) are listed in Table 13-13. The separation stage molybdenum recovery achieved under these conditions was 58.4% at 57.1% Mo in the concentrate. The low recovery was due to losses during the upgrading. Further work is required to determine the causes of losses in cleaner tailings and the means to improve molybdenum recovery while maintaining the molybdenum grade at over 50%.

Table 13-13: Molybdenum Separation Conditions (pH, Reagent Type and Dosage)

Circuit	Molybdenum Rougher Flotation			Molybdenum Cleaner Flotation			
Reagent	NaHS	Fuel Oil	pH	NaHS	Fuel Oil	Cyanide	pH
Dosage (gpt)	9,100	280	10	5,600	480	100	10

13.1.4 2011–2012 Bench Scale Test Work (RDI)

During 2011 and 2012, additional test work was conducted on fresh drill core samples, predominantly hypogene mineralization, with the primary objective to evaluate copper and molybdenum separation. The test program included evaluation of the bulk flotation parameters developed by G&T. Bench bulk flotation was carried out to generate a bulk concentrate for the separation tests. Only two copper-molybdenum separation tests were conducted because a small quantity of bulk concentrate was produced by the bench flotation testing.

13.1.4.1 Head Characteristics

The head assay of the composite sample used for the testing is shown in Table 13-14.

Table 13-14: Head Assay of Test Composite

Element	Cu	Mo	Fe	S (total)	Ag
Unit	(%)	(%)	(%)	(%)	(gpt)
Content	0.363	0.0296	2.87	2.25	4.5

13.1.4.2 Copper and Molybdenum Bulk Flotation – Bench Tests

Bulk rougher flotation tests were performed to optimize the process parameters determined by G & T. The variables investigated included grind size, flotation time, flotation pH and alternate sulphide collectors. The results from the test work are summarized as follows:

- Copper recovery into rougher concentrate improved with an increase in primary grind size fineness. A grind size of 80% passing 105 microns was selected for the process.
- Reagents sodium isopropyl xanthate (SIPX), Aero 3477 and Aero 8989 were not as effective as PAX for the target sulphide flotation.

- A slight improvement in copper recovery could be achieved at pH 9 to 10 as compared with the natural pH of 8.
- Molybdenum recovery was not sensitive to the primary grind size and pulp pH tested.

Test Cl-1 conducted at pH 9 with PAX and fuel oil as collectors recovered 85.3% of the copper, 86.7% of the molybdenum and 84.1% of the silver into a concentrate grading 6.79% Cu, 0.596% Mo and 62 gpt Ag.

The subsequent open circuit bulk cleaner flotation was run under the similar conditions as developed by the G&T program with rougher concentrate regrind followed by three stages of cleaner flotation.

The third bulk cleaner flotation recovered 40.1% of the copper, 41.7% of the molybdenum, and 29.9% of the silver in a concentrate assaying 24% Cu, 2.16% Mo and 165 gpt Ag.

Most of the mineral losses was in the first cleaner stage, similar to the observations in the G&T test work.

13.1.4.3 Copper and Molybdenum Separation Flotation – Bench Tests

Using open circuit bulk flotation procedure, the bulk concentrate for the copper-molybdenum separation tests were generated from the 2011-2012 composite sample. Two separation tests were conducted. Sodium bisulfite ($NaHSO_3$) and sodium hydrosulfide (NaHS) were used to depress copper sulphides. It was found that NaHS was more effective in the coper and molybdenum separation.

Due to the limited bulk concentrate produced, only one stage of cleaner flotation was conducted followed by molybdenum rougher flotation which produced a molybdenum rougher concentrate grading 17% Mo and 4.94% Cu. After one stage of cleaner flotation, the cleaner concentrate assayed 35.7% Mo and 0.54% Cu. The molybdenum recovery in the cleaner concentrate was low at 51.5%.

13.2 Recommended Further Test Work

Further work is required to optimize reagent regime and primary grind size and regrind sizes to further improve copper and molybdenum recoveries and concentrate quality, in particular for the supergene mineralization. Recommended test work is outlined in Section 18.

14.0 MINERAL RESOURCE ESTIMATES

14.1 Basis of Current Resource Estimate

This mineral resource estimate has been completed by Tetra Tech to incorporate new information collected from the Berg Project since the previous NI 43-101 Technical Report in 2009. The block modelling has been completed using Datamine Studio RM v 1.2.47.0.

The 2011 drilling campaign completed 36 surface drillholes, totaling 10,677.6 m, and collection of 6,140 drill core samples. The program focused on infill drilling in areas with low density sampling, and as perimeter drilling to test for potential expansion of known resources.

A weighted average between the three year trailing average, and 5 year consensus forecast pricing (Consensus Economics Inc., 2021) of 40% and 60% respectively along with preliminary metallurgical recovery data assumptions have been incorporated to calculate a CuEq cut-off value of 0.20% for reporting of Mineral Resources.

14.2 Database

Separate databases received from Surge containing data from 2008 and previous and containing the 2011 data were merged by Tetra Tech to form a single database suitable for use in development of the geological and mineral resource model. A data inventory of the drillhole database is summarized in Table 14-1.

Table 14-1: Inventory of the Drillhole Database Used for the Mineral Resource Estimate

Data Type	Number of Entries (non-composite)	Total Length	Comments
DH Collar	201	51,662.33m	Excludes: 10 Sierra Empire holes – S13-S24, and 4 Kennecott holes – BRG-010,011,063 and 065
Survey	873		
Assay	20,281	49,460.99 m	
Lithology	2,628	51,662.31 m	
Weathering (Mtyp)	818	40,984.67 m	
Specific Gravity	2,996		Non-zero entries
Recovery	11,854		

14.3 Geological Model

The digital geological model development interpretation of the Berg deposit has been developed through iteration since 2007. The most recent model was amended in 2011 by Equity using Vulcan software to incorporate new information collected during the drilling campaign of that year. The model was provided to Tetra Tech from Surge and consists of seven lithologic units and three weathering zone domains interpreted from drilling and surface mapping. The model was imported by Tetra Tech into Datamine format files.

The QP reviewed the model in 3D and also verified some interpreted lithological contacts during a core shack visit from February 10th-12th 2021. This model was considered by the QP to be current since there has not been any additional drilling on the property since 2011 and has been used as the base control for lithological domaining in the current resource estimate. Moreover, the QP agrees with the geologic interpretation and the boundaries applied to the model.

The following lithological units are represented in the model:

Lithological Domains:

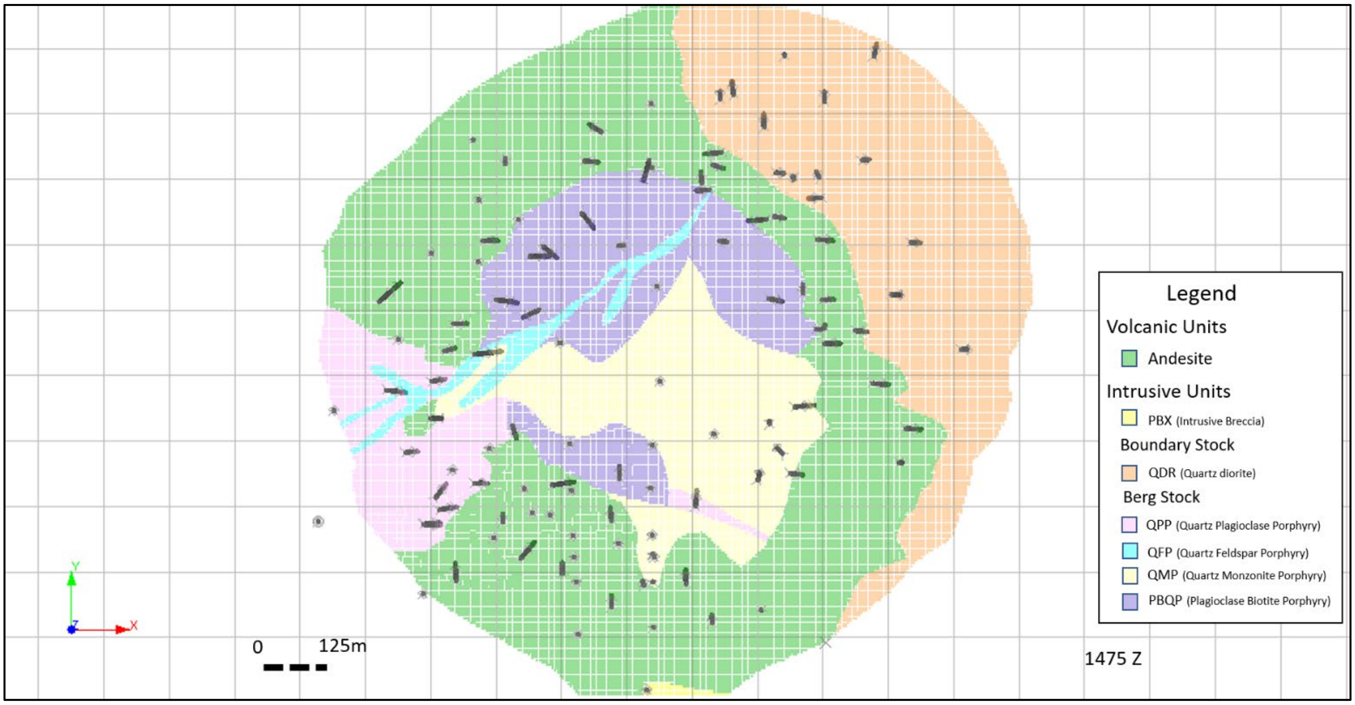
- Overburden
- AND (Andesitic Volcanics)
- QDR (Quartz Diorite)
- PBX (Intrusive Breccia)
- Berg Intrusive Stock, comprised of:
  - PBQP (Plagioclase-Biotite-Quartz Porphyry);
  - QMP (Quartz Monzonite Porphyry);
  - QPP (Quartz-Plagioclase Porphyry); and
  - QFP (Quartz-Feldspar Porphyry).

Weathering Horizons:

- LCH (Leached Cap Mineralization)
- SUP (Supergene Mineralization)
- HYP (Hypogene Mineralization)

In order to laterally constrain the grade interpolation, a broad grade shell has been developed based on a limit of approximately 0.10% CuEq in drilling. Additional influence and constraints on mineralization imposed on the interpolation process as boundary conditions are described below in Section 14.5.1.1.

Figure 14-1: Plan View of the Geological Model



14.4 Input Data Analysis

The drillhole database was superimposed on the geological model . The raw data was then composited to 3 m intervals, analyzed for outliers for application of grade capping, and then spatially analyzed using variography. These data management and modifying steps are described in the subsections below.

14.4.1 Raw Assay Data

Descriptive statistics of the raw assay data according to their location within the geological model are included in Tables 14-2 to 14-6.

Table 14-2: Summary of Number of Samples per Domain

		LITHOLOGY								
MIN_TYPE	ITEM	**AND**	**BASALT**	**BRECCIA**	**PBQP**	**QDR**	**QFP**	**QMP**	**QPP**	**TOTAL**
LCH	LENGTH	546	-	-	175	470	30	131	40	1,392
	CU	497			160	411	28	120	33	1,249
	MO	497			159	411	28	120	33	1,248
	AG	278			130	243	11	64	25	751
SUP	LENGTH	2,780	-	6	997	2,702	132	571	662	7,850
	CU	2,746		5	995	2,680	132	570	658	7,786
	MO	2,730		5	991	2,672	130	570	658	7,756
	AG	1,641		0	809	1,986	84	386	565	5,471
HYP	LENGTH	7,944	-	45	2,569	3,964	262	1,267	644	16,695
	CU	7,940		45	2,569	3,954	262	1,245	643	16,658
	MO	7,874		44	2,560	3,891	190	1,245	643	16,447
	AG	6,116		0	2,093	3,539	245	1,000	463	13,456

Table 14-3: Summary of Raw Assay Statistics by Weathering Zone

	STATISTICS PER DOMAIN									
MIN_TYPE	**ITEM**	**N**	**Min**	**Max**	**Mean**	**Var**	**StDv**	**StEr**	**Skew**	**Kurt**	**G.Mean**
LCH	LENGTH	1,139	0.00	32.91	2.50	6.53	2.56	0.07	4.99	36.14	1.73
	CU_%	1,249	0.00	1.836	0.09	0.02	0.14	0.00	4.94	38.41	0.06
	MO_%	1,248	0.00	0.22	0.02	10.24	0.03	0.00	2.47	7.01	0.01
	AG_gpt	751	0.00	173	2.70	67.30	8.20	0.22	12.88	210.57	3.15
SUP	LENGTH	7,850	0.00	98.80	2.31	5.76	2.40	0.03	24.75	802.00	2.01
	CU_%	7,786	0.00	5.64	0.37	0.06	0.25	0.00	2.53	31.31	0.29
	MO_%	7,756	0.00	0.674	0.02	10.34	0.03	0.00	0.00	0.00	0.01
	AG_gpt	5,471	0.00	1020	3.47	265.71	0.18	0.18	38.53	2078.61	2.89
HYPO	LENGTH	16,695	0.00	42.67	2.41	0.65	0.81	0.01	9.79	475.22	2.21
	CU_%	16,658	0.00	2.63	0.21	0.02	0.14	0.00	1.66	9.67	0.16
	MO_%	16,447	0.00	0.51	0.03	0.00	0.03	0.00	3.07	19.51	0.02
	AG_gpt	13,456	0.00	633.00	3.47	150.43	12.26	0.11	25.18	954.28	2.70

Table 14-4: Summary of Raw Assay Statistics within Leach Zone

	LEACHATE STATISTICS										
ROCK_TYPE	**ITEM**	**N**	**Min**	**Max**	**Mean**	**Var**	**StDv**	**StEr**	**Skew**	**Kurt**	**G.Mean**
ANDS	LENGTH	514	0.00	19.51	2.87	6.80	2.61	0.12	3.55	14.48	2.03
	CU_%	468	0.00	1.84	0.09	0.02	0.15	0.01	5.18	43.20	0.06
	MO_%	468	0.00	0.22	0.03	0.00	0.04	0.00	2.10	4.59	0.01
	AG_gpt	228	0.00	67.00	2.06	19.37	4.40	0.19	7.92	99.73	3.17
PBQP	LENGTH	137	0.00	16.15	2.33	3.27	1.81	0.15	4.55	27.08	1.62
	CU_%	124	0.00	1.05	0.11	0.02	0.16	0.01	3.29	13.38	0.07
	MO_%	123	0.00	0.04	0.01	0.00	0.01	0.00	1.06	1.34	0.01
	AG_gpt	94	0.00	58.00	2.51	29.20	5.40	0.46	8.22	79.26	2.65
QDR	LENGTH	414	0.01	32.91	3.02	8.69	2.95	0.14	5.70	43.75	2.40
	CU_%	366	0.00	1.53	0.08	0.02	0.13	0.01	5.18	43.87	0.06
	MO_%	366	0.00	0.17	0.02	0.00	0.03	0.00	2.29	6.08	0.01
	AG_gpt	198	0.00	173.00	2.49	78.65	8.87	0.44	17.21	327.19	3.61
QFP	LENGTH	29	0.91	7.10	2.54	1.70	1.30	0.24	1.42	2.91	2.26
	CU_%	28	0.00	0.08	0.05	0.00	0.02	0.00	-0.05	0.28	0.05
	MO_%	28	0.00	0.17	0.04	0.00	0.05	0.01	0.75	-0.84	0.01
	AG_gpt	11	0.00	15.00	3.03	19.69	4.44	0.82	1.29	0.63	7.34
QMP	LENGTH	129	0.3	23.16	2.64	6.58	2.56	0.23	5.34	34.75	2.15
	CU_%	119	0.00	0.30	0.08	0.01	0.08	0.01	1.19	0.42	0.05
	MO_%	119	0.00	0.11	0.01	0.00	0.03	0.00	2.14	3.68	0.01
	AG_gpt	60	0.00	8.00	0.94	1.89	1.38	0.12	1.98	5.09	1.67
QPP	LENGTH	34	0.2	15.80	2.68	9.63	3.10	0.53	3.22	9.82	1.90
	CU_%	28	0.00	0.45	0.08	0.01	0.10	0.02	1.73	3.34	0.06
	MO_%	28	0.00	0.10	0.02	0.00	0.02	0.00	1.30	1.25	0.02
	AG_gpt	20	0.00	135.00	14.00	997.41	31.58	5.42	2.56	5.48	7.05

Table 14-5: Summary of Raw Assay Statistics within Supergene Zone

	SUPERGENE STATISTICS										
ROCK_TYPE	**ITEM**	**N**	**Min**	**Max**	**Mean**	**Var**	**StDv**	**StEr**	**Skew**	**Kurt**	**G.Mean**
ANDS	LENGTH	2537	0.00	98.80	2.50	13.45	3.67	0.07	18.01	383.95	2.07
	CU_%	2503	0.00	5.64	0.38	0.08	0.28	0.01	3.81	53.73	0.28
	MO_%	2493	0.00	0.67	0.03	0.00	0.04	0.00	4.60	45.16	0.01
	AG_gpt	1360	0.00	1020.00	3.64	634.71	25.19	0.50	29.95	1098.51	3.18
PBQP	LENGTH	801	0.00	6.10	1.95	0.45	0.67	0.02	0.54	1.47	1.78
	CU_%	799	0.00	1.03	0.27	0.02	0.14	0.01	1.08	2.43	0.23
	MO_%	797	0.00	0.21	0.02	0.00	0.02	0.00	3.95	19.81	0.01
	AG_gpt	615	0.00	14.00	2.01	3.67	1.92	0.07	1.71	5.46	2.13
QDR	LENGTH	2294	0.00	21.34	2.31	1.39	1.18	0.02	7.40	101.77	2.10
	CU_%	2275	0.00	2.18	0.46	0.06	0.25	0.01	0.91	3.67	0.37
	MO_%	2270	0.00	0.46	0.02	0.00	0.03	0.00	4.51	41.06	0.01
	AG_gpt	1565	0.00	216.00	3.43	51.99	7.21	0.15	14.85	360.35	3.55
QFP	LENGTH	95	0.3	8.60	2.44	1.10	1.05	0.11	2.64	12.25	2.25
	CU_%	95	0.001	1.46	0.21	0.06	0.25	0.03	2.05	5.79	0.10
	MO_%	94	0.00	0.13	0.02	0.00	0.03	0.00	1.87	3.72	0.00
	AG_gpt	50	0.00	6.00	0.81	1.82	1.35	0.14	2.28	6.19	1.35
QMP	LENGTH	507	0.00	4.42	2.17	0.59	0.77	0.03	-0.12	-0.91	2.00
	CU_%	506	0.00	1.16	0.29	0.03	0.18	0.01	1.53	3.96	0.24
	MO_%	506	0.00	0.15	0.02	0.00	0.02	0.00	2.50	8.02	0.01
	AG_gpt	322	0.00	120.00	2.07	42.99	6.56	0.29	12.82	210.45	1.83
QPP	LENGTH	486	0.00	14.63	2.00	0.72	0.85	0.04	6.93	99.09	1.71
	CU_%	483	0.00	1.30	0.24	0.03	0.17	0.01	2.38	7.80	0.20
	MO_%	483	0.00	0.37	0.03	0.00	0.04	0.00	3.24	18.40	0.02
	AG_gpt	392	0.00	89.00	2.54	27.87	5.28	0.24	10.40	151.14	2.11

Table 14-6: Summary of Raw Assay Statistics within Hypogene Zone

	HYPOGENE STATISTICS										
ROCK_TYPE	**ITEM**	**N**	**Min**	**Max**	**Mean**	**Var**	**StDv**	**StEr**	**Skew**	**Kurt**	**G.Mean**
ANDS	LENGTH	6452	0.00	9.14	2.42	0.53	0.73	0.01	-0.69	1.29	2.18
	CU_%	6449	0.00	1.32	0.24	0.02	0.13	0.00	1.26	4.19	0.20
	MO_%	6407	0.00	0.51	0.03	0.00	0.04	0.00	2.94	18.23	0.02
	AG_gpt	4647	0.00	384.00	3.44	116.13	10.78	0.13	18.81	502.74	3.09
PBQP	LENGTH	2016	0.00	42.67	2.48	1.26	1.12	0.02	22.62	815.43	2.29
	CU_%	2016	0.00	1.01	0.14	0.01	0.08	0.00	2.85	17.60	0.12
	MO_%	2011	0.00	0.29	0.03	0.00	0.03	0.00	2.84	10.97	0.02
	AG_gpt	1569	0.00	633.00	3.85	502.97	22.43	0.50	19.65	470.21	1.96
QDR	LENGTH	3087	0.00	18.29	2.37	0.52	0.72	0.01	4.21	88.64	2.23
	CU_%	3076	0.00	2.63	0.25	0.03	0.17	0.00	1.58	11.85	0.18
	MO_%	3041	0.00	0.49	0.02	0.00	0.03	0.00	3.30	32.08	0.01
	AG_gpt	2658	0.00	131.00	3.87	40.24	6.34	0.11	7.84	98.96	2.98
QFP	LENGTH	186	0.10	3.53	2.28	0.49	0.70	0.05	-0.57	0.15	2.11
	CU_%	186	0.00	0.66	0.10	0.01	0.10	0.01	2.50	7.99	0.06
	MO_%	146	0.00	0.22	0.01	0.00	0.03	0.00	3.95	23.09	0.01
	AG_gpt	175	0.00	64.00	2.75	36.57	6.05	0.44	7.13	61.29	1.80
QMP	LENGTH	1034	0.00	12.19	2.43	0.75	0.87	0.03	1.86	19.66	2.13
	CU_%	1013	0.00	0.84	0.13	0.01	0.09	0.00	2.27	10.66	0.11
	MO_%	1013	0.00	0.34	0.02	0.00	0.03	0.00	3.54	21.84	0.01
	AG_gpt	768	0.00	70.00	2.14	21.34	4.62	0.14	9.16	112.15	1.84
QPP	LENGTH	529	0.00	6.25	2.33	0.54	0.73	0.03	-0.12	0.50	2.15
	CU_%	528	0.00	0.79	0.15	0.01	0.09	0.00	1.30	5.17	0.12
	MO_%	528	0.00	0.28	0.02	0.00	0.03	0.00	4.58	32.18	0.01
	AG_gpt	349	0.00	221.00	3.40	164.92	12.84	0.56	11.46	167.20	2.42

14.4.2 Composites

The raw assay data were composited and normalized into 3 m intervals. Summary statistics of the composite data are shown below in Tables 14-7 to 14-8.

Table 14-7: Summary of Number of Composite Samples per Domain

		LITHOLOGY								
MIN_TYPE	**ITEM**	**AND**	**BASALT**	**BRECCIA**	**PBQP**	**QDR**	**QFP**	**QMP**	**QPP**	**TOTAL**
LCH	LENGTH	466	-	-	104	419	24	109	30	1,152
	CU	352	-	-	83	316	22	87	19	879
	MO	352	-	-	83	316	22	87	19	879
	AG	180	-	-	59	161	6	37	12	455
SUP	LENGTH	2,059	-	8	509	1,733	323	365	323	5,320
	CU	1,866	-	5	508	1,709	318	365	318	5,089
	MO	1,865	-	5	508	1,709	318	365	318	5,088
	AG	918	-	0	365	1,071	237	204	237	3,032
HYP	LENGTH	5,172	-	44	1,590	2,402	142	838	409	10,597
	CU	5,169	-	44	1,590	2,402	142	825	407	10,579
	MO	5,164	-	43	1,590	2,393	120	825	407	10,542
	AG	3,586	-	0	1,280	2,060	141	587	242	7,896

Table 14-8: Summary of Composite Assay Statistics by Weathering Zone

	STATISTICS PER DOMAIN									
MIN_TYPE	**ITEM**	**N**	**Min**	**Max**	**Mean**	**Var**	**StDv**	**StEr**	**Skew**	**Kurt**	**G.Mean**
LCH	LENGTH	1,152	0.00	4.00	3.00	0.02	0.13	0.07	-2.51	32.73	3.00
	CU_%	879	0.00	1.25	0.07	0.01	0.12	0.00	4.04	23.62	0.05
	MO_%	879	0.00	0.22	0.02	8.59	0.03	0.00	2.47	10.48	0.01
	AG_gpt	455	0.00	83.67	1.82	26.59	5.16	0.22	9.72	125.20	2.77
SUP	LENGTH	5,320	0.00	3.96	3.00	0.00	2.40	0.03	24.75	802.00	2.01
	CU_%	5,089	0.00	3.03	0.37	0.06	0.25	0.00	2.53	31.31	0.29
	MO_%	5,088	0.00	0.39	0.02	8.49	0.03	0.00	0.00	0.00	0.01
	AG_gpt	3,032	0.00	461.92	2.68	111.57	0.18	0.18	38.53	2078.61	2.89
HYPO	LENGTH	10,597	0.00	4.00	3.00	0.00	0.03	0.00	9.79	475.22	2.21
	CU_%	10,597	0.00	1.21	0.21	0.02	0.13	0.00	1.66	9.67	0.00
	MO_%	10,579	0.00	0.33	0.03	9.06	0.03	0.00	3.07	19.51	0.02
	AG_gpt	7,896	0.00	427.34	3.37	105.94	10.29	0.10	25.18	954.28	2.70

14.4.3 Capping

The composite dataset was evaluated for outliers using visual histogram and probability plot inspection and decile analysis. The data was inspected by the main weathering domains (i.e., leach, supergene and hypogene) rather than by individual lithologies within each weathering zone since the grade distributions were relatively uniform cross each of the lithological units.

Decile analysis requires sorting the data by increasing grade value and then determining the proportion of metal in each decile. The upper decile (90th to 100th percentile) is further divided into percentiles and the metal proportion in each is calculated. If any one of the following conditions is true, it can be concluded that capping of high grade samples is warranted:

- The upper decile contains more than 40% of the metal in the population or;
- The upper decile contains more than 2.3 times the metal of the next lowest decile or;
- The highest centile contains more than 10% of the metal in the population or;
- The highest centile contains more than 1.75 times the metal of the next lowest centile.

The capping threshold selected is the maximum value that brings the metal distribution into compliance with the above conditions. These thresholds are listed in Table 14-9, below.

Table 14-9: Summary of Capping Applied to Composite Data

	Min	Max	Cap	Number above Cap	% Metal Value Lost
Copper					
Leach	0.00	1.25%	N/A	0	0
Supergene	0.00	3.03%	N/A	0	0
Hypogene	0.00	1.23%	N/A	0	0
Molybdenum					
Leach	0.00	0.22%	N/A	0	0
Supergene	0.00	0.39%	N/A	0	0
Hypogene	0.00	0.38%	N/A	0	0
Silver					
Leach	0.00	83.67gpt	30 gpt	8	5.91
Supergene	0.00	461.92	35 gpt	27	8.45
Hypogene	0.00	427.34	35 gpt	78	7.03

Capping of copper and molybdenum in any domain was found to not be necessary, as none of the above criteria was met during the quantile analysis. A capping threshold of 30 gpt silver was implemented for the leachate horizon, along with a 35 gpt threshold for both the supergene and hypogene horizons. All three of these domains were found to contain greater than 40% total metal content in the upper decile, and more than 2.3 times the metal of the next lowest decile.

Ideally, silver mineralization would have been modelled separately but due to the paucity of silver analyses in the Berg database and because this mineralization was only discovered in 2007, its geological controls are poorly understood.

14.4.4 Variography

Directional sample correlograms were calculated along horizontal azimuths of 0, 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, and 330 degrees. For each azimuth, sample correlograms were also calculated at dips of 30 and 60 degrees and horizontally.

After fitting the variance parameters, the algorithm then fits an ellipsoid to the 37 ranges from the directional models for each structure. The final models of anisotropy are given by the lengths and orientations of the axes of the ellipsoids.

Variography, using Datamine Studio software, was completed on the composited assay dataset. This analysis was reviewed and incorporated into the present block model interpolation. Separate sets of experimental grade variograms were calculated for each of the elements (copper, molybdenum and silver) and each alteration domain respectively. A downhole variogram was created to determine the nugget effect and the correlograms were modelled to determine spatial continuity of the composited mineralization. Tables 14-10 and 14-11 summarize the results of the variography.

Table 14-10: Grade Variogram for Leach Domain

	VRefNum	VAngle	VAxis	Nugget	1st Structure			Variance	SILL	2nd Structure			Variance	SILL
					Range					Range				
					X	Y	Z			X	Y	Z		
Cu	1	0	1	0.001	99.9	60.5	22.3	0.013		-	-	-		
Mo	2	0	1	0.888	57.2	40.3	17.9	1.733		100.3	100.3	37.6	6.255	
Ag	3	0	1	1.067	24	23.7	13.1	0.299		99.4	75.7	20.9	10.615	

Table 14-11: Grade Variogram for Supergene and Hypogene Domain

	VRefNum	VAngle	VAxis	Nugget	1st Structure			Variance	SILL	2nd Structure			Variance	SILL
					Range					Range				
					X	Y	Z			X	Y	Z		
Cu	1	0	1	0.004	98.9	109.1	21.1	0.010		249.7	198.5	291.3	0.023	
Mo	2	0	1	1.366	128.9	198.5	11.9	2.110		199.2	252.2	248.8	5.495	
Ag	3	0	1	4.723	52.9	150	11	7.303		100.9	156.2	111.1	7.481	

14.4.5 Bulk Density

A total of 2,969 usable bulk density measurements have been collected from drill core using in situ mass in water measurement methods since 2007. These data are summarized in Tables 14-12 to 14-14 below, and values for each domain have been applied to the model.

Table 14-12: Number of Specific Gravity Measurements by Geology Domain (SG >0)

	Lithological Domain					
Weathering Horizon	**AND**	**QDR**	**PBQP**	**QFP**	**QMP**	**QPP**
Leach	48	31	15	1	15	2
Supergene	165	192	89	18	91	57
Hypogene	968	556	355	78	212	76

Table 14-13 Standard Deviation of Specific Gravity Measurements by Geology Domain (SG >0)

	Lithological Domain					
Weathering Horizon	**AND**	**QDR**	**PBQP**	**QFP**	**QMP**	**QPP**
Leach	0.14	0.09	0.06	-	0.09	0.01
Supergene	0.22	0.16	0.14	0.20	0.21	0.06
Hypogene	0.12	0.12	0.09	0.10	0.08	0.05

Table 14-14: Average Specific Gravity by Geology Domain (SG >0)

	Lithological Domain					
Weathering Horizon	**AND**	**QDR**	**PBQP**	**QFP**	**QMP**	**QPP**
Leach	2.54	2.47	2.48	2.53	2.50	2.47
Supergene	2.69	2.60	2.54	2.54	2.59	2.61
Hypogene	2.75	2.73	2.61	2.67	2.65	2.64

14.5 Interpolation Plan

14.5.1 Search Parameters

The mineral resource estimations were interpolated as a three-pass system which were run independently within each individual alteration wireframe domain using composite data constrained by the wireframe. The range of the pass 1,2 and 3 search ellipses corresponds to 33%, 66% and 100% respectively of the ranges determined from the variography analysis. Table 14-15 below summarizes search distances and rotations for estimating a block as well as minimum and maximum number of composites required.

Table 14-15: Interpolation Search Parameters by Metal

Berg Copper Estimation Parameters										
Pass Number	**Zone**	**Search Distance**			**Rotation**			**Number of Composites**		
		X	**Y**	**Z**	**Z**	**X**	**Z**	**Min**	**Max**	**Max per Drillhole**
Pass 1	Leachate	33	16.5	8.25	237	14	0	10	12	4
	Supergene	83	67	41.5	237	14	0	10	12	4
	Hypogene	83	67	41.5	237	14	0	10	12	4
Pass 2	Leachate	66	33	16.5	237	14	0	7	12	4
	Supergene	165	132	82.5	237	14	0	7	12	4
	Hypogene	165	132	82.5	237	14	0	7	12	4
Pass 3	Leachate	100	50	25	237	14	0	5	12	4
	Supergene	250	200	125	237	14	0	5	12	4
	Hypogene	250	200	125	237	14	0	5	12	4
Berg Molybdenum Estimation Parameters										
Pass 1	Leachate	33	33	13.2	237	14	0	10	12	4
	Supergene	66	82.5	33	237	14	0	10	12	4
	Hypogene	66	82.5	33	237	14	0	10	12	4
Pass 2	Leachate	66	66	26.4	237	14	0	7	12	4
	Supergene	132	165	66	237	14	0	7	12	4
	Hypogene	132	165	66	237	14	0	7	12	4
Pass 3	Leachate	100	100	40	237	14	0	5	12	4
	Supergene	200	250	100	237	14	0	5	12	4
	Hypogene	200	250	100	237	14	0	5	12	4
Berg Silver Estimation Parameters										
Pass 1	Leachate	33	24.75	6.6	237	14	0	10	12	4
	Supergene	33	49.5	16.5	237	14	0	10	12	4
	Hypogene	33	49.5	16.5	237	14	0	10	12	4
Pass 2	Leachate	66	49.5	13.2	237	14	0	7	12	4
	Supergene	66	99	33	237	14	0	7	12	4
	Hypogene	66	99	33	237	14	0	7	12	4
Pass 3	Leachate	100	75	20	237	14	0	5	12	4
	Supergene	100	150	50	237	14	0	5	12	4
	Hypogene	165	247.5	82.5	237	14	0	5	12	4

14.5.2 Dynamic Anisotropy

The mineral zonation at Berg is quite typical of a porphyry deposit in that it forms concentric rings about the center of a central multi-phase intrusion (i.e., the Berg Stock). The higher grade regions of the deposit are found to straddle the contact between the intrusion and the surrounding andesite and quartz diorite rocks. The direction of greatest continuity is parallel to the intrusive contact and the direction of least continuity is perpendicular to it.

Dynamic anisotropy is an function in Datamine Studio RM that permits the search ellipse orientation to be continuously adjusted to match the tangent of the average orientation of the mineralized zone to mimic curvature or folding structures. This allows the search volume to be oriented to follow the trend of the mineralization. The azimuth of the major and semi-major axes, the search dimensions, and variogram parameters remain unchanged within the search ellipse. The Berg model is, therefore, well suited to the use of the Dynamic Anisotropy to control the search ellipse orientation during the interpolation process.

To use Dynamic Anisotropy, one must first interpolate into the geology model the dip-direction and dip angles of the search ellipsoid before using them for grade estimation. The angles can be derived from the orientation of wireframe triangles and / or from strings digitised in plan and section. At Berg, a horizontal slice through the intrusion was used to generate a set of concentric strings which were then used to interpolate the dip-direction and dip of the search ellipsoid axis into the block model. The strings are shown in Figure 14-2.

Figure 14-2: Dynamic Anisotropy Strings

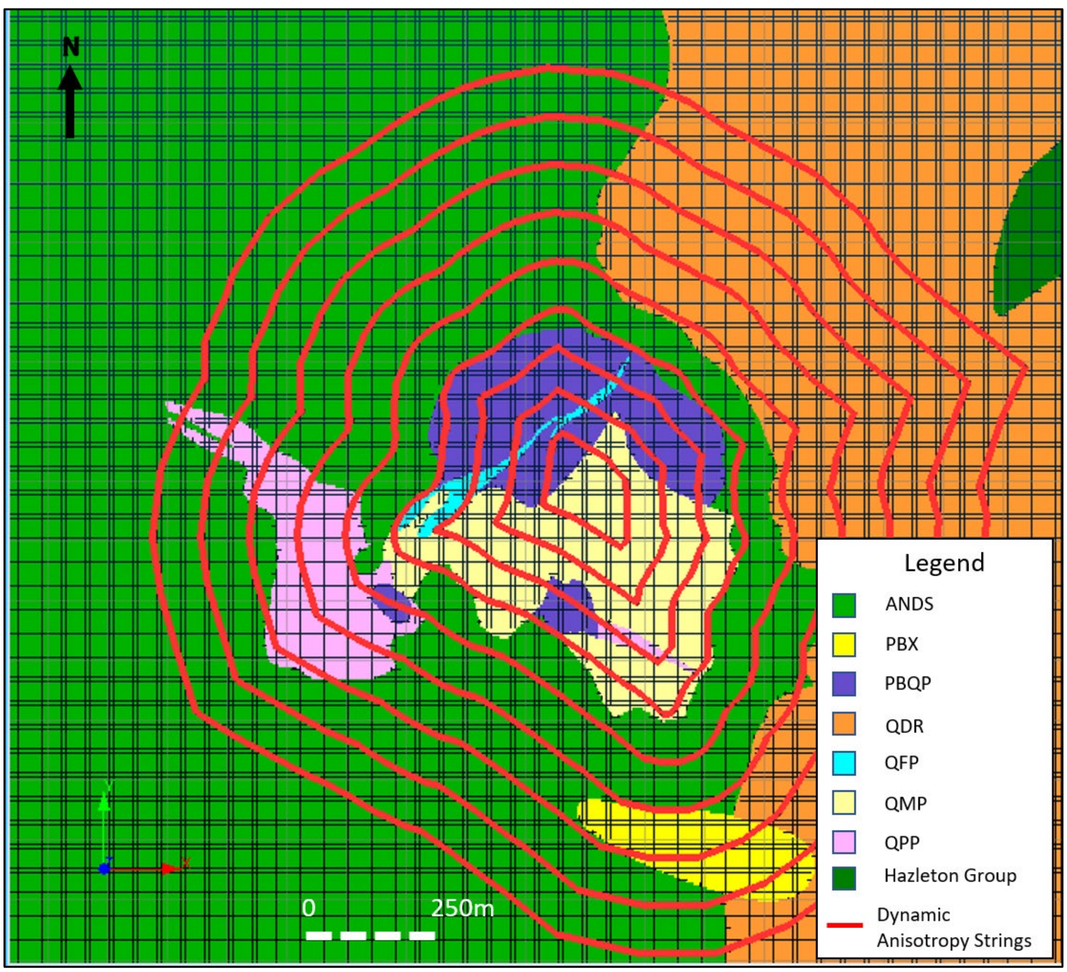
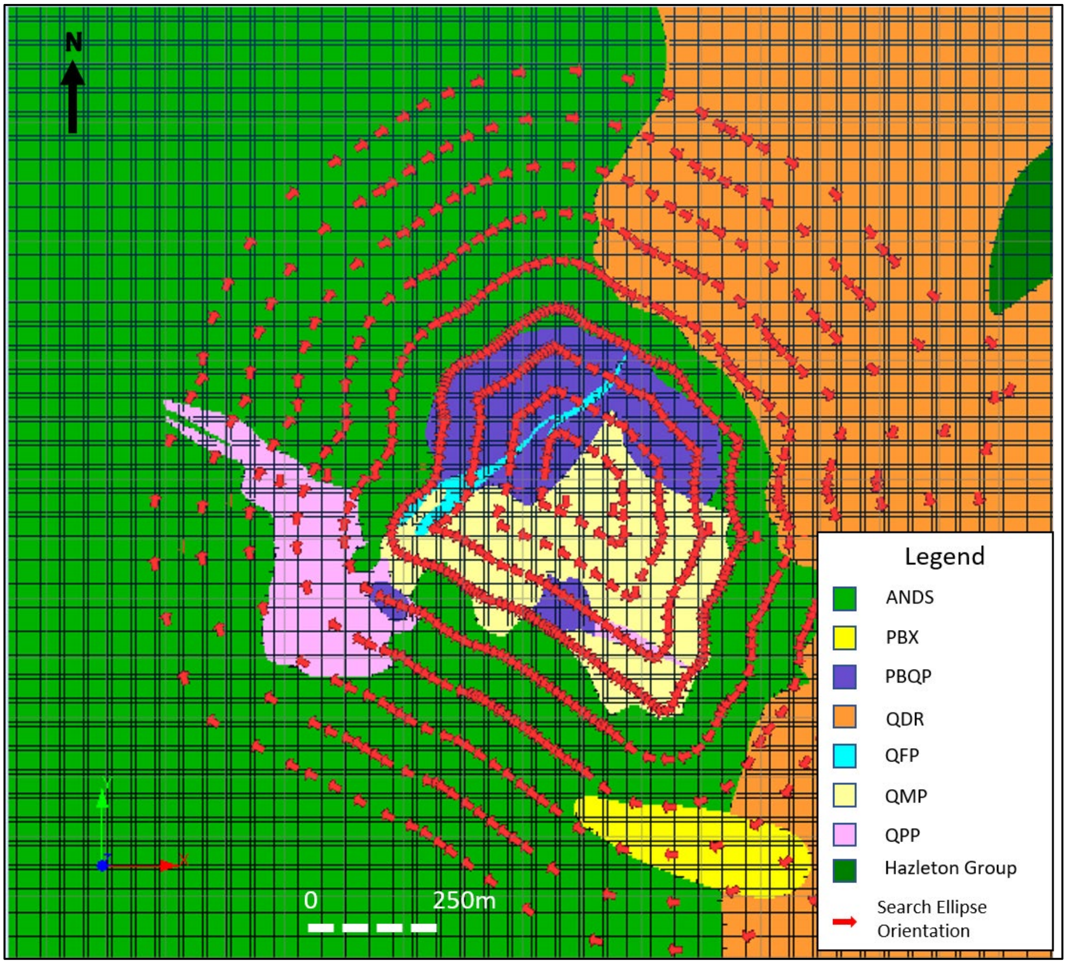


Figure 14-3: Dynamic Anisotropy Search Ellipse Orientation



14.6 Model Development

14.6.1 Boundary Conditions

Contact analysis was conducted through visual inspection of drillhole intersections throughout the various weathered horizons and host lithological units, and by inspection of descriptive statistics by domain.

Copper grade and continuity were seen to be controlled by the mineralization type contacts and by location relative to the intrusive contact. The host lithology appears to have less influence. During the interpolation of the block mode, a hard boundary was allocated to the contact of the Berg Stock with surrounding host lithology thereby preventing the estimation of copper, molybdenum, and silver grades across the contact, soft boundaries were allocated to the contacts of lithology phases internal to the stock, and soft boundaries were allocated between the host quartz diorite and andesite units.

For copper, molybdenum and silver mineralization, hard boundaries were established between the leach zone and supergene zone boundary across all lithologies. The Supergene zone has been interpreted to have been strongly influenced by groundwater flows controlled predominantly by the steep topography; the supergene horizon (only) has been modelled as a continuous mineralized horizon (i.e., soft boundaries) from the andesite and quartz diorite through the upper portion of the intrusive stock. The contact between the supergene and hypogene horizon was determined to be gradational, and soft boundaries were allocated to all mineralization across this contact.

Resources are reported to a maximum depth of 550 m below surface. Although several drill holes did intersect Cu-Mo-Ag mineralization below this depth, in the authors' opinion, there is not a reasonable expectation that material more than 550 m below surface would be mined.

14.6.2 Block Model Dimensions

The drillhole spacing is variable across the deposit due to a range of hole orientations selected by operators to access intersection target from limited drill roads access on the steep topography. Sample spacing is estimated, on average, to be approximately 75 m.

A parent block size was selected as 10 m cubic volumes to accommodate the average sample spacing and the composite sample size. To better honor geological contacts, a sub-block model was developed to allow sub-block dimensions to a minimum of 5 m cubic volumes. The interpolation process results in a grade for the parent block which is then applied to any sub-block which have been formed from the parent block.

The block model dimensions are shown in Table 14-16.

Table 14-16: Block Model Set-up Parameters

Block Model Parameters			
	X	**Y**	**Z**
Minimum	602,000	5,961,757	950
Maximum	604,240	5,963,790	2,260
Model Size (m)	2,230	2,040	1,300
Block Size (m)	10	10	10
Blocks	223	204	130
Min Sub-cell size (m)	5	5	5

14.7 Mineral Resource Statement

14.7.1 Conceptual Pit Shell Constraints and Minimum Grade Cut-off

To determine the quantities of material offering "reasonable prospects for eventual economic extraction" by an open pit, a Lerch Grossman pit optimizer algorithm and reasonable open pit mining assumptions were applied to the block model using Datamine Studio OP™.

Input parameters were developed including a 40%, 60% ratio between the three year historical metal prices and 5 year forward looking consensus metal price forecasts respectively, and metal recoveries, The input parameters were simplified to calculate a copper equivalent (CuEq) cut-off grade of 0.20% to be applied to blocks within the pit for reporting of mineral resources (and are listed in Table 14-17).

The results from the pit optimization are used solely for testing the "reasonable prospects for eventual economic extraction" by an open pit, and do not represent mineral reserves which can only be estimated based on an economic evaluation that is used in a preliminary feasibility or feasibility study of a mineral project. As such, no reserves have been estimated. As per NI 43-101, mineral resources, which are not mineral reserves, do not necessarily demonstrate economic viability.

Table 14-17: Simplified Whittle Optimization Parameters for Estimation of Resource Estimation CuEq Cut-off Grade

Item	Description	Unit	Value ($USD)
Price			
	Cu	$/lb	3.50
	Mo	$/lb	14.00
	Ag	$/oz	21.00
Recovery			
Leach	Cu Recovery	%	0
	Mo Recovery	%	61
	Ag Recovery	%	52
Super	Cu Recovery	%	73
	Mo Recovery	%	61
	Ag Recovery	%	52
Hypogene	Cu Recovery	%	81
	Mo Recovery	%	71
	Ag Recovery	%	67
Process loss		%	1.0
Mining loss		%	2.0
NSR, selling costs		%	1.0
Total Loss		**%**	**4.0**
Process cost		$/t mined	5.50
Mining cost		$/t mined	1.75
G&A		$/t mined	1.50
Transport		$/t mined	0.19
	truck	$/wmt con	40
	ocean	$/wmt con	65

14.7.2 Classification

Mineral Resource Classification was performed in reference to CIM Best Practices. Mineral reserves can only be estimated on an economic evaluation that is used in a preliminary feasibility or a feasibility study on a mineral project, thus no reserves have been estimated, and the mineral resources that are reported are not yet demonstrated to have economic viability for extraction.

Measured Mineral resources were assigned to mineralization falling with pass 1 search ellipse distances for Copper, Indicated were assigned to pass 2 copper search ellipse distances, and inferred resources were assigned to pass 3 copper search ellipses as shown in Table 14-15.

In accordance with CIM Definitions Standards (2014) the QP is of the opinion that the Berg deposit is a reasonable prospect for eventual economic extraction on the basis of:

- Location of the deposit in reasonable proximity to power and road infrastructure;
- Demonstrated size and grade of the mineral resource estimate in comparison to similar deposits types in British Columbia;
- Demonstrated spatial continuity of mineralization;
- No known environmental, permitting, legal, title, taxation, socio-economic, marketing or other relevant issues are known to the QP that may affect the estimate of a mineral resource; and
- The resource statement is based on the block model being constrained to a conceptual pit shell using on Lersch-Grossman algorithm assessment in Studio OP.

Several factors were used in the determination of the mineral resource classification as follows:

- CIM Definition Standards;
- Experience with similar deposits;
- Drillhole spacing; and
- Number of sample composite values used in block grade estimation.

Inferred Classification

Inferred mineral resources are those materials where evidence is sufficient to imply but not verify geological and grade or quality continuity. Those blocks which were interpolated by the third interpolation pass have been classified as Inferred. The blocks are within full range from the input composites as defined by variography and require at least two holes to determine continuity of grade (i.e., one hole with four composites + at least one additional hole with one composite). The majority of these blocks are located at the perimeter of the block model and were first constrained by a 0.10 Cu% grade shell, then classified within the conceptual pit shell.

Indicated Classification

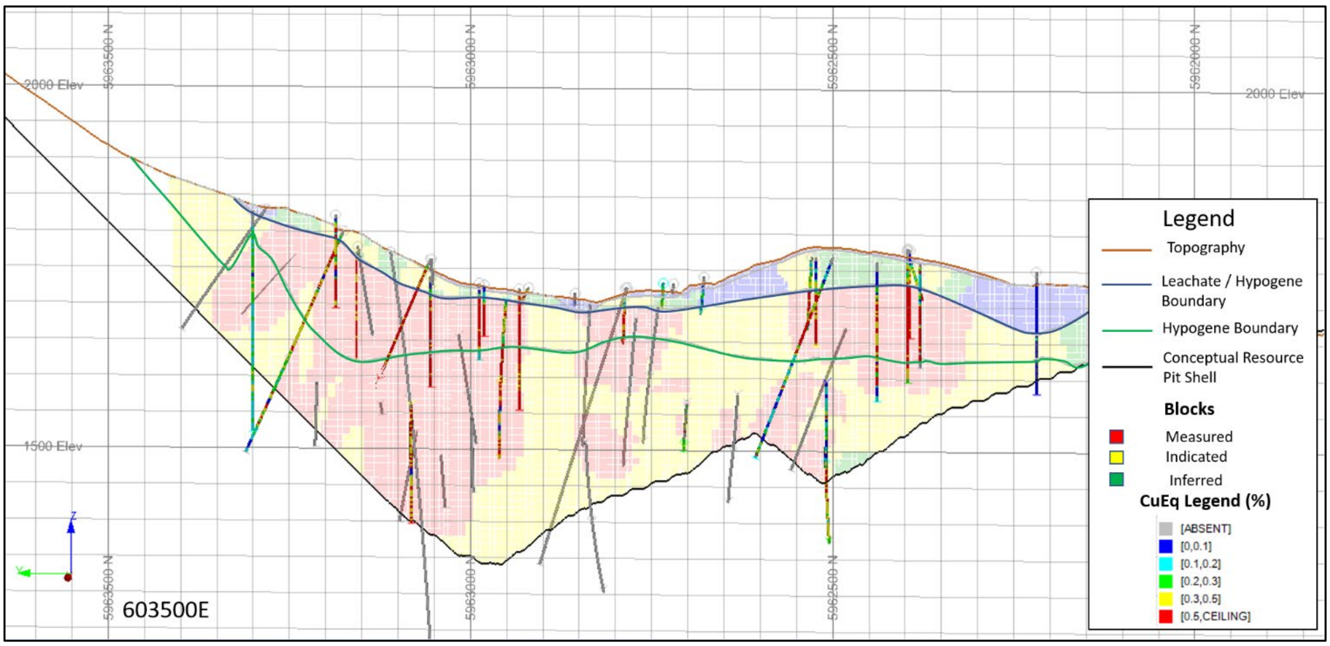
Indicated mineral resources are those materials where evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. Those blocks which were interpolated by the second interpolation pass have been classified as Indicated. The blocks are within two-thirds of the range from the input composites as defined by variography and require at least two holes to determine continuity of grade (i.e., one holes with four composites + at least a one additional hole with three composites). These blocks represent the majority of the resource tonnage and are distributed throughout the model and were first constrained by a 0.10 Cu% grade shell, then classified within the conceptual pit shell.

Measured Classification

Measured Resources are those materials for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. Those blocks which were interpolated by the first pass have been classified as Measured. The blocks are within one-third of the range from the input composites as defined by variography and require at least three holes to determine continuity of grade (i.e., two holes with four composites + at least one additional hole with two composites). Drill core recovery has been considered. The majority of these blocks are located in areas of higher density drilling and sample collection and have been classified within the conceptual pit shell.

Figure 14-4 depicts the distribution of blocks coloured by classification.

Figure 14-4: Distribution of Resource Block Classification, Section 3,500 E, Looking East



14.7.3 Resource Tabulation

The Mineral Resource Estimate for the Berg deposit is summarized in Table 14-18. This estimate is effective as of March 9, 2021. This estimate adheres to guidelines set forth by National Instrument 43-101 and the CIM Best Practices and Definition Standards. Table 14-19 lists the Mineral Resource Estimate for the Berg deposit by Weathering Zone and Category, Table 14-20 lists the contained metal equivalent for each resource category.

Table 14-18: Mineral Resource Estimate for the Berg Deposit by Category, with Effective Date of March 9, 2021

Category	Cut-off (%CuEq)	Tonnes	Cu (%)	Mo (%)	Ag (gpt)	CuEq (%)
Measured	0.20	207,229,000	0.34	0.03	3.02	0.45
Indicated	0.20	402,757,000	0.24	0.03	3.01	0.35
Measured and Indicated	**0.20**	**609,986,000**	**0.27**	**0.03**	**3.01**	**0.38**
Inferred	**0.20**	**28,066,000**	**0.22**	**0.02**	**3.75**	**0.30**

6) CuEq calculated using metal prices of $3.10 /lb Cu, $10.00 /lb Mo, and $20 /oz Ag. Recoveries were applied to correspond with estimated individual metal recoveries based on limited metallurgical testwork for production of a copper and molybdenum concentrate; the leach zone (Cu = 0%, Mo = 61%, and Ag = 52%), supergene zone (Cu = 73%, Mo = 61%, and Ag = 52%), and hypogene zone (Cu = 81%, Mo = 71%, and Ag = 67%). Smelter loss was not applied.
7) A cut-off value of 0.20% CuEq was used as the base case for reporting mineral resources that are subject to open pit potential. The resource block model has been constrained by a conceptual open pit shell, however, economic viability can only be assessed through the completion of engineering studies defining reserves including PFS and FS. Resource classification adheres to CIM Definition Standards; it cannot be assumed that all or any part of Inferred Mineral Resources will be upgraded to Indicated or Measured as a result of continued exploration.
8) Dry bulk density has been estimated based on 2,996 in situ specific gravity measurements collected between 2007 and 2011. Values were applied by geology model domain (n = 18) representing the weathering profiles and major lithological units; values ranged from 2.38 t/m^3 to 2.74 t/m^3.
9) There are no known legal, political, unnatural environmental, or other risks that could materially affect the potential development of the mineral resources.
10) All numbers are rounded. Overall numbers may not be exact due to rounding.

Table 14-19: Mineral Resource Estimate for the Berg Deposit by Weathering Zone and Category, with Effective Date of March 9, 2021

Zone	Category	Cut-off (%CuEq)	Tonnes	Cu (%)	Mo (%)	Ag (gpt)	CuEq (%)
Leach							
	Measured	0.20	2,540	0.04	0.09	5.62	0.21
	Indicated	0.20	205,000	0.14	0.12	2.37	0.25
	Inferred	0.20	66,000	0.11	0.09	6.13	0.21
Supergene							
	Measured	0.20	86,948,000	0.41	0.03	2.46	0.50
	Indicated	0.20	88,500,000	0.29	0.02	2.67	0.37
	Inferred	0.20	7,233,000	0.23	0.01	4.26	0.29
Hypogene							
	Measured	0.20	120,279,000	0.28	0.04	3.42	0.41
	Indicated	0.20	314,052,000	0.22	0.03	3.10	0.34
	Inferred	0.20	20,767,000	0.22	0.02	3.57	0.30

1) CuEq calculated using metal prices of $3.10 /lb Cu, $10.00 /lb Mo, and $20 /oz Ag. Recoveries were applied to correspond with estimated individual metal recoveries based on limited metallurgical testwork for production of a copper and molybdenum concentrate; the leach zone (Cu = 0%, Mo = 61%, and Ag = 52%), supergene zone (Cu = 73%, Mo = 61%, and Ag = 52%), and hypogene zone (Cu = 81%, Mo = 71%, and Ag = 67%). Smelter loss was not applied.
2) A cut-off value of 0.20% CuEq was used as the base case for reporting mineral resources that are subject to open pit potential. The resource block model has been constrained by a conceptual open pit shell, however, economic viability can only be assessed through the completion of engineering studies defining reserves including PFS and FS. Resource classification adheres to CIM Definition Standards; it cannot be assumed that all or any part of Inferred Mineral Resources will be upgraded to Indicated or Measured as a result of continued exploration.
3) Dry bulk density has been estimated based on 2,996 in situ specific gravity measurements collected between 2007 and 2011. Values were applied by geology model domain (n = 18) representing the weathering profiles and major lithological units; values ranged from 2.38 t/m³ to 2.74 t/m³.
4) There are no known legal, political, unnatural environmental, or other risks that could materially affect the potential development of the mineral resources.
5) All numbers are rounded. Overall numbers may not be exact due to rounding.
6) Silver grades reported for the deposit are considered inferred due to the lack of historical drilling data.

Table 14-20: Contained Metals for the Berg Deposit by Category, with Effective Date of March 9, 2021

Category	Cut-off (%CuEq)	Cu (lbs)	Mo (lbs)	Ag [(6)] (ounces)	CuEq (lbs)
Measured	0.20	1,540,800,000	149,092,000	20,104,000	2,057,716,000
Indicated	0.20	2,110,292,000	269,798,000	38,966,000	3,068,623,000
Measured and Indicated	**0.20**	**3,651,092,000**	**418,890,000**	**59,071,000**	**5,126,339,000**
Inferred	0.20	137,895,000	10,550,000	3,386,000	184,503,000

14.7.4 Validation

Model validation is undertaken to demonstrate that the input data has been fairly and accurately represented in outputs of the block modelling process. Substantial deviations to the data distribution or mean tendency, or inflations to high grade ranges can lead to misrepresentation or overstatement of the mineral resource estimate.

Methods used to validate the models include visual spatial comparison of input drillhole composite data on cross-section with block model output, comparison of descriptive statistics by means of a histogram analysis, and swath plot analysis. Additionally, the Ordinary Kriging interpolation results were compared to the results of Inverse Distance Weighted (ID, to power of 2) and nearest neighbour interpolation methods. These comparisons provide qualitative comparison of the results. Quantitative comparison of results can be more challenging to achieve, particularly in widely-spaced data, as the results of the model and the input composite data have vastly different sample density to volume relationships (i.e., sample support) due to the large search parameters that are required to support grade continuity.

The model validation indicates that the input data has been reasonably represented in the model, at a confidence level of an Inferred, Indicated and Measured Mineral Resources.

14.7.4.1 Visual Comparison

Visual comparison of the input data with the output block model resulted in decent correlation. The modelled grade trends follow the intended boundary conditions and grade distributions supported by drilling.

Figure 14-5: Visual Comparison of CuEq Grade: Vertical Section 3,500 E, Looking East

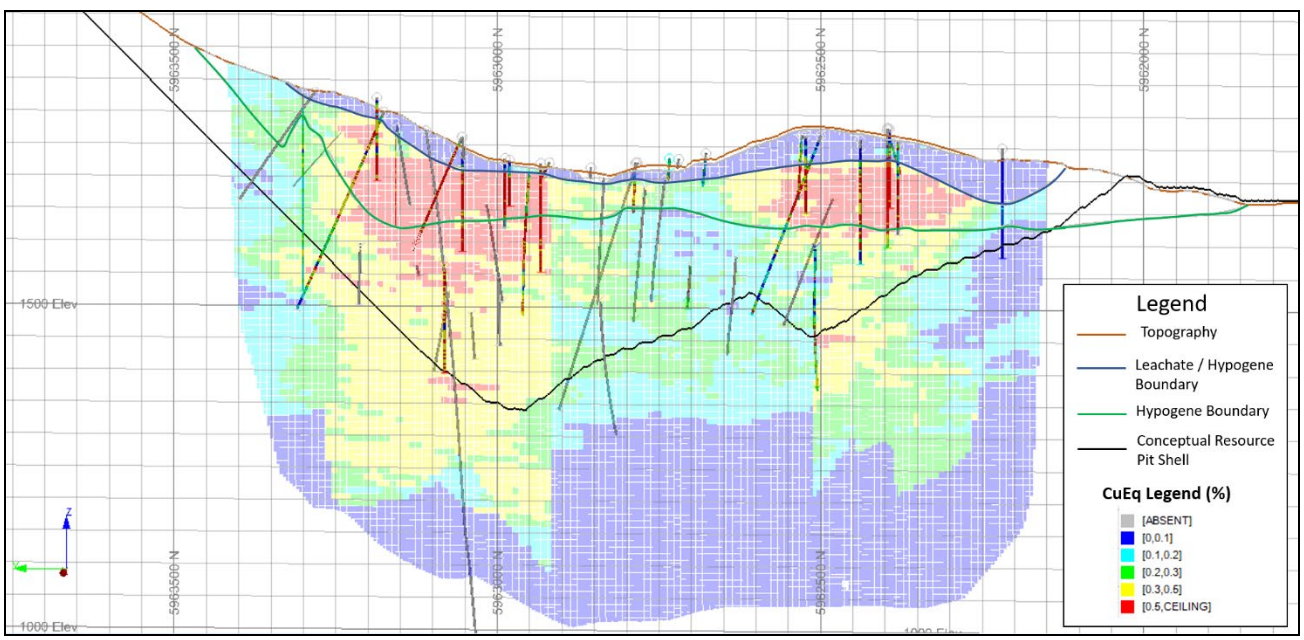


Figure 14-6 Visual Comparison of CuEq Grade: Vertical Section 2,985 N, Looking North

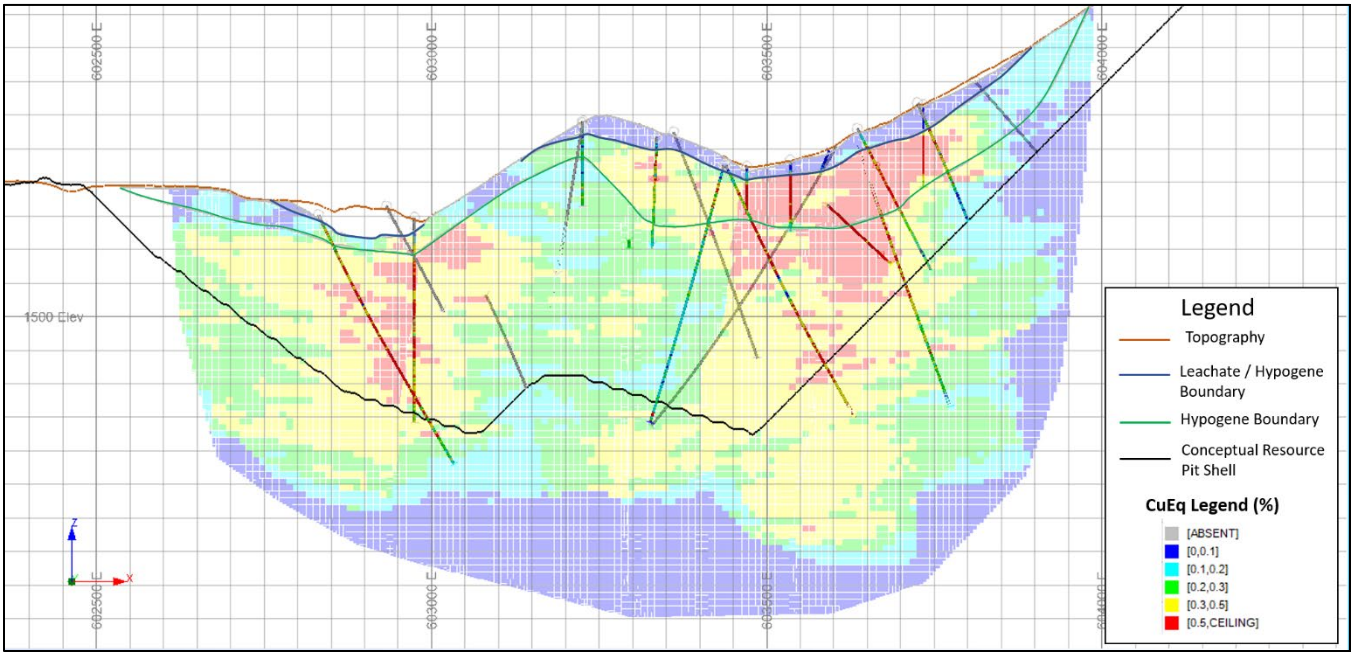
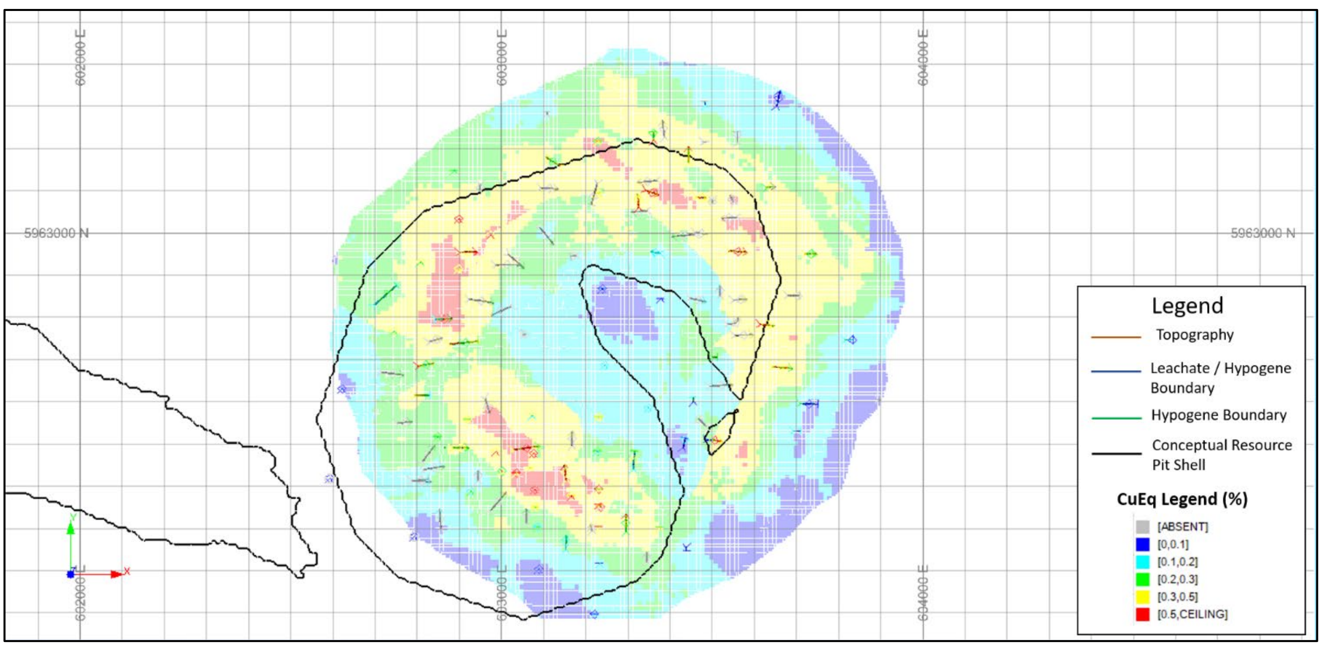


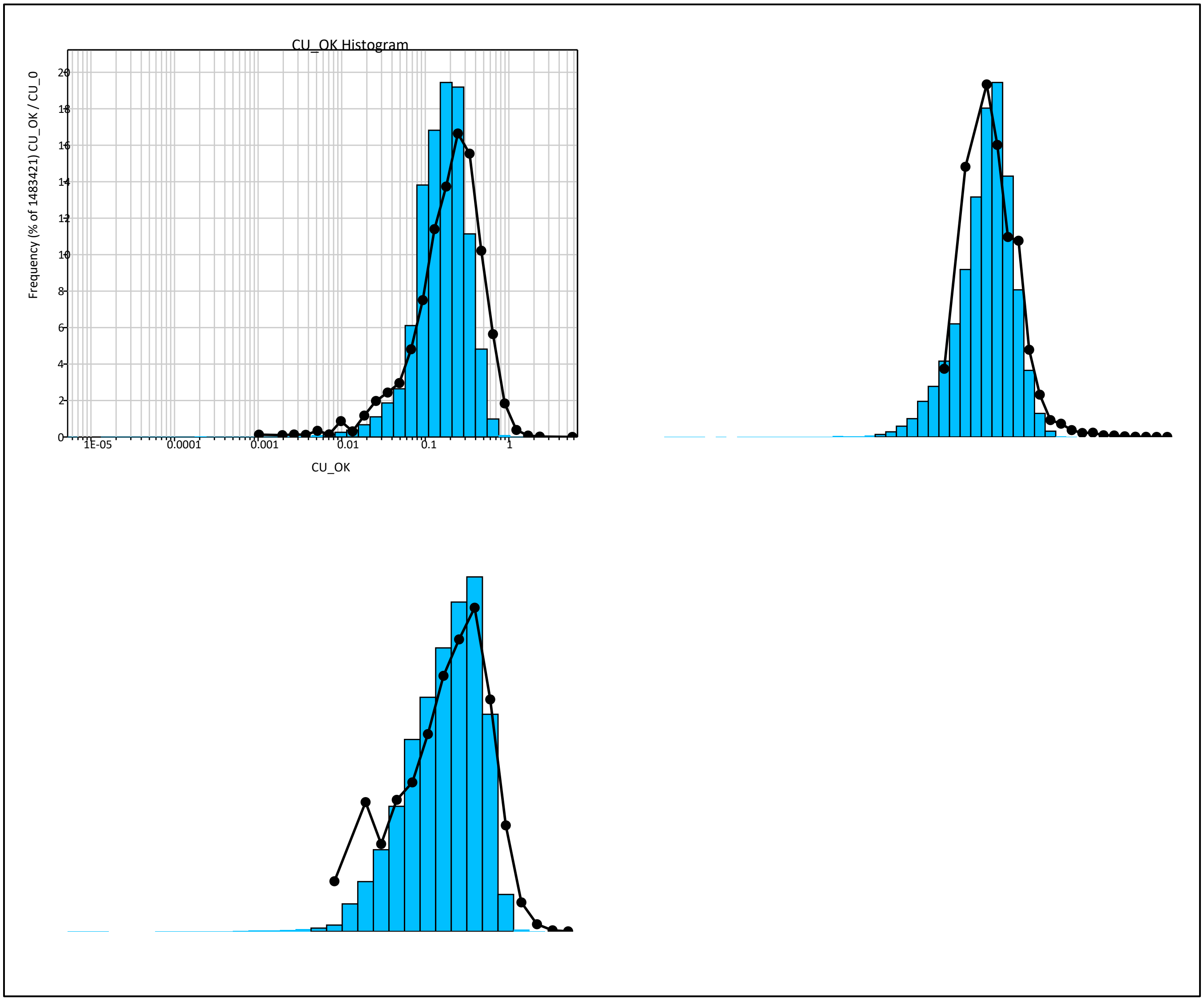
Figure 14-7 Visual Comparison of CuEq Grade: Horizontal Section 1,475 masl, Looking Down



14.7.4.2 Model Statistic Comparison

Histograms were used to compare general statistical distributions of the inputs composites to the output block model grades. These plots are shown in Figure 14-8. The comparison show good correlation of the data distribution and central tendency between input composite data and the model output.

Figure 14-8: Histogram comparison for Cu, Mo and Ag



14.7.4.3 Swath Plots

Swath plots provide a qualitative method to observe preservation of the input composite grade trends on a spatial basis in the block model results. The data is plotted with average values along discrete intervals along the Cartesian X, Y and Z axis (i.e., easting, northing, and elevation). Input sample data used for these swath plots is composited and capped, resulting in a slightly smoother trend than raw data. The sample data can be clustered and may misrepresent areas of high grade mineralization that have been oversampled. The block data is based on interpolated values from the composited and capped data and can also appear clustered due to the creation of sub-blocks. Both datasets have been constrained to the geological and grade shell models. Swath plots for copper are shown below in Figure 14-9, for molybdenum in Figure 14-10, and for silver in Figure 14-11.

In general, the block data plots slightly lower than the input composites data on a total block volume basis. This is interpreted as being due areas of larger volume and lower density sampling within the QDR domain relative to the other mineralized domains. Overall grade trends are preserved, and no bias is interpreted to have been introduced to the data.

Figure 14-9: Swath Plots for Copper

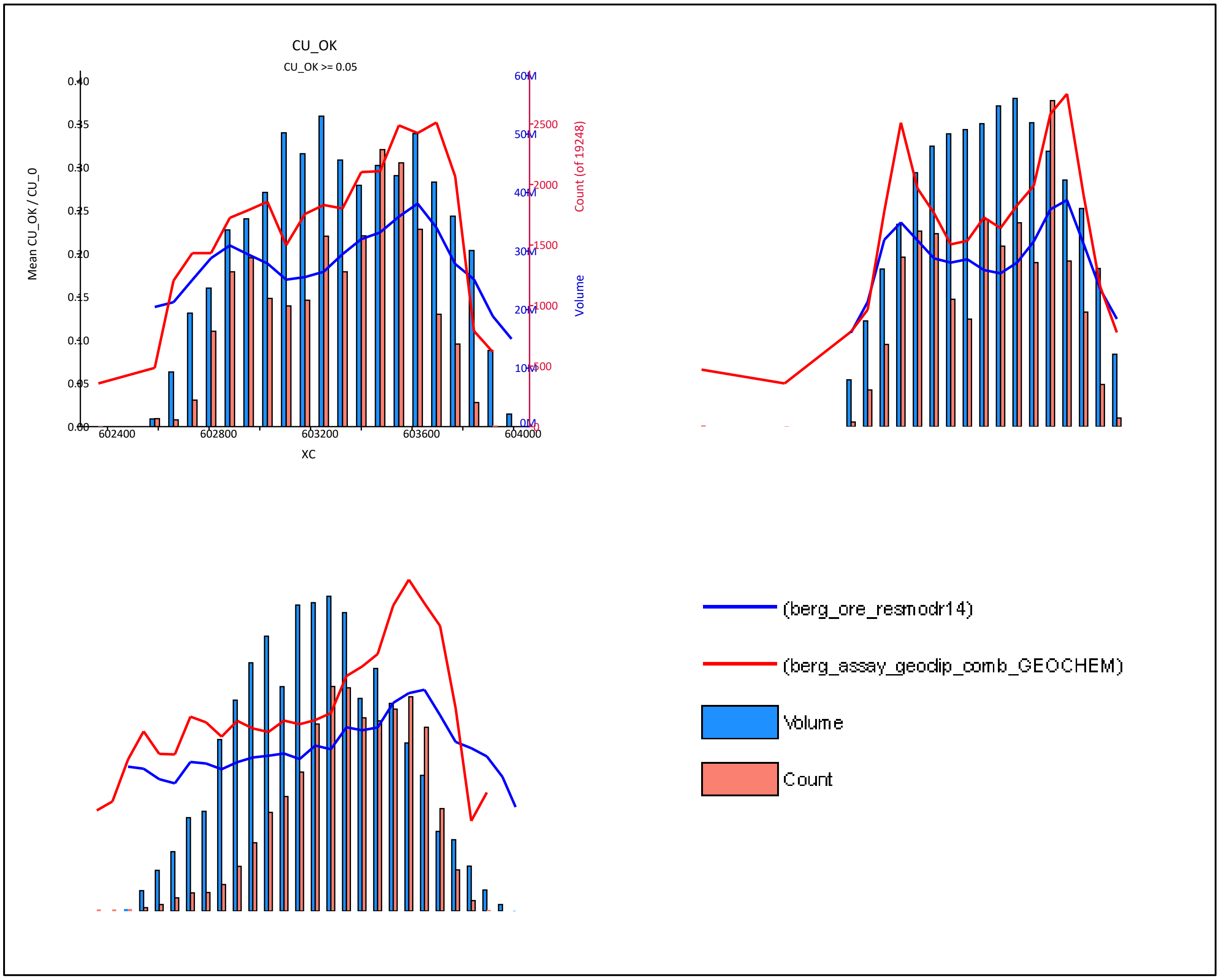


Figure 14-10: Swath Plots for Molybdenum

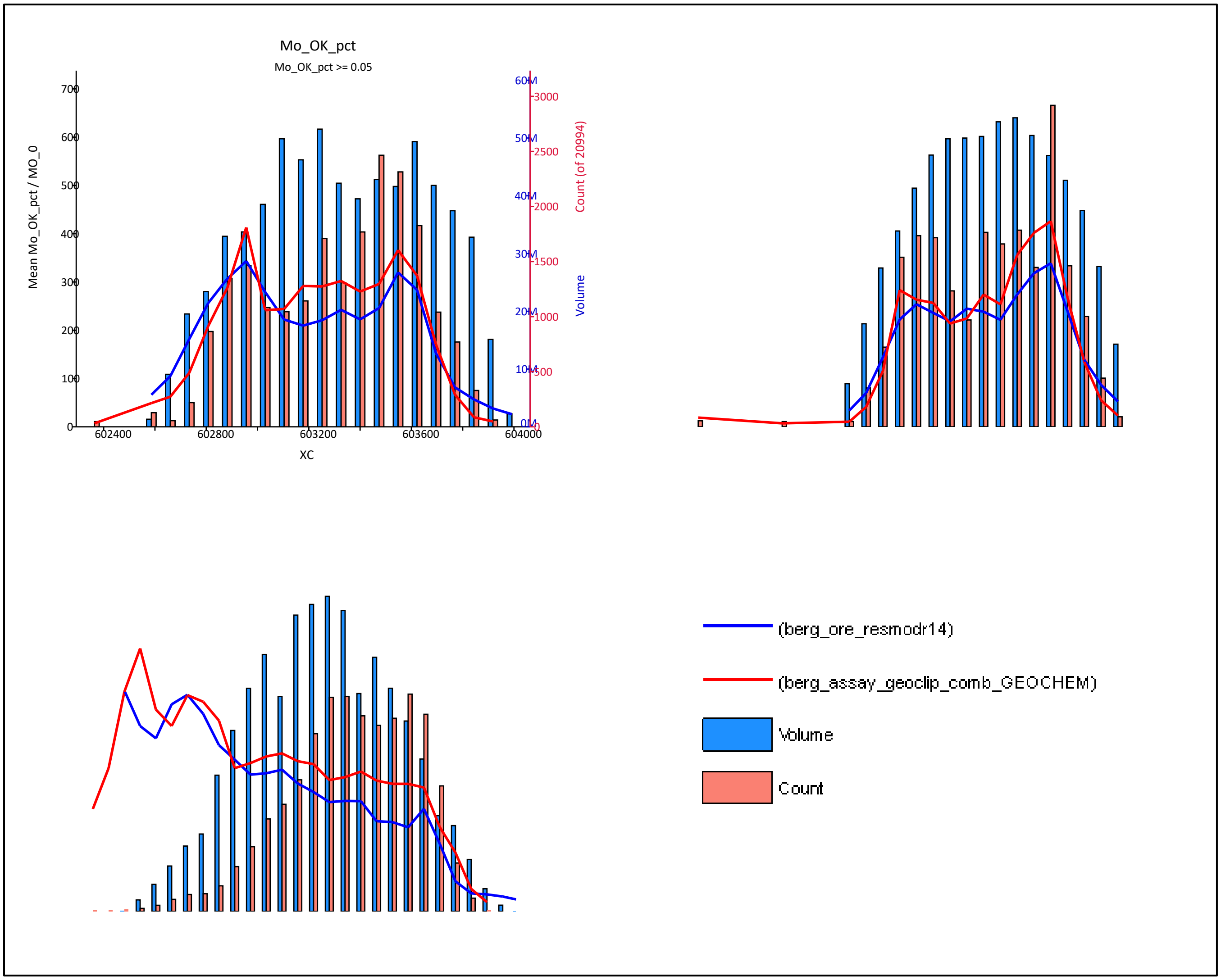
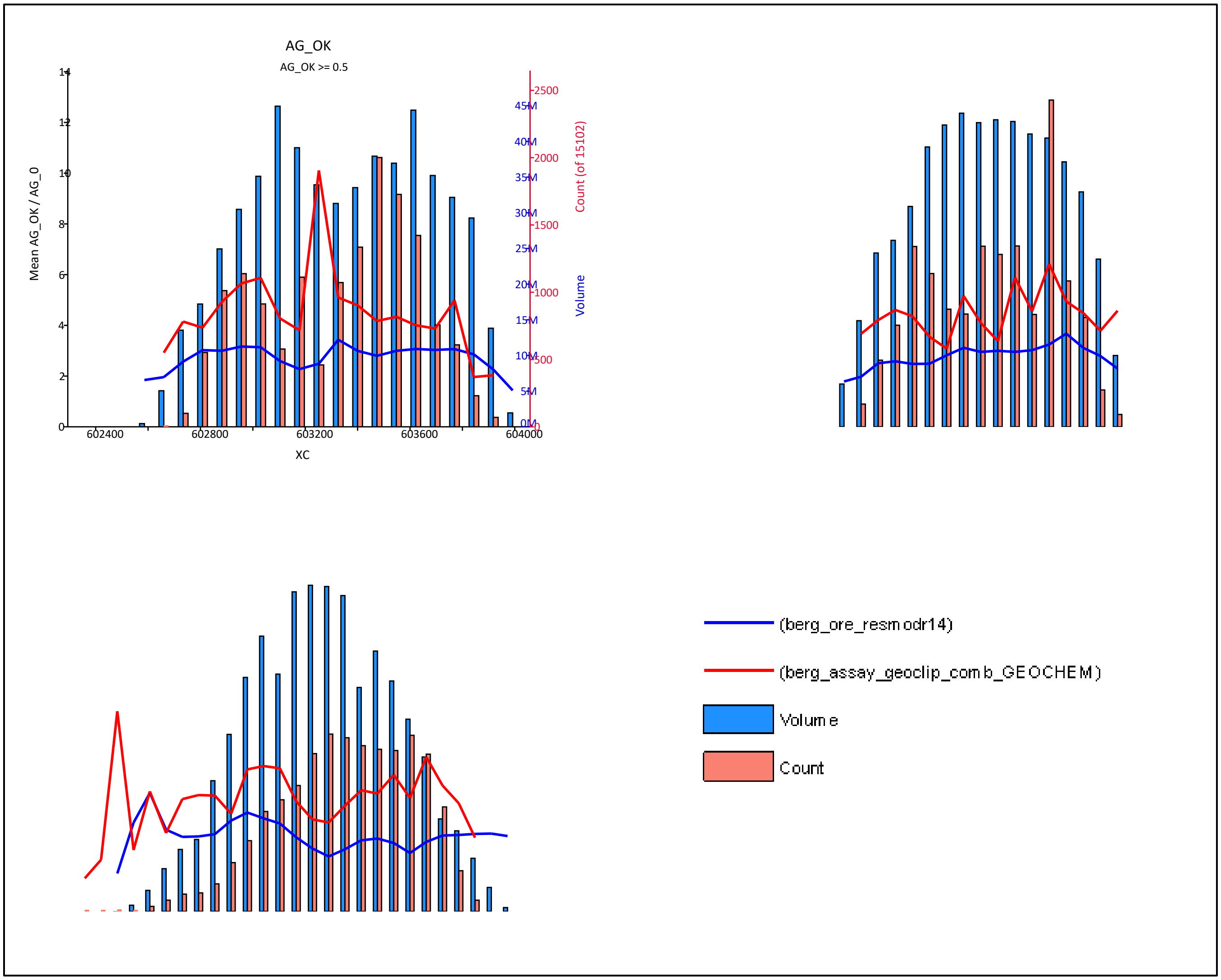


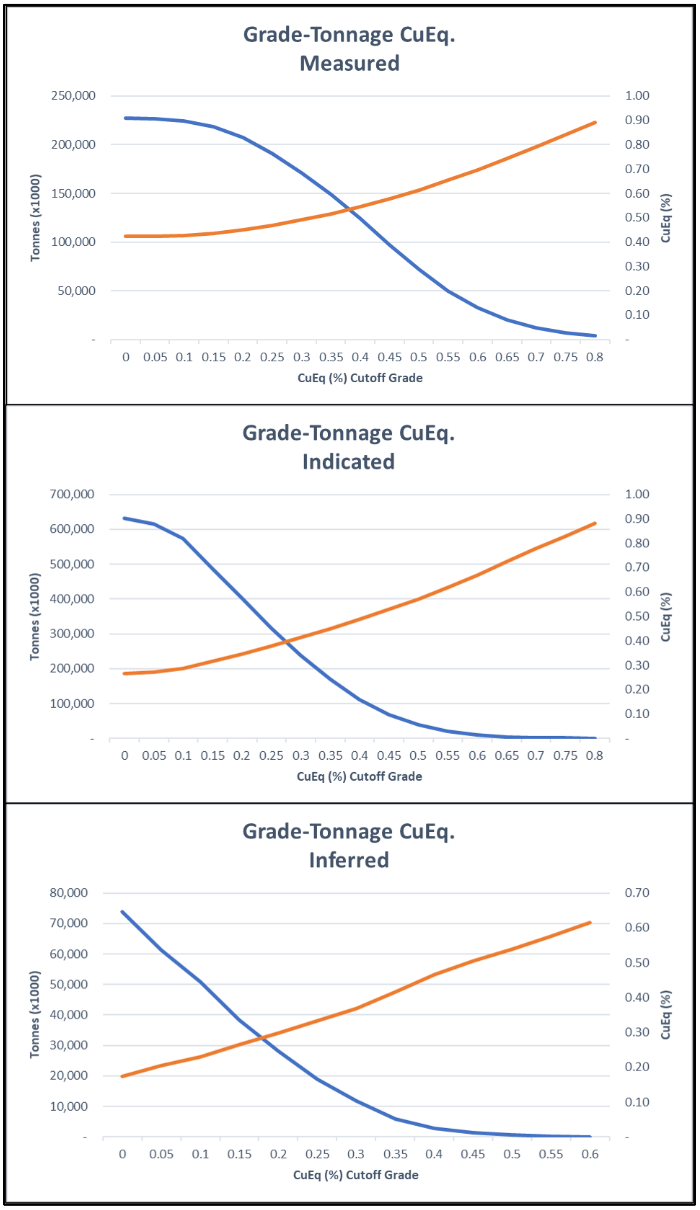
Figure 14-11: Swath Plots for Silver



14.7.5 Grade Tonnage Curve

Grade tonnage Curves are provided as means to show tonnage sensitivity with copper grade. The grade tonnage tabulation includes all blocks contained within the model and has been segmented based on mineral resource classification (Figure 14-12) within the conceptual pit constraint.

Figure 14-12: Grade Tonnage Curve



14.7.6 Soluble Copper Mineralization

Grades for secondary, or soluble copper, mineralization (CuOx) has also been interpolated into the block model using the same constraints and parameters applied to the copper grade. Drillcore collected in 2007, 2008 and 2011 has been analyzed for CuOx within the supergene zone, and in portion of both the leach and hypogene zones. The results of the analyses have been used to interpret the depth and extent of the supergene horizon.

The CuOX grade has not been compiled as part of the mineral resource estimate statement due an incomplete dataset; historical drilling completed prior to 2007 did not analyze for soluble copper. A null value has been allocated to sampling intervals for historical drilling where CuOX grades are not available. This can result in smearing of grades through the model which can overestimate, or underestimate the actual distribution based on the spatial density of analytical data. The CuOx block model is reported to be indicative of soluble copper concentrations ranges and spatial distribution throughout the deposit. Additional sampling is required for classification of soluble copper in the mineral resources.

A comparison of the distributions of the input composite data and the block model distribution by weathering horizon are shown in Figure 14-13, and a vertical cross-section along Section 3,500 E is shown as Figure 13-14.

Figure 14-13: Distribution of Soluble Copper Concentration by Weathering Horizon

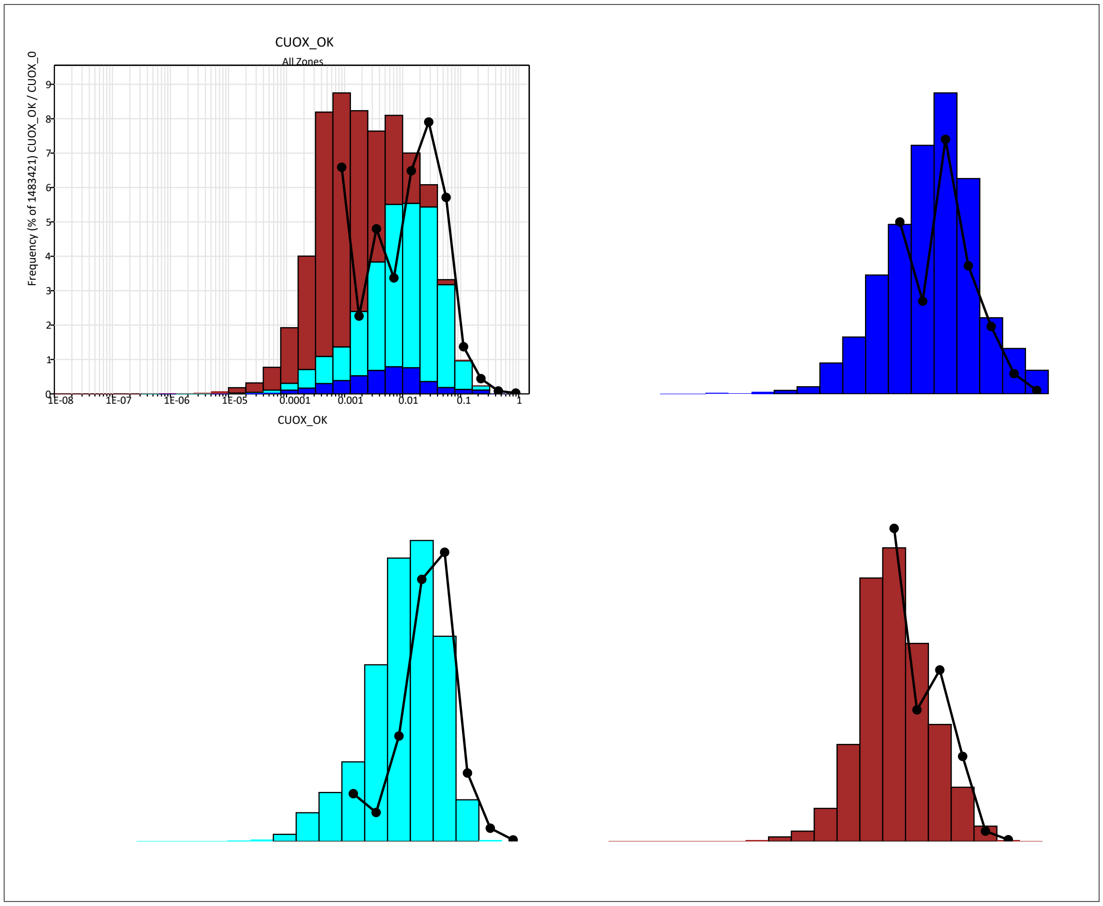
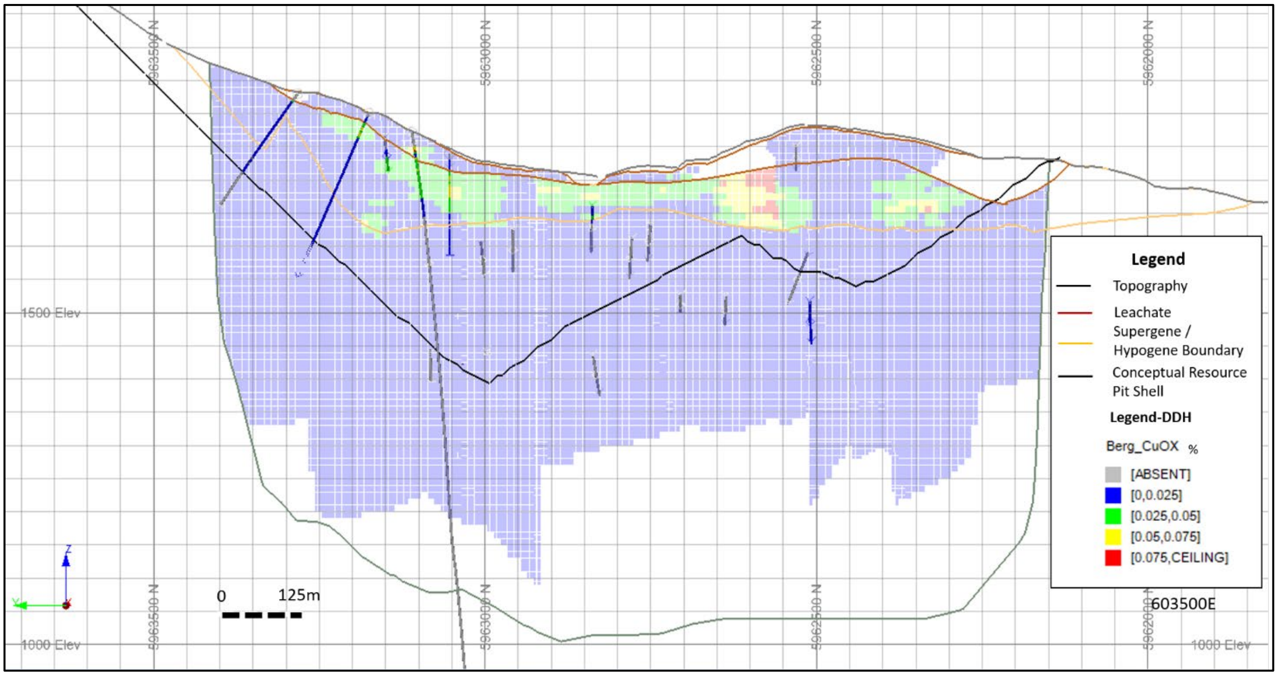


Figure 14-14: Vertical Cross-Section of CuOx along Section 3,500 E, Looking East



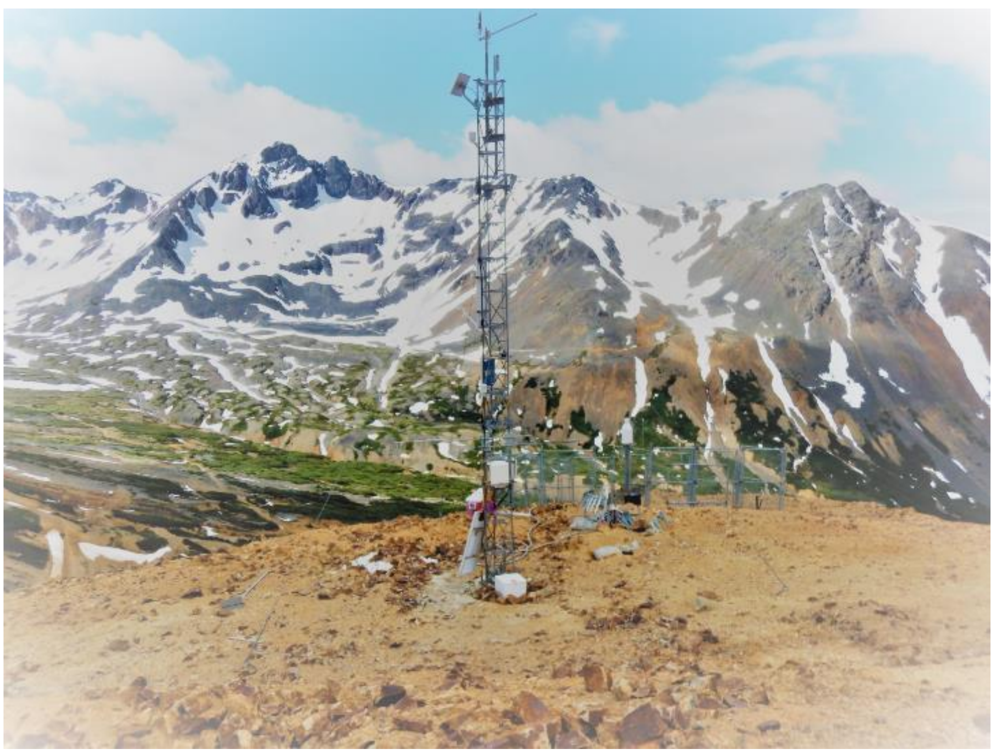
15.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

15.1 Environmental Baselines Studies

Environmental baseline studies have been undertaken by AMEC Earth and Environmental commenced in 2007 and were continued in the 2008 and 2011 seasons (Harris and Labrenz, 2009). This work included reviewing environmental data for the project site and collecting long lead time data including water quality, hydrology, meteorology, and acid rock drainage/mine leachate test work.

Environmental monitoring by Surge is ongoing, with two weather stations on the Property collecting data continuously. Two site visits were made in 2014 by ERM Consultants Canada Ltd to collect data from the weather stations and to collect water samples from Bergeland Creek draining the area around the Berg deposit. Results of the 2014 environmental monitoring program are presented in ERM, 2014. The weather station located at the Berg deposit is currently in disrepair and has not been confirmed if the station is still being monitored for data collection.

Photo 15-1: Weather Station found at the Berg Site (June 2018)



15.2 Exploration Permit

A Multi-Year Area-Based (MYAB) permit (MX-1-836; originally issued on April 16, 1980) was amended on July 17, 2021 and expires on March 31, 2022. The amended permit authorizes the use of the existing Berg camp, IP surveying, 50 surface diamond drill holes, five helipads and 10 km of existing trail modification with several conditions. The claims included in the MYAB permit are shown in Figure 2-1. Activities authorized under the permit can only occur between July 15 and October 31 of each calendar year to minimize the impact to Caribou and

Mountain Goat, unless a qualified biologist conducts an onsite assessment to determine if work can proceed without adversely impacting Caribou.

15.3 Environmental Bonding

The BC Ministry of Energy and Mines currently has a $112,500 reclamation bond held against the Property. There is an access trail leading to the Berg deposit dating from the historical drilling programs that may require reclamation in the future. There are also drill access roads near the Berg deposit from historical drill programs, and a temporary tent camp established in 2007 and refurbished in 2011 that will require reclamation in the future.

16.0 ADJACENT PROPERTIES

16.1 Huckleberry Mine

The Huckleberry Mine, owned by Imperial Metals, is an open pit copper-molybdenum mine located 22 kilometres to the southwest of Berg. The mine has production capacity of approximately 20,000 tonnes per day. The mine commenced operations in 1997 and ceased operations in August 2016 and has since been on care and maintenance. Much of the mining equipment and the process plants remain on site (Imperial Metals, 2017). The mine geology and deposit style is similar to the Berg deposit; the QP has not personally observed the Huckleberry Deposit.

17.0 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information that is material to this report that has not already been disclosed in other sections.

18.0 INTERPRETATION AND CONCLUSIONS

18.1 Geology and Mineral Resources

Past programs by Kennecott and Placer Dome lead to the discovery and partial delineation of a significant copper-molybdenum porphyry deposit on the Berg Property. The deposit was the subject of a number of economic reviews by Placer Dome between the early 1970s and 1991. The majority of these reviews considered the Berg porphyry deposit to be a candidate for an open pit, bulk tonnage mining operation. In 2007, Terrane carried out an aggressive diamond drill program designed to confirm the results of previous workers and delimit the resource by including more step out drilling, particularly below the historic resource. This program was followed by additional drilling in 2008 and again in 2011. These programs have been incorporated into an updated mineral resource estimate.

Mineralization at Berg is still open to depth throughout the deposit, and partially open outwards from the Berg Stock towards the southeast. The best mineralization is defined within the Hazelton volcanic rocks (i.e., AND unit) that lie between the Berg quartz monzonite stock and the quartz diorite intrusion in the NE quadrant, and 200 m into the quartz diorite from the volcanic/quartz diorite contact. Significant mineralization, in particular Mo mineralization, has been intersected at depths greater than 500 m adjacent to the Berg Stock in all zones and merits further drilling. Since one of the main controls on mineralization is the subvertical contact between the Berg Stock and its host rocks, continued inclined drilling will be necessary to further establish continuity of mineralization.

The reliability of the historical assay results should continue to be reviewed, and eventually be replaced as the Berg deposit is advanced. Although the data appears to have been collected according to industry standards at the time, it must be considered that some of the original data was lost or discarded over the last 30+ years. Resampling of some of the Placer Dome core in 2007 indicated a very good correlation between this re-assaying and the historic database, however none of the Sierra Empire core is available for comparative resampling. Additional drilling should also target areas delimited by the Sierra Empire holes to gain confidence in this historical data. Much of the previous work did not include assaying for silver and it is apparent that silver could make a significant contribution to the economics of the deposit. Additionally, historical drilling did not collect soluble ‘oxide’ copper (i.e., CuOx) data.

The existing geological model for the deposit has been developed and verified with great care. Small interfingering dykes have not been included in the model due to their relative complexity. Some of these dykes, including the QFP types, generally are barren of grade and may be locally diluting the Cu-Mo grades in the block model, although this effect is considered to be minor if present. The model does not include structure controls, which may be considered as a priority modelling exercise by Surge in the future. Structures are believed to be present in the deposit and may play a contributing factor on mineralizing controls, particularly for silver distribution. Low core recovery observed in the 2011, and previous drilling, may also be due to deeply weathered and inclined faults.

This report details a new NI 43-101 and CIM-compliant resource estimate for the Berg deposit. Some infill drilling is still necessary to replace historic drilling and to supplement a complete geochemical database.

Numerous prospects have been identified on the broader Berg Property through geophysical and boots on the ground prospecting. Work should be continued to advance the numerous prospects particularly the Bergette and the Serenity/Tahtsa area. Low sulphidation epithermal models may be favourable to help identify the location within the mineralized systems for the various veins being observed in this area.

18.2 Metallurgy & Mineral Processing

Many test programs have been conducted on the resource since 1970, including most recent test programs performed by G&T, SGS and RDI between October 2007 and January 2012. The programs included head characterization, mineralogical analysis, material hardness determination and bench open circuit, locked cycle and pilot plant flotation tests. Conventional flotation process, comprising of primary grinding, rougher flotation, bulk rougher concentrate regrind, and three stages of bulk cleaner flotation followed by conventional copper and molybdenum separation, can be used to produce marketable copper concentrate and molybdenum concentrate from the mineralization.

The supergene and hypogene materials yield different metallurgical performances. The hypogene mineralization is more amenable to the flotation recovery and copper-molybdenum separation treatment, compared to the supergene mineralization.

The hypogene mineralization is expected to be moderately hard. The supergene materials are softer than the hypogene materials.

19.0 RECOMMENDATIONS

It is recommended that Surge advance the Berg deposit to an advanced project stage which would include the collection of geotechnical data, hydrogeological data, and additional metallurgical data in order to support a Preliminary Economic Assessment. Engineering studies required to complete this work would be evaluated in a gap-analysis and series of options studies which would include, and not be limited to, innovative ground stabilization methods and product processing and transportation options.

Environmental baselines monitoring should be continued.

19.1 Geology

An additional drilling program is recommended to replace and phase out the reliance on historical data. This program would include 15,000 m targeting areas with predominance of historical data and would include use of appropriate orientation surveys and collection of a full suite of geochemical data. It is also recommended that this program be combined with geotechnical and hydrogeological data collection including use of a downhole televiewer surveying to aid in development of a structural geology model. The block model should be upgraded to include geometallurgical interpretation, including distribution of geochemistry for lead, zinc, arsenic, and antimony concentrations. The updating of the block model is contingent upon the successful collection of geometalluigical information. A budget of Cdn$5,550,000 is proposed to complete the drilling and geometallurgical scope, and Cdn$75,000 is proposed to completed the updates to the block model.

Regional targets within the Berg Property should be continued to be evaluated. Based on exploration results collected to date, prospective targets for further exploration include the northern and eastern extents of the Bergette prospect, the Sibola target and various gold showings in the Tahtsa/Serenity area. An exploration budget of Cdn$2,000,000 is proposed. This program recommendation is independent of the above drilling program.

19.2 Metallurgy & Mineral Processing

Further metallurgical test work is recommended to optimize process conditions and improve target metal recovery and concentrate quality. The cost required for the testing is estimated to be approximately Cdn$550,000. The estimated cost for geometallurgical related testing is listed in Section 19.1. The recommended test program includes:

- Grindability tests to confirm the mill design parameters.
- Head grade-recovery correlations for copper, molybdenum and silver, particularly for the supergene mineralization.
- Bulk flotation optimization tests on individual supergene and hypogene mineral samples and a range of supergene/hypogene blends to optimize pyrite rejection, metal recovery and concentrate grade. The parameters to evaluate should include primary grind and regrind sizes, reagent regime and pulp pH. The tests should include locked cycle tests.
- Metallurgical and material hardness variability tests on various mineralization types in terms of head grade, mineralogical composition and spatial distribution.
- Further copper-molybdenum separation tests to confirm and optimize the flowsheet and process conditions that can effectively reject copper minerals and pyrite from molybdenum concentrate to improve molybdenum recovery and concentrate grade. The parameters to evaluate should include regrinding requirements, reagent

regime, and chemical treatment for the final molybdenum concentrate to reduce impurity contents. Pilot plant operation would be required to generate the bulk concentrate for the separation tests.

- Minor element analysis of the final copper and molybdenum concentrates, particularly to determine if there are penalty elements in the concentrates.
- Process design related parameters should be tested, including concentrate and tailings dewatering testing and concentrate and tailings particle size determinations.
- Tailings characterization study should be conducted.

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APPENDIX A

QUALIFIED PERSONS STATEMENT OF QUALIFICATIONS

CAMERON R. NORTON, P.Geo.

I, Cameron Norton, P.Geo., of North Vancouver, British Columbia, do hereby certify:

- I am Senior Geologist and Team Lead with Tetra Tech Canada Inc. with a business address at Suite 10 – 885 Dunsmuir Street, Vancouver, BC, V6C 1N5.
- I am a registered Professional Geoscientist with the Engineers and Geoscientists of British Columbia (#178541).
- Since 2010 I have worked as an exploration and resource geologist for numerous precious metal, base metal, and industrial metal projects in Canada.
- I graduated from the University of Victoria in 2010 with a B.Sc. in Earth and Ocean Science.
- This certificate applies to the technical report entitled "Updated Technical Report and Mineral Resource Estimate on the Berg Project, British Columbia with effective date of March 9, 2021 (the "Technical Report").
- I visited the Berg core storage facility on February 10-12, 2021.
- I am independent of Surge Copper Corp., as defined by Section 1.5 of the Instrument.
- I have not had any prior involvement with the Berg Property that is subject of the Technical Report.
- I am responsible for the Sections 1 through 11, 12.1-12.2, 14 through 17, and co-author of Sections 18 and 19 of this Technical Report.
- I confirm that I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with them.
- At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 3rd day of May 2021 at Vancouver, British Columbia

"signed and stamped"

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Cameron R. Norton, P.Geo.
Senior Geologist
Tetra Tech Canada Inc.

JIANHUI (JOHN) HUANG, Ph.D., P.Eng.

I, Jianhui (John) Huang, Ph.D., P.Eng., of Vancouver, British Columbia, do hereby certify:

- I am a Senior Metallurgist with Tetra Tech Canada Inc. with a business address at Suite 1000, 10th Fl., 885 Dunsmuir St., Vancouver, BC, V6B 1N5.
- This certificate applies to the technical report entitled "Updated Technical Report and Mineral Resource Estimate on the Berg Project, British Columbia" with an effective date of March 9, 2021 (the "Technical Report").
- I am a graduate of North-East University, China (B.Eng., 1982), Beijing General Research Institute for Non-ferrous Metals, China (M.Eng., 1988), and Birmingham University, United Kingdom (Ph.D., 2000). I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (#30898). My relevant experience includes over 30 years involvement in mineral processing for base metal ores, gold and silver ores, rare metal ores, and industrial minerals. I am a "Qualified Person" for purposes of National Instrument 43-101 (the "Instrument").
- I have not conducted a personal inspection of the Property that is the subject of this Technical Report.
- I am responsible for Sections 1 (Metallurgy and Process related), 13, 18.1 and 19.2 of the Technical Report.
- I am independent of Surge Copper Corp., as defined by Section 1.5 of the Instrument. I have had involved with metallurgical test work review and preliminary process technological development in 2008 for the property.
- I have read the Instrument and sections of the Technical Report I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 3rd day of May 2021 at Vancouver, British Columbia.

"signed and stamped"

Jianhui (John) Huang, Ph.D., P.Eng.
Senior Metallurgist
Tetra Tech Canada Inc.

DANIEL K. LUI, M.Sc., P.Geo.

I, Daniel K. Lui, P.Geo, do hereby certify that:

- I am employed as a Senior Project Geologist with Equity Exploration Consultants located at 1238-200 Granville St., Vancouver, British Columbia, Canada.
- I am a member in good standing of Engineers and Geoscientists of British Columbia, License No. 51291. I graduated with a Master of Science degree in Geology from the University of Western Ontario in 2005 and a Bachelor of Science in Geology from the University of British Columbia in 2002.
- I have practiced my profession for 19 years since graduation. I have been directly involved in exploration for gold, silver, copper, lead, zinc, and uranium in British Columbia, Yukon, Nunavut, Alaska, Nevada, Australia, Serbia, and Afghanistan. As a result of my experience and qualifications, I am a Qualified Person as defined in NI 43–101.
- I am a contributing author for the preparation of the technical report titled "Technical Report for the Berg Project, Northwest Mining Region, British Columbia, Canada" (the "Technical Report"), dated May 3, 2021., prepared Surge Copper Corporation ("Client") and am responsible for Section 12.3 and relevant portions of the Introduction.
- I visited the Berg Property on August 13th, 2019.
- I am independent of Surge Copper Corporation as described by Section 1.5 of the instrument.
- I have had conducted previous exploration work on the Berg Property.
- I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.
- 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.
- As of the effective date of the technical report, to the best of my knowledge, information, and belief, the sections of the technical report that I am responsible for, contain all scientific and technical information that is required to be disclosed to make those sections of the technical report not misleading.

Signed and dated this 3rd day of May 2021 at Vancouver, British Columbia.

"signed and stamped"

Daniel K. Lui, M.Sc., P.Geo.
Senior Project Geologist
Equity Exploration Consultants