

# **NI 43-101 Updated Technical Report for the Tomichi Copper-Molybdenum Project Gunnison County, Colorado**

Prepared for:

**Libero Mining Corporation**  
Vancouver, B.C., Canada



Prepared by:

**Gault Group, LLC**  
Cortez, Colorado, U.S.A.



**Effective Date:** March 1, 2017

**Release Date:** July 10, 2017

**Endorsed by Qualified Persons:**

Paul D. Gray, P.Geo. and Robert C. Sim, P.Geo., Consulting Geologists

## TABLE OF CONTENTS

1	SUMMARY .....	1-1
2	INTRODUCTION .....	2-1
2.1	Introduction and Overview .....	2-1
2.2	Terms of Reference .....	2-1
2.3	Location and Ownership .....	2-2
2.4	Purpose of Report .....	2-2
2.5	Sources of Information.....	2-3
2.6	Qualified Persons .....	2-4
2.7	Project Property Visit.....	2-4
3	RELIANCE ON OTHER EXPERTS .....	3-1
4	PROPERTY DESCRIPTION .....	4-1
4.1	Description and Location .....	4-1
4.2	Surface Area of Property.....	4-1
4.3	Mineral Tenure.....	4-1
4.4	Ownership Royalties, Agreements, and Encumbrances .....	4-5
4.5	Environmental Liabilities.....	4-6
4.6	Permits .....	4-6
4.7	Other Significant Factors .....	4-7
5	ACCESS, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY .....	5-1
5.1	Access .....	5-1
5.2	Physiography.....	5-1
5.3	Climate and Operating Season .....	5-1
5.4	Vegetation .....	5-2
5.5	Local Resources and Infrastructure.....	5-2
6	HISTORY .....	6-1
6.1	Tomichi Mining District and Early Mineral Production, 1879 through 1950 .....	6-1
6.2	Harry Weckerling Stakes Lode Mining Claims in 1955 .....	6-1
6.3	Climax Molybdenum Company, 1957 .....	6-7
6.4	Cyprus Mines Corporation, 1968 and 1969 .....	6-10
6.5	Cities Service Minerals Corporation, 1974 to 1977 .....	6-13
6.6	Molycorp, Incorporated, 1978 to 1981 .....	6-16
6.7	Burnstone Ventures, Incorporated, 2011 to 2016 .....	6-24
6.7.1	<i>Comparison of Historic and New Re-assay Data .....</i>	<i>6-29</i>
6.7.2	<i>New Re-assay Data .....</i>	<i>6-29</i>
6.7.3	<i>Magnetic Susceptibility .....</i>	<i>6-32</i>
6.7.4	<i>Geologic Mapping and Field Sampling .....</i>	<i>6-32</i>
6.7.5	<i>Water Sampling .....</i>	<i>6-32</i>

6.7.6	<i>Drilling</i> .....	6-32
6.7.7	<i>Resource Estimate</i> .....	6-32
6.7.8	<i>Interpretations</i> .....	6-33
7	<b>GEOLOGIC SETTING AND MINERALIZATION</b> .....	7-1
7.1	<b>Regional Geology</b> .....	7-1
7.2	<b>Local and Property Geology</b> .....	7-6
7.2.1	<i>Lithology, Stratigraphy, Structure</i> .....	7-6
7.2.2	<i>Alteration</i> .....	7-12
7.2.3	<i>Mineralization</i> .....	7-12
8	<b>DEPOSIT TYPES</b> .....	8-1
9	<b>EXPLORATION</b> .....	9-1
9.1	<b>Planned and Ongoing Evaluations</b> .....	9-1
10	<b>DRILLING</b> .....	10-1
11	<b>SAMPLE PREPARATION, ANALYSES AND SECURITY</b> .....	11-1
11.1	<b>Historic Exploration</b> .....	11-1
11.1.1	<i>Existing Drill Core</i> .....	11-1
11.1.2	<i>New Drill Core</i> .....	11-3
11.2	<b>Historic Explorations Adequacy</b> .....	11-3
12	<b>DATA VERIFICATION</b> .....	12-1
12.1	<b>Historic Explorations</b> .....	12-1
12.2	<b>2012 Molycorp Re-assay Program</b> .....	12-1
12.3	<b>Comparison of Old vs. New Drilling Data</b> .....	12-1
12.4	<b>Database Validation</b> .....	12-2
12.5	<b>Conclusion</b> .....	12-2
13	<b>MINERAL PROCESSING AND METALLURGICAL TESTING</b> .....	13-1
14	<b>MINERAL RESOURCE ESTIMATES</b> .....	14-1
14.1	<b>Introduction</b> .....	14-1
14.2	<b>Available Data</b> .....	14-2
14.3	<b>Geological Model, Domains and Coding</b> .....	14-8
14.4	<b>Specific Gravity Data</b> .....	14-9
14.5	<b>Compositing</b> .....	14-10
14.6	<b>Comparison of Drilling Data</b> .....	14-10
14.7	<b>Exploratory Data Analysis</b> .....	14-11
14.7.1	<i>Basic Statistics by Domain</i> .....	14-11
14.7.2	<i>Contact Profiles</i> .....	14-14
14.7.3	<i>Conclusions and Modeling Implications</i> .....	14-15
14.8	<b>Development of a Grade Probability Shell</b> .....	14-15
14.9	<b>Summary of Estimation Domains</b> .....	14-16

14.10	Evaluation of Outlier Grades .....	14-16
14.11	Variography .....	14-17
14.12	Model Setup and Limits .....	14-19
14.13	Interpolation Parameters .....	14-20
14.14	Validation.....	14-21
14.14.1	<i>Visual Inspection</i> .....	14-21
14.14.2	<i>Model Checks for Change of Support</i> .....	14-21
14.14.3	<i>Comparison of Interpolation Methods</i> .....	14-23
14.14.4	<i>Swath Plots (Drift Analysis)</i> .....	14-25
14.15	Resource Classification.....	14-26
14.16	Mineral Resources.....	14-27
14.17	Sensitivity of Mineral Resources .....	14-29
14.18	Comparison with the Previous Estimate .....	14-30
14.19	Summary and Conclusions.....	14-31
15	MINERAL RESERVE ESTIMATES.....	15-1
16	MINING METHODS .....	16-1
17	RECOVERY METHODS.....	17-1
18	PROJECT INFRASTRUCTURE .....	18-1
19	MARKET STUDIES AND CONTRACTS .....	19-1
20	ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT.....	20-1
21	CAPITAL AND OPERATING COSTS .....	21-1
22	ECONOMIC ANALYSIS .....	22-1
23	ADJACENT PROPERTIES .....	23-1
24	OTHER RELEVANT DATA AND INFORMATION .....	24-1
25	INTERPRETATION AND CONCLUSIONS .....	25-1
25.1	Historic Property Data .....	25-1
25.2	Analytical and Data Adequacy .....	25-1
25.3	Key Interpretations.....	25-2
25.4	Conclusions.....	25-3
26	RECOMMENDATIONS .....	26-1
26.1	Recommended Work Programs .....	26-1
26.2	Costs.....	26-3
27	REFERENCES .....	27-1
28	DATE AND SIGNATURE PAGES .....	28-1

## LIST OF TABLES

Table 1.1: Sensitivity of Inferred Mineral Resources to Cut-off Grade .....	1-2
Table 4.1: Tomichi Copper-Molybdenum Project Claims .....	4-3
Table 6.1: Summary of Tomichi Copper–Molybdenum Project Basic Drill Hole Information*	6-3
Table 6.2: Climax Molybdenum Company Historic Data Available from 1957.....	6-8
Table 6.3: Cyprus Mines Corporation Historic Data Available for 1968 and 1969 .....	6-11
Table 6.4: Cities Service Minerals Corporation Historic Data Available from 1974 to 1977...	6-15
Table 6.5: Molycorp Incorporated Historic Data Available from 1978 to 1981 .....	6-21
Table 6.6: Burnstone Ventures Historic Data Available from 2011 to 2016.....	6-25
Table 6.7: Copper and Molybdenum Comparison and Relative Percent Difference for Analysis of Historic Molycorp Core Assays versus 2011 Burnstone Re-assay Results.....	6-30
Table 6.8: Comparison of composite intervals between Molycorp and Burnstone re-assays ...	6-31
Table 7.1: Description of Paleogene Rock Units of the Tomichi Project.....	7-8
Table 14.1: Summary of Lithology Codes and Rock Types.....	14-7
Table 14.2: Summary of Basic Statistics of Sample Database .....	14-7
Table 14.3: Treatment of Outlier Sample Data - Copper.....	14-17
Table 14.4: Variogram Parameters .....	14-19
Table 14.5: Block Model Limits.....	14-19
Table 14.6: Interpolation Parameters.....	14-20
Table 14.7: Estimate of Inferred Mineral Resource.....	14-28
Table 14.8: Sensitivity of Inferred Mineral Resources to Cut-off Grade Inside Base Case Pit Shell .....	14-30
Table 14.9: Comparison of Inferred Mineral Resources with the Previous (2012) Estimate..	14-30
Table 26.1: Estimated Costs (USD) for Implementing Proposed Project Phase I.....	26-3
Table 26.2: Estimated Costs (USD) for Implementing Proposed Project Phase II .....	26-3

## LIST OF FIGURES

Figure 4-1: Tomichi Copper-Molybdenum Project Location Map.....	4-2
Figure 4-2: Tomichi Copper-Molybdenum Project Mining Claims Location Map .....	4-5
Figure 6-1: Tomichi Copper-Molybdenum Project Historic Drillhole Locations 1957 through 2012.....	6-6
Figure 6-2: Core from TM-9, 102 Feet to 140 Feet.....	6-18
Figure 6-3: Core from TM-9, 191 Feet to 226.5 Feet.....	6-19
Figure 7-1: Tomichi Copper-Molybdenum Project Regional Geology Map.....	7-3
Figure 7-2: Tomichi Copper-Molybdenum Project Geology Map Explanation.....	7-4
Figure 7-3: Tomichi Copper-Molybdenum Project Colorado Mineral Belt.....	7-5
Figure 7-4: Tomichi Copper-Molybdenum Project Geologic Map .....	7-10

Figure 7-5: Tomichi Copper-Molybdenum Project W-E Cross Section 4269500N.....	7-11
Figure 7-6: Representative Vein Types .....	7-13
Figure 14-1: Plan View of Drilling / Sampling by Year.....	14-3
Figure 14-2: Isometric View of Copper Grades in Drilling.....	14-4
Figure 14-3: Isometric View of Molybdenum Grades in Drilling.....	14-4
Figure 14-4: Isometric View of Gold Grades in Drilling .....	14-5
Figure 14-5: Isometric View of Silver Grades in Drilling.....	14-6
Figure 14-6: Isometric View of Rhenium Grades in Drilling.....	14-6
Figure 14-7: Isometric View of the Rock Types in Drilling and West-Dipping Fault .....	14-8
Figure 14-8: Isometric View of the Molybdenum Grades Relative to the Copper Hill Fault ...	14-9
Figure 14-9: Boxplot Comparing Copper Grades by Rock Type .....	14-12
Figure 14-10: Boxplot Comparing Molybdenum Grades by Rock Type .....	14-12
Figure 14-11: Boxplot Comparing Gold Grades by Rock Type.....	14-13
Figure 14-12: Boxplot Comparing Silver Grades by Rock Type .....	14-13
Figure 14-13: Boxplot Comparing Rhenium Grades by Rock Type .....	14-14
Figure 14-14: Contact Profile for Copper and Molybdenum across the Copper Hill Fault ....	14-15
Figure 14-15: Herco Grade/Tonnage Plot for the Copper Model.....	14-22
Figure 14-16: Herco Grade/Tonnage Plot for the Molybdenum Model .....	14-22
Figure 14-17: Grade/Tonnage Comparison of Copper Models .....	14-24
Figure 14-18: Grade/Tonnage Comparison of Molybdenum Models .....	14-24
Figure 14-19: Swath Plot of Copper OK and NN Models by Northing .....	14-26
Figure 14-20: Swath Plot of Molybdenum OK and NN Models by Northing.....	14-26
Figure 14-21: Isometric Views of Base Case Inferred Mineral Resource .....	14-29

## 1 SUMMARY

This report summarizes exploration work performed on the Tomichi Copper-Molybdenum Project (Project), Gunnison County, Colorado, U.S.A. This Report is an update of two independent National Instrument 43-101 Technical Reports written for Burnstone Ventures, Inc. The first Report is dated October 7, 2011, and the second is dated July 9, 2013. This Report is an update on a previously reported mineral resource estimate, a revised and updated summary of mineral exploration activities conducted on the Property, as well as an updated review of the Property exploration history. Further, the Report includes a discussion of the Property Deposit Model and exploration potential of the Project and recommendations and budget for the next phases of mineral exploration at Tomichi.

The Tomichi Copper-Molybdenum Project (Project), of Gunnison County, Colorado, U.S.A is a copper-molybdenum exploration prospect located in the Gunnison National Forest within the Rocky Mountains approximately 50 kilometers (km) (30 miles) east of Gunnison, Colorado, and 50 km west of Salida, Colorado. The Project lies within the Whitepine and Garfield, Colorado, U.S. Geological Survey, 7.5 minute series topographic base maps. The land survey coordinates for the Project include Sections 23, 24, 25, and 26, Township 50 North, Range 5 East, New Mexico Meridian. The Property consists of 49 unpatented lode mining claims with a total area of approximately 409 hectares (ha) (1,011 acres).

Tomichi property mineral exploration and drilling was first initiated in 1957 and has proceeded sporadically since then through the present day. Five previous operators have completed 52 core holes for a total of 16,612 m (54,500 ft) of which 12,433 m (40,790 ft) of historic core from 31 holes are presently available for inspection and testing. Historic data available from previous exploration companies include geologic maps, cross sections, drilling logs and internal geologic reports. However, there is no information by which to evaluate how historic drilling, field, or exploration activities were conducted prior to Burnstone Ventures program in 2011-2014. There are no laboratory reports from previous operators; all mineral concentration data are from information presented on drill logs or summary report sheets.

The Project is located on the west side of the Continental Divide in the Sawatch Range of central Colorado, U.S.A with elevations that range from approximately 3,000 m to 3,938 m (12,920 ft) above mean sea level (amsl). Tomichi Creek which drains the Property eventually flows into the Gunnison River, a tributary of the Colorado River. The region is typical glaciated mountainous terrain with cirques, U-shaped valleys, serrated ridges, moraines, and lake basins.

The Project is located on the southern edge of the Sawatch Range in the Southern Rocky Mountain physiographic province within the Colorado Mineral Belt and Tomichi mining district. The property geology consists of Proterozoic granites intruded by a Paleogene granitic intrusive

complex. Three granite porphyry phases characterized by aplitic, seriate, and megacrystic textures form nested bodies central to the copper-molybdenum mineralized zone and are closely related to mineralization. Postmineral normal offset along the north-south striking, moderately west-dipping Copper Hill fault offset mineralized zones, and juxtaposed potassic alteration and mineralized porphyry on its footwall against sericitized and pyritic rock on its hanging wall.

Tomichi is interpreted as a porphyry copper-molybdenum deposit that has all of the characteristics of porphyry systems including multiple intrusions, zoned hydrothermal alteration, and multiple stages of veining and sulphide mineralization.

Based on the current level of exploration, the Tomichi deposit contains an Inferred mineral resource estimated at 711 million tonnes at a grade of 0.21% copper, 0.035% molybdenum, 0.017 g/t gold, 2.0 g/t silver and 0.22 g/t rhenium containing 3.3Blbs copper, 555Mlbs molybdenum, 393koz gold, 46Moz silver and 339klbs of rhenium. The resource exhibits reasonable prospects for eventual economic extraction using open pit mining methods.

Table 1.1 shows the sensitivity of the resource, listed at a variety of cut-off grades for comparison purposes, contained inside a resource limiting pit shell that has been generated based on a copper price of \$3.00/lb and a molybdenum price of \$10.00/lb. The base case resource, assuming a cut-off grade of 0.25% CuEq, is highlighted in the table

**TABLE 1.1: SENSITIVITY OF INFERRED MINERAL RESOURCES TO CUT-OFF GRADE**

Cut-off CuEq%	Million tonnes	Average Grade:						Contained Metal:				
		CuEq* (%)	Cu (%)	Mo (%)	Au (g/t)	Ag (g/t)	Re (ppm)	Cu (Blbs)	Mo (Mlbs)	Au (koz)	Ag (Moz)	Re (klbs)
0.1	1,002	0.29	0.19	0.031	0.015	1.8	0.193	4.17	689	493	57.2	426
0.15	990	0.30	0.19	0.032	0.015	1.8	0.194	4.15	687	490	56.9	423
0.2	906	0.31	0.20	0.033	0.016	1.8	0.202	3.93	655	460	53.7	402
<b>0.25</b>	<b>711</b>	<b>0.33</b>	<b>0.21</b>	<b>0.035</b>	<b>0.017</b>	<b>2.0</b>	<b>0.216</b>	<b>3.31</b>	<b>555</b>	<b>393</b>	<b>45.6</b>	<b>339</b>
0.3	480	0.36	0.23	0.039	0.019	2.1	0.231	2.42	412	287	33.2	244
0.35	264	0.39	0.25	0.043	0.020	2.3	0.247	1.43	249	168	19.8	144

Notes: Limited inside \$3.00/lb CuEq pit shell. Base case cut-off is 0.25% CuEq.

CuEq number excludes Ag, Au, and Re.

Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

The results of diamond drilling to date indicate that the deposit remains open to further expansion at depth and to the north, east and southwest. Many of the current drill holes were terminated at depths ranging from 300 to 400 m below surface, in mineralization that is well above the base case cut-off threshold.



A \$2,022,500, two-phase exploration program is recommended for the Tomichi Copper-Molybdenum Project. Phase I consists of detailed data gathering and compilation, LiDAR/satellite imagery, environmental baseline studies, and geologic mapping with a total budget of \$614,000. A \$1,408,500 Phase II program of diamond drilling of six holes totaling 5,000 m is recommended to more accurately determine the extent of the mineralized envelope to the east, north, west, and to depth. Additionally, such a program would include an analysis of two twinned historic holes for data confirmation, in-fill and step out diamond drilling (to increase confidence in the mineral resource and afford the collection of material for bulk density and metallurgical test work).

## 2 INTRODUCTION

Libero Mining Corporation (“Libero” or “the Company”) retained the services of Gault Group, LLC to prepare this Canadian National Instrument 43-101 compliant Technical Report for the Tomichi Copper-Molybdenum Project (Project), Gunnison County, Colorado, U.S.A. The Project is an exploration property. This technical report summarizes the geology, mineralization, previous and proposed work, an estimate of mineral resources and includes recommendations.

### 2.1 Introduction and Overview

Libero Mining Corporation is a Vancouver-based mineral exploration company listed on the TSX Venture Exchange with trading symbol TSX-V:LBC.

Libero holds an Option to acquire 100% interest in the Tomichi Copper-Molybdenum Project (“the Project”) in Gunnison County, Colorado, U.S.A. The Project is not subject to underlying royalties.

This report is an update to the previously reported Technical Reports by Gault Group (2011) and Gault Group (2013) and presents a review of the historical exploration work conducted on the Property, a property description, a geology and mineralization review, an estimate of mineral resources and recommendations for next-steps exploration work.

The Tomichi Copper-Molybdenum Project is being explored for porphyry-style copper-molybdenum mineralization by Libero.

### 2.2 Terms of Reference

Paul D. Gray, P.Geo., (“Gray”) of PDG Geological Consultants and Robert C. Sim, Geol., (“Sim”) of SIM Geological Inc, were contracted by Gault Group Inc. (“GGL”) to prepare this independent National Instrument 43-101 (“NI 43-101”) Technical Report to be filed with the Toronto Stock Exchange (“TSX”) Venture Exchange and the Canadian System for Electronic Document Analysis and Retrieval (“SEDAR”). The primary author, Gray, is responsible for preparation of the report and compilation of historical data, with the exception of *Section 14.0, Mineral Resource Estimate*. Section 14.0 is the responsibility of Mr. Sim. Both authors are Qualified Persons independent of Libero, GGL, and any of the underlying owners of the Tomichi mineral claims.

This report was produced for the purpose of supplying updated ownership and claim information as well as updated mineral exploration information and recommendations for further work to the shareholders of Libero as part of Libero’s acquisition of the Property. The Report was written in compliance with disclosure and reporting requirements set forth in the Canadian Securities Administrations’ current “Standards of Disclosure for Mineral Projects” under provisions of National Instrument 43-101, Companion Policy 43-101 CP and Form 43-101 F1. It is a

compilation of publicly-available (SEDAR) reports, other Property specific technical reports written since 1957 (published and unpublished) and government scientific publications on the area and region. All supporting documentation is referenced in the References section of this Report. Gray visited the Tomichi Project on February 26, 2017 accompanied by Gault Group personnel.

### **2.3 Location and Ownership**

The Project is in the Gunnison National Forest within the Rocky Mountains approximately 50 kilometers (km) (30 miles) east of Gunnison, Colorado, and 50 km west of Salida, Colorado. The Project lies within the Whitepine and Garfield, Colorado, U.S. Geological Survey, 7.5 minute series topographic base maps. The land survey coordinates for the Project include Sections 23, 24, 25, and 26, Township 50 North, Range 5 East, New Mexico Meridian.

The Project consists of 49 unpatented lode mining claims with a total area of approximately 409 hectares (ha) (1,011 acres). Of the 49 lode mining claims, 29 are owned by Weckerling and partners. The Project's lode mining claims are located primarily on U.S. Department of Agriculture Forest Service (USFS) land with some of these claims overlying 131 ha (324 acres) of patented or fee land. Liberio Mining Limited, a wholly owned United States subsidiary of Liberio executed an Option Agreement with Weckerling and partners for 29 unpatented lode mining claims on December 16, 2016.

In May of 2017, Liberio staked an additional 20 unpatented lode claims. Location certificates and maps for these 20 claims have been filed on behalf of Liberio with the BLM and Gunnison County.

No final agreements with patented or fee land owners have been executed.

### **2.4 Purpose of Report**

Liberio Mining Corporation (Liberio) retained the services of Gault Group, LLC (GGL) to prepare a Canadian National Instrument 43-101 (NI 43-101) compliant Technical Report for the Tomichi Copper-Molybdenum Project (Project), Gunnison County, U.S.A. This request was made by Mr. Ian Slater, CEO, Liberio Mining Corporation (TSX-V: LBC) an exploration company with their office location at Suite 2348 – 666 Burrard Street, Vancouver, B.C., Canada, V6C 2X8.

Property mineral exploration and drilling was initiated in 1957 and occurred periodically with the last exploration and drilling completed in 2015. During these historic exploration periods 52 core holes were drilled for a total of 16,612 meters (m) (54,500 feet ["ft"]) of drilling.

The purpose of this Technical Report is to provide the reader with the status of the Project and a basic understanding of historic exploration activities, geology, mineralization, proposed exploration, and recommendations. This Technical Report is prepared using the industry

accepted Canadian Institute of Mining, Metallurgy and Petroleum (CIM) “Best Practices and Reporting Guidelines” for disclosing mineral exploration information; the Canadian Securities Administrators revised regulations in NI 43-101 (Standards of Disclosure For Mineral Projects, June 24, 2011); Companion Policy 43-101CP, June 24, 2011; Form 43-101F1, June 24, 2011, that became effective June 30, 2011; and CIM Definition Standards for Mineral Resources and Mineral Reserves (May 10, 2014).

## 2.5 Sources of Information

Gray reviewed hard and electronic copies of available Project data. All of the data are historic; dating from 1957 through 2015, and include: unpublished hard and electronic copies of reports, drill logs, memos and correspondence, geologic maps, and working cross-sections developed by various exploration companies from 1957 through 1981. Inventories of these available resources are included in Section 6. Furthermore, drill core from explorations completed in 1979 – 2013 and coarse rejects and pulps from 2012-2013 initiatives have been secured in storage and are available for continued evaluation and testing. An inventory of the drill core is included in Section 6.6.

As described in more detail in Sections 11 and 12, there is no information by which to evaluate how drilling, field, or exploration activities were conducted for historic information presented in this technical report. There are no laboratory reports for listed mineral concentrations presented herein; all mineral concentrations data are from information presented on drill logs or summary report sheets. Therefore, the mineralization presented and discussed in this technical report is not necessary indicative of the mineralization on the Project property.

There are four published reports that were relied upon for baseline geology and mineralogy. The first is specific to the Garfield 15 minute quadrangle, Colorado, upon which the Project property and the Tomichi Creek mineral district are located: *Dings, M.G. and Robinson, C.S., 1957, Geology and Ore Deposits of the Garfield Quadrangle, Colorado, United States (U.S.) Geological Survey Professional Paper 289, 110 p.*

The second report is more regional in areal extent and adds a broader geologic and mineral character overview: *Streufert, R.K., 1999, Geology and Mineral Resources of Gunnison County, Colorado, Colorado Geological Survey, 76 p.*

The remaining two reports are specific to the Tomichi porphyry: *Gault Group, LLC. 2011, NI 43-101 Technical Report on Historic Exploration Tomichi Copper-Molybdenum Project Gunnison County, Colorado. Prepared for Burnstone Venture, Incorporated Dated October 7, 2011, and Gault Group, LLC. 2013, NI 43-101 Technical Report on Historic Exploration Tomichi Copper-Molybdenum Project Gunnison County, Colorado. Prepared for Burnstone Venture, Incorporated Dated July 9, 2013*



## **2.6 Qualified Persons**

Mr. Paul D. Gray is a co-author of this Technical Report and a “Qualified Person” as defined by NI 43-101. Mr. Robert C. Sim is a co-author of this report and a “Qualified Person” as defined by NI 43-101.

## **2.7 Project Property Visit**

Mr. Paul D. Gray, accompanied by GGL personnel, conducted a site visit of the Project area and inspected the core repository on February 26, 2017.

### **3 RELIANCE ON OTHER EXPERTS**

Neither GGL nor the author has performed an independent verification of land title and tenure as summarized in Section 4.3 of this report. Mr. Stephen E. Glass, GGL Principal, reviewed legal agreements provided by Libero. However, neither Mr. Glass nor the author verified the legality of any underlying agreement(s) that may exist concerning the Project. Information contained regarding mining claims were provided by Libero and obtained from the Bureau of Land Management's (BLM) LR2000 active mining claims database, and Gunnison County public records. Ms. Cortney Pink, GGL Director of Regulatory Affairs, also reviewed and confirmed the transfer of historic core Molybdenum and Copper concentration results into spreadsheets. Mr. Major Kindsfater, GGL Project Engineer, reviewed and confirmed land coordinates for the Project and assisted with the production of report figures.

Libero informed Paul D. Gray, P.Geo. that there are no known encumbrances with the mining claims, property or access; no known environmental liabilities with the mining claims; no factors or risks that may affect access, title, or the right or ability to perform work on the claims or property.

Neither GGL nor the authors are an insider, associate or an affiliate of Libero. The results of this Technical Report are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings. GGL, Robert C. Sim, Brock Riedell, and Paul D. Gray are being paid professional fees for preparing this Technical Report in accordance with normal professional consulting practices.

## 4 PROPERTY DESCRIPTION

### 4.1 Description and Location

The Project is in the Gunnison National Forest of Gunnison County, Colorado, U.S.A., within the Rocky Mountains approximately 50 kilometers (km) (30 miles (ml)) east of Gunnison, Colorado, and 50 km (30 ml) west of Salida, Colorado (Figure 4-1). The Project lies within the Whitepine, Colorado and Garfield, Colorado, U.S. Geological Survey, 7.5 minute series topographic base maps. The land survey coordinates for the Project include un-surveyed Sections 23, 24, 25, and 26, Township 50 North, Range 5 East, New Mexico Meridian. Access to the Project is accomplished via unrestricted public rights-of-way (U.S. Highway 50, and County Road 888).

### 4.2 Surface Area of Property

The property dimensions for the Project's unpatented lode mining claims are approximately 1,829 m (6,000 ft) in north-south direction and approximately 2,286 m (7,500 ft) in east-west direction; for an approximate 409 hectares (ha) (1,011 acres) in total property area.

### 4.3 Mineral Tenure

The Project consists of 29 unpatented lode mining claims owned by Weckerling and associated partners, and 20 unpatented lode mining claims owned by Libero. All of the Project's lode mining claims are located on U.S. Department of Agriculture Forest Service (USFS) land. Figure 4-2 depicts the location of each of the 49 unpatented lode claims and Table 4.1 list each claim and their respective serial number and owner. Also shown in Figure 4-2 are 131 ha (324 acres) of patented or fee land that underlie a portion of the 29 unpatented mining claims.

The BLM and the USFS manage the lands covered by unpatented mining claims with the BLM administering all records and claim fees. Unpatented lode mining claims in Colorado are located in the field with four corner posts, two side center posts, and a location monument. Each unpatented lode mining claim dimension is approximately 182 m by 457 m (600 ft by 1,500 ft); equating to approximately 8 ha (20 acres).

Location certificates for each mining claim are filed with the BLM and recorded in the County in which the claims are located. In the Project area individual location certificates and a map showing their locations are on file with the BLM office in Lakewood, Colorado as well as the Gunnison County Recorder's office in Gunnison, Colorado. The map and location certificate on file constitute the legal surveys for the property. To maintain mining claims in good standing a claim holder must make annual maintenance fee payments to the BLM and record a notice of intent to hold the claims or an affidavit of assessment work with the County recorder.



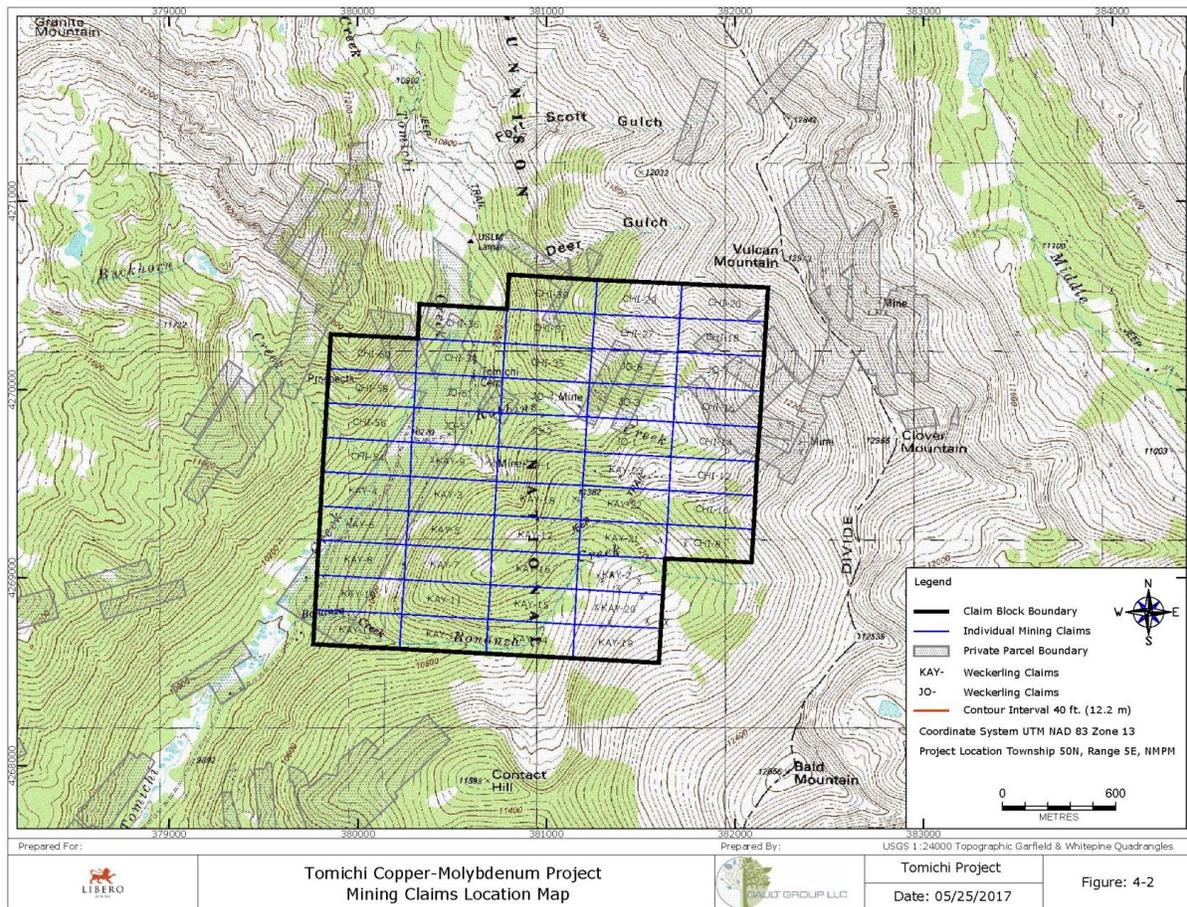
**TABLE 4.1: TOMICHI COPPER-MOLYBDENUM PROJECT CLAIMS**

<b>Claim Name</b>	<b>BLM Serial Number</b>	<b>Claim Owner</b>
Jo-1	CMC107651	Weckerling and Partners
Jo-2	CMC107652	Weckerling and Partners
Jo-3	CMC107653	Weckerling and Partners
Jo-4	CMC107654	Weckerling and Partners
Jo-5	CMC107655	Weckerling and Partners
Jo-6	CMC107656	Weckerling and Partners
Jo-7	CMC289338	Libero Mining Limited
Jo-8	CMC289339	Libero Mining Limited
Kay-1	CMC107657	Weckerling and Partners
Kay-2	CMC107658	Weckerling and Partners
Kay-3	CMC107659	Weckerling and Partners
Kay-4	CMC107660	Weckerling and Partners
Kay-5	CMC107661	Weckerling and Partners
Kay-6	CMC107662	Weckerling and Partners
Kay-7	CMC107663	Weckerling and Partners
Kay-8	CMC107664	Weckerling and Partners
Kay-9	CMC107665	Weckerling and Partners
Kay-10	CMC107666	Weckerling and Partners
Kay-11	CMC107667	Weckerling and Partners
Kay-12	CMC107668	Weckerling and Partners
Kay-13	CMC107669	Weckerling and Partners
Kay-14	CMC107670	Weckerling and Partners
Kay-15	CMC242613	Weckerling and Partners
Kay-16	CMC242614	Weckerling and Partners
Kay-17	CMC242615	Weckerling and Partners
Kay-18	CMC242616	Weckerling and Partners
Kay-19	CMC242617	Weckerling and Partners
Kay-20	CMC242618	Weckerling and Partners
Kay-21	CMC242619	Weckerling and Partners
Kay-22	CMC242620	Weckerling and Partners
Kay-23	CMC242621	Weckerling and Partners
CHI-8	CMC289340	Libero Mining Limited
CHI-10	CMC289341	Libero Mining Limited



<b>Claim Name</b>	<b>BLM Serial Number</b>	<b>Claim Owner</b>
CHI-12	CMC289342	Libero Mining Limited
CHI-14	CMC289343	Libero Mining Limited
CHI-16	CMC289344	Libero Mining Limited
CHI-18	CMC289345	Libero Mining Limited
CHI-20	CMC289346	Libero Mining Limited
CHI-27	CMC289347	Libero Mining Limited
CHI-29	CMC289348	Libero Mining Limited
CHI-34	CMC289349	Libero Mining Limited
CHI-35	CMC289350	Libero Mining Limited
CHI-36	CMC289351	Libero Mining Limited
CHI-37	CMC289352	Libero Mining Limited
CHI-39	CMC289353	Libero Mining Limited
CHI-54	CMC289354	Libero Mining Limited
CHI-56	CMC289355	Libero Mining Limited
CHI-58	CMC289356	Libero Mining Limited
CHI-60	CMC289357	Libero Mining Limited

**FIGURE 4-2: TOMICHI COPPER-MOLYBDENUM PROJECT MINING CLAIMS LOCATION MAP**



Libero and BLM records indicate that all maintenance fees for the 49 claims are current through August 31, 2017. No verification of claim posts, associated with each claim, was made during the site visit. No verification as to the validity of the mining claims, their ownership, or the land tenure in years past was made during this evaluation.

#### 4.4 Ownership Royalties, Agreements, and Encumbrances

On December 16, 2016, Libero executed an Option Agreement with Weckerling and partners to earn 100% of 29 unpatented lode mining claims (Table 4.1, Jo-1 through Jo-6 and Kay-1 through Kay-23) in the Tomichi mining district of Gunnison County, Colorado. The Option Agreement contains an exercise price of \$4 million dollars to be paid on or before the fifth anniversary of the execution of the Agreement, December 16, 2021. A payment of \$7,500 was paid on signing and the first year anniversary payment of \$40,000 was paid within 30 days of signing. Until the option is exercised, payments of \$60,000, \$80,000, \$125,000, \$150,000 are required on the second, third, fourth, and fifth anniversaries, respectively, to keep the Option in good standing.

If the Option is exercised, Liberio will have earned 100% ownership of the 29 mining claims and no further annual payments will be required.

In May of 2017, Liberio staked an additional 20 unpatented lode claims (Table 4.1, Jo-7 and Jo-8, CHI-8, CHI-10, CHI-12, CHI-14, and filed location certificates and maps with the BLM in Lakewood, Colorado and the County Clerk's office in Gunnison County, Colorado.

#### **4.5 Environmental Liabilities**

Based upon a review of the available Project data supplied by Liberio, and on-site investigations by GGL personnel, no environmental liabilities were identified. Investigations of previous land disturbance made during property site visit revealed existing single-lane dirt roads that access the property, presumably constructed for historic geologic exploration, and a few small waste rock dumps remaining near adits, also presumed to be associated with historic exploration. Neither the dirt access roads nor the small waste rock dumps were evaluated in detail for their full length or extent. Based on observations by GGL personnel of areas traversed during the extensive on-site investigations and site visits, there does not appear to be a source of environmental concerns on the property. A Phase I site assessment of the subject property pursuant to ASTM Standards was not conducted, and is not recommended.

#### **4.6 Permits**

Two phases of exploration activities are recommended. Based upon GGL's review of Liberio's Phase I efforts, no Federal, State, or local permits or approvals are required.

Liberio's Phase II exploration plans include drilling. Mineral exploration activities that may create surface disturbance associated with the Project are subject to regulation by the USDA Forest Service (USFS), State of Colorado Division of Reclamation Mining and Safety (DRMS) and Gunnison County. Federal authorization for exploration on USFS administered lands is granted via a Notice of Intent (NOI) when surface disturbance is insignificant, or an approved Plan of Operations (POO) when the potential exists for significant surface disturbance or impacts to other resources. Prospecting permits and applicable requirements for reclamation of surface disturbance and financial assurance are administered by DRMS, via a Memorandum of Understanding (MOU) with the USFS. Gunnison County promulgated parallel mineral exploration and mining regulations administered by the Community Development Department (CDD). Time frames for USFS authorization range from 15 days for an NOI, to several months for an exploration POO. DRMS approval and issuance of prospecting permits and financial assurance is a minimum of 25 working days. CDD has no codified time frames for approvals.



#### **4.7 Other Significant Factors**

Based on the knowledge base acquired to date, and not having completed a detailed risk analysis, there are no known other significant factors or risks that may affect the access, title, or the right or ability to perform work on the Property

## **5 ACCESS, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY**

### **5.1 Access**

The Project is accessible from Gunnison, Colorado, by traveling east on U.S. Highway 50 for 51 km (32 miles) or west 51 km from Salida, Colorado, to the turnoff for County Road 888 and Whitepine, Colorado. Then one travels north on County Road 888 for 16 km (10 miles) on a two-lane paved and improved gravel road to the small town of Whitepine, Colorado. Continuing north on County Road 888 the road is unimproved dirt/gravel for another 2.4 km (1.5 miles) until crossing the southernmost boundary of the Project's mining claims. The road continues for 1.1 km (0.7 miles) and intersects a series of historic drill and mine access roads that transect portions of the property. These access roads are unimproved and have not been maintained, however they are accessible with the use of a four-wheel drive vehicle. Gault Group (2013).

### **5.2 Physiography**

The Project is located on the west side of the Continental Divide in the Sawatch Range of central Colorado, U.S.A. The crest of the Sawatch Range defines the Continental Divide which in this region is generally oriented in a north-south direction. The maximum elevation within the property is approximately 3,938 m (12,920 ft) above mean sea level (amsl) near the summit of Vulcan Mountain. Vulcan Mountain is located approximately one mile northeast of the Project's property center and is one of many named peaks along the Continental Divide.

The lowest property elevation is approximately 3,041 m amsl (9,980 ft amsl) along Tomichi Creek in the southwest area of the property. Surface runoff and intermittent discharge from the eastern portion of the property is mainly from two named creeks, Robbins Creek and Bonanza Creek and from the western portion of the property by Buckhorn Creek. These three drainages are tributaries of Tomichi Creek which is the main perennial stream in the area. Tomichi Creek eventually flows into the Gunnison River, a tributary of the Colorado River.

The region is typical glaciated mountainous terrain with cirques, U-shaped valleys, serrated ridges, moraines, and lake basins. Gault Group (2013).

### **5.3 Climate and Operating Season**

The climate of the area and property is typical of high mountainous terrain at this latitude ( $\approx 38^{\circ} 30''$  North). In general during the summer months the weather is temperate with thunderstorms a common occurrence and at times summer low temperatures can fall below freezing. Snow can start falling as early as September, but usually begins to collect in late October into November, although clear cold weather usually prevails in September and October. By late November the

weather is cold and snowfall can be significant. Temperatures can fall well below freezing in the winter months ( $-40^{\circ}\text{F}$  or  $-40^{\circ}\text{C}$ ). The snow begins to melt in May and is typically nearly all gone by July. Some higher elevation north facing slopes can retain snow for many of the summer months. An example of seasonal temperatures from Gunnison, Colorado (2,346 m, 7,700 feet amsl) indicates the average January low is  $-8^{\circ}\text{F}$  ( $-22^{\circ}\text{C}$ ), and the average July high is  $82^{\circ}\text{F}$  ( $28^{\circ}\text{C}$ ). Therefore, due to winter weather conditions the Project property is generally accessible from June through October. During some years lower property elevations may be accessible in late-May into mid-November. Gault Group (2013).

#### **5.4 Vegetation**

Most of the mountain slopes are covered to timberline by evergreens, predominately lodgepole pine and Engelmann spruce, with the heaviest stand on the north facing slopes. The main deciduous trees are aspen, willow and alder; with willow and alder common in the stream valleys. Above timberline the area is covered with grassy slopes. The steepest slopes are commonly rock talus covered. Gault Group (2013).

#### **5.5 Local Resources and Infrastructure**

An evaluation of infrastructure has not been completed for any future exploration: however, some basic observations can be made. Whitepine, Colorado is a residential community with a population around 60 and has no retail services. There is no power on the Project property and water supply needs would likely be from property surface water sources. Accommodations along with basic supplies, labor, fuel, etc. are available in the towns of Gunnison, Colorado,  $\sim 64\text{ km}$  ( $\approx 40\text{ miles}$ ) to the west with a population of  $\sim 6,000$ , or the town of Salida, Colorado  $\sim 64\text{ km}$  to the east, with a population of  $\sim 5,500$ . Any specialized material, equipment or manpower requirements would be readily available in larger cities that are greater distances, 225 - 337 km (140 – 210 miles) to the east and northeast of the Project, i.e., Denver, Colorado Springs, etc. Gault Group (2013).

## 6 HISTORY

Sections 6-1 through 6-5 are modified from Gault Group (2013).

### 6.1 Tomichi Mining District and Early Mineral Production, 1879 through 1950

The Tomichi mining district was one of the early mining districts developed on the western slope of the Continental Divide in Colorado. Mineral deposits in the district, such as lead-zinc-silver-gold, were first discovered in 1879 and many of the important mining claims were located between 1879 and 1883. Most mining activity in the district occurred between 1883 and 1893, although there is limited information available on the history or production during this time period. In 1900 it was reported by the Director of the U.S. Mint that the Tomichi mining district produced 22,000 tons of sulfide ore, even though during this year there was a drop in the price of silver and only a few mines were in operation. Then in 1901 the Akron Mining Company consolidated various mines in the district and in 1905 they constructed the first mill, these changes allowed them to be the most productive mine in the district although there was limited production from 1901 to 1937. Then in 1937 Callahan Zinc-Lead Company acquired Akron Mining Company operations, as well as a number of other mines, and began to modernize the mines and equipment and started mining operations in 1943. In 1951 Callahan Zinc-Lead Company acquired control of most of the mines in the Whitepine area of the Tomichi mining district. Coeur Mining, Inc. acquired Callahan in 1991; it is not known if Coeur retains property in the area.

Most of the producing mines through 1950 in the Tomichi mining district were located adjacent to and predominately south and southeast of the Project, the subject of this report. U.S. Bureau of Mines production records for the Tomichi mining district for the period of 1901 – 1950 indicate these quantities of recovered metals: 1,373 ounces of gold; 744,443 ounces of silver; 482,380 pounds of copper; 1,746,077,542 pounds of lead; and 34,790,959 pounds of zinc. The U.S. Bureau of Mines noted of the reported quantities that less than one percent of production was outside of Whitepine area but still within the Tomichi mining district.

### 6.2 Harry Weckerling Stakes Lode Mining Claims in 1955

In 1955, Harry Weckerling of Golden, Colorado, staked lode mining claims over the Project area. The number of claims that were initially staked by Mr. Weckerling during this time period is unknown, however information from Cities Service Minerals Corporation who pursued exploration in 1974-1977 suggests that there were as many as 124 Weckerling claims, although at the time they called into question the validity of some claims in the southern portion of the claim block, also noting, “they are outside the target area.”

As mentioned previously, a detailed land and claim title search was not completed; however, available records indicate that 20 of Mr. Weckerling's original 1955 lode claims, Kay #1 through Kay #14 and Jo #1 through Jo #6, are a part of this Project.

Throughout the history of Mr. Weckerling's (or the subsequent owners of Mr. Weckerling's mining claims, Weckerling and partners) mining claims there appear to have been seven different companies that have been interested in the property. Four of the seven companies performed exploration activities, these companies include: Climax Molybdenum Company (1957), Cyprus Mines Corporation (1968-1969), Cities Service Minerals Corporation (1974-1977) and Molycorp, Inc. (1978-1981). The remaining three (3) companies were Baumgardner Oil Company, St. Joe Lead, and Noranda. Baumgardner Oil Company, in some type of arrangement, may have been associated with Climax Molybdenum Company and the other two companies (parties) do not appear to have performed any exploration activities on the mining claims and there is no known information about their involvement with the mining claims aside from their name.

Due to the different generations of historic explorations on the property the identification designations (ID numbers) can at times be confusing. Therefore, the ID number for the following historic explorations used herein is based on the first appearance of said ID number, which in most cases is the first appearance of the drill hole number on a geologic log. For example, the geologic log for Climax Molybdenum Company's first drill hole was identified as DH-1. DH-1 shall be used to identify this drill log, even though other information indicates an ID number of "1" or "Drill Hole No. 1."

Table 6.1 presents a summary of basic drill hole information including MoS<sub>2</sub>, Mo, and Cu results for all historic drill holes associated with the Project.

**TABLE 6.1: SUMMARY OF TOMICHI COPPER–MOLYBDENUM PROJECT BASIC DRILL HOLE INFORMATION\***

ID Number	Year Drilled	Angle/ Azimuth	Total Depth (ft / m)	Mo – Cu at total depth	Average MoS <sub>2</sub> %	Average Mo %	Average Cu %	Interval (feet)	Thickness (feet)	Thickness (metres)
DH-1	1957	-90	209 ft /63.7 m	n/a	0.00	0.00	0.05	14-209	195	59.4
DH-2	1957	-90	601ft /183.2 m	Cu & Mo	0.04	0.02	0.21	10 - 601	591	180.2
DH-3	1957	-90	695 ft /211.8 m	Cu & Mo	0.06	0.03	0.23	20 - 695	675	205.8
DH-4	1957	-45 / 90°	331 ft /100.9 m	n/a	0.05	0.03	0.15	50 - 331	281	85.7
DH-5	1957	-90	520 ft /158.5 m	n/a	0.01	0.00	0.08	22 - 520	498	151.8
DH-6	1957	-45 / 105°	776 ft /236.5 m	n/a	0.00	0.00	0.03	11 - 776	765	233.2
DH-7	1957	-90	627 ft /191.1 m	n/a	0.01	0.00	0.03	15 - 627	613	186.8
DH-8	1957	-60 / 105°	291ft /88.7 m	n/a	0.02	0.01	0.07	20 - 291	271	82.6
DH-9	1957	-90	231ft /70.4 m	n/a	0.00	0.00	0.02	70 - 231	161	49.1
T-1-C	1968	-90	1364 ft /415.7 m	n/a	0.03	0.02	0.28	60 - 680	620	189.0
T-1-C	1968	-90	1364 ft /415.7 m	n/a	0.05	0.03	0.18	20 - 1364	1344	409.8
T-2-C	1968	-90	780 ft /237.7 m	Mo	0.06	0.04	0.11	0 - 780	780	237.8
T-3-C	1969	-90 (?)	550 ft /167.6 m	Cu	0.02	0.01	0.22	60 - 550	490	149.4
3-C	1968	-90	320 ft /92.0 m	n/a	0.02	0.01	0.25	98-303	205	62.5
4-C	1968?	-90	70 ft /21.3 m	Cu	0.01	0.01	0.30	10 - 50	40	12.2
5-C	1968	-90	102 ft /31.1 m	n/a	0.02	0.01	0.20	12-102	90	27.4
T-5-C	1969	-90 (?)	1053.3 ft /321.0 m	Cu	0.03	0.02	0.28	20 - 1053	1033	314.9
T-6-C	1969	90 (?)	1106.3 ft /337.2 m	n/a	0.00	0.00	0.11	20 - 1106	1086	331.1
T-7-C	1969	-90 (?)	857 ft /261.2 m	n/a	0.00	0.00	0.01	20 – 857 <sup>a</sup>	837	255.2
T-8-C	1969	-90 (?)	1049.3 ft /319.8 m	Cu	0.01	0.00	0.20	10 - 1049	1039	316.8
T-9-C	1969	-90 (?)	1095 ft /333.8 m	Cu	0.01	0.00	0.11	10 – 1095 <sup>b</sup>	1085	330.8
W-1	1977	-90	550 ft / 167.6 m	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W-2	1977	-45	100 ft / 30.5 m	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W-3	1977	-90	900 ft / 274.3 m	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TM-01	1977	-75 / 330°	2378 feet /724.8m	n/a	0.10	0.06	0.08	0 - 1750	1750	533.5
TM-02	1977	-90	2477 feet /755.0m	n/a	0.02	0.01	0.21	855 - 2005	1150	350.6



ID Number	Year Drilled	Angle/ Azimuth	Total Depth (ft / m)	Mo – Cu at total depth	Average MoS <sub>2</sub> %	Average Mo %	Average Cu %	Interval (feet)	Thickness (feet)	Thickness (metres)
TM-03	1977	-90	707 feet /215.5m	n/a	0.02	0.01	0.25	415 - 555	140	42.7
TM-04	1980	-90	1265 feet /385.6m	n/a	0.11	0.06	0.08	460 - 1265	805	245.4
TM-05	1980	-90	1077 feet /328.3m	Cu & Mo	0.09	0.05	0.24	66 - 1070	1004	306.1
TM-06	1980	-80 / 330°	2852 feet /869.3m	n/a	0.04	0.02	0.06	10 - 2852	2842	866.5
TM-07	1980	-90	1447 feet /450.2m	n/a	0.02	0.01	0.27	20 - 520	500	152.4
TM-07	ditto	ditto	ditto	Cu	0.04	0.03	0.26	20 - 1447	1427	435.1
TM-08	1980	-90	1642 feet /500.5m	n/a	0.06	0.04	0.25	32 - 1380	1348	411.0
TM-09	1980	-90	1174 feet /357.8m	n/a	0.08	0.05	0.45	33 - 770	737	224.7
TM-09	1980	ditto	ditto	Mo	0.10	0.06	0.31	33 - 1174	1141	347.9
TM-10	1980	-90	864 feet / 263.3m	Cu & Mo	0.10	0.06	0.29	37 - 864	827	252.1
TM-11A	1980	-90	991 feet / 302.1m	Mo	0.10	0.06	0.16	100 - 991	891	271.7
TM-12	1980	-90	1207 feet /367.9m	n/a	0.02	0.01	0.31	60 – 370	310	94.5
TM-12	ditto	ditto	ditto	Cu	0.02	0.01	0.22	24 - 1207	1183	360.7
TM-13	1980	-90	1307 feet /398.4m	Cu	0.07	0.04	0.32	240 - 1307	1067	325.3
TM-14	1980	-90	1107 feet /337.4m	n/a	0.08	0.05	0.21	240 - 1107	867	264.3
TM-15	1980	-90	1107 feet /337.4m	Mo	0.10	0.06	0.22	70 - 1107	1037	316.2
TM-16	1980	-90	997 feet / 303.9m	n/a	0.08	0.05	0.24	130 - 260	130	39.6
TM-16	ditto	ditto	ditto	Mo	0.10	0.06	0.12	110 - 997	887	270.4
TM-17	1981	-90	1215 feet /370.3m	n/a	0.03	0.02	0.10	90 - 1215	1125	343.0
TM-18	1981	-90	1240 feet/378.0m	n/a	0.04	0.02	0.08	110 - 1240	1130	344.5
TM-19	1981	-90	1273 feet /388.0m	Cu & Mo	0.07	0.04	0.25	600 - 1273	673	205.2
TM-20	1981	-90	1448 feet /441.4m	n/a	0.02	0.01	0.17	80 - 830	750	228.7
TM-21	1981	-90	1240 feet /378.0m	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TM-22	1981	-90	1227 feet /374.0m	n/a	0.04	0.02	0.31	530 - 690	160	48.8
TM-22	ditto	ditto	ditto	Mo	0.09	0.06	0.06	1060-1227	167	50.9
TM-23	1981	-90	1126 feet /373.7m	n/a	0.01	0.01	0.17	40 - 640	600	182.9
TM-24	1981	-90	1200 feet /365.8m	n/a	0.12	0.07	0.12	570 - 1200	630	192.1
TM-25	1981	-90	1489 feet /453.8m	n/a	0.05	0.03	0.12	1060 - 1480	420	128.1



ID Number	Year Drilled	Angle/ Azimuth	Total Depth (ft / m)	Mo – Cu at total depth	Average MoS <sub>2</sub> %	Average Mo %	Average Cu %	Interval (feet)	Thickness (feet)	Thickness (metres)
TM-26	1981	-90	1545 feet /470.9m	n/a	0.03	0.02	0.29	560 - 970	410	125.0
TM-26	ditto	ditto	ditto	n/a	0.07	0.04	0.16	560 - 1545	985	300.3
TM-26	ditto	ditto	ditto	n/a	0.05	0.03	0.14	24 - 1545	1521	463.7
TM-27	2012	-45/090	1109 feet /338m	Mo & Cu	0.08	0.05	0.26	67 - 1109	1042	317.5
TM-28	2012	-90	984 feet /300m	Mo	0.07	0.04	0.29	15 - 984	969	295.6
TM-28A	2012	-55/065	1316 feet /401m	Cu	0.05	0.03	0.26	16 - 1316	1300	396.6
TM-29	2012	-90	482 feet /147m	Mo	0.07	0.04	0.22	27 - 482	455	138.9
TM-30	2012	-45/270	1296 feet /395m	Mo	0.08	0.05	0.26	14 - 1296	1282	390.7

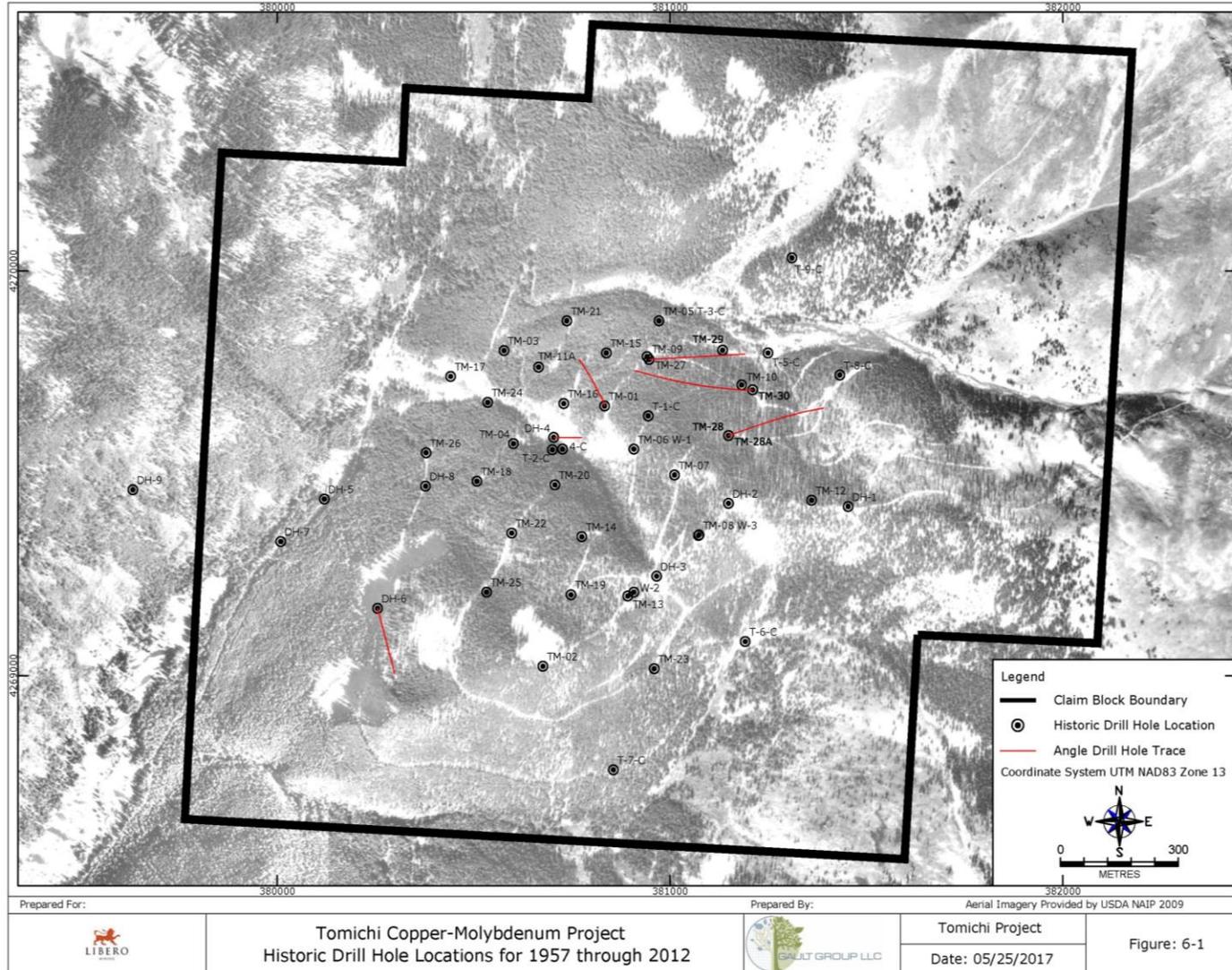
\* Including molybdenite (MoS<sub>2</sub>), molybdenum (Mo) and copper (Cu) analytical results for all historic drill holes. MoS<sub>2</sub>, Mo, and Cu results shown are derived by averaging results from 10-foot sample lengths over the interval indicated for each drill hole.

Note: there is no information by which to evaluate how drilling, field, or exploration activities were conducted for historic information presented in Table 6.1 prior to the 2012 holes TM-27 through -30. There are no laboratory reports, all mineral concentrations data are from information presented on drill logs or summary report sheets. Therefore, the actual results from future evaluations may be more or less favorable.

<sup>a</sup> sample interval every other 10-feet, i.e., every 20 ft.

<sup>b</sup> sample interval every other 10-feet from 530 ft to 1095 ft.

**FIGURE 6-1: TOMICHI COPPER-MOLYBDENUM PROJECT HISTORIC DRILLHOLE LOCATIONS 1957 THROUGH 2012**



### 6.3 Climax Molybdenum Company, 1957

In 1957 Climax Molybdenum Company (Climax) drilled nine widely spaced drill (core) holes ranging in length from 63.7 m to 236.5 m (209 ft to 776 ft) for a total of 1,304.8 m (4,281 ft) of drilling. The drill holes were designated identification numbers DH-1 through DH-9 (Figure 6-1). The drill holes were presumably all on Mr. Weckerling's lode claims; however, there is no information on a legal arrangement associated with this exploration and no review of claim ownership for 1957 was made during this review.

Available data from Climax exploration efforts include: drilling (core) logs; molybdenite, molybdenum copper laboratory results in percent; and graphic drill logs. Table 6.2 presents a summary of Climax's historic information associated with the Project and available for review. In addition, Table 6.1 presents a summary of basic drill hole information including molybdenite, molybdenum and copper results for Climax drill holes DH-1 through DH-9. The average concentration range reported during the Climax exploration was from 0.00% to 0.03% molybdenum and 0.02% to 0.23% copper. The highest molybdenum and copper concentrations were from three drill holes (DH-2, DH-3, and DH-4) with reported average concentrations ranging from 0.02% to 0.03% molybdenum and 0.15% to 0.23% copper. Copper and molybdenum values in drill holes DH-2 and DH-3 continued to be reported when the drill holes reached total depth.

As shown on Table 6.1 when there is not a clearly defined higher grade interval all sample results for the complete drill hole were used for the result. Higher grade copper intervals ( $\geq \approx 0.15\%$ ) and higher grade molybdenum ( $\geq \approx 0.05\%$ ) have been defined for select historic drill holes and are shown along with their interval and thickness.

As described in more detail in Items 11 and 12, there is no information by which to evaluate how drilling, field, or exploration activities were conducted for historic information presented in this section. There are no laboratory reports, all mineral concentrations data are from information presented on drill logs or summary report sheets. No core or samples were retained. There were no mineral resource or mineral reserves known to have been derived from Climax's exploration efforts.

**TABLE 6.2: CLIMAX MOLYBDENUM COMPANY HISTORIC DATA AVAILABLE FROM 1957**

Document Type	ID Number	Date	Total Depth/ Interval	Description Condition	Coordinates Indicated	MoS <sub>2</sub> and Cu Laboratory Results	Comments
Drill log	DH-1	N/A	209 ft /63.7 m	Hard to read	Yes	None/visual indication	10 ft/3 m descriptions
Drill log	DH-2	N/A	601ft /183.2 m	Good	Yes	None/visual indication	10 ft/3 m descriptions
Drill log	DH-3	9/7/57-9/30/57	695 ft /211.8 m	Good	Yes	None/visual indication	10 ft/3 m descriptions
Drill log	DH-4	9/25/57-10/2/57	331 ft /100.9 m	Good	Yes	None/visual indication	45° angle – Az = 90°
Drill log	DH-5	10/2/57-10/15/57	520 ft /158.5 m	Good	Yes	None/visual indication	10 ft/3 m descriptions
Drill log	DH-6	10/4/57-11/3/57	776 ft /236.5 m	Hard to read	Yes	None/visual indication	45° angle – Az = 105°
Drill log	DH-7	10/18/57-11/7/57	627 ft /191.1 m	Hard to read	Yes	None/visual indication	10 ft/3 m descriptions
Drill log	DH-8	11/4/57-11/16/57	291ft /88.7 m	Hard to read	Yes	None/visual indication	60° angle – Az = 105°
Drill log	DH-9	11/7/57-11/27/57	231ft /70.4 m	Good	Yes	None/visual indication	10 ft/3 m descriptions
MoS <sub>2</sub> & Cu Results	DH-1 (No.1)	N/A	14-209 ft / 4.2-63.7 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-2 (No.2)	N/A	10-601 ft / 3-183.2 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-3 (No.3)	N/A	20-695ft / 6-211.8 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-4 (No.4)	N/A	50-331ft / 15.2-100.9 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-5 (No.5)	N/A	22-520 ft / 6.7-158.5 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-6 (No.6)	N/A	11-776 ft / 3.4-236.5 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-7 (No.7)	N/A	15-628 ft / 4.6-191.1 m	Good	N/A	Yes	Results from 10 ft/3m intervals
MoS <sub>2</sub> & Cu Results	DH-8 (No.8)	N/A	20-291 ft / 6-88.7 m	Good	N/A	Yes	Results from 10 ft/3m and 20 ft/6m intervals
MoS <sub>2</sub> & Cu Results	DH-9 (No.9)	N/A	70-231 ft / 21.3-70.4 m	Good	N/A	Yes	Results from 20 ft/6m intervals

Document Type	ID Number	Date	Total Depth/ Interval	Description Condition	Coordinates Indicated	MoS <sub>2</sub> and Cu Laboratory Results	Comments
Graphic Drill log	DH-3 (#3 – AMAX)	N/A	605 ft/184.4 m	Hard to read	N/A	Yes	Summary log, depth different than Drill log
Graphic Drill log	DH-4 (#4 – AMAX)	N/A	331 ft /100.9 m	Good	N/A	Yes	Summary log 45° angle – Az = 90°
Graphic Drill log	DH-5 (#5 – AMAX)	N/A	520 ft /158.5 m	Good	N/A	Yes	Summary log
Graphic Drill log	DH-6 (#6 – AMAX)	N/A	776 ft /236.5 m	Good	N/A	Yes	Summary log 45° angle – Az = 105°
Graphic Drill log	DH-7 (#7 – AMAX)	N/A	627 ft /191.1 m	Good	N/A	Yes	Summary log

#### 6.4 Cyprus Mines Corporation, 1968 and 1969

In 1968 Cyprus Mines Corporation (Cyprus) started their Tomichi project evaluation by first completing a reconnaissance geologic map. Additional 1968 work included an Induced Polarization (I.P.) survey and a surface geochemical survey. In 1968 and 1969 Cyprus drilled 11 core holes ranging in length from 21.3 m to 424.9 m (70 ft to 1,394 ft) for a total of 2,537.1 m (8,323.9 ft) of drilling. The drill holes were designated different identification numbers and include: DDH-1-C (T-1-C), DDH-1-C (T-2-C), T-3-CA & T-3-C, 3-C, 4-C, 5-C, T-5-C, T-6-C, T-7-C, T-8-C, and T-9-C (Figure 6-1). The drill holes were presumably all on Mr. Weckerling's lode claims; however, there is no information on a legal arrangement associated with this exploration and no review of claim ownership for 1968 and 1969 was made during this review.

Available data from Cyprus's exploration efforts include: drilling (core) logs; molybdenite, molybdenum and copper laboratory results in percent; graphic drill logs; a summary report describing results from 1968 explorations; two cross-sections using results from some of the explorations; and a surface assay – geochemistry copper-molybdenum value map. Table 6.3 presents a summary of this historic information associated with the Project and available for review.

Table 6.1 presents a summary of basic Cyprus drill hole information including molybdenite, molybdenum, and copper results for drill holes DDH-1-C (T-1-C), DDH-1-C (T-2-C), T-3-CA & T-3-C, 3-C, 4-C, 5-C, T-5-C, T-6-C, T-7-C, T-8-C, and T-9-C along with other historic drill holes associated with the Project (Note that the locations for drill holes 3-C and 5-C are uncertain). The average concentration range reported during the Cyprus exploration was from 0.00% to 0.04% molybdenum and 0.01% to 0.30% copper. The highest molybdenum concentrations were from three drill holes (T-1-C, T-2-C, and T-5-C) with reported average concentrations ranging from 0.02% to 0.04% molybdenum. Molybdenum values in drill hole T-2-C continued to be reported when the drill hole reached total depth. The highest copper concentrations were from seven drill holes (T-1-C, T-3-C, 3-C, 4-C, 5-C, T-5-C and T-8-C) with reported average concentrations ranging from 0.18% to 0.30% copper. Copper values in drill holes T-3-C, 4-C, T-5-C, T-8-C, and T-9-C continued to be reported when the drill holes reached total depth.

**TABLE 6.3: CYPRUS MINES CORPORATION HISTORIC DATA AVAILABLE FOR 1968 AND 1969**

Document Type	ID Number	Date	Total Depth/ Interval	Description Condition	Coordinates Indicated	Mo and Cu Lab Results	Comments
Drill log	DDH-1-C (T-1-C)	9/12/68-10/25/68	1364 ft /415.7 m	Good	Yes	Yes	Detailed descriptions, cannot read lower depths
Graphic Drill log	DDH-1-C (T-1-C)	N/A	1364 ft /415.7 m	Good	No	No	100 ft/30 m descriptions
Mo & Cu Results	DDH-1-C (T-1-C)	9/12/68-10/25/68	1364 ft /415.7 m	Good	Yes	Yes	Color summary column
Drill log	DDH-2-C (T-2-C)	N/A	780 ft /237.7 m	Good	Yes	Yes	Detailed descriptions, cannot read depths
Mo & Cu Results	DDH-2-C (T-2-C)	N/A	780 ft /237.7 m	Good	Yes	Yes	Color summary column
Drill log	(3-C)	10/30/68-11/9/68	320 ft /92.0 m	Good	?	Yes	Detailed descriptions Drill hole location uncertain
Drill log	(4-C)	N/A	70 ft /21.3 m	Good	Yes	Yes	Detailed descriptions
Drill log	(5-C)	11/16/68-11/21/68	102 ft /31.1 m	Good	?	Yes	Detailed descriptions Drill hole location uncertain
Summary Report (Holt, Inc.)	N/A	Late 1968-Early 1969 ?	N/A	Good	N/A	Yes, for 1968 drill holes	Technical information, interpretations, and recommendations
Assay & Geochem Map	N/A	1968 ?	Soil and Rock Surface sampling	Fair	Yes, on map boarder	Yes. Units unknown	≈ 200 samples, mapped results presented as values with no units.
Graphic Summary log	T-3-CA & T-3-C	7/18/69-8/11/69	550 ft /167.6 m	Good	No	Yes	Alteration, lithology, mineralization, included
Graphic Summary log	T-5-C	8/26/69-11/8/69	1053.3 ft /321.0 m	Fair	No	Yes	Alteration, lithology, mineralization, Ag & Au results but no units
Graphic Summary log	T-6-C	7/3/69-8/1/69	1106.3 ft /337.2 m	Good	No	Yes	Alteration, lithology, mineralization, included

Document Type	ID Number	Date	Total Depth/ Interval	Description Condition	Coordinates Indicated	Mo and Cu Lab Results	Comments
Graphic Summary log	T-7-C	8/3/69-8/21/69	857 ft /261.2 m	Good	No	Yes	Alteration, lithology, mineralization, included
Graphic Summary log	T-8-C	9/28/69-10/28/69	1049.3 ft /319.8 m	Good	No	Yes	Alteration, lithology, mineralization, some Ag & Au results but no units
Graphic Summary log	T-9-C	9/29/69-11/20/69	1095 ft /333.8 m	Good	No	Yes	Alteration, lithology, mineralization, included
Graphic Summary log Key	N/A	N/A	N/A	Fair	No	No	Helpful and defines most of the symbols and codes
N-S Cross Section	various	November 1969	601-1364 ft / 183.2- 415.7 m	Fair-poor	No	Yes	Includes: DDH-1-C, T-3-C, T- 5-C, T-6-C, T-7-C, T-9-C, Climax DH-2, DH-3
NW-SE Cross Section	various	November 1969	550-1053 ft / 167.6- 321.0 m	Fair	No	Yes	Includes: T-3-C, T-5-C, T-8-C

Cyprus's summary report (Holt, Inc., ND) made the following conclusions about the Tomichi property: (1) the portion of the exposed Tomichi Stock bearing sub-marginal copper mineralization which lies just east of the Copper Hill fault may represent the center of the altered and mineralized body; (2) an extremely favorable pattern of alteration suggests the possibility that the potassic/quartz-sericite transition zone, the most likely locus of higher grade, lies on the hanging wall of the Copper Hill fault near Climax hole 6; (3) high potential for "ore-grade" copper with molybdenum, (4) the degree of fracturing is particularly amenable to porphyry type mineralization; and (5) significant mineralization to a depth of more than 400 m (1,300 ft) and sub ore-grade mineralization was found over an area of approximately 550 m by 825 m (1,800 ft by 2,700 ft).

As shown on Table 6.1 when there is not a clearly defined higher grade interval all sample results for the complete drill hole were used for the result. Higher grade copper intervals ( $\geq \approx 0.15\%$ ) and higher grade molybdenum ( $\geq \sim 0.05\%$ ) have been defined for select historic drill holes and are shown along with their interval and thickness.

As described in more detail in Sections 11 and 12, there is no information by which to evaluate how drilling, field, or exploration activities were conducted for historic information presented in this section. There are no laboratory reports, all mineral concentrations data are from information presented on drill logs or summary report sheets. No core or samples were retained. There were no mineral resource or mineral reserves known to have been derived from Cyprus's exploration efforts.

### **6.5 Cities Service Minerals Corporation, 1974 to 1977**

In 1974 Cities Service Corporation and Cities Service Oil Company, Minerals Department, later to become Cities Service Minerals Corporation (Cities Service) started their Tomichi project evaluation by first completing an aeromagnetic survey. Initial interpretations made in 1975 led to an Induced Polarization (I.P.) survey in 1976. Also conducted in 1976 was ground magnetic work to confirm the aeromagnetic survey. In 1977 Cities Service drilled three (3) core holes ranging in length from 30.4 meters to 274.3 meters (100 feet to 900 feet) for a total of 472.4 meters (1,550 feet) of drilling. The drill holes were designated identification numbers and include: W-1, W-2, and W-3. There are no copies of drill logs for drill holes W-2 and W-3; therefore, the depths for these two holes are based on information from Mr. Robert M. Perkins, a geologist who worked for Cities Service in 1976-1977 and during their exploration of the Tomichi area (Perkins, pers. comm., 2011). Table 6.1 presents a summary of basic drill hole information for drill holes W-1, W-2, and W-3. There is little information available for these drill holes and no molybdenum or copper core analytical results.

The drill holes were presumably all on Mr. Weckerling's lode claims; however, there is no information on a legal arrangement associated with this exploration and no review of claim ownership for 1974 through 1977 was made during this review.

Available data from Cities Service exploration efforts include: one incomplete drill (core) log; an aeromagnetic survey summary report with maps, a summary report with maps describing results from IP survey, an internal project update report, an alteration map, and a geologic map. Table 6.4 presents a summary of this historic information associated with the Project and available for review.

Cities Service's summary report made the following conclusions: 1) the IP survey indicated the sulfide system has an areal extent of approximately five square km (two square miles) and defined the outer limits of sulfide mineralization, 2) interpreted IP electrical properties are compatible with a concentrically zoned sulfide system, and 3) the interpretations from the aeromagnetic and preliminary ground magnetic survey suggested hydrothermal alteration indicators within the Tomichi property area.

As described in more detail in Sections 11 and 12, there is no information by which to evaluate how drilling, field, or exploration activities were conducted for historic information presented in this section. No core or samples were retained. There were no mineral resource or mineral reserves known to have been derived from Cities Service's exploration efforts.

**TABLE 6.4: CITIES SERVICE MINERALS CORPORATION HISTORIC DATA AVAILABLE FROM 1974 TO 1977**

Document Type	ID Number	Date	Total Depth/ Interval/Area	Description Condition	Coordinates Indicated	Mo and Cu Laboratory Results	Comments
Aeromag Survey map	Fig. 2	July 1974	1:24,000 Centered on Tomichi Project	Good	Yes	No	Magnetic contour interval 10 gammas
Aeromag Survey map	Figure 1	Dec 27, 1974	1:62,500 Includes Tomichi Project	Good/Fair	Yes	No	Magnetic contour interval 25 gammas
Aeromag Survey map	N/A	May 1, 1976	1:24,000 Includes Tomichi Project	Good	Yes	No	Magnetic contour interval 20 gammas, same area as Dec 27, 1974 aeromag map
Aeromag Report	W. Frangos	May 28, 1976	July and Dec 1974 aeromag map area	Good	Yes	No	Identifies magnetic anomalous, including Tomichi Project area
Summary Memo	R.M. Perkins	November 22, 1976	Tomichi Project area	Good	Yes,	Yes. Historic summary	History, geology, 1976 summary of activities, recommended work
Alteration Map	R.M. Perkins	November 1976	1:2,400 Tomichi Project area	Good	Yes	No	Identifies propylitic, argillic, phyllic, potassic alteration
IP Report	W. Frangos	Field work August 1976 Report February 1977	Tomichi Project area	Good	Yes includes maps and sections	No	Identifies IP anomalous, including Tomichi Project area
Drill log	W-1	8/12/77-9/4/77	550 ft / 167.6 m	Poor	No	Partial, not reliable	Description only to 127 feet
Geologic Map	R.M. Perkins	November 1977	1:2,400 Tomichi Project area	Good	Yes	No	Includes all known drill hole locations through 1977

## 6.6 Molycorp, Incorporated, 1978 to 1981

Molycorp Incorporated (Molycorp) a relatively comprehensive evaluation of the Tomichi Project area. The first available Molycorp records indicate that their work begin in 1978. They completed three drill (core) holes in 1979 and this was followed in 1980 and 1981 with completion of an additional 23 core holes. Therefore, Molycorp completed 26 core holes for a total of 10,851.5 m (35,602 ft) of drilling. Their drill holes were designated identification numbers that include: TM-1 through TM-26 (Figure 6-1). The drill holes were presumably all on Mr. Weckerling's lode claims; however, there is no information on a legal arrangement associated with this exploration and no review of claim ownership for 1978 through 1981 was made during this review.

There are 10,484.7 m (34,395.5 ft) of core from Molycorp's drilling efforts that were retained, later stored by Weckerling and partners, and presently is available for inspection and testing. As previously mentioned, during the site visit on July 13, 2011 approximately 10% of the Molycorp core boxes were randomly inspected and each of those core boxes contained core. A preliminary inspection of some the core geology as compared to an available drill log indicated a match. However, a detailed evaluation of available core to the drill logs was not completed. Figures 6-1 and 6-2 present examples of core for drill hole TM-9. Shown is core in the core boxes, the associated drill hole number and box number, and the depth interval in feet. The companion drill log description, prepared at the time of Molycorp's core inspection, for TM-9 as matched to the core interval is presented for the example intervals shown in Figures 6-2 and 6-3. Core recovery/integrity as represented in these figures is typical and there appears to have been a high percent of recovery with the core presently in good condition not only for drill hole TM-9 but also for the other drill holes randomly inspected. Note that the examples in these figures are meant to portray the existence and condition of the core and not meant to indicate that the geology, descriptions, or test results are indicative of the remainder of this hole or other Project drill holes.

Table 6.5 presents a summary of Molycorp historic information associated with the Project and available for review. In 1980 a geologic map for the Tomichi project area was completed, and later revised in 1981, that includes information from Molycorp's exploration drilling and previous companies' exploration efforts. Hand drawn cross sections (undated) at various azimuth directions were constructed using Molycorp, and some previous companies, drilling results. The cross sections included general summary information of molybdenum copper laboratory results associated with drill holes. An updated version of the aforementioned map has been included in this document as Figure 7-5.

A presentation by Jacobson (1984) summarizes Molycorp's project work from 1978 to 1981. Molycorp concluded that (1) copper-molybdenum mineralization is centred on the ~36 Ma

Tomichi multiphase granite-rhyolite complex; (2) the copper zone overlies and partially overlaps the molybdenum zone; (3) chalcopyrite deposition preceded and overlapped molybdenite, and was followed by pyritic mineralization; (4) anomalous surface copper and molybdenum outline the mineralized zones; (5) post-mineral movement on the Copper Hill fault offset mineralization, with the southwest (hanging wall) block down-dropped; (6) the Tomichi property has all of the characteristics of porphyry systems including multiple intrusions, classic alteration zoning, and multiple stages of mineralization; and (7) the Tomichi system is distinct from and older than the Climax and Henderson deposits, and instead is a molybdenum-rich porphyry copper deposit similar to Mineral Park and Sierrita, Arizona.

Table 6.1 presents a summary of basic drill hole information including molybdenite, molybdenum and copper results for drill holes TM-1 through TM-26, along with other historic drill holes associated with the Project. The average concentration range reported during the Molycorp exploration was from 0.01% to 0.07% molybdenum and 0.06% to 0.45% copper. The highest molybdenum concentrations of greater than or equal to 0.05% were from intervals within 11 drill holes (TM-1, TM-4, TM-5, TM-9, TM-10, TM-11A, TM-14, TM-15, TM-16, TM-22, and TM-24) with reported average concentrations ranging from 0.05% to 0.07% molybdenum. Molybdenum values in drill holes TM-5, TM-9, TM-10, TM-11A, TM-15, TM-16, TM-19, and TM-22 continued to be reported when the drill holes reached total depth.

**FIGURE 6-2: CORE FROM TM-9, 102 FEET TO 140 FEET**



Figure 6-2. TM-9 core from 102 ft to 140 ft (31.1 m to 42.7 m). Note wooden depth blocks. Matching geologic description from Molycorp drill log TM-9 states the following for rock type: Mr. Princeton Quartz Monzonite, Lt grey to green-grey porphyritic 15-20% subhedral feldspar, phenocrysts 4-8 mm., largely altered to green sericite, 2-5% rounded quartz phenocrysts. Alteration is described as: strong sericite alteration in fracture zones, possible secondary limonite pervasive, malachite local in fabric. The mineralization description continues: small amount of pyrite disseminated as grains in fabric and along fractures, local concentration of pyrite in quartz pyrite veins, 4mm in diameter, very small amount of chalcopyrite disseminated as grains in fabric, local concentration of chalcopyrite in quartz-chalcopyrite veins. At 118 feet up to 30 mm thick. MoS<sub>2</sub> common in qtz-MoS<sub>2</sub> veins. Plus qtz-MoS<sub>2</sub> lined fractures, 110 feet to 130 feet abundant MoS<sub>2</sub> along qtz lined shear fractures trend 45°-70° from horizontal larger qtz-MoS<sub>2</sub> veins 5mm to 3 inch trend 0-45° from horizontal. Reported Mo concentrations results were 100 feet to 110 feet = 0.016%; 110 feet to 120 feet = 0.025%; 120 feet to 130 feet = 0.024%, and 130 feet to 140 feet = 0.024%. Reported Cu concentrations results were 100 feet to 110 feet = 0.38%; 110 feet to 120 feet = 2.20%; 120 feet to 130 feet = 0.93%, and 130 feet to 140 feet = 1.30%. Note that the average Mo and Cu results reported for the complete hole of TM-9 was: Mo = 0.06% and Cu = 0.31%. For an interval of 33 feet to 770 feet (10.1 meter to 234.7 meters) the reported results for TM-9 were: Mo = 0.05% and Cu = 0.45% (Table 6.1).

**FIGURE 6-3: CORE FROM TM-9, 191 FEET TO 226.5 FEET**



Figure 6.3. TM-9 core from 191 feet to 226.5 feet (58.2 meters to 69.0 meters). Note wooden depth blocks. Matching geologic description from Molycorp drill log TM-9 states the following for rock type: Mr. Princeton Quartz Monzonite, Lt grey to green-grey, equigranular, slightly porphyritic, few scattered (2%) pink subhedral K-feldspar phenocrysts 15 mm, groundmass obscured in places by alteration, 70% Feldspar, 15% quartz, 15% biotite, locally chloritized. Alteration is described as: moderate to strong sericite alteration in fabric and along fractures, green-white sericite alteration of feldspars in fabric. The mineralization description continues: very small amounts of pyrite and chalcopyrite disseminations as grains and clots in fabric and along fractures, pyrite seems associated closely with biotite chalcopyrite associated with quartz veins, MoS<sub>2</sub> common in quartz veins and quartz lined fractures, especially 205 feet to 225 feet, MoS<sub>2</sub> dissemination grains and coating on vein walls. Reported Mo concentrations results for 190 feet to 200 feet = 0.049%, 200 feet to 210 feet = 0.047%, 210 feet to 220 feet = 0.016%, and 220 feet to 230 feet = 0.050%. Reported Cu concentrations results for 190 feet to 200 feet = 0.32%, 200 feet to 210 feet = 0.62%, 210 feet to 220 feet = 0.37%, and 220 feet to 230 feet = 0.41%. Note that the average Mo and Cu results reported for the complete section of TM-9 was: Mo = 0.06% and Cu = 0.31%. For an interval of 33 feet to 770 feet (10.1 meter to 234.7 meters) the reported results were: Mo = 0.05% and Cu = 0.45% (Table 6.1).

The highest copper concentrations of  $\geq 0.15\%$  were from intervals within 18 drill holes (TM-2, TM-3, TM-5, TM-7, TM-8, TM-9, TM-10, TM-11A, TM-12, TM-13, TM-14, TM-15, TM-16, TM-19, TM-20, TM-22, TM-23, and TM-26) with reported average concentrations ranging from 0.16% to 0.45% molybdenum. Copper values in drill holes TM-5, TM-7, TM-10, TM-12, TM-13, and TM-19 continued to be reported when the drill holes reached total depth.

As shown on Table 6.1 when there is not a clearly defined higher grade interval all sample results for the complete drill hole were used for the result. Higher grade copper intervals ( $\geq \approx 0.15\%$ ) and higher grade molybdenum ( $\geq \approx 0.05\%$ ) have been defined for select historic drill holes and are shown along with their interval and thickness.

As described in more detail in Sections 11 and 12, there is no information by which to evaluate how drilling, field, or exploration activities were conducted for historic information presented in this section. There are no laboratory reports, all mineral concentrations data are from information presented on drill logs or summary report sheets. Core samples from most of Molycorp's exploration drilling were retained and therefore can be compared to available drill logs.

There were no mineral resource or mineral reserves known to have been derived from Molycorp's exploration efforts.

**TABLE 6.5: MOLYCORP INCORPORATED HISTORIC DATA AVAILABLE FROM 1978 TO 1981**

Document Type	ID Number	Date	Total Depth/ Available Core	Description Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
Drill log & Core	TM-1	6/4/79-8/8/79	2378 feet /724.8m Core 9 ft – 2378 ft	Good	No. Shown on maps	Yes	Core recovery ≈ 98%
Drill log & Core	TM-2	8/14/79-11/22/79	2477 feet /755.0m Core 0 ft – 2473 ft	Good	No. Shown on maps	Yes	Core recovery ≈ 98%
Drill log & Core	TM-3	6/?/79	707 feet /215.5m Core 43.5 ft – 707 ft	Good	No. Shown on maps	Yes	Description starts at 43.5ft Core recovery ≈ 70% to 300 ft then 95%
Drill log & Core	TM-4	6/7/80-6/16/80	1265 feet /385.6m Core 72 ft – 1265 ft	Good-Fair	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-5	6/21/80-6/24/80	1077 feet / 328.3m Core 66 ft – 1077 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-6	6/29/80-7/18/80 8/6/81-8/22/81	2852 feet / 869.3m Core 10 ft – 2852 ft	Good	No. Shown on maps	Yes	Hole deepened 2068 feet – 2852 feet in 1981
Drill log & Core	TM-7	7/7/80-7/18/80	1447 feet / 450.2m Core 14 ft – 1477 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-8	7/20/80-8/1/80	1642 feet / 500.5m Core 32 ft – 1642 ft	Good, hard to read	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-9	7/20/80-7/29/80	1174 feet / 357.8m Core 33 ft – 1174 ft	Good	No. Shown on maps	Yes	Core recovery % not stated missing 800-1000 feet description
Drill log & Core	TM-10	7/20/80-7/29/80	864 feet / 263.3m Core 39 ft – 863 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-11A	8/12/80-8/20/80	991 feet / 302.1m Core 103 ft – 967 ft	Good-Fair	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-12	8/3/80-8/10/80	1207 feet / 367.9m Core 24 ft – 1207 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-13	8/13/80-8/19/80	1307 feet / 398.4m Core 40 ft – 1307 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-14	8/21/80-8/28/80	1107 feet / 337.4m Core 59 ft – 1107 ft	Good, hard to read	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-15	8/23/80-9/8/80	1107 feet / 337.4m Core 71 ft – 1107 ft	Good-Fair	No. Shown on maps	Yes	Core recovery % not stated but observation = good

Document Type	ID Number	Date	Total Depth/ Available Core	Description Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
Drill log & Core	TM-16	1980 ?	997 feet / 303.9m Core 166 ft – 997 ft	Good -Fair	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-17	5/30/81-6/6/81	1215 feet / 370.3m Core 90 ft – 1215 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-18	6/3/81-6/26/81	1240 feet / 378.0m Core 20 ft – 1240 ft	Poor	No. Shown on maps	Yes	Description for 20 feet to 400 feet only.
Drill log & Core	TM-19	6/19/81	1273 feet / 388.0m Core 10 ft – 1273 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-20	6/26/81	1448 feet / 441.4m Core 80 ft – 1448 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill Core	TM-21	1981 ?	1240 feet / 378.0m Core 37 ft – 1240 ft	n/a	No. Shown on maps	No	Core recovery % observation = good
Drill log & Core	TM-22	7/18/81	1227 feet / 374.0m Core 10 ft – 1227 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-23	7/20/81-7/27/81	1126 feet / 373.7m Core 40 ft – 1126 ft	Good, hard to read	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-24	7/29/81-8/5/81	1200 feet / 365.8m Core 84 ft – 1200 ft	Good, hard to read	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-25	8/23/81-9/2/81	1489 feet / 453.8m Core 22 ft – 1489 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Drill log & Core	TM-26	9/12/81	1545 feet / 470.9m Core 33 ft – 1545 ft	Good	No. Shown on maps	Yes	Core recovery % not stated but observation = good
Geologic map	HSJ	1980 & revised August 1981	1:2,400 Tomichi Project area	Good	Yes	No	Includes all known drill hole locations through 1981

Document Type	ID Number	Date	Total Depth/ Available Core	Description Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
Speaker's notes for presentation	Herbert S. Jacobson	No date; but believed to be Sep 1984	Tomichi Project area	Good but missing figures	Generally	Yes. In general terms	History, geology, alteration, mineralization, limited summary of activities. Presentation to Denver Region Exploration Geologists' Society
Seven cross sections	Unknown author	unknown	Tomichi Project area	Fair, not all data included	Generally	Yes, for some drill holes	Assume constructed by Molycorp. Mo and Cu results only for some drill holes, no geology

## **6.7 Burnstone Ventures, Incorporated, 2011 to 2016**

Burnstone initiated an exploration program on the property including relogging and re-assaying of historic Molycorp drill core; magnetic susceptibility measurements of Molycorp drill core; detailed and reconnaissance scale geologic mapping; reconnaissance geochemical sampling; and a baseline water sampling program. All 26 Molycorp drill holes were relogged, and 22 of these were re-assayed to confirm historic copper and molybdenum assay results and to test for additional geochemical elements. Five additional infill holes were drilled in 2012. A 43-101 compliant inferred resource was calculated. Table 6.6 presents a summary of the historic Burnstone information associated with the Project and available for review.

**TABLE 6.6: BURNSTONE VENTURES HISTORIC DATA AVAILABLE FROM 2011 TO 2016**

Document Type	ID Number	Date	Total Depth/Interval/Area	Description, Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
Drill digital log & core	TM-27	9/27/2012	338 m; core from 20.5 m	Lagger, PDF	Yes	Yes; also Ag and Re	Log by Brittany Lillegard (contract geologist)
Drill digital log & core	TM-28	10/01/2012	300 m (all core)	Lagger, PDF	Yes	Yes; also Ag and Re	Log by Brittany Lillegard (contract geologist)
Drill digital log & core	TM-28A	10/07/2012	401 m (all core)	Lagger, PDF	Yes	Yes; also Ag and Re	Log by Brittany Lillegard (contract geologist)
Drill digital log & core	TM-29	10/13/2012	147 m (all core)	Lagger, PDF	Yes	Yes; also Ag and Re	Log by Brittany Lillegard (contract geologist)
Drill digital log & core	TM-30	10/13/2012	395 m (all core)	Lagger, PDF	Yes	Yes; also Ag and Re	Log by Brittany Lillegard (contract geologist)
Digital drill logs	TM-01 through -26	10-11/2012	See Table 6.5	Lagger ± PDF	Yes	Yes; also Ag, Au, Re	Logging by Mike Perkins, Tom Peters, and Brittany Lillegard
Digital core photos	TM-01 through -26	8-12/2011	See Table 6.5	JPG	No	No	Split core; depths in feet; ~20 ft per photo
Digital core photos	TM-27, -28, -28A, -29, -30	9-10/2012		JPG	No	No	Whole core, depths in m; ~12 m per photo
Digital topography	S. Wakelin(?)	4/2011, 8/2011	Tomichi project area and district	SHP, Geosoft GRD			Various versions with 50 m, 10 m, 100 ft contours
Air photo	S. Wakelin(?)	7/2011	Tomichi project area	GeoTIFF	Yes; georeferenced	No	Stitch of colour air photos from unknown date
Roads	H. Diakow	7/2014	Tomichi project area and district	SHP	Yes	No	SHP simplified from GPS tracklogs
Comprehensive drilling database	52 holes; compiled by S. Wakelin	11/2012	16,612 m; (core available for 12,433 m)	CSV	Yes	Yes, also Ag, Au, Re, F and multielement for some holes	Collar, Survey, Geol, VeinDensity, Mineralization, MagSusc, Assay_main and _multi-elem files
Graphical drill hole strip logs	TM-01 through -26	Sep through Dec 2011	See Table 6.5	PDF, ArcGIS MXD, some PNG	Yes	Yes	1:2500 and 1:5000 scales. Some show just Cu and Mo; others add Re, F, Au, Ag, Pb, Zn, Mn, As, K, and S

Document Type	ID Number	Date	Total Depth/Interval/Area	Description, Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
Graphical drill hole strip logs	TM-27, -28, -28A, -29, -30	1/8/2013		PDF, ArcGIS MXD	Yes	Yes	1:2500 scale; show Cu, Mo, Re, Ag, Pb, Zn, Mn, As, K, S
Sampling and QA/QC plan	S. Wakelin	8/15/2011	Plan for 2011 relogging and new drilling	DOCX	No	No	
Geologic trip report	K.B. Riedell	9/5/2011	Tomichi project area	PDF	Core sample photos keyed to hole and depth	In general terms	Covers geology, alteration/mineralization, interpretations, and recommendations. Table describing rock units
Petrographic report	C. Leitch	10/12/2011	9 samples from holes TM-01, -02, -04, -05, -08, -09	PDF	No	No; but abundance of chalcopyrite, molybdenite, and pyrite estimated	
Inferred resource, summary table	R. Simpson	6/2012	Tomichi project area	PDF	No	Yes; also Au, Ag, Re, CuEq	ID2 estimations at cutoffs of from 0.1% to 0.4% CuEq; 0.2% is Base Case. Includes price, cost and recovery assumptions
Table of lithology codes	S. Wakelin	11/20/2012	Tomichi project area	XLS	No	No	Table of 20 rock units, showing numeric and alpha codes and rock names
Memo; cross-section interpretation	K.B. Riedell	2/5/2013	Tomichi project area	TXT saved from email	Refers to W-E sections by last 4 digits	Describes Cu, Mo, Re, Ag, Pb and Zn distribution	
Geologic and petrographic report	K.B. Riedell	11/19/2014	Tomichi project area	PDF	Yes, on maps and sample locations	No	Confirmation of EH veins; discusses implications for targeting Cu
Memo; meeting with J. Shannon	K.B. Riedell	12/11/2014	Tomichi project area, Mt. Princeton batholith, Mt. Aetna caldera	TXT saved from email, with notes	No	No	Discusses correlations of Tomichi units with Mt. Princeton and Mt. Aetna rocks

Document Type	ID Number	Date	Total Depth/Interval/Area	Description, Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
Outcrop geologic map, 1:2500	K.B. Riedell, S. Wakelin, B. Lillegard	7/2012	Tomichi project area	Good, with SHP files; incomplete ArcGIS MXD	Yes	No	Outcrop geology and interpretation. Minor hand-drawn additions by Riedell/ Diakow, 8-9/2014
Geologic compilation map, 1:5000	K.B. Riedell, A. Diakow	9/2014	Tomichi project area	Good; hand-drawn with PDF scan	Yes	No	Interpreted geology, hand-drawn; with overlays showing veins, interpreted distribution of EH veins
Detailed field mapping sheets, 1:2500	K.B. Riedell, A. Diakow	2014	Tomichi project area	Fair to good; georeferenced scans	Yes	No	Topo base, mylar overlays showing outcrop geology, alteration, veining
Detailed field mapping sheets, 1:25,000	J. Chapman, J. McCorquadae	9/2014	Tomichi – Monarch districts	Fair to good	Yes	No	Topo base, mylar overlays showing recon geology, rock and stream-sediment samples
Geologic, mineral occurrence map, 1:50,000	K.B. Riedell	9/2014, 12/2014	Tomichi – Monarch districts	Hard copy, ArcGIS MXD	Yes	Qualitatively	Occurrences compiled from Dings and Robinson (1957); 12/2014 version plotted on Shannon (1988) geology
Recon geol, sample, min occur maps, 1:50,000 and 1:100,000	J. Chapman, J. McCorquadae, K.B. Riedell	9/2014	Tomichi – Monarch districts	SHP, ArcGIS MXD	Yes	No	Rock types, rock samples, stream-sediment samples, occurrences, occurrence pie chart, Pb/Cu ratios
Alteration / Copper Hill fault map, ~1:12,500	R.M. Perkins	2/2012	Tomichi project area	Good; hand-drawn plus SHP	Yes	No	Shows potassic, phyllic, propylitic, argillic and silicic zones. Structure contours on CHF plane from 9,200 to 11,200 ft
Level plans, 1:10,000	K.B. Riedell	1/2014, 12/2015	Tomichi project area	PNG, ArcGIS MXD	Yes	Yes	3300 to 2600 m elevations at 100-m intervals; showing gridded Cu, Mo, CuEq
W-E cross-sections, 1:5000	S. Wakelin, K.B. Riedell	12/2011	Tomichi project area	PDF, ArcGIS MXD, some PNG	Yes	Yes (downhole colour bars; 3-D grid slices)	9000 to 9900 N at 100-m intervals; hand-drawn geologic interpretations on some copies

Document Type	ID Number	Date	Total Depth/Interval/Area	Description, Condition	Coordinates Indicated	Mo and Cu Reported Results	Comments
S-N cross-sections, 1:5000	S. Wakelin	12/2011	Tomichi project area	PDF, ArcGIS MXD	Yes	Yes (downhole colour bars; 3-D grid slices)	9000 to 9900 N at 100-m intervals; voxel slices showing Cu, Mo, CuEq
W-E cross sections, 1:5000	S. Wakelin, K.B. Riedell	1/2013, 12/2015	Tomichi project area	PDF, ArcGIS MXD	Yes	Yes (downhole colour bars; 3-D grid slices)	Include 2012 Burnstone holes; 9000 to 9900 N at 100-m intervals
W-E section 9500N, 1:5000	K.B. Riedell, A. Diakow	9/2014	Central Tomichi project	Good; hand-drawn with PDF	Yes	Interpreted zones of > 0.2% and >0.4% CuEq	Interpreted geology, incorporating minor quick-logging done in 9/2014
Restored W-E sec 9500N, 1:5000	K.B. Riedell	9/2014	Central Tomichi project	Good, hand-drawn	Yes	Interpreted zones of > 0.2% and >0.4% CuEq	Offset along CHF and tilting removed; interpretations at 30 and 34.5-35 Ma
Burnstone presentations	D. Fulcher et al	4/2011, 8/2011, 6/2013, 6/2014	Corporate overview and Tomichi project	PDF, DOCX	Yes, on maps	As % CuEq	All show property outline on air photo, project geology, cross sections with CuEq intercepts.

A Burnstone internal memo (Wakelin, 2011) indicates that industry-standard quality assurance / quality control (QA/QC) protocols were in place during Burnstone's sampling and assaying programs, both for the re-assaying of Molycorp core and the new drill holes. The protocols required random insertion of standard, blank, and duplicate samples into sample batches at a 5% ratio, along with chain of custody controls for new drilling. Samples were shipped from Gunnison to the primary preparation and analytical lab, ALS Minerals in Reno, Nevada. The author has not been able to confirm that these protocols were followed in practice; and data files with compiled QA/QC results have not been located.

#### ***6.7.1 Comparison of Historic and New Re-assay Data***

A total of 2,865 samples were collected during the core-relogging and re-assaying process and analyzed for copper and molybdenum plus an extended suite of geochemical elements through ICP using a 4-acid digestion. Tables 6.7 and 6.8 compare copper and molybdenum values with historic values for the same sample intervals for a representative group of sample intervals.

Gray has reviewed the re-logging and re-assay data and is comfortable that the reanalyses substantiated the historic assays as valid for the purposes of the Project at this stage. Gray recommends a more robust analysis of the pre-1980's drilling be conducted during the next phase of exploration (including twinning of the historic drill holes) to establish a statistically valid correlation with the historically reported assay grades from these vintages of exploration campaigns. This point is particularly important as the pre-1980's assay certificates and drill core are unavailable for confirmation analyses such as those conducted by Burnstone.

#### ***6.7.2 New Re-assay Data***

A new multi-element analysis program was initiated by Burnstone that includes possible by-product elements of a copper/molybdenum system, including silver, gold and rhenium. Gold values are general low in the assays completed to date. Multi-element ICP analyses are useful for defining geochemical zoning; therefore, a 48 element ICP analysis with a 4-acid digestion was implemented. Fluorine was added to the analytical package as it can be an important pathfinder element in many molybdenum-rich porphyry systems.

**TABLE 6.7: COPPER AND MOLYBDENUM COMPARISON AND RELATIVE PERCENT DIFFERENCE FOR ANALYSIS OF HISTORIC MOLYCORP CORE ASSAYS VERSUS 2011 BURNSTONE RE-ASSAY RESULTS**

Hole ID	From (m)	To (m)	Thickness (m)	Mo (%) Burnstone	Mo (%) Molycorp	Mo Relative % Difference	Cu (%) Burnstone	Cu (%) Molycorp	Cu Relative % Difference
TM-01	3.05	609.6	606.55	0.048	0.056	15.6	0.076	0.074	-3.3
TM-03	15.09	169.16	154.07	0.006	0.004	-23.5	0.084	0.092	9.3
TM-04	21.95	385.57	363.62	0.043	0.045	3.7	0.073	0.073	0.6
TM-05	20.12	328.27	308.15	0.040	0.051	27.2	0.217	0.242	11.7
TM-06	3.05	752.86	749.81	0.026	0.026	-0.2	0.061	0.062	2.9
TM-07	4.27	441.05	436.78	0.024	0.026	8.2	0.263	0.260	-1.1
TM-08	9.75	420.62	410.87	0.034	0.036	4.0	0.245	0.251	2.8
TM-09	11.28	207.26	195.98	0.042	0.055	29.0	0.475	0.323	-32.0
TM-10	11.28	263.35	252.07	0.061	0.062	1.9	0.280	0.294	5.0
TM-11A	31.39	302.06	270.67	0.059	0.061	3.9	0.158	0.171	8.2
TM-13	12.19	398.37	386.18	0.034	0.038	12.3	0.213	0.272	27.7
TM-14	17.37	337.41	320.04	0.040	0.041	1.6	0.154	0.180	17.1
TM-15	21.34	337.41	316.07	0.058	0.059	1.7	0.211	0.217	2.6
TM-16	33.52	243.84	210.32	0.067	0.069	2.0	0.139	0.144	3.0
TM-17	27.43	370.33	342.9	0.017	0.020	13.7	0.108	0.102	-6.2
TM-18	6.10	377.95	213.36	0.028	0.015	-44.7	0.073	0.071	-2.2
TM-19	3.05	388.01	384.96	0.024	0.024	0.0	0.151	0.146	-3.3
TM-20	24.38	411.48	387.1	0.012	0.012	0.3	0.130	0.125	-3.6
TM-21	39.62	378.01	338.39	0.029	0.032	10.7	0.208	0.215	3.4
TM-24	164.59	365.76	201.17	0.061	0.067	9.6	0.119	0.125	4.9
TM-25	36.58	453.85	417.27	0.017	0.013	-20.7	0.072	0.071	-1.5
TM-26	7.32	470.92	463.6	0.026	0.031	18.1	0.135	0.143	6.1

<sup>1</sup>Relative % Difference = (Molycorp(Cu% or Mo%) – Burnstone(Cu% or Mo%)) / Burnstone (Cu% or Mo%) \*100%

**TABLE 6.8: COMPARISON OF COMPOSITE INTERVALS BETWEEN MOLYCORP AND BURNSTONE RE-ASSAYS**

DDH#	From	To	Interval	Cu	Mo	Ag	Au	Re
	m	m	m	%	%	g/t	g/t	g/t
TM-01	6.10	725.00	718.90	0.074	0.050			
TM-01-2011	6.10	725.00	718.90	0.069	0.043	0.64	0.011	0.23
TM-02	260.67	611.28	350.61	0.210	0.011			
TM-03	126.52	169.21	42.69	0.247	0.012			
TM-03-2011	126.49	215.65	89.16	0.248	0.015	2.55	0.016	0.062
TM-04	21.95	381.00	359.05	0.074	0.050			
TM-04-2011	21.95	381.00	359.05	0.074	0.044	0.782	0.009	0.199
TM-05	20.12	328.27	308.15	0.244	0.051			
TM-05-2011	20.12	328.27	308.15	0.217	0.040	1.76	0.015	0.158
TM-06	3.05	869.29	866.24	0.056	0.022			
TM-06-2011	3.05	869.29	866.24	0.054	0.023	0.688	0.007	0.09
TM-07	4.27	441.05	436.78	0.261	0.026			
TM-07-2011	4.27	441.05	436.78	0.256	0.024	1.819	0.027	0.133
TM-08	9.76	420.73	410.98	0.251	0.036			
TM-08-2011	9.75	499.87	490.12	0.245	0.035	1.728	0.02	0.192
TM-09	10.06	357.93	347.87	0.312	0.057			
TM-09-2011	10.06	357.93	347.87	0.295	0.063	7.853	0.033	0.301
TM-10	8.23	263.41	255.18	0.294	0.062			
TM-10-2011	11.28	263.41	252.13	0.281	0.061	2.197	0.02	0.327
TM-11A	31.39	302.06	270.67	0.163	0.059			
TM-11A-2011	31.39	302.06	270.67	0.157	0.057	1.294	0.012	0.269
TM-12	7.32	367.99	360.67	0.216	0.010			
TM-13	73.17	398.37	325.20	0.319	0.044			
TM-13-2011	73.17	398.37	325.20	0.245	0.039	1.984	0.018	0.217
TM-14	70.12	337.50	267.38	0.211	0.048			
TM-14-2011	68.88	337.41	268.53	0.175	0.047	1.484	0.016	0.281
TM-15	21.34	337.41	316.07	0.217	0.059			
TM-15-2011	21.34	337.41	316.07	0.211	0.058	1.357	0.014	0.265
TM-16	33.54	303.96	270.43	0.117	0.060			
TM-16-2011	33.54	303.89	270.35	0.122	0.064	1.061	0.01	0.385
TM-17	216.46	370.43	153.96	0.148	0.036			
TM-17-2011	216.46	370.43	153.97	0.16	0.033	1.098	0.016	0.169
TM-18	152.40	356.50	204.10	0.099	0.024			
TM-18-2011	152.40	356.52	204.12	0.10	0.044	0.988	0.011	0.254
TM-19	182.93	388.10	205.17	0.255	0.043			
TM-19-2011	182.27	388.10	205.83	0.263	0.044	2.237	0.016	0.238
TM-20	24.39	441.46	417.07	0.117	0.013			
TM-20-2011	24.39	441.46	417.07	0.121	0.012	0.903	0.015	0.071
TM-21	11.28	378.05	366.77	0.212	0.032			
TM-21-2011	11.28	378.01	366.73	0.208	0.027	1.384	0.017	0.091
TM-22	161.59	374.09	212.50	0.124	0.031			
TM-23	12.20	343.29	331.10	0.141	0.007			
TM-24	25.61	365.85	340.24	0.107	0.064			
TM-24-2011	25.60	365.76	340.16	0.103	0.038	0.866	0.01	0.232
TM-25	268.29	453.96	185.67	0.124	0.032			
TM-25-2011	6.71	453.85	447.14	0.068	0.016	0.548	0.008	0.077
TM-26	7.32	471.04	463.72	0.143	0.031			
TM-26-2011	7.32	470.92	463.60	0.134	0.026	0.945	0.016	0.184

### **6.7.3 Magnetic Susceptibility**

Part of the logging procedure included measuring magnetic susceptibility using a handheld KT-10 magnetic susceptibility meter. Magnetic susceptibility measurements were taken every 3.3 meters (10 feet). Routine magnetic susceptibility logging of core can provide an objective indicator of alteration in the system.

### **6.7.4 Geologic Mapping and Field Sampling**

A property scale geological mapping program was undertaken 2011 and 2012 to confirm the existing geological mapping; to compare field observations with historic drill logs as well as Burnstone's re-logging; and to quantify alteration intensity and vein styles. Detailed mapping was completed over approximately 2 square kilometers, including all the area of the known resource. Mapping was extended to the district scale in 2014; reconnaissance mapping along with stream-sediment, rock and dump sampling were conducted over an area approximately 13 by 10 km surrounding the property.

### **6.7.5 Water Sampling**

A baseline surface water sampling program commenced in advance of any surface disturbance, such as drilling activities related to the project. Water sampling began in August of 2011 and continued through the second quarter of 2012. One full year of qualifying data for current parameters was collected. The August 2011 event was designed as an initial site assessment and field data gathering exercise rather than a more detailed surface water chemistry investigation. By October 2011, the regulatory framework had been determined for referencing a more complete baseline parameter list. Four (4) consecutive quarters of surface water quality sampling and analysis was completed. All site locations and parameters for which regulatory thresholds are referenced were found to fall below applicable thresholds for surface and drinking water standards.

### **6.7.6 Drilling**

Burnstone drilled five core holes totaling 1,581 meters (5,187 ft) in September-October 2012. The drilling focused on the near-surface higher grade northeastern part of the deposit. All five holes encountered copper and molybdenum mineralization. Results are tabulated in Table 6.1.

### **6.7.7 Resource Estimate**

Burnstone consultant Ronald G. Simpson calculated an Inferred Resource, the first NI 43-101 compliant resource for the property, in June 2012. The Base Case (assuming a 0.2% CuEq cutoff) contained 622,429,000 tonnes averaging 0.182% copper, 0.040% molybdenum, 0.016 g/t gold, and 1.5 g/t silver (Gault Group, 2013).

### 6.7.8 Interpretations

The extensive documentation from Burnstone's work on the property, especially in 2011-14, led to the following interpretations and conclusions:

- The project contains an inferred resource of over 600 M tonnes that is potentially extractable by open pit. The resource is open to the east, north, southeast, and at depth.
- The Tomichi granite complex is lithologically distinct from the Mount Princeton batholith (35.8-35.3 Ma); it is probably slightly younger, ~35-34.5 Ma.
- Copper-molybdenum mineralization is centred on the nested aplitic, seriate, and coarse porphyry phases of the complex, the intrusions most closely associated with mineralization. The younger porphyritic microgranite is weakly veined and mineralized, and is late-mineral in age.
- The copper zone overlies and partially overlaps the molybdenum-rich core. Both have the form of inverted teacup-shaped ore shells. A significant portion of the copper shell has been eroded, whereas the majority of the Mo zone is preserved.
- The Copper Hill fault strikes south-north and dips moderately west; the previously mapped Tomichi fault does not exist. West-side down offset on the CHF displaced mineralized zones. Reconstruction of geologic and grade patterns through the core of the deposit suggest ~850 m of post-mineral displacement. There is strong potential for offset mineralization in the hanging wall block in the west part of the property. Climax' shallow holes 5 and 7 in this area both were terminated in >0.1% CuEq. There has been no deeper drilling in this area.
- A previously unrecognized stage of early-halo veining developed in the earlier porphyries and wall rocks, and is preferentially mineralized with chalcopyrite. Preliminary mapping outlined an area with >10% early-halo veins at least 400 m by 150 m in extent, west of the Copper Hill fault. This area is undrilled, presumably because previous explorers targeted molybdenum rather than copper.
- The Tomichi resource lies within a 12 by 11 km porphyry style "mineral cluster" including carbonate replacement silver-lead-zinc±copper-gold ores in the Whitepine area to the south and the Monarch district to the east.
- Tomichi is a molybdenum-rich porphyry copper deposit with close affinities to the quartz monzonitic-granitic porphyry molybdenum-copper systems of Seedorff et al. (2005).

## 7 GEOLOGIC SETTING AND MINERALIZATION

Geologic age designations in this section follow the most recent geologic time scales published by the International Union of Geological Sciences (Gibbard et al., 2009) and Geological Society of America (Walker et al., 2013). Both time scales downgrade the Tertiary to an informal designation, replacing it with the Paleogene (Paleocene, Eocene, and Oligocene epochs, approximately 66 to 23 Ma) and Neogene (Miocene and Pliocene, 23 to 2.6 Ma) periods. Prior rock codes for the Paleogene units beginning with the letter “T” are retained for consistency with existing project databases.

### 7.1 Regional Geology

The Project is located on the southwestern edge of the Sawatch Range in the Southern Rocky Mountain physiographic province, Colorado (Figures 7-1 and 7-2), within the Colorado Mineral Belt (Figure 7-3). Proterozoic crystalline and Paleozoic sedimentary rocks exposed in the Sawatch Range are part of the north-south trending Laramide Sawatch Uplift (55-80 Ma). Block faulting starting at ~30-26 Ma (Epis and Chapin, 1975; McIntosh and Chapin, 2004) further uplifted parts of the region, producing some of Colorado’s tallest peaks. The crest of the Sawatch Uplift generally coincides with the Continental Divide.

The rocks associated with the region range in age from Proterozoic granitic and metamorphic basement rocks to Paleozoic and Mesozoic sedimentary rocks that have been intruded by Paleogene quartz monzonites, granites and their equivalents. Quaternary glacial, talus, and alluvial deposits have partially covered some of these pre-existing rocks.

Proterozoic rocks include schists and gneisses of various compositions, gray granite similar to the Silver Plume granite, and pink Pikes Peak granite. Paleozoic rocks unconformably overly the Proterozoic rocks with the older Paleozoic section predominately dolomite and limestone with thin units of quartzite. Pennsylvanian and Permian black shale, quartzite, and minor limestone overlie the lower Paleozoic units. Some of the Paleozoic rocks have been metamorphosed to quartzite, marble, hornfels, or argillite. The thickness of the Paleozoic section in the region is estimated at about 1,920 m (6,300 ft). Overlying the Paleozoic rocks are Mesozoic sedimentary rocks that include the Morrison Formation, Dakota Sandstone and Mancos Shale.

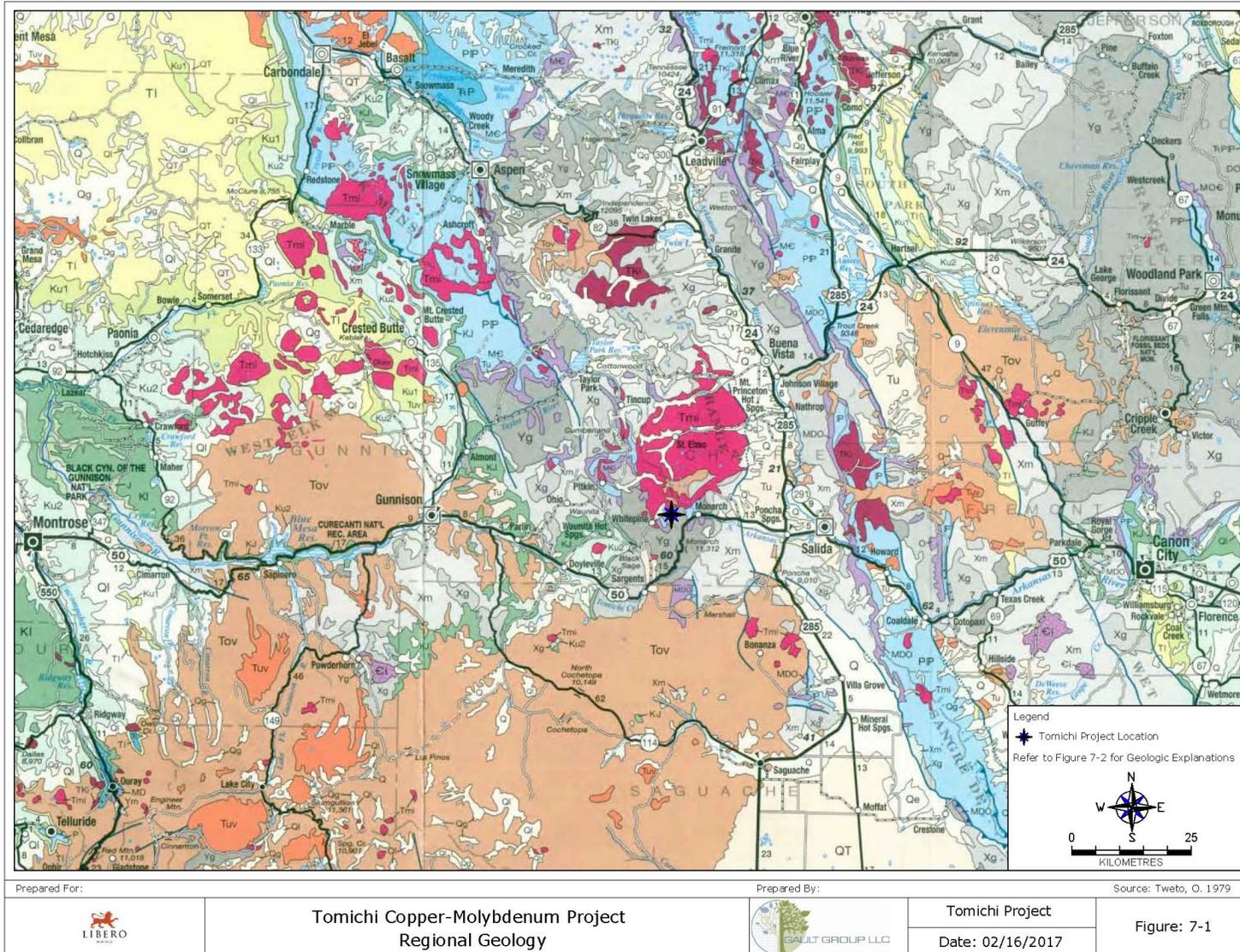
Late Cretaceous and Cenozoic intrusions followed the Mesozoic sequence and are divided into three distinct suites based on age. The oldest or Laramide (72?-40 Ma; Figure 7-2) vary in composition from granodiorite to granite and are located on the western flank of the Sawatch Uplift. Paleogene intrusions include granodiorite, quartz monzonite, and granitic stocks, batholiths, laccoliths, dikes, and sills. The project is located at the southwestern edge of the Mount Princeton batholith (Fig. 7-1), a Paleogene quartz monzonitic complex dated at ~36-35



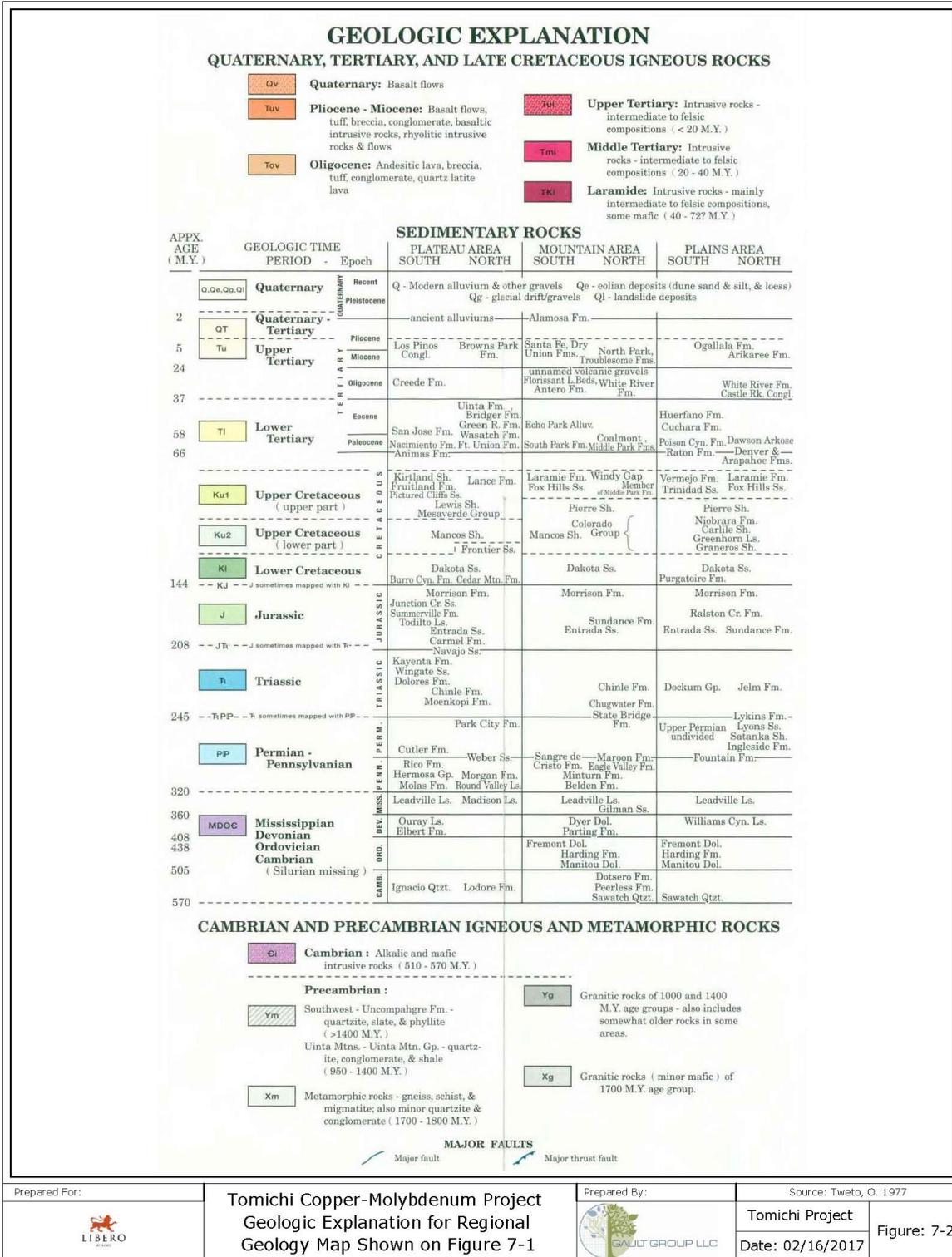
Ma. The 34.5 Ma Mount Aetna caldera, a 20 by 33 km collapse structure, is nested within the Mount Princeton batholith (Shannon, 1988; Mills and Coleman, 2013). Neogene igneous rocks include rhyolitic plugs, sills, laccoliths, and small stocks.

Quaternary deposits consist of glacial moraine, glaciofluvial deposits, landslides, talus, and alluvium. The glacial deposits are widespread and cover much of the valley floors and lower slopes in the region, but are rarely more than 6 m (20 ft) thick.

**FIGURE 7-1: TOMICHI COPPER-MOLYBDENUM PROJECT REGIONAL GEOLOGY MAP**

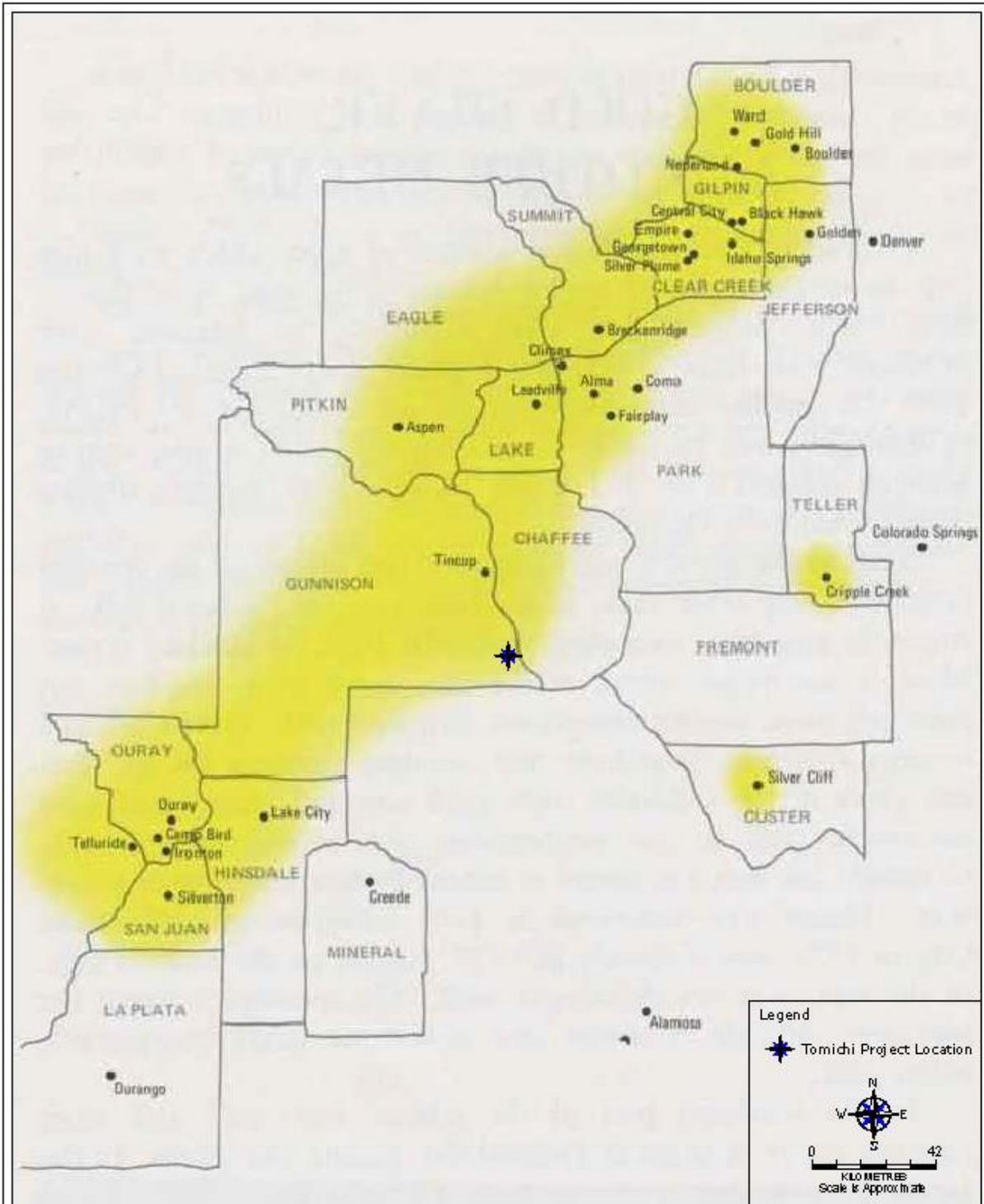


**FIGURE 7-2: TOMICHI COPPER-MOLYBDENUM PROJECT GEOLOGY MAP EXPLANATION**



Prepared For:	Tomichi Copper-Molybdenum Project Geologic Explanation for Regional Geology Map Shown on Figure 7-1	Prepared By:	Source: Tweto, O. 1977
			Tomichi Project
			Date: 02/16/2017
			Figure: 7-2

**FIGURE 7-3: TOMICHI COPPER-MOLYBDENUM PROJECT COLORADO MINERAL BELT**



Prepared For:	Tomichi Copper-Molybdenum Project Colorado Mineral Belt	Prepared By:	Source: Cronk, J. and Cronk, H., 1972				
			<table border="1"> <tr> <td data-bbox="1112 1785 1282 1816">Tomichi Project</td> <td data-bbox="1282 1785 1396 1816">Figure: 7-3</td> </tr> <tr> <td data-bbox="1112 1816 1282 1858">Date: 02/17/2017</td> <td data-bbox="1282 1816 1396 1858"></td> </tr> </table>	Tomichi Project	Figure: 7-3	Date: 02/17/2017	
Tomichi Project	Figure: 7-3						
Date: 02/17/2017							

## 7.2 Local and Property Geology

### 7.2.1 Lithology, Stratigraphy, Structure

The Tomichi property is underlain primarily by granites of both Proterozoic and Paleogene ages. Paleozoic rocks are preserved in the Whitepine area immediately to the south, and across the Continental Divide a few kilometers to the east. Mesozoic rocks are exposed about 12 kilometers (7 miles) to the southwest. Figure 7-4 shows property geology, compiled from 1:5,000 to 1:2,400 geologic mapping by Molycorp, Inc. in 1979-81 and Burnstone Ventures in 2012-14; and from 1:31,680 and 1:24,000 maps of Dings and Robinson (1957), Shannon (1988), and Toulmin and Hammarstrom (1990).

It is emphasized that the ages presented in this section are based mostly on lithologic correlation and relative age relationships with age-dated rocks outside the Tomichi property. There are two known radiometric age determinations within the property. Cyprus' summary report (Holt, Inc., ND) cited a 30 Ma age for the Tomichi complex, presumably by K-Ar methods. It is uncertain what rock unit was analyzed, and no further details are available. Molycorp dated an unknown phase of the Tomichi complex and obtained a 36 Ma whole-rock K-Ar age (Jacobson, 1984; noted by James Shannon in a discussion with Brock Riedell, December 2014). Note that a 38 Ma whole-rock K-Ar date obtained by Felix Mutschler from Tomichi Dome, 17 kilometers (11 miles) southwest of the project (cited in Christiansen et al., 1986), is sometimes erroneously cited as the age of the Tomichi complex and porphyry system.

#### **Proterozoic**

Proterozoic rocks are represented by a single unit ("PCGR"), tentatively correlated by Dings and Robinson (1957) and Toulmin and Hammarstrom (1990) with the Silver Plume Granite of the Front Range, dated at 1.45-1.39 Ga (Tweto, 1977). It is a massive gray rock marked by microcline phenocrysts (~40-45%) in a medium-grained groundmass of subequal quartz and plagioclase with minor biotite(?). Bands richer in quartz commonly define a weak foliation.

#### **Paleogene Intrusive Rocks**

The earliest Cenozoic intrusive rock in the area is the Mount Princeton Quartz Monzonite that forms a batholith approximately 30 by 35 kilometers (19 by 22 miles) across. The property lies near the southern edge of this batholith. The quartz monzonite is generally gray and medium-grained, with plagioclase, K-feldspar, quartz, hornblende, biotite, and magnetite. Wedge-shaped crystals of sphene up to 1.5 mm long are characteristic (Toulmin and Hammarstrom, 1990). Shannon (1988) mapped six gradational subphases ranging from granodiorite to granite. Mills and Coleman (2013) reported U/Pb zircon ages ranging from  $35.80 \pm 0.10$  to  $35.37 \pm 0.10$  Ma.

Intrusive rocks of the immediate project area are monzogranites, with subequal amounts of plagioclase, K-feldspar, and quartz. Previous workers correlated these with the Mount Princeton Quartz Monzonite, but mapping by Burnstone showed them to be distinct rocks. Most of the

Tomichi granites are coarser than typical Mount Princeton, contain 5-10 percent more quartz, and lack megascopic sphene. After joint examination of Tomichi samples and thin sections by James Shannon and Brock Riedell in December 2014, Shannon concluded that the Tomichi granites do not correlate with any of the phases he mapped in the Mount Princeton batholith (Riedell, 2014b). It is not clear if they are older or younger than the Mount Princeton. Molycorp's 36-Ma K-Ar age cited above is slightly older than more recent ages of the Mount Princeton Quartz Monzonite, but the difference is within analytical error of the K-Ar age.

Based on phenocryst assemblages, groundmass mineralogy and texture, Burnstone subdivided the Tomichi granite complex into the eight phases and subphases described in Table 7.1. Age relationships remain incompletely documented, as noted in the table. The granite porphyry phases TGa, TGs, and TGcp occur mostly central relative to the mineralized zone (Figure 7-5), and are the intrusions most closely related to molybdenum-copper mineralization.

The edges of the ~34.5 Ma Mount Aetna caldera are occupied by ring-dykes of the Mount Aetna Quartz Monzonite Porphyry (Mount Aetna porphyritic rhyodacite phase of Shannon, 1988; 34.6-34.4 Ma, Mills and Coleman, 2013). Mount Aetna porphyry and megabreccia related to the caldera are widely exposed just north of the current Tomichi claims. Tomichi units TPD and TGcp are similar to the Mount Aetna due to their characteristic K-feldspar megacrysts up to 25 mm long; they are probably closely related rocks.

### **Structural Geology**

The principal fault on the property is the Copper Hill fault (Figure 7-4). A road cut at 380665E / 4269650N exposes the fault as a ~0.5 m thick zone of gouge and breccia striking approximately north-south and dipping ~45 degrees westward. Here the structure juxtaposes potassic-altered granite porphyry (aplitic subphase) in the footwall against sericitized and pyritic PCGR in the hanging wall. Structure contouring by Burnstone confirmed the overall north-south strike and moderate westward dip (see section 6.7). The irregular surface trace reflects the effects of topography. (Previous maps show a north-northeast trending Tomichi fault on the south side of Copper Hill; this is now considered part of the Copper Hill fault.) The Copper Hill fault clearly offsets mineralized zones (Figure 7-5) and is interpreted to postdate mineralization. Constraints on magnitude and direction of offset are discussed in Sections 6.7.8, and 25.3.

A prominent north-south topographic linear on the north side of Copper Hill at ~381210-381220E has been hypothesized to indicate a high-angle fault. Detailed surface mapping by Burnstone was unable to confirm or refute the existence of a structure here. Hole TM-28A crossed the linear; no fault was logged, and review of core photos suggests the hypothesized fault is not present.

**TABLE 7.1: DESCRIPTION OF PALEOGENE ROCK UNITS OF THE TOMICHI PROJECT**

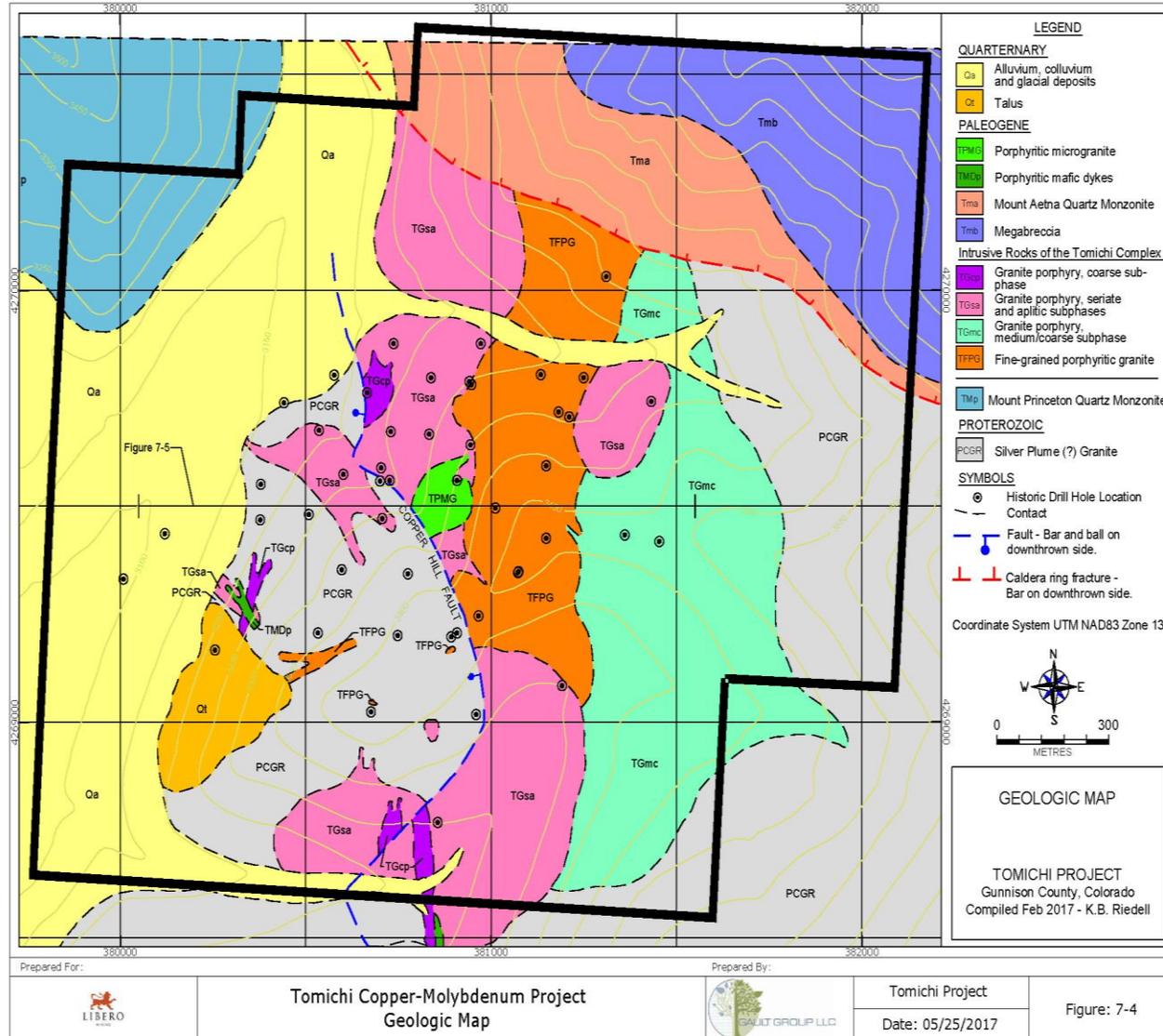
Rock Unit	Rock Code	Numeric Code	Former or Alternative Names	Age Relationships	Description
Porphyritic microgranite	TPMG	70	Aplite, tan rhyolite and rhyolite porphyry	Cuts TGcp, TGs, TGa, TFPG	Pink; sparsely porphyritic with ~10% phenocrysts of plagioclase, quartz (pinhead-sized, commonly angular), and biotite; aplitic K-feldspar > quartz, plagioclase groundmass, 0.01-0.06 mm
Porphyritic mafic dyke	TMDp	153		Cuts TGs, PCGR	Dark grey to green-grey, coherent, phenocryst-poor quartz andesite to dacite; aphanitic groundmass
Porphyritic dacite	TPD	90	Mount Aetna quartz monzonite porphyry	Cuts TGa	Medium grey; phenocrysts of plagioclase (5-7%), biotite (3-5%), quartz (2-3%), and megacrystic K-feldspar (~1%, 5-20 mm); quartz-plagioclase-K feldspar-biotite groundmass coarsens with depth from 0.05-0.15 to 0.3-0.5 mm
Granite porphyry (coarse subphase)	TGcp	101	Mount Princeton Quartz Monzonite	Cuts TGs, TGa, TFPG, PCGR	Pink-grey; 10-15% phenocrysts of K-feldspar (8-25+ mm) and plagioclase, 5% each quartz eyes and thick biotite books; K-feldspar-quartz-plagioclase-biotite groundmass, 0.2-0.5 mm
Granite porphyry (seriate subphase)	TGs	71	Mount Princeton Quartz Monzonite	Cuts TGa, TGmc, TFPG, PCGR	Pink-grey; phenocrysts of K-feldspar ( $\leq 8$ mm), quartz and plagioclase ( $\leq 5$ mm) grade to texture of 0.5-1 mm K-feldspar-quartz-plagioclase-biotite groundmass
Granite porphyry (aplitic subphase)	TGa	81	Mount Princeton Quartz Monzonite	Cuts TGmc	Pink-grey; phenocrysts of plagioclase (15-20%), biotite (5-8%), K-feldspar (2-5%, $\leq 8$ to locally 15 mm), and quartz (2-4%)
Granite porphyry (medium/coarse subphase)	TGmc	91	Mount Princeton Quartz Monzonite	Cuts TFPG(?), PCGR	Pink-grey; medium- to coarse-grained; K-feldspar > quartz, plagioclase, biotite, with sparse K-feldspar laths to $\leq 12$ mm)
Fine-grained porphyritic granite	TFPG	82	Fine-grained granite; Copper Mountain aplite porphyry of Shannon (1988)	Cuts PCGR; ambiguous relationships with TGmc, TGs (possibly more than one injection of TFPG?)	Light pink-grey; phenocrysts of plagioclase (4-6%), biotite (2-4%), quartz (1-2%, irregular to angular grains $\leq 5$ mm, K-feldspar (1-2%, 4-8 mm laths). Outcrops more competent, with more angular subparallel joints than granite porphyry phases

(Arranged from probable youngest to oldest; modified from Riedell, 2011)

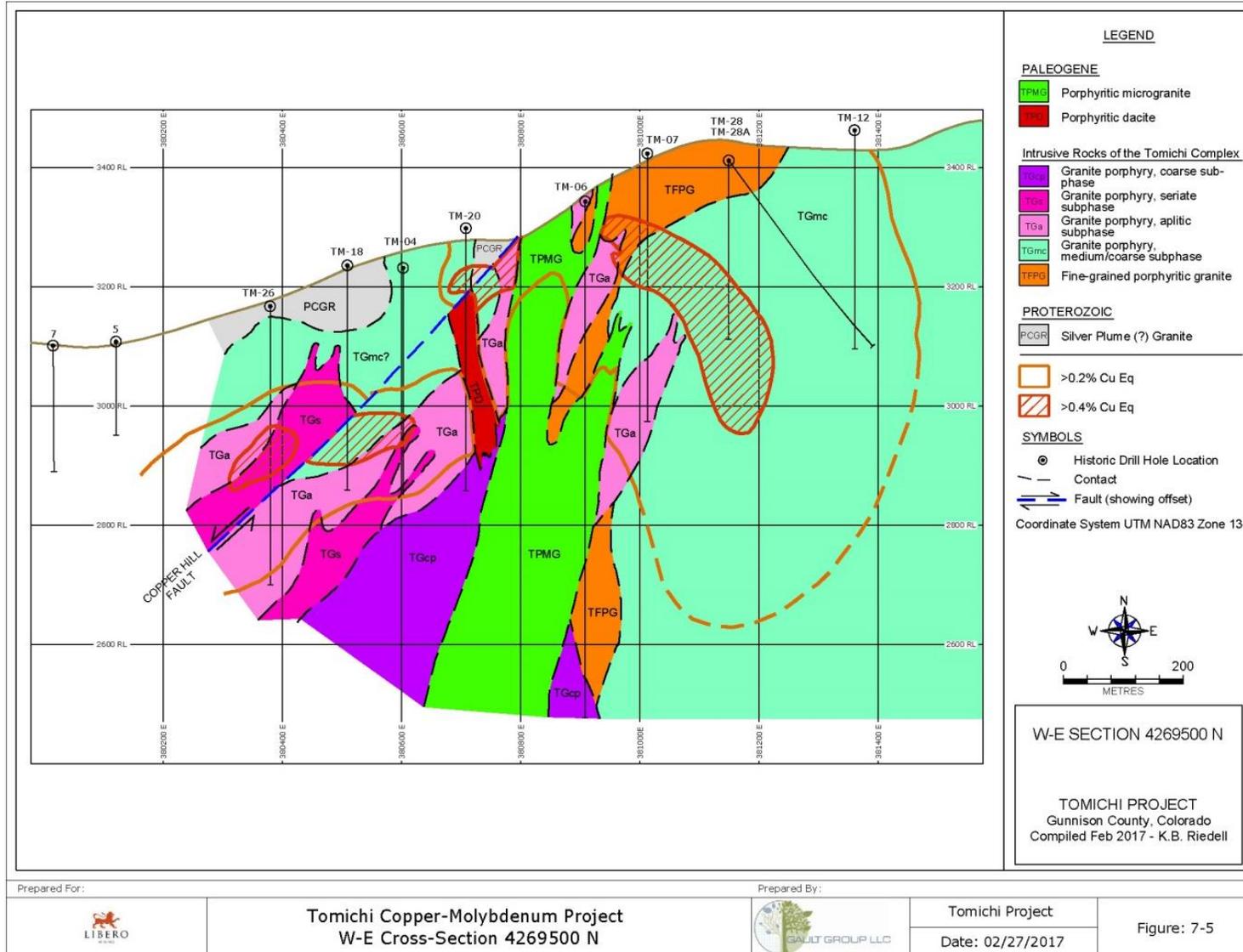
Notes:

- (1) The biotite-rich subphase of granite porphyry (Tgb, code 72) described by Riedell (2011) is no longer used; mapping in 2014 showed this to be TGs hybridized with an unexposed quartz dioritic phase that is possibly related to TMDp.
- (2) Rhyodacite porphyry (TRP, code 80), logged in one short interval in hole TM-09, is now considered to be strongly altered granite porphyry, probably TGa.
- (3) The current drilling database contains additional rock codes due to miscoding and/or ad-hoc naming of new rock units. These include:
  - Biotite quartz monzodiorite porphyry (TBMDP, code 95)
  - Porphyritic quartz monzodiorite (TPMD, code 123)
  - Fine-grained granite porphyry (TFGP, code 73, and TFG, code 76; miscoding of TFPG?)
  - Granite porphyry (TG, code 100)
  - Mount Princeton (TMP, code 60), and Quartz monzonite (TQM, code 92); are probably equivalent to TGmc
  - Unknown units: TFGb, TFMGm, TGf, TGPG, TPMGm

**FIGURE 7-4: TOMICHI COPPER-MOLYBDENUM PROJECT GEOLOGIC MAP**



**FIGURE 7-5: TOMICHI COPPER-MOLYBDENUM PROJECT W-E CROSS SECTION 4269500N**



### 7.2.2 Alteration

The explored system is dominated by moderate potassic alteration, marked by partial replacement of magmatic biotite by shreddy biotite. Halos of pink to white K-feldspar surround many quartz veins. Primary magnetite is mostly preserved. The shallower and fringing parts of the system (especially west of the Copper Hill fault) show sericitic assemblages which probably overprint earlier potassic alteration. White sericite replaces most K-feldspar, and soapy green illite(?) replaces plagioclase. Original biotite sites are partially sericitized and light brown. Most or all magnetite is destroyed.

The limit of quartz-sericite (phyllic) alteration as mapped by Molycorp is 1500 m (5000 ft) southwest by 900 m (3000 ft) wide]. A halo of propylitic alteration is present but has not been defined by mapping; it appears to be best developed to the east and west and may extend for 500 km (1,500 ft) beyond sericitic alteration.

Quartz-chalcopyrite±molybdenite±pyrite veins and veinlets are ubiquitous throughout the mineralized zone but are volumetrically minor, typically comprising 1-5% of the rock. Attitudes to core axis suggest most veins are steep. A-type sugary quartz veins and veinlets (following the classification of Gustafson and Hunt, 1975, and Seedorff et al., 2005) are the principal vein style in the system (Figure 7-6) and B-type banded quartz±molybdenite veins are subordinate. Early potassic halos (EH veins) (Proffett, 2009) are common in PCGR and fine-grained porphyritic granite, especially west of the Copper Hill fault (Riedell, 2014a). These are thin quartz-sulphide veinlets or fractures surrounded by thicker (5-30+ mm) halos of grey sericite with biotite and/or K-feldspar, and common to abundant sulphides (Figure 7-6). Early halos on the west side of the property are mostly pyritic, whereas those east of the Copper Hill fault contain significant chalcopyrite but are poor in molybdenite. Prior to 2014, EH veins at Tomichi were mismapped as late quartz-sericite or D-type veins. A-type veins cut EH veins in a road-cut exposure at 3812010E / 4269670N, which implies the EH veins formed relatively early and probably at high temperature.

### 7.2.3 Mineralization

The mineralized area currently identified on the property is ~550 m by ~825 m in plan dimension, and extends ~600 m deep (1,800 ft by 2,700 ft by 2,000 ft). Copper and molybdenum mineralization occurs in the Paleogene porphyries and Proterozoic granite wall rocks. Chalcopyrite, molybdenite and pyrite in total average 1-3 volume percent within the deposit. Chalcopyrite occurs in A and EH veins, as well as disseminated in mafic sites. Molybdenite occurs as fine grains within both A and B veins, but normally not in veinlets with chalcopyrite. Minor molybdenite was remobilized into late fractures and faults as “moly paint”. No disseminated molybdenite has been recognized. Late pyritic mineralization associated with

sericitic alteration and D sericite-quartz veins is concentrated west of the Copper Hill fault, where sulphide content locally exceeds 5 percent. Sphalerite, galena, and arsenopyrite are locally noted, mostly in late and/or peripheral veins.

Analysis of metal zoning in level plan and section suggests molybdenum occupies a position slightly more central than copper. Copper occurs mostly above the 3100-3200 m elevations and decreases with depth. The zone of >0.05% molybdenum starts 50-100 m below surface, overlapping the copper-rich zone, but persists downward to at least the 2850 m elevation.

A minor quantity of the rare metal rhenium is present. Rhenium analyses of drill core by ICP are available for 3,553 samples, including Burnstone’s re-analysis of 22 Molycorp holes in 2011, as well as the five Burnstone holes drilled in 2012. The average rhenium grade of the resource (at the Base Case 0.15% copper equivalent cutoff) is 0.195 ppm. The rhenium is very likely contained within molybdenite, as in some other porphyry copper-molybdenum deposits such as Island Copper, B.C., Robinson, Nevada, and San Manuel, Arizona (Sutolov, 1979).

The uppermost 40-60 m of holes is partially oxidized, with chrysocolla, malachite, and neotocite (brown/black cupriferous Mn oxides) mixed with goethite, jarosite, and minor relict sulphides. Thin zones of supergene chalcocite replacing chalcopyrite are cut in some holes (e.g., TM-09, 35-37 m).

**FIGURE 7-6: REPRESENTATIVE VEIN TYPES**

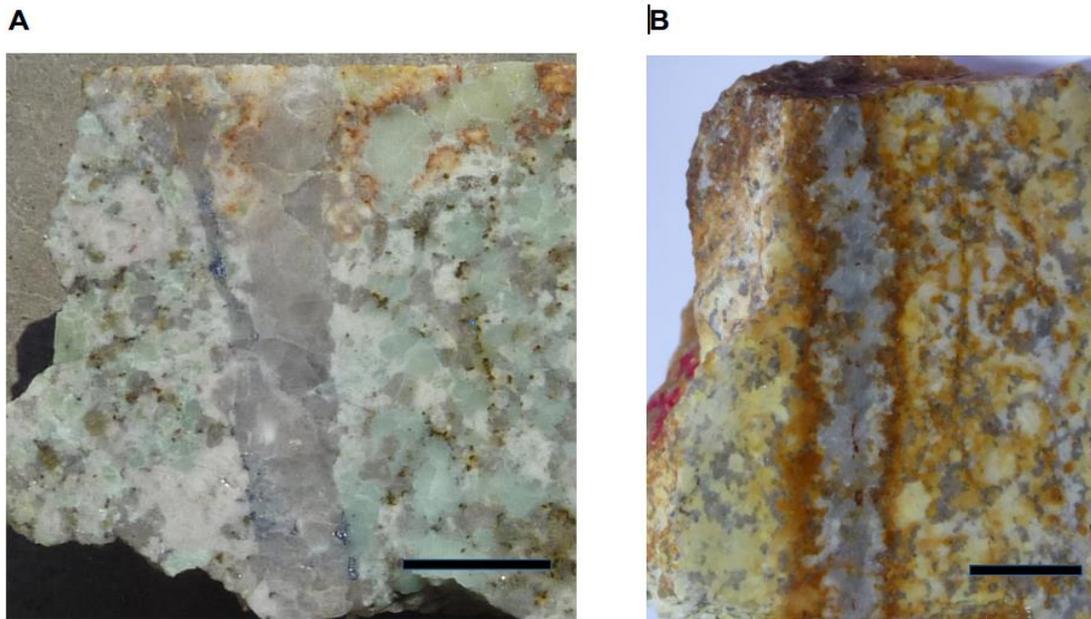


Figure 7-6. Photos of representative vein types. Scale bars are 1 cm long.

**A:** A-type granular quartz veinlets with minor molybdenite, cutting TGs. TM-09, 44.8 m.

**B:** Thin early-halo or “EH” veinlet cutting PCGR, slabbed hand sample, surface locality 380450E / 4268990N. Note hydrothermal K-feldspar (white) along the margins of the halo, which contrasts with the light grey sericite and relict quartz making up most of the halo.

## 8 DEPOSIT TYPES

The Tomichi Copper-Molybdenum Project shows the characteristics of intrusion related porphyry systems, including multiple porphyry intrusions, zoned hydrothermal alteration, and multiple stages of veining and sulphide mineralization. In detail, the intrusive rocks, metal signature, and alteration styles of the Tomichi system suggest close affinities with the quartz monzonitic-granitic porphyry molybdenum-copper systems of Seedorff et al. (2005). Similar deposits include Liberty (Hall-Tonopah) and Buckingham, Nevada; Mount Tolman, Washington; Brenda, B.C.; and El Creston, Sonora. Molybdenum grades are lower than in Climax-type (high-F) porphyry molybdenum deposits such as Climax, Henderson, Silver Creek (Rico), but the quartz monzonitic-granitic systems benefit from significant copper contents. Intrusions driving these systems characteristically display coarse-porphyry textures (Seedorff et al., 2005, Table A2), as in several the later granite porphyries at Tomichi. Seedorff et al. (2010) cited the Montezuma molybdenum-copper system east of Keystone as another quartz monzonitic-granitic porphyry molybdenum-copper deposit in the Colorado Mineral Belt. Montezuma (~39 Ma) and Tomichi are older than the Climax-type systems of the belt, which date between 29 and 5 Ma (Seedorff et al., 2010).

## **9 EXPLORATION**

Libero has not conducted any physical exploration work on the Project property. Historic exploration efforts by previous companies have been discussed in Section 6.

### **9.1 Planned and Ongoing Evaluations**

Reported analytical results from coring results, as described in Section 6, have been assembled into spreadsheets. Libero, and its consultant, have completed gross preliminary analyses of the reported historic core analytical results as summarized in Table 6.1. There is an ongoing effort to review and assimilate the historic data and complete a comprehensive mineral evaluation report for the Project.



## 10 DRILLING

Libero has not conducted any drilling on the Project property. Historic drilling by previous operators has been exhaustively discussed in Section 6 and the reader is directed to that section for a full discussion of drilling activities on the Property.

## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

### 11.1 Historic Exploration

There are no records that were located during this review or from the information supplied by Libero that pertain to sampling, analyses or security that were used by the historic exploration companies prior to Burnstone's involvement. That stated, there is no reason to believe that the existing records of analytical grades are in anyway incorrect or biased as the historic work was conducted by Industry professionals.

There is no information by which to evaluate how drilling, field, or exploration activities were conducted prior to Burnstone Ventures program in 2011-2014. There are no laboratory reports or original or copied assay certificates from previous operators; all mineral concentrations data are from information presented on drill logs or summary report sheets. Core from 31 of the historic drill holes were preserved and are available for examination and testing.

Burnstone re-logged and re-assayed existing Molycorp core from drill holes TM-1 through TM-26 in 2011 and drilled five new drill holes in 2012. A Burnstone internal memo (Wakelin, 2011) indicates that industry-standard quality assurance / quality control (QA/QC) protocols were in place during Burnstone's sampling and assaying programs, both for the re-assaying of Molycorp core and the new drill holes. The protocols required random insertion of standard, blank, and duplicate samples into sample batches at a 5% ratio, along with chain of custody controls for new drilling. Samples were shipped from Gunnison to the primary preparation and analytical lab, ALS Minerals in Reno, Nevada. The authors have not been able to confirm that these protocols were followed in practice; and data files with compiled QA/QC results have not been located.

#### *11.1.1 Existing Drill Core*

##### **Molycorp core preparation prior to dispatch to the analytical laboratory for re-assay program:**

Re-assay samples were collected along intervals which match sample intervals from the historic Molycorp drill core program, previously split core. The split core was halved using a diamond core saw. The quarter of the cut core placed in individual sealed polyurethane bags with a sample tag identifier enclosed, a zap-strap was used to close the bag and placed into a sealed woven plastic bag with other similarly prepared samples, secured and inventoried under chain-of-custody (COC) protocol. The remaining quarter core was placed back in the core box for permanent storage. Samples were prepared by outside contractors, who were trained and supervised by Burnstone personnel at a secure facility in Gunnison, Colorado.

The COC identified each core sample, the analytical method(s) requested, the date and time of collection and shipment, and who prepared the samples and relinquished custody. A COC

accompanied all samples submitted with a copy of each COC cataloged. All re-assay samples were shipped by independent transport companies (typically by freight truck) in sealed woven plastic bags to ALS Laboratories, Reno where the samples were processed and then shipped via airfreight to ALS Minerals laboratory in North Vancouver, B.C. Canada for analysis.

**Laboratory sample procedures for existing Molycorp core:**

ALS Minerals in Reno Nevada was the laboratory for sample preparation and ALS Minerals in North Vancouver B.C. was the laboratory for analytical analyses. ALS Minerals in North Vancouver is individually certified to standards within ISO 9001:2008 and has received accreditation to ISO/IEC 17025:2005 from the Standards Council of Canada (SCC) for precious and base metal assay methods. ALS Minerals was paid a fee for their analytical services and is independent of and not affiliated with Burnstone.

Sample preparation is designed to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory. When received at the laboratory the sample was logged into the ALS tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 grams was taken and pulverized to better than 85 % passing a 75-micron (Tyler 200 mesh, US Std. No. 200) screen. Aliquots of this split were used for analytical testing.

Analytical laboratory procedures for samples submitted to the laboratory include: copper, molybdenum, silver & rhenium analysis using ALS Minerals methods ME-MS61 – 48 elements by 4-acid ICP-MS. Additional analytical methods used include: Mo-OG62 and Cu- OG62– Four acid digestion with ICP-AES, using hydrofluoric acid (HF). Gold analysis used was Au-AA23 – Gold by fire assay and AAS finish. Fluorine analyses were performed for eight of the Molycorp holes, using method F-ELE81a – S.I.E. Fusion.

**Quality control (QC) and quality assurance (QA) procedures employed for existing Molycorp core:**

During sample preparation and before shipment a standard, a blank and a duplicate sample were inserted within the sample group at a 5% ratio, i.e., 3 QC samples per 17 core samples. High quality standards were individually packaged and supplied by CDN Resource Laboratory Ltd., Langley, B.C., Canada, V1M 4B4 and WCM Minerals Ltd., Burnaby, B.C. Canada V5J 3P4. The blank sample(s) used were from a local source, i.e., commonly available hardware store silica sand. Duplicate samples were included by way of submitting an empty sample bag, with a unique identifying label, which signifies (and directs) to the lab to collect a duplicate sub-sample from the preceding tagged sample bag. This sub-sample was the duplicate.

Laboratory sample results were received by Burnstone's designed data management representative (Sarah Wakelin, Geologist). Data were reviewed for completeness, entered into Lager 3D Exploration geologic database management and plotting system software, after which

the results are plotted and analyzed for consistency. Laboratory reports and plotted analytical results receive final approval after they have been reviewed and approved by Burnstone's QC/QA officer (Jim Chapman, Geologist).

### ***11.1.2 New Drill Core***

#### **New drill core preparation prior to dispatch to the analytical laboratory:**

New drill core was transported from the drill site to the core processing area by company personnel. Drill core was logged (geologically described) using Lager 3D Exploration geologic database management and plotting system software and cut lengthwise in half. The core half that is archived was stored and organized in properly labeled core boxes with a unique identifier in Burnstone's secure warehouse facility in Gunnison, Colorado.

As noted above, the author has not been able to confirm that Burnstone's QA/QC and chain of custody protocols were followed in practice. Assuming they were followed, the drill core half submitted to the laboratory was placed in a poly-urethane sample bag, zap-strap closed with a sample tag identifier enclosed and placed into a sealed woven plastic bag with other similarly prepared samples, secured and inventoried under chain-of-custody (COC) protocol. The COC identified each core sample, the analytical method(s) requested, the date and time of collection and shipment, and who has prepared the samples and relinquishes custody. A COC accompanied all samples submitted with a copy of each COC cataloged. An overnight courier shipping service or freight service, under COC protocol, transported the samples to the laboratory.

#### **Laboratory sample procedures for new drill core:**

This utilized the same procedures as for the re-assay program (Section 11.3.1.b) on the historical Molycorp core, except that gold and fluorine analyses were not performed.

#### **Quality control (QC) and quality assurance (QA) procedures employed for new drill core:**

Burnstone's QA/QC plan called for new core to utilize the same procedures as for the re-assay program (Section 11.3.1.c) on the historical Molycorp core. The author has not been able to confirm that these protocols were followed in practice; and data files with compiled QA/QC results have not been located.

It is the author's opinion that Burnstone and ALS Minerals, Reno Nevada and ALS Minerals, North Vancouver B.C. Canada sample preparation, security, and analytical procedures are consistent with and meet industry-accepted standards.

## **11.2 Historic Explorations Adequacy**

Standards for different exploration companies related to sample preparation, analyses, and security have varied through time. It is assumed that during the time of each respective historic exploration that each company would have used industry-standard protocols for drilling, sampling, logging, and analytical analyses. Pending further details from the existing historic



data and analytical results, additional evaluations, check assaying, and twinning of previous drill holes are required in order to confirm historic data analytical results.

Until results from Liberio's planned and ongoing evaluations, where additional information is developed to support the historic database, the information in the historic database should be used as guideline data to develop exploration planning and support the need for future Project evaluations.

## 12 DATA VERIFICATION

### 12.1 Historic Explorations

No data verification procedures were directly applied on the historic information. Forensic verification procedures were applied to the historic information as there is no drill core available for examination.

### 12.2 2012 Molycorp Re-assay Program

Burnstone's re-assay program of existing Molycorp core was designed to verify the historic Molycorp assay results in order to assist in verifying other reports, drill logs, geologic maps and cross sections. Data verification consisted of duplicating, as closely as possible, the original sample intervals from 22 of 26 Molycorp holes, and submitting these for re-assay. Results of the re-assay program were then compared on a sample by sample basis with the original assay data to evaluate the consistency and reproducibility of the copper and molybdenum values. A total of 2865 samples were analyzed with the results summarized in Table 6.7 and Table 6.8. The molybdenum assay comparison shows more variability (55% of the re-assay results within 10%) and copper assay comparison show less variability (82% of the re-assay results within 10%). (Gault Group, LLC, 2013).

No data verification procedures were applied on the other historic information associated with this Project as the information available was preserved as unpublished hard copies of reports, drill logs, memos and correspondence, geologic maps, analytical assay results and working cross-sections developed by various exploration companies from 1957 through 1981. (Gault Group, LLC, 2013).

Gray has reviewed the re-logging and re-assay data and is comfortable that the reanalyses substantiated the historic assays as valid for the purposes of the Project at this stage. Gray recommends a more robust analysis of the pre-1980's drilling be conducted during the next phase of exploration (including twinning of the historic drill holes) to establish a statistically valid correlation with the historically reported assay grades from these vintages of exploration campaigns. This point is particularly important as the pre-1980's assay certificates and drill core are unavailable for confirmation analyses such as those conducted by Burnstone.

### 12.3 Comparison of Old vs. New Drilling Data

Comparisons were made between "old" (pre-1977) drilling and "new" (Molycorp drill holes) by declustering the two sets of data and comparing the grades of samples that are within a maximum distance of 100 m from both data types. The results show that copper grades compare very closely between new and old drilling. Molybdenum grades were slightly higher in the new drilling and this difference is attributed to the spatial location of the newer Molycorp drill holes.

There are also two sets of twinned holes comparing old and new drilling. Copper grades compare very closely where molybdenum grades are more variable between wins. Overall, the results are quite similar.

Based on these results there is no evidence suggesting that the drilling results obtained prior to Molycorp's involvement on the project are invalid. The inclusion of the older drilling provides a more robust database for use in the development of the resource block model.

#### **12.4 Database Validation**

The database used to generate the mineral resource estimate presented in this report contains sample data collected from a total of 52 drill holes. Assay certificates are only available for samples collected by Burnstone during the 2011 re-sampling program or their drilling program conducted in 2012. This represents a total of 27 drill holes from which eight holes were randomly selected for validation. Samples grades from the eight holes were compared values listed in certified assay certificates issued by the assay laboratory. (Excel files). No errors were found.

#### **12.5 Conclusion**

In the author's opinion, the database management, validation and assay QAQC protocols used on the newer drilling and sampling are consistent with common industry practices. Comparisons of the older and newer sample data show there to be no apparent bias between these two vintages of data.

The QP considers the database to be sufficient to support the estimation of mineral resources.



## **13 MINERAL PROCESSING AND METALLURGICAL TESTING**

Not applicable at present, as there is no mineral processing or metallurgical testing information for the Project.

## 14 MINERAL RESOURCE ESTIMATES

### 14.1 Introduction

The mineral resource estimate for the Tomichi deposit was prepared under the direction of Robert Sim, P.Geo, with the assistance of Bruce Davis, PhD, FAusIMM. Mr. Sim is the independent Qualified Person (QP) within the meaning of NI 43-101 for the purposes of mineral resource estimates contained in this report. This section of the technical report describes the resource estimation methodology and summarizes the key assumptions considered by the QP to prepare the resource model for the copper, molybdenum, gold, silver and rhenium mineralization at the Tomichi project. This is an update of a previous and first mineral resource estimate for the Tomichi deposit that was described in a technical report prepared by Gault Group, LLC for Burnstone Ventures Inc., dated July 9, 2013 and with an effective date of June 26, 2012.

In the opinion of the QP, the resource evaluation reported herein is a reasonable representation of the mineralization found at the Tomichi project at the current level of sampling. The mineral resource has been estimated in conformity with generally accepted CIM *Estimation of Mineral Resource and Mineral Reserves Best Practices Guidelines* (November 23, 2003) and is reported in accordance with the Canadian Securities Administrators' National Instrument 43-101. Mineral resources are not mineral reserves and they do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into a mineral reserve upon application of modifying factors.

Estimations are made from 3D block models based on geostatistical applications using commercial mine planning software (MineSight® v11.50-1). The project was originally evaluated using Imperial coordinates and these data has been converted to metric Universal Transverse Mercator Zone 13, 1883 North American Datum. The block model has a nominal block size measuring 15 x 15 x 15 m. The majority of drill holes are vertically oriented and spaced at intervals ranging from 100 m to 250 m with an average of about 150 m. The resource estimate was generated using drill hole sample assay results and the interpretation of a geological model which relates to the spatial distribution of copper, molybdenum, gold, silver and rhenium. Interpolation characteristics were defined based on the geology, drill hole spacing, and geostatistical analysis of the data. The resources were classified according to their proximity to the sample data locations and are reported, as required by NI 43-101, according to the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (May, 2014).

This report includes estimates for mineral resources. No mineral reserves were prepared or reported.

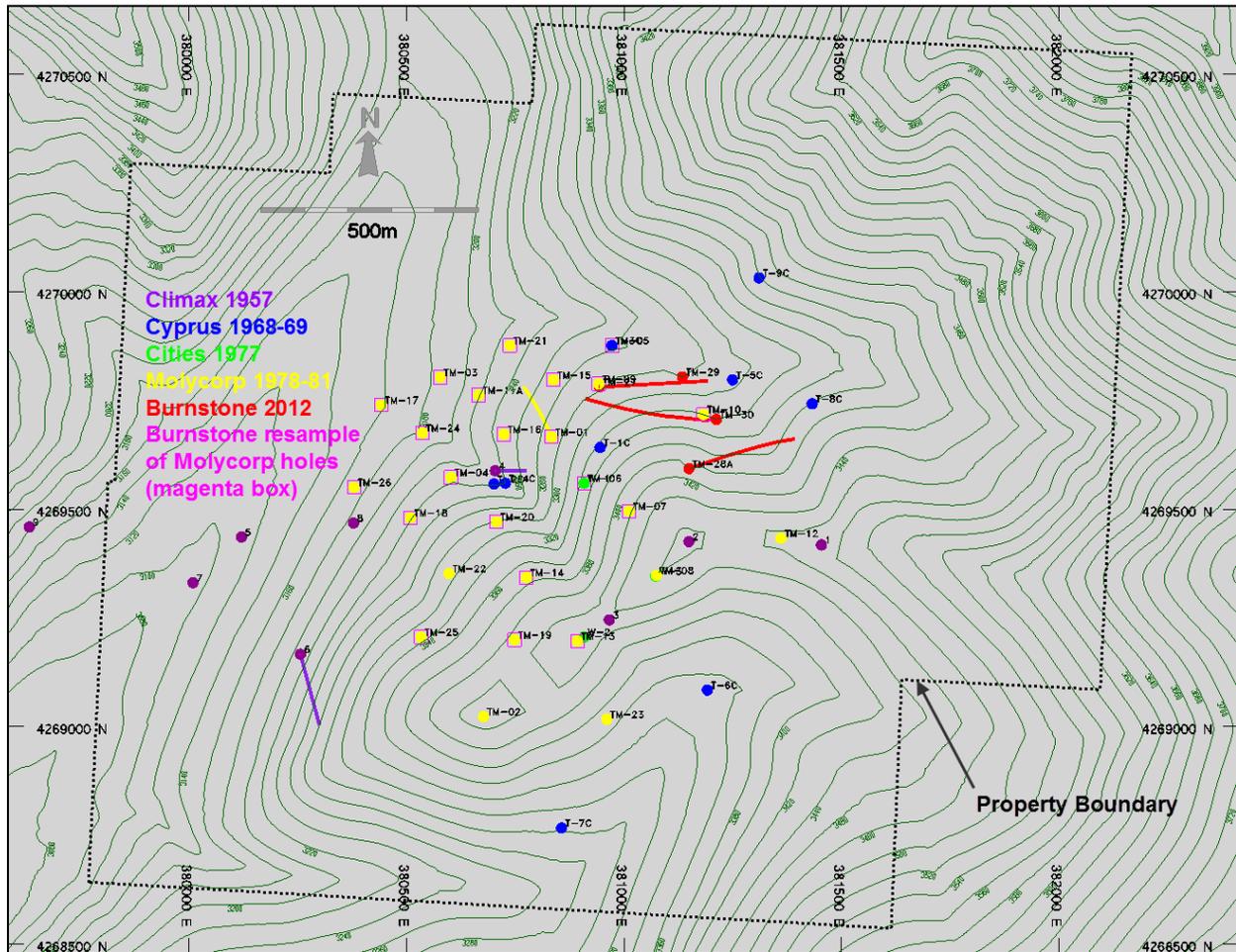
## 14.2 Available Data

Libero provided the drill hole sample data for the Tomichi project on February 9, 2017. This comprised a series of Excel (spreadsheet) files containing collar locations, downhole survey results, geologic information and assay results for a total of 52 drill holes representing 16,612 m of drilling. The history of exploration is described in detail in Section 6 of this report.

Drilling on the Tomichi project dates back to 1957, and includes programs conducted in the 1960s, 1970s and 1980s. All of these programs were conducted by reputable companies. The majority of the drilling was conducted by Molycorp between 1979 and 1981. Twenty-two of these holes, representing 84% of the sample intervals, were re-sampled by Burnstone in 2011. In 2012, Burnstone drilled five additional holes on the property. The distribution of drilling by year is shown in plan in Figure 14-1. Holes originally drilled by Molycorp and re-sampled in 2011 are identified with a magenta box around the collar locations.

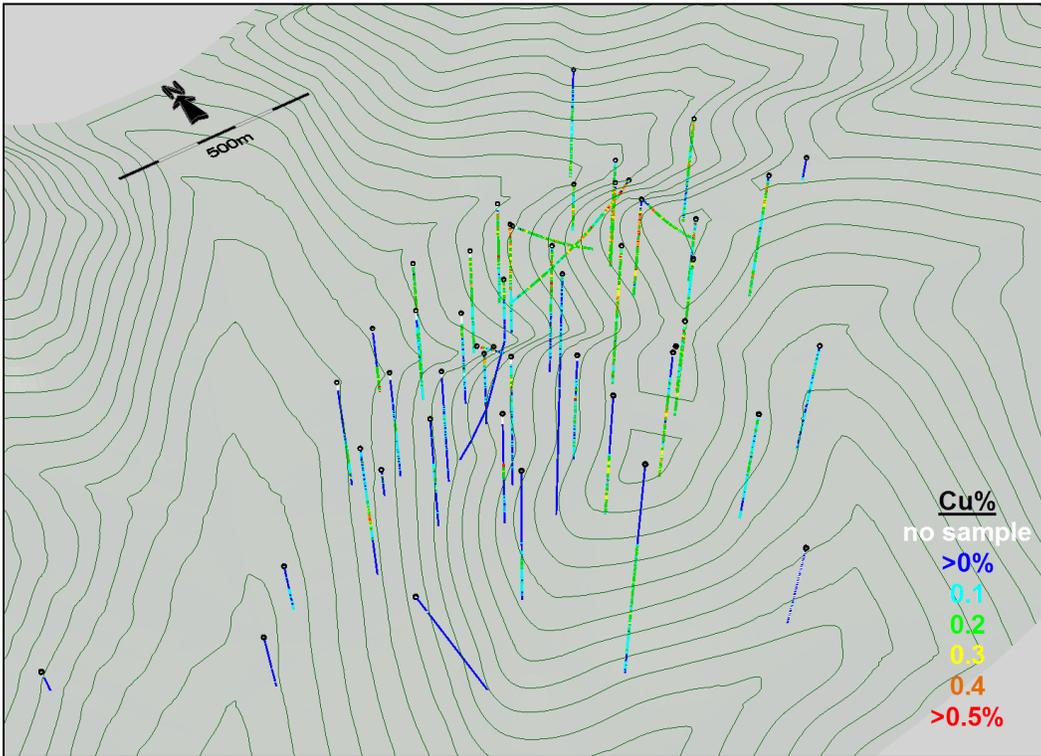
Drilling occurs over an area measuring 1,800 m east-west by 1,300 m north-south. Most of the significant mineralization occurs over a circular area that is approximately 1 km in diameter. Mineralization remains open to the north and at depth. Holes are collared along the southeastern slope of a valley, extending from an elevation of 3,100 m to almost 3,500 m in elevation. Nearby peaks extend to 4,000 m and higher. The majority of drill holes are vertically oriented. Several of the more recent drill holes are inclined at a variety of angles. There is no apparent bias in the sample results in vertical versus inclined drill holes. Drill hole spacing varies from 100 m to 250 m with an average spacing of about 150 m. Most drill holes extend to depths of about 400 m below surface and many holes have been terminated in appreciable mineralization. Several holes extend to over 700 m in length and one hole to a final depth of 869.3 m.

**FIGURE 14-1: PLAN VIEW OF DRILLING / SAMPLING BY YEAR**

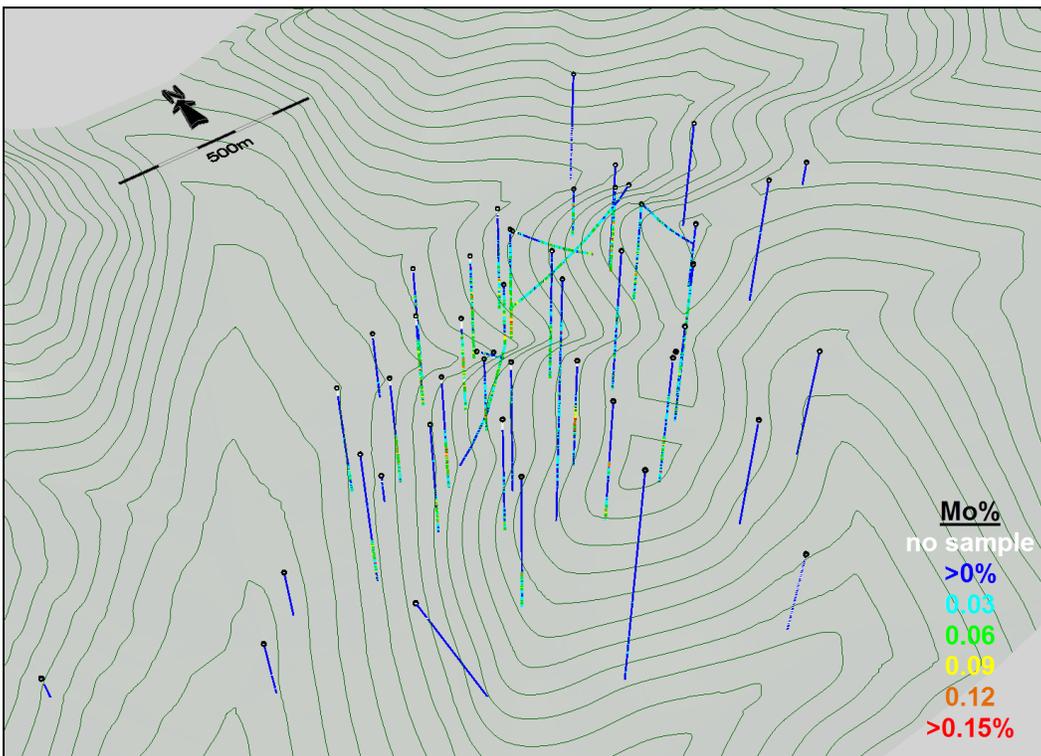


Sample data for copper, molybdenum, gold, silver and rhenium have been extracted from the main database and imported into MineSight<sup>®</sup> for use in the development of the resource model. There are a total of 5,305 individual samples in the project database. Individual sample intervals range from a minimum of 0.61 m to a maximum of 15.24 m and average 3.02 m in length. The majority of the samples collected in 2011, plus all samples from holes drilled in 2012, have been analyzed with a multi-element ICP package. The remainder of the samples has only been analyzed for copper and molybdenum. The distribution of copper and molybdenum samples is shown in Figures 14-2 and 14-3.

**FIGURE 14-2: ISOMETRIC VIEW OF COPPER GRADES IN DRILLING**

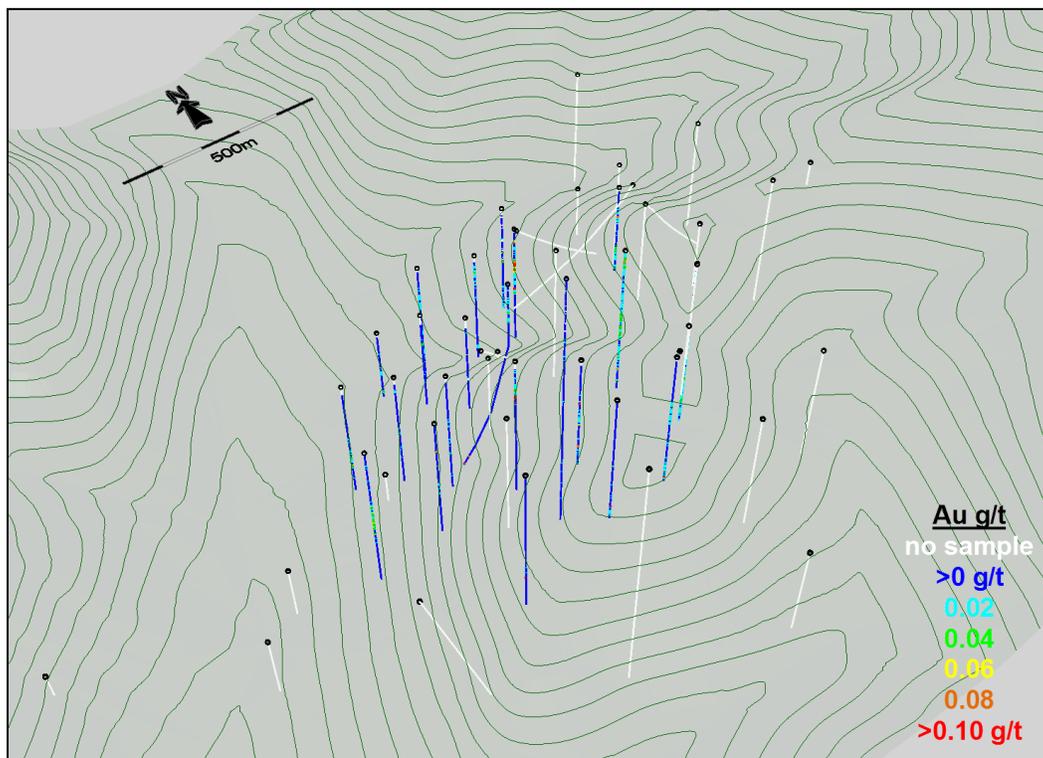


**FIGURE 14-3: ISOMETRIC VIEW OF MOLYBDENUM GRADES IN DRILLING**

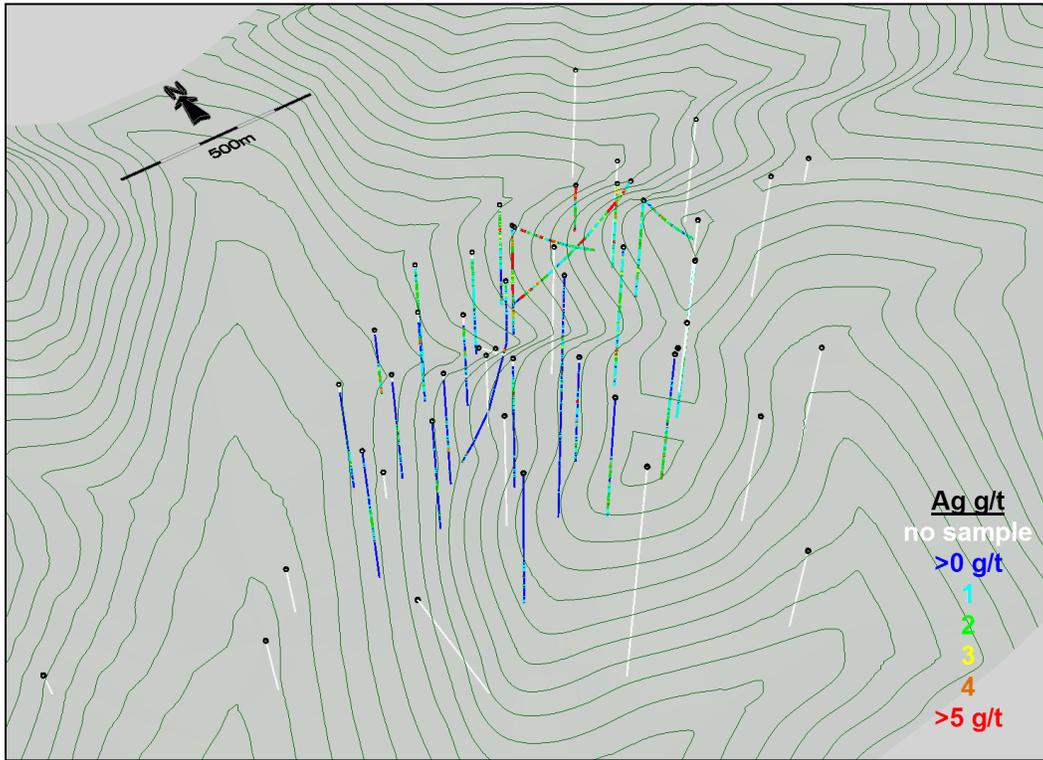


The distribution of available gold, silver and rhenium data is shown in Figures 14-4, 14-5 and 14-6. Most of the drill holes without data for gold, silver and rhenium occur around the outside of the deposit. There have been no adjustments to the database to account for missing data. Although there are less sample data available for these additional elements, the distribution of data is still sufficient to support the estimation of grades in the block model and, although the confidence is somewhat diminished due to the relative lack of sample data, it is felt that the data still supports estimates of these metal grades in resources in the Inferred category.

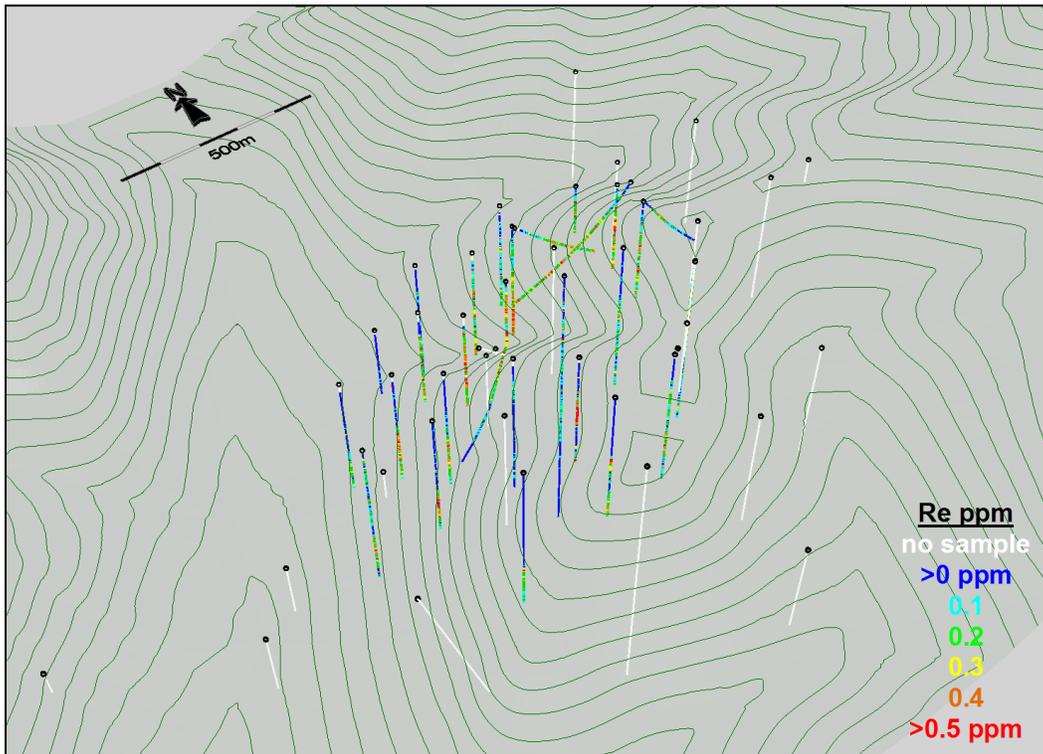
**FIGURE 14-4: ISOMETRIC VIEW OF GOLD GRADES IN DRILLING**



**FIGURE 14-5: ISOMETRIC VIEW OF SILVER GRADES IN DRILLING**



**FIGURE 14-6: ISOMETRIC VIEW OF RHENIUM GRADES IN DRILLING**



Topographic data was provided in the form of 3D contour lines on 100 ft (30.48 m) (vertical) intervals. This information was converted to metric units and used to generate a 3D digital terrain surface over the property. This surface correlates well with the locations of the drill hole collars.

Geologic information derived from observations during core logging provides lithology code designations of the various rock units present on the property. Lithology data are only available in holes drilled by Molycorp and more recent drill holes. There are 19 individual lithology types in the database that have been summarized into 6 main rock units as summarized in Table 14.1.

**TABLE 14.1: SUMMARY OF LITHOLOGY CODES AND ROCK TYPES**

Lithology Code	Rock Code	Rock Type	Description
2	1	OVB	Overburden
7	2	Fault	Fault zone
91, 71, 73, 101, 81, 76, 100, 72	3	TGPP	Porphyry
92, 60	4	MTP	Monzonite
82	5	TFPG	Granite
153, 80, 90, 95, 123	6	Dykes	Small dykes
70	7	TMPG	Dyke
102	8	PCGR	Precambrian Granite

The basic statistical properties of the sample database are shown in Table 14.2.

**TABLE 14.2: SUMMARY OF BASIC STATISTICS OF SAMPLE DATABASE**

Element	# of Samples	Total Sample Length (m)	Min	Max	Mean	Std. Dev.
Copper (%)	5,519	15,814	0	5.51	0.16	0.144
Molybdenum (%)	5,519	15,814	0	0.380	0.028	0.030
Gold (g/t)	2,996	8,675	0.005	0.480	0.014	0.018
Silver (g/t)	3,553	10,208	0.02	95.30	1.63	3.64
Rhenium (ppm)	3,553	10,208	0.002	2.190	0.182	0.173

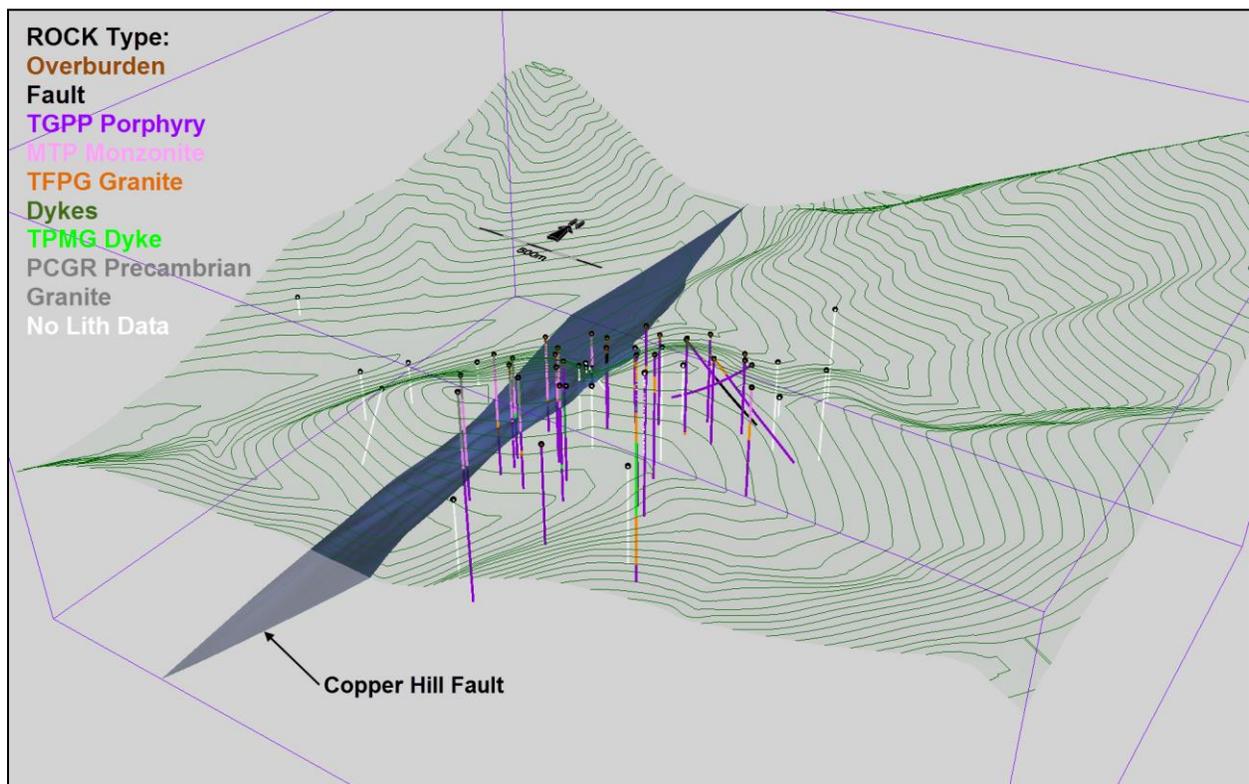
Note: Original sample data weighted by sample length.

### 14.3 Geological Model, Domains and Coding

Tomichi is interpreted to be a porphyry-style deposit with mineralization occurring as a result of igneous intrusion into a host of volcanic rocks. This deposit exhibits mineral trends that are common in porphyry-style deposits: a somewhat barren central core, reflective of the intrusive phase, surrounded by a mineralized halo. This general distribution can be seen in Figures 14-2 through 14-6.

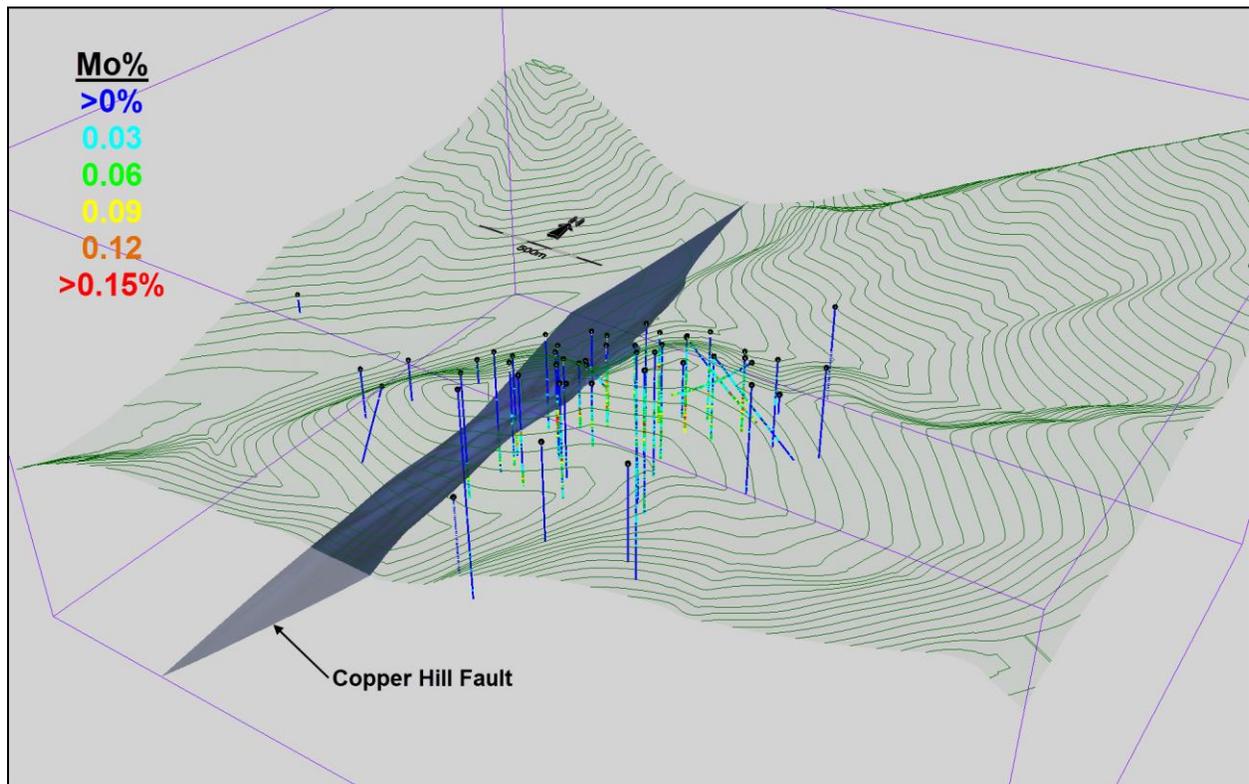
The distribution of the main rock types, as logged in drilling, is shown in Figure 14-7. Changes in both rock type and mineral content are defined by a pronounced fault, referred to as the Copper Hill fault that strikes north-south and dips 40 degrees to the west.

**FIGURE 14-7: ISOMETRIC VIEW OF THE ROCK TYPES IN DRILLING AND WEST-DIPPING FAULT**



There are signs of some post-mineral displacement along the Copper Hill fault. Minor zones of copper, gold, silver and rhenium mineralization occur at depth on the western side of the Copper Hill fault, suggesting a down-dropped displacement on the western side of the fault. The molybdenum grades tend to be very low on the western side of this structure as shown in Figure 14-8.

**FIGURE 14-8: ISOMETRIC VIEW OF THE MOLYBDENUM GRADES RELATIVE TO THE COPPER HILL FAULT**



Other than some thin surficial oxidation where sulphides occur at surface, there are no indications of significant oxidation of the resource. Intervals of surface overburden have been intersected in all Molycorp drill holes with thicknesses ranging from 3 m to 32 m. A surface representing the base of overburden/top of bedrock has been interpreted from the drilling results.

#### 14.4 Specific Gravity Data

There have been 61 specific gravity (SG) measurements conducted on samples from Tomichi. The average SG values by rock type vary from a minimum of 2.57 t/m<sup>3</sup> to maximum of 2.61 t/m<sup>3</sup>. Due to limited data and a low variability in the SG values, an average value of 2.60 t/m<sup>3</sup> has been used to calculate resource tonnage for all rock types. This assumption of density is considered appropriate for these rocks. Model blocks in overburden are assigned a default SG value of 1.90 t/m<sup>3</sup>.

Additional SG measurements across the whole deposit area are recommended.

## 14.5 Compositing

Compositing the drill hole samples helps standardize the database for further statistical evaluation. This step eliminates any effect that inconsistent sample lengths might have on the data.

To retain the original characteristics of the underlying data, a composite length was selected that reflects the average original sample length. The generation of longer composites can result in some degree of smoothing which could mask certain features of the data. A composite length of 3 m was selected for Tomichi that reflects the average sample length of 3.04 m and the fact that 82% of the original samples are 3 m in length.

Drill hole composites are length-weighted and were generated down-the-hole; this means that composites begin at the top of each hole and are generated at 3 m intervals down the length of the hole.

## 14.6 Comparison of Drilling Data

There are two vintages of data: "Old" and "New". Old drilling includes Climax 1957, Cyprus 1968-69, and Cities 1977. New data are holes drilled by Molycorp in the late 1970s and early 1980s, including re-sampling by Burnstone in 2011 and holes drilled by Burnstone in 2012. Note that Old holes have only been analyzed for copper and molybdenum. Also note that the 2012 resource estimate excluded all drilling data prior to Molycorp. There is no reason given for this decision in the technical report.

Samples from Old and New drilling were declustered and compared over areas where both data types occur. The results show a close comparison of copper grades between the two vintages of data. Molybdenum grades tend to be higher in the New drill holes, but this difference is likely due to differences in the spatial location of the holes.

There are two sets of twinned drill holes in the database. The copper grades encountered in these twinned holes are very similar. The molybdenum grades are slightly higher in the Old drilling in one set of twins and lower in the Old drilling in the other twin comparison. Overall, the results are quite similar.

Overall, copper grades are quite similar in Old versus New drilling. Molybdenum grades are marginally higher in the New holes but this appears to be due to the spatial location of the holes. There is no evidence suggesting the drilling results prior to Molycorp are invalid. The results tend to mimic one another, and there are no apparent reasons to exclude this sample data. Having the additional drill holes in the database enhances the overall estimate of resources. All available data have been incorporated in the generation of the resource estimate.

## 14.7 Exploratory Data Analysis

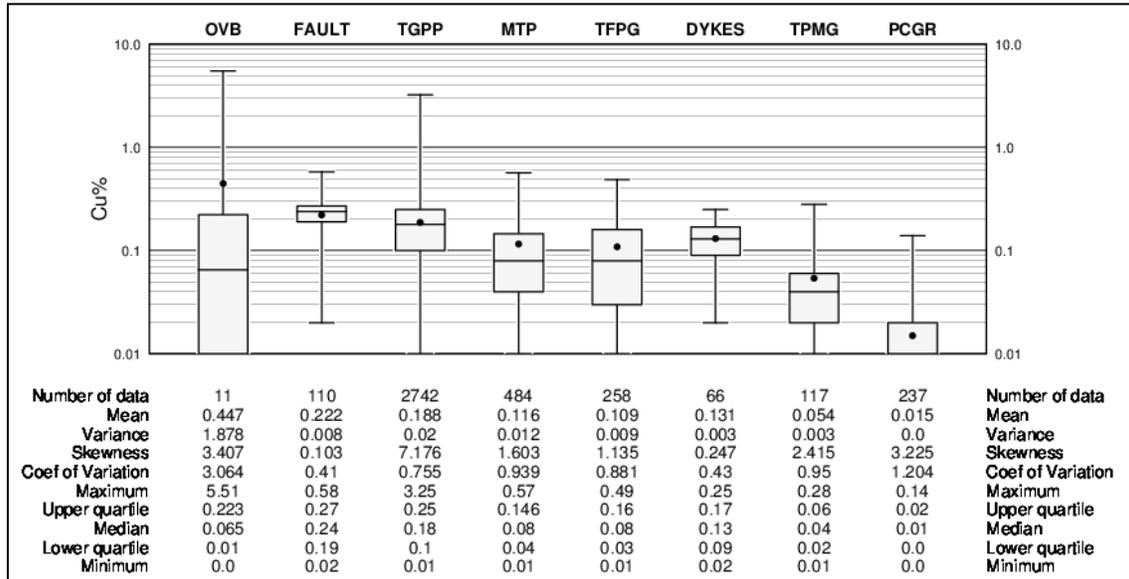
Exploratory data analysis (EDA) involves the statistical summarization of the database to better understand the characteristics of the data that may control grade. One of the main purposes of this exercise is to determine if there is evidence of spatial distinctions in grade which may require the separation and isolation of domains during interpolation. The application of separate domains prevents unwanted mixing of data during interpolation and, therefore, the resulting grade model will better reflect the unique properties of the deposit. However, applying domain boundaries in areas where the data is not statistically unique may impose a bias in the distribution of grades in the model.

A domain boundary, which segregates the data during interpolation, may be applied if the average grade in one domain is significantly different from that of another domain. A boundary may also be applied if there is evidence that a significant change in the grade distribution has occurred across the contact.

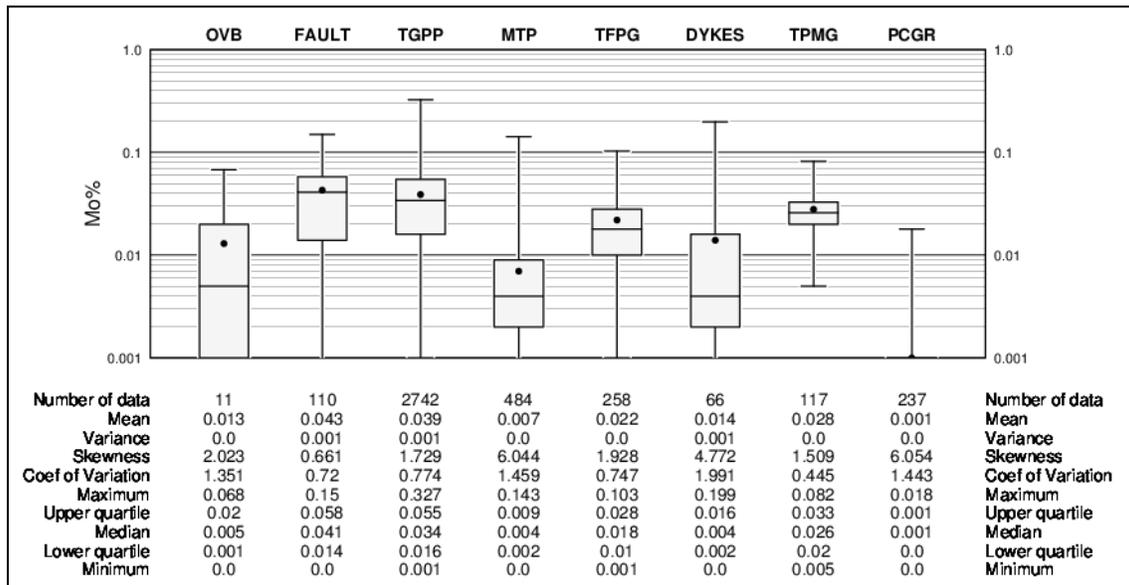
### *14.7.1 Basic Statistics by Domain*

The basic statistics for the distribution of copper, molybdenum, gold, silver and rhenium by Rock type are shown in the boxplots in Figures 14-9 through 14-13. The results are similar for most metals; mineralization is present, to some extent, in all rock types and lower grades tend to occur in PCGR and MTP. The majority of the PCGR and MTP occur on the western (hanging wall) side of the Copper Hill fault.

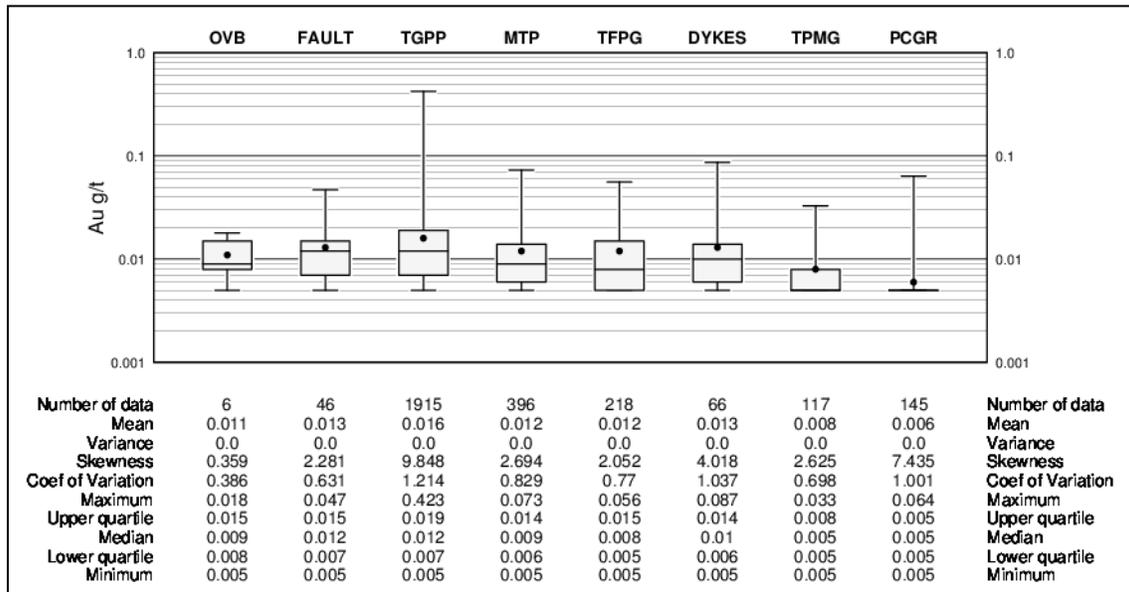
**FIGURE 14-9: BOXPLOT COMPARING COPPER GRADES BY ROCK TYPE**



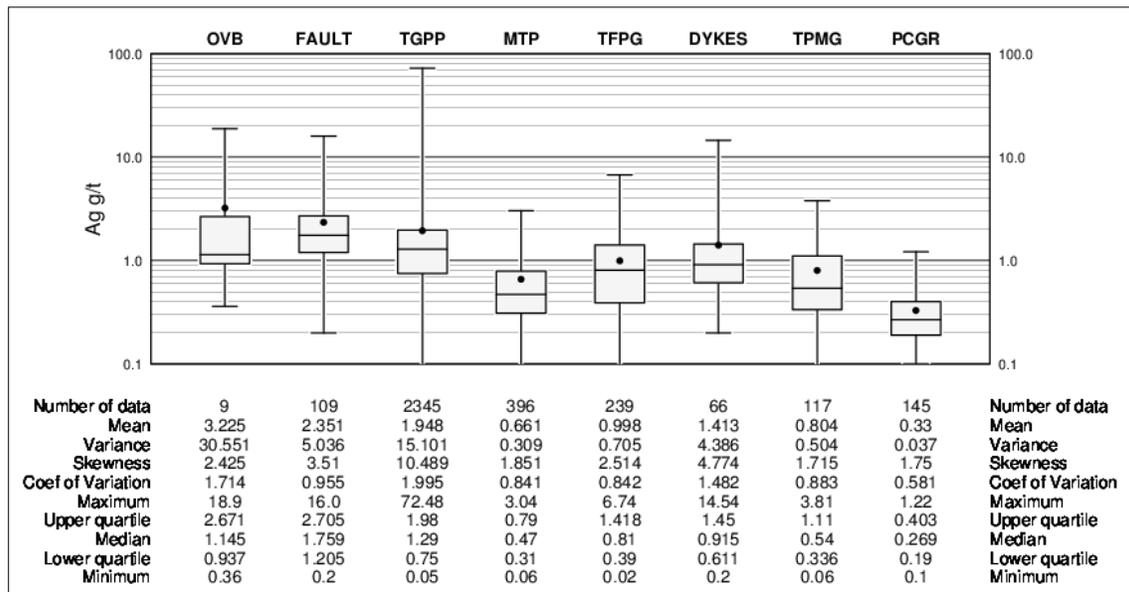
**FIGURE 14-10: BOXPLOT COMPARING MOLYBDENUM GRADES BY ROCK TYPE**



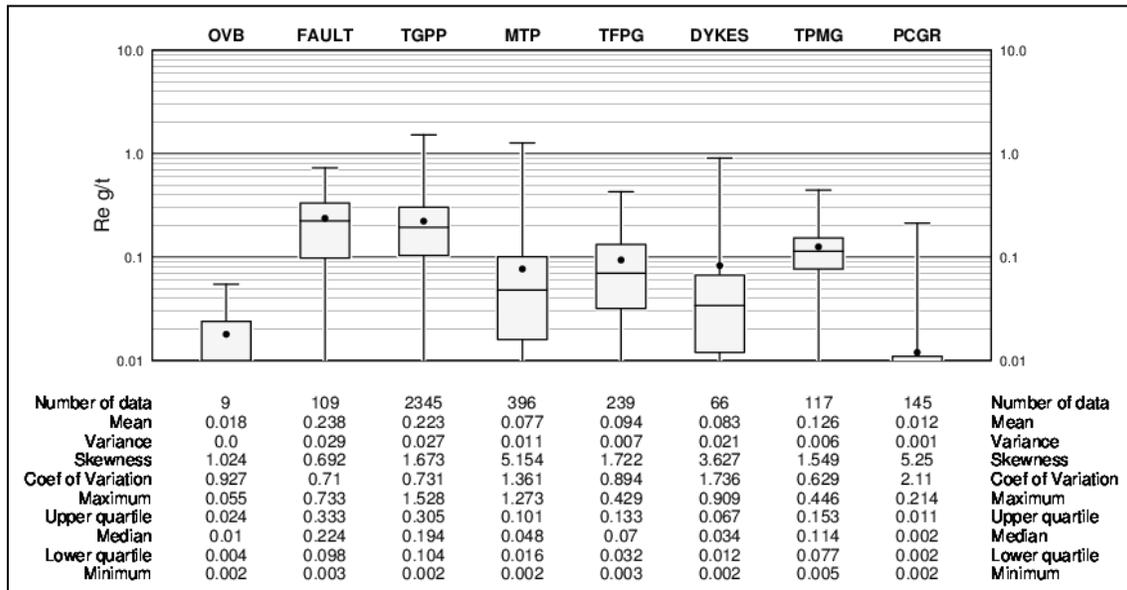
**FIGURE 14-11: BOXPLOT COMPARING GOLD GRADES BY ROCK TYPE**



**FIGURE 14-12: BOXPLOT COMPARING SILVER GRADES BY ROCK TYPE**



**FIGURE 14-13: BOXPLOT COMPARING RHENIUM GRADES BY ROCK TYPE**

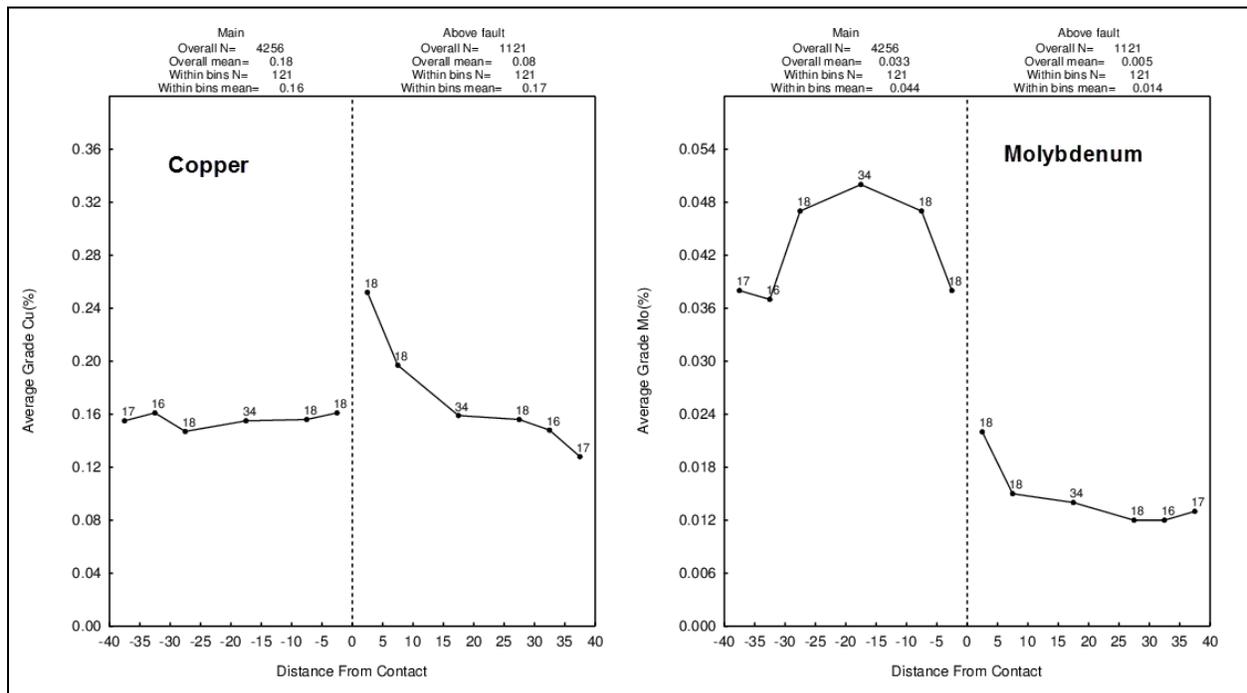


### 14.7.2 Contact Profiles

Contact profiles evaluate the nature of grade trends between two domains: they graphically display the average grades at increasing distances from the contact boundary. Those contact profiles that show a marked difference in grade across a domain boundary indicate that the two datasets should be isolated during interpolation. Conversely, if a more gradual change in grade occurs across a contact, the introduction of a hard boundary (e.g., segregation during interpolation) may result in a much different trend in the grade model; in this case, the change in grade between domains in the model is often more abrupt than the trends seen in the raw data. Finally, a flat contact profile indicates no grade changes across the boundary; in this case, hard or soft domain boundaries will produce similar results in the model.

A series of contact profiles were generated to evaluate the nature of grade changes across the Copper Hill fault. An abrupt change in grade is evident for all metals but not as pronounced for gold and silver. It is evident that significant changes in metal grades occur in the vicinity of the Copper Hill fault. Examples showing the change in copper and molybdenum grade across the Copper Hill fault are shown in Figure 14-14.

**FIGURE 14-14: CONTACT PROFILE FOR COPPER AND MOLYBDENUM  
ACROSS THE COPPER HILL FAULT**



### 14.7.3 Conclusions and Modeling Implications

The results of the EDA indicate that the nature of the distributions is similar for all metals. Statistical analysis shows that all rock types are mineralized to some extent and that the rock type is not a controlling factor in the distribution of metal in the deposit. Visual observations show that a barren core exists in the deposit, but the outward grade increase tends to be gradational rather than abrupt.

There has been significant post-mineral displacement along the Copper Hill fault and, as a result, there should be no mixing of sample data across this boundary during grade estimation in the resource block model.

### 14.8 Development of a Grade Probability Shell

With the absence of any domains that significantly control the distribution of mineralization in the deposit, a probability-shell approach has been taken to generate a domain that encompasses areas that are likely to be mineralized from those that are not.

Although the distributions of all metals included in this analysis follow similar spatial trends, the probability shell is generated about the two main potential contributors, copper and molybdenum, through the use of a copper-equivalent grade. Gold, silver and rhenium are excluded from the equivalent-grade calculation because the confidence is lower due to the lack of assays for these metals in the older drill holes.

Assuming metal prices of \$3.00/lb copper and \$10.00/lb for molybdenum, copper-equivalent (CuEq) grades were calculated using the formula:

$$\text{CuEq}\% = \text{Cu}\% + (\text{Mo}\% \times 3.33)$$

Indicator values are assigned to 3 m composited drill hole sample data at a threshold grade of 0.1% CuEq. Samples below this threshold are assigned a value of zero (0) and samples above are assigned a value of one (1). An indicator variogram is produced, and probabilities are estimated into model blocks using ordinary kriging. A visual review of the results show that a shell built about a 50% probability threshold provides a best fit to the underlying sample data (i.e., inside the shell there is a >50% probability that the grade will be greater than 0.1% CuEq). Samples and model blocks are then coded inside and outside of the probability shell and these are segregated during block grade interpolations.

#### **14.9 Summary of Estimation Domains**

Hard boundary rules are applied for the Copper Hill fault and the probability shell domain. This results in four distinct domains that are honoured during the estimation of all metal grades in the resource block model. These are:

- Footwall (east or main) block of Copper Hill fault and inside the Probability Shell domain
- Footwall (east or main) block of Copper Hill fault and outside the Probability Shell domain
- Hanging wall (western) block of Copper Hill fault and inside the Probability Shell domain
- Hanging wall (western) block of Copper Hill fault and outside the Probability Shell domain

#### **14.10 Evaluation of Outlier Grades**

Histograms and probability plots for the distributions of copper, molybdenum, gold, silver and rhenium were reviewed to identify the presence of anomalous outlier grades in the composited (3 m) database. Following a review of the physical location of potentially erratic samples in relation to the surrounding sample data, it was decided that these would be controlled during block grade interpolations using a combination of traditional top-cutting and also applying outlier limitations. An outlier limitation controls the distance of influence of samples above a defined grade threshold. During grade interpolations, samples above the outlier thresholds are limited to a maximum distance-of-influence of 50 m. The grade thresholds for copper, molybdenum, gold, silver and rhenium in the four estimation domains are summarized in Table 14.3.

**TABLE 14.3: TREATMENT OF OUTLIER SAMPLE DATA - COPPER**

Metal	Estimation Domain	Maximum	Top-cut Limit	Outlier Limit
Copper (%)	FW Inside PS	2.50	1	0.7
	FW Outside PS	5.51	1	0.2
	HW Inside PS	2.25	1	0.6
	HW Outside PS	0.16	-	0.1
Molybdenum (%)	FW Inside PS	0.327	0.15	0.10
	FW Outside PS	0.068	-	0.05
	HW Inside PS	0.073	-	0.05
	HW Outside PS	0.036	-	0.02
Gold (g/t)	FW Inside PS	0.423	-	0.2
	FW Outside PS	0.098	-	-
	HW Inside PS	0.085	-	-
	HW Outside PS	0.064	-	-
Silver (g/t)	FW Inside PS	72.48	-	30
	FW Outside PS	3.27	-	-
	HW Inside PS	17.68	-	5
	HW Outside PS	1.52	-	-
Rhenium (ppm)	FW Inside PS	1.528	1.00	0.8
	FW Outside PS	0.191	-	0.10
	HW Inside PS	0.493	-	0.3
	HW Outside PS	0.603	-	0.15

Notes: 3 m composited drill hole data. FW=footwall, HW=hanging wall, PS=probability shell.

These measures have resulted in losses of 1.5% copper, 5% molybdenum, 2% gold, 14% silver and 12% rhenium. Relatively higher metal losses for molybdenum, silver and rhenium are due to a combination of skewed distributions of data and the spacing of drill holes. Additional drilling is required to gain a better understanding of these elements and reduce the overall effects of these applications. Overall, these measures are considered appropriate for a deposit with this distribution of delineation drilling.

### 14.11 Variography

The degree of spatial variability in a mineral deposit depends on both the distance and direction between points of comparison. Typically, the variability between samples increases as the distance between those samples increases. If the degree of variability is related to the direction of comparison, then the deposit is said to exhibit anisotropic tendencies which can be

summarized with the search ellipse. The semi-variogram is a common function used to measure the spatial variability within a deposit.

The components of the variogram include the nugget, the sill and the range. Often samples compared over very short distances, even samples compared from the same location, show some degree of variability. As a result, the curve of the variogram often begins at some point on the y-axis above the origin: this point is called the *nugget*. The nugget is a measure of not only the natural variability of the data over very short distances but also a measure of the variability which can be introduced due to errors during sample collection, preparation, and the assay process.

The amount of variability between samples typically increases as the distance between the samples increases. Eventually, the degree of variability between samples reaches a constant, maximum value: this is called the *sill*, and the distance between samples at which this occurs is called the *range*.

In this report, the spatial evaluation of the data was conducted using a correlogram rather than the traditional variogram. The correlogram is normalized to the variance of the data and is less sensitive to outlier values, generally giving better results.

Variograms were generated using the commercial software package Sage 2001<sup>®</sup> developed by Isaaks & Co. Multidirectional variograms were generated from the distributions of copper, molybdenum, gold, silver and rhenium. Due to a lack of data in some domains, variograms were generated using samples located in the main FW fault block and inside of the probability shell domain, and these variograms are used to estimate grades in all estimation domains. The results are summarized in Table 14.4.

**TABLE 14.4: VARIOGRAM PARAMETERS**

Element	Nugget	Sill 1	Sill 2	1st Structure			2nd Structure		
				Range (ft)	Azimuth (°)	Dip	Range (ft)	Azimuth (°)	Dip
Copper	0.200	0.476	0.324	93	345	46	7347	226	37
	Spherical			34	335	-44	595	33	52
				13	250	5	493	131	6
Molybdenum	0.250	0.447	0.303	87	51	88	2762	75	8
	Spherical			49	62	-2	394	234	82
				47	332	0	260	345	3
Gold	0.250	0.528	0.222	77	50	15	3987	242	-3
	Spherical			47	137	-11	1676	331	29
				26	193	71	198	158	61
Silver	0.200	0.713	0.087	74	24	68	6041	291	24
	Spherical			62	227	20	1759	26	10
				14	134	8	496	317	-64
Rhenium	0.292	0.451	0.258	315	180	21	1128	73	7
	Spherical			147	91	-3	813	54	-83
				97	9	69	146	343	2

Note: Correlograms conducted on 3 m composite sample data.

## 14.12 Model Setup and Limits

A block model was initialized in MineSight® and the dimensions are defined in Table 14.5. The block model limits are represented by the purple rectangle in Figure 14-7 and 14-8. The selection of a nominal block size measuring 15 m x 15 m x 15 m is considered appropriate with respect to the current drill hole spacing as well as the selective mining unit (SMU) size typical of an operation of this type and scale.

**TABLE 14.5: BLOCK MODEL LIMITS**

Direction	Minimum	Maximum	Block Size (m)	# of Blocks
X (east)	379500	382500	15	200
Y (north)	4268390	4270790	15	160
Z (elevation)	2500	4000	15	100

Blocks in the model were coded on a majority basis with the estimation domains. During this stage, blocks along a domain boundary are coded if more than 50% of the block occurs within the boundaries of that domain.

Blocks are coded on a majority basis with the base of overburden surface. Blocks in the model that are >50% below the surface are coded as “rock” and the remaining, near-surface blocks are coded as “overburden”.

The proportion of blocks that occur below the topographic surface is also calculated and stored within the model as individual percentage items. These values are used as weighting factors to determine the in-situ resources for the deposit.

### 14.13 Interpolation Parameters

The block model grades for copper, molybdenum, gold, silver and rhenium were estimated using Ordinary Kriging (OK). The results of the OK estimation were compared with the Hermitian Polynomial Change of Support model (also referred to as the Discrete Gaussian Correction). This method is described in more detail in Section 14.14.

The Tomichi OK model was generated with a relatively limited number samples to match the change of support or Herco (Hermitian Correction) grade distribution. This approach reduces the amount of smoothing or averaging in the model, and, while there may be some uncertainty on a localized scale, this approach produces reliable estimates of the recoverable grade and tonnage for the overall deposit.

The estimation parameters for the various elements in the resource block model are shown in Table 14.6. All grade estimations use length-weighted composite drill hole sample data.

**TABLE 14.6: INTERPOLATION PARAMETERS**

Element	Search Ellipse Range (m)			# of Composites		
	X	Y	Z	Min/block	Max/block	Max/hole
Copper	500	500	500	5	32	8
Molybdenum	500	500	500	5	28	7
Gold	300	300	300	5	32	8
Silver	300	300	300	5	36	9
Rhenium	300	300	300	5	28	7

## 14.14 Validation

The results of the modeling process were validated using several methods. These include a thorough visual review of the model grades in relation to the underlying drill hole sample grades, comparisons with the change of support model, comparisons with other estimation methods and grade distribution comparisons using swath plots.

### 14.14.1 *Visual Inspection*

A detailed visual inspection of the block model was conducted in both section and plan to ensure the desired results following interpolation. This includes confirmation of the proper coding of blocks within the estimation domains and the overburden surface. The estimated copper, molybdenum, gold, silver and rhenium grades in the model appear to be a valid representation of the underlying drill hole sample data.

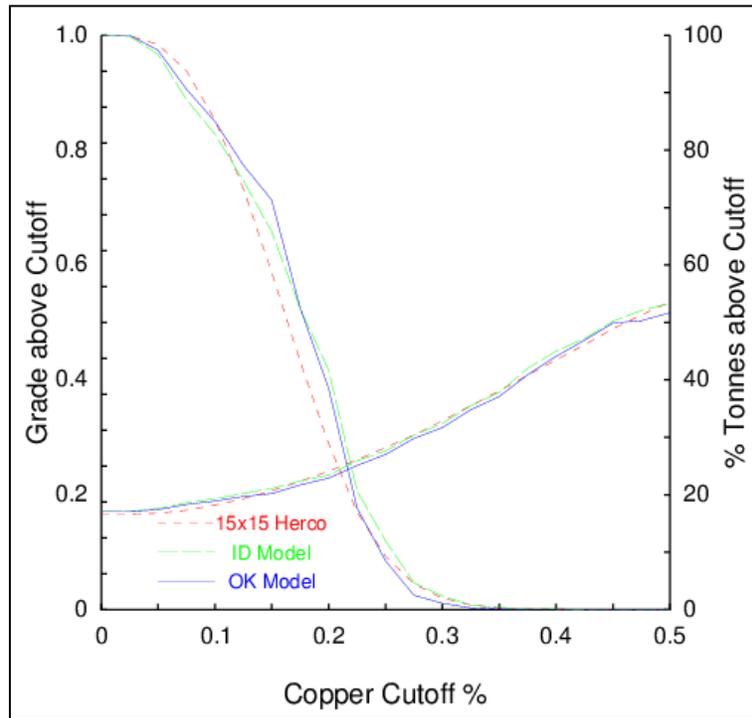
### 14.14.2 *Model Checks for Change of Support*

The relative degree of smoothing in the block model estimates were evaluated using the Discrete Gaussian of Hermitian Polynomial Change of Support method (described by Journel and Huijbregts, Mining Geostatistics, 1978). With this method, the distribution of the hypothetical block grades can be directly compared to the estimated (OK) model through the use of pseudo-grade/tonnage curves. Adjustments are made to the block model interpolation parameters until an acceptable match is made with the Herco distribution. In general, the estimated model should be slightly higher in tonnage and slightly lower in grade when compared to the Herco distribution at the projected cut-off grade. These differences account for selectivity and other potential ore-handling issues which commonly occur during mining.

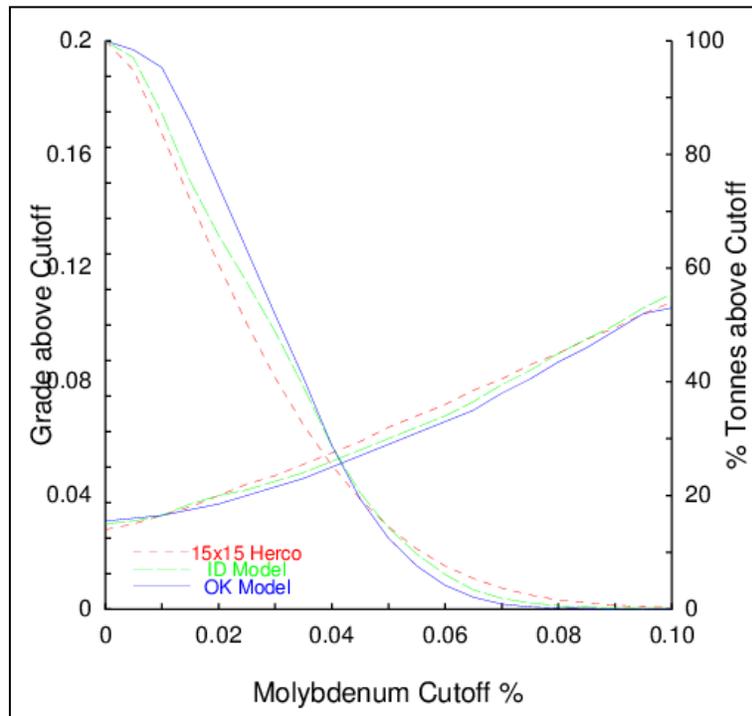
The Herco (Hermitian correction) distribution is derived from the declustered composite grades which have been adjusted to account for the change in support, going from smaller drill hole composite samples to the large blocks in the model. The transformation results in a less skewed distribution but with the same mean as the original declustered samples.

The Herco analysis was conducted on the distribution of copper, molybdenum, gold, silver and rhenium in the block model and level of correspondence was achieved in all cases. Examples showing the distribution of the copper and molybdenum models are shown in Figures 14-15 and 14-16, respectively.

**FIGURE 14-15: HERCO GRADE/TONNAGE PLOT FOR THE COPPER MODEL**



**FIGURE 14-16: HERCO GRADE/TONNAGE PLOT FOR THE MOLYBDENUM MODEL**

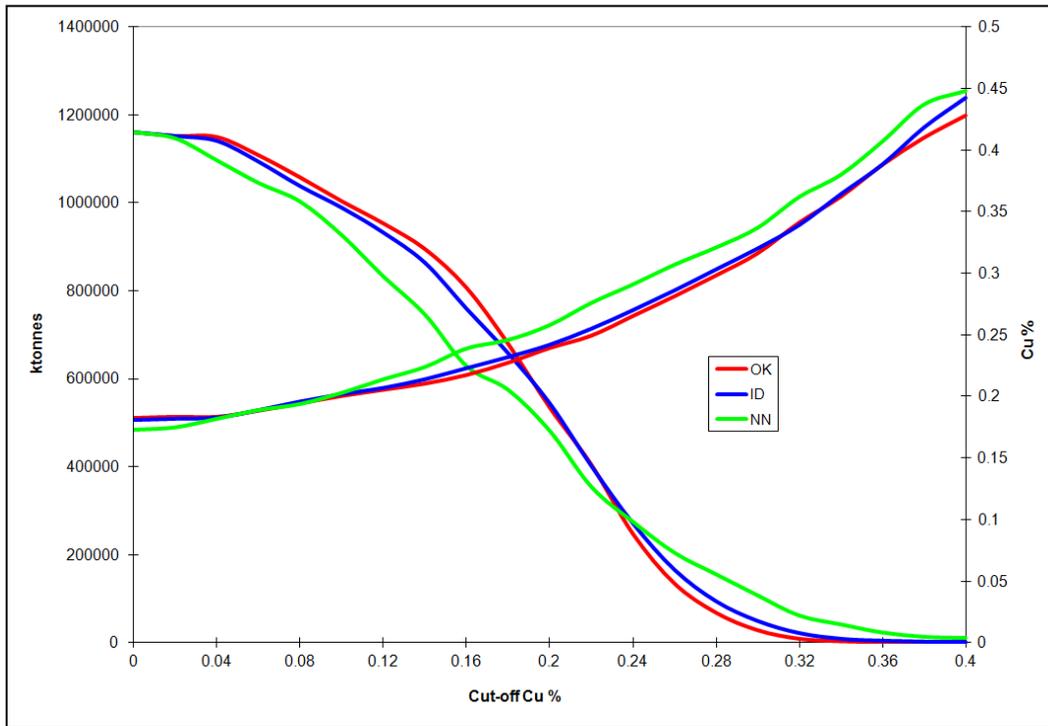


### ***14.14.3 Comparison of Interpolation Methods***

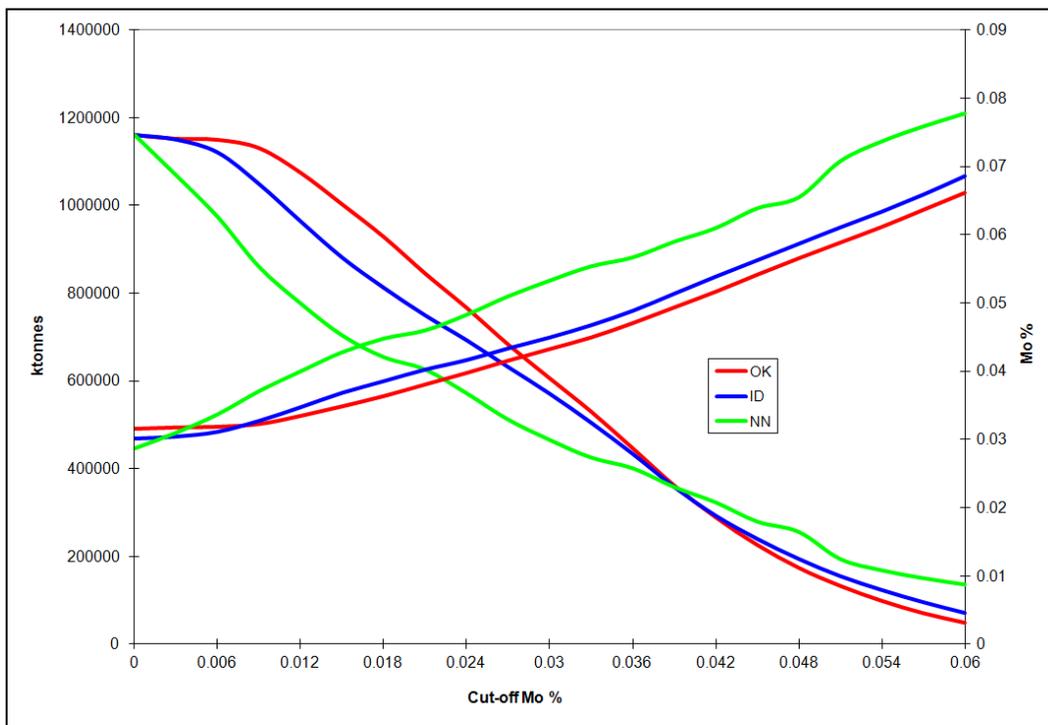
For comparison purposes, additional models for copper, molybdenum, gold, silver and rhenium were generated using both the inverse distance weighted (IDW) and nearest neighbour (NN) interpolation methods (the NN model was made using data composited to 15 m intervals).

Comparisons are made between these models on grade/tonnage curves. Examples of the grade/tonnage curves for copper and molybdenum are shown in Figures 14-17 and 14-18, respectively. There is good correlation between the OK and ID models throughout the range of cut-off grades. The NN distribution, generally showing less tonnage and higher grade, is the result of the absence of smoothing in this modeling approach. Similar results were achieved with the gold, silver and rhenium models. Reproduction of the model using different methods tends to increase the confidence in the overall resource.

**FIGURE 14-17: GRADE/TONNAGE COMPARISON OF COPPER MODELS**



**FIGURE 14-18: GRADE/TONNAGE COMPARISON OF MOLYBDENUM MODELS**



#### **14.14.4 Swath Plots (Drift Analysis)**

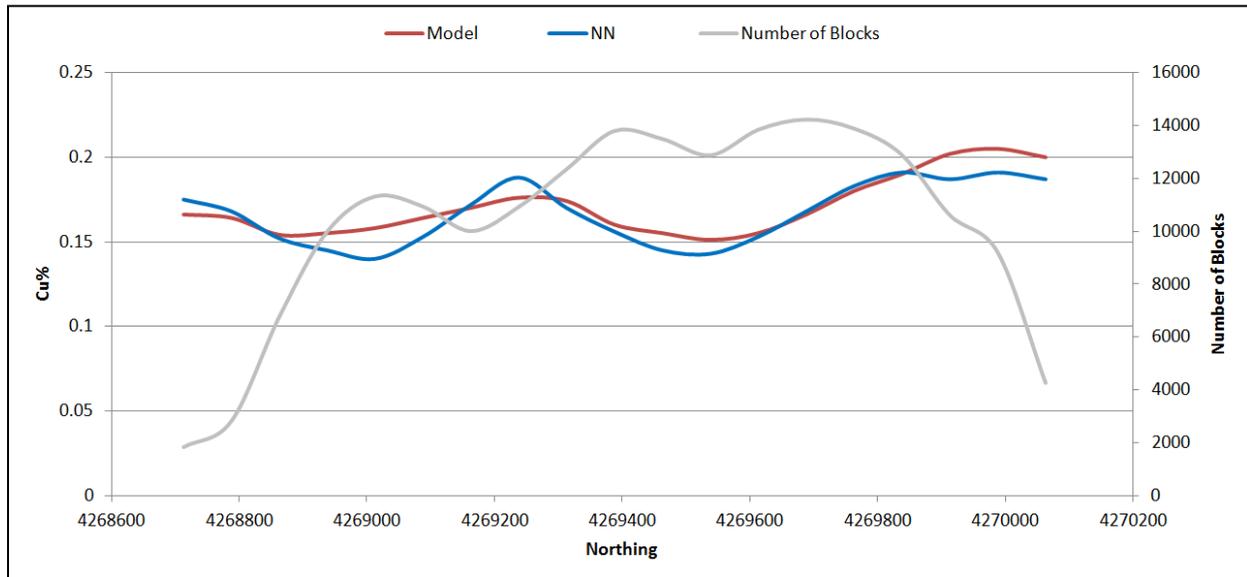
A swath plot is a graphical display of the grade distribution derived from a series of bands, or swaths, generated in several directions through the deposit. Grade variations from the OK model are compared using the swath plot to the distribution derived from the declustered (NN) grade model.

On a local scale, the NN model does not provide reliable estimations of grade, but, on a much larger scale, it represents an unbiased estimation of the grade distribution based on the underlying data. Therefore, if the OK model is unbiased, the grade trends may show local fluctuations on a swath plot, but the overall trend should be similar to the NN distribution of grade.

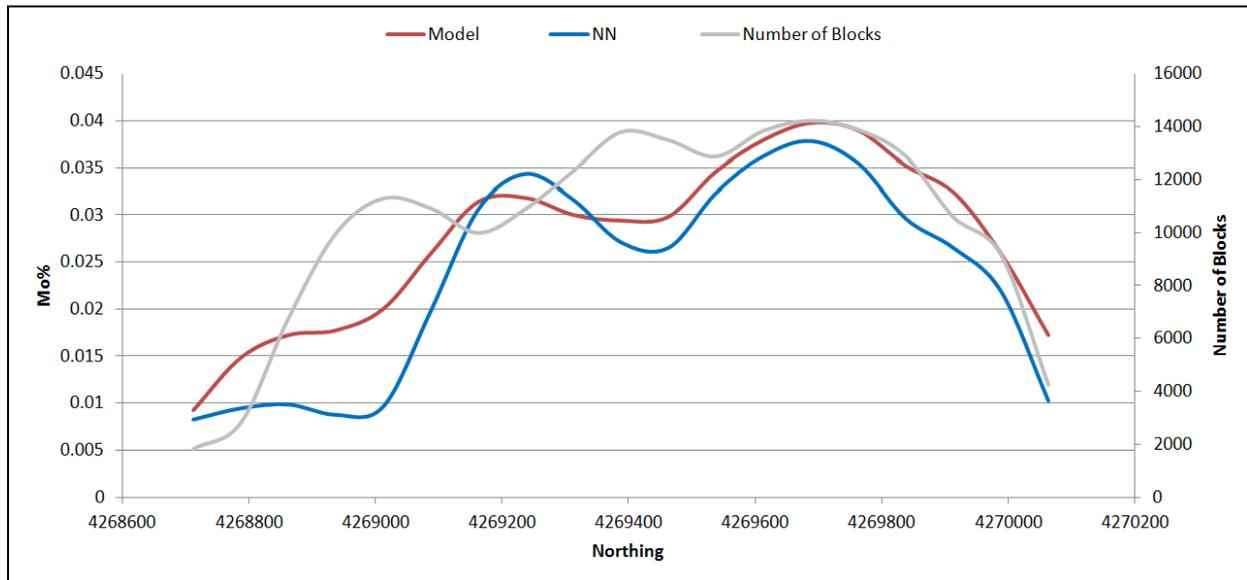
Swath plots have been generated in three orthogonal directions for all models. Examples showing the copper and molybdenum distributions in west-east swaths are shown in Figures 14-19 and 14-20, respectively.

There is good correspondence between the models in most areas. The degree of smoothing in the OK model is evident in the peaks and valleys shown in the swath plots. Areas where there are large differences between the models tend to be the result of “edge” effects, where there is less available data to support a comparison. Note that the majority of the resource occurs between 4269000N and 4269900N. The validation results indicate that the OK model is a reasonable reflection of the underlying sample data.

**FIGURE 14-19: SWATH PLOT OF COPPER OK AND NN MODELS BY NORTHING**



**FIGURE 14-20: SWATH PLOT OF MOLYBDENUM OK AND NN MODELS BY NORTHING**



### 14.15 Resource Classification

The mineral resources for the Tomichi deposit were classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves (May, 2014). The classification parameters are defined relative to the distance between copper and molybdenum sample data and are intended to encompass zones of reasonably continuous mineralization that exhibit the desired degree of confidence. These parameters are based on visual observations and



The pit shell is generated using a floating cone algorithm based on the recoverable copper equivalent block grades. There are no adjustments for mining recoveries or dilution. This test indicates that some of the deeper mineralization may not be economic due to the increased waste stripping requirements. It is important to recognize that these discussions of surface mining parameters are used solely to test the “reasonable prospects for eventual economic extraction,” and do not represent an attempt to estimate mineral reserves. There are no mineral reserves calculated for the Tomichi project. These preliminary evaluations are used to prepare a Mineral Resource Statement and to select appropriate reporting assumptions.

The estimate of Inferred Mineral Resources, contained within the \$3.00/lb CuEq pit shell, is presented in Table 14.7. Based on the metal prices and operating costs listed above and including adjustment to account for capital payback, the base case cut-off grade for mineral resources is estimated to be 0.25% copper equivalent (CuEq). The distribution of the base case mineral resource within the \$3.00/lb CuEq pit shell is shown from a series of isometric viewpoints in Figure 14-21.

There are no known factors related to environmental, permitting, legal, title, taxation, socio-economic, marketing, or political issues which could materially affect the mineral resource. Resources in the Inferred category have a lower level of confidence than that applying to Indicated resources and, although there is sufficient evidence to imply geologic grade and continuity, these characteristics cannot be verified based on the current data. It is reasonably expected that the majority of the Inferred Mineral Resource could be upgraded to Indicated Mineral Resource with continued exploration.

**TABLE 14.7: ESTIMATE OF INFERRED MINERAL RESOURCE**

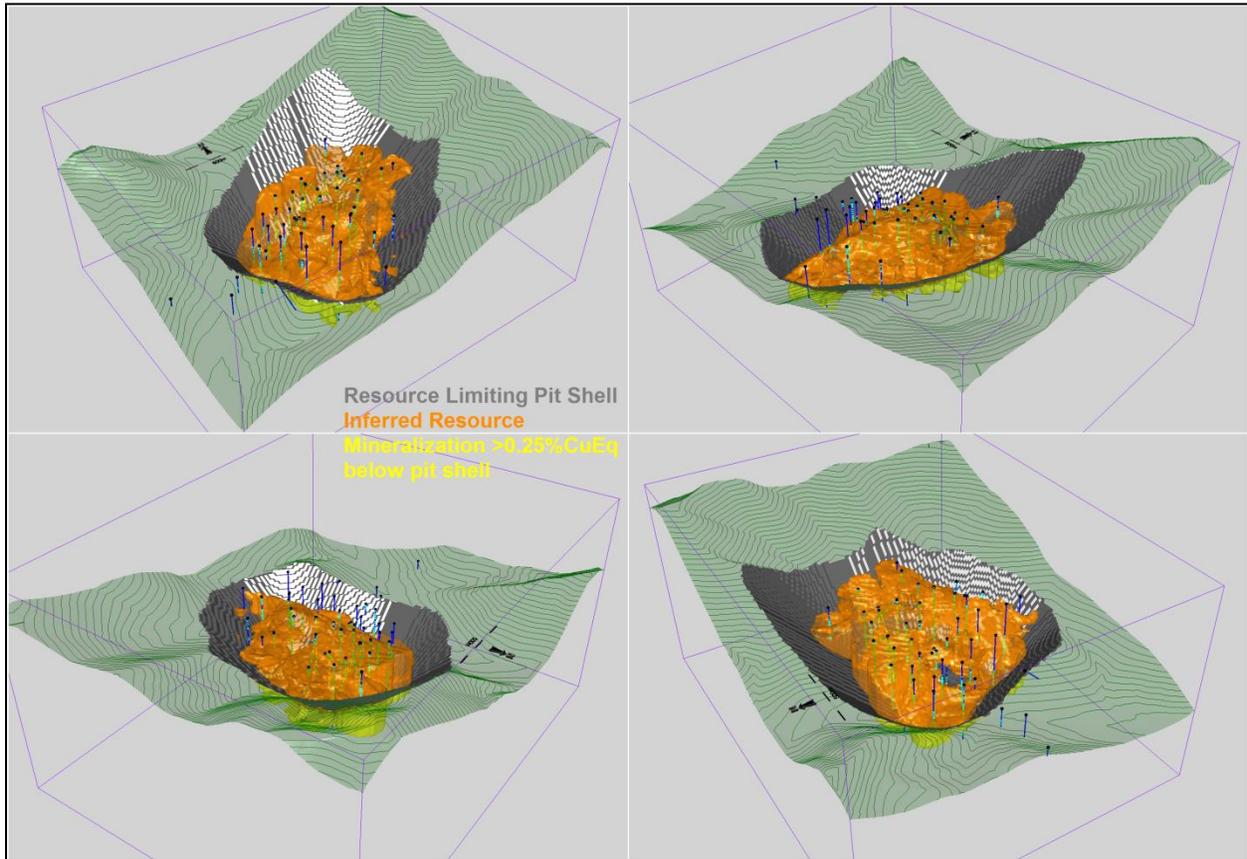
Million tonnes	Average Grade						Contained Metal				
	CuEq* (%)	Cu (%)	Mo (%)	Au (g/t)	Ag (g/t)	Re (ppm)	Cu (Blbs)	Mo (Mlbs)	Au (koz)	Ag (Moz)	Re (klbs)
711	0.33	0.21	0.035	0.017	2.0	0.216	3.31	555	393	45.6	339

Notes: Limited inside \$3.00/lb CuEq pit shell. Base case cut-off is 0.25% CuEq.

CuEq number excludes Ag, Au, and Re.

Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

**FIGURE 14-21: ISOMETRIC VIEWS OF BASE CASE INFERRED MINERAL RESOURCE**



### 14.17 Sensitivity of Mineral Resources

The sensitivity of resources contained within the \$3.00/lb CuEq pit shell is demonstrated by listing resources at a series of cut-off thresholds as shown in Table 14.8. There is little change in the resource when the cut-off grade is lowered, but, with increasing cut-off grade, there is a loss of tonnage and a corresponding increase in average grade of all metals.

**TABLE 14.8: SENSITIVITY OF INFERRED MINERAL RESOURCES TO CUT-OFF GRADE INSIDE BASE CASE PIT SHELL**

Cut-off CuEq%	Million tonnes	Average Grade						Contained Metal				
		CuEq* (%)	Cu (%)	Mo (%)	Au (g/t)	Ag (g/t)	Re (ppm)	Cu (Blbs)	Mo (Mlbs)	Au (koz)	Ag (Moz)	Re (klbs)
0.1	1,002	0.29	0.19	0.031	0.015	1.8	0.193	4.17	689	493	57.2	426
0.15	990	0.30	0.19	0.032	0.015	1.8	0.194	4.15	687	490	56.9	423
0.2	906	0.31	0.20	0.033	0.016	1.8	0.202	3.93	655	460	53.7	402
<b>0.25</b>	<b>711</b>	<b>0.33</b>	<b>0.21</b>	<b>0.035</b>	<b>0.017</b>	<b>2.0</b>	<b>0.216</b>	<b>3.31</b>	<b>555</b>	<b>393</b>	<b>45.6</b>	<b>339</b>
0.3	480	0.36	0.23	0.039	0.019	2.1	0.231	2.42	412	287	33.2	244
0.35	264	0.39	0.25	0.043	0.020	2.3	0.247	1.43	249	168	19.8	144

Notes: Limited inside \$3.00/lb CuEq pit shell. Base case cut-off is 0.25% CuEq. CuEq number excludes Ag, Au, and Re.  
Mineral resources are not mineral reserves because the economic viability has not been demonstrated

#### 14.18 Comparison with the Previous Estimate

The previous estimate of mineral resources, calculated in 2012, is compared to the new estimate in Table 14.9.

**TABLE 14.9: COMPARISON OF INFERRED MINERAL RESOURCES WITH THE PREVIOUS (2012) ESTIMATE**

Year	Million tonnes	Average Grade							Contained Metal				
		2017 CuEq (%)	2012 CuEq (%)	Cu (%)	Mo (%)	Au (g/t)	Ag (g/t)	Re (ppm)	Cu (Blbs)	Mo (Mlbs)	Au (koz)	Ag (Moz)	Re (klbs)
2017	711	0.33	0.42	0.21	0.035	0.017	2.0	0.216	3.31	555	393	45.6	339
2012	622	0.31	0.41	0.18	0.040	0.016	1.5	0.200	2.50	549	320	30.0	274

Notes: Cut-off grade for the 2012 resource was 0.20%CuEq and 0.25%CuEq for the 2017 resource.  
2012: CuEq% = Cu% + (Mo% × 5) + (Au g/t × 0.681) + (Ag g/t × 0.012).  
2017: CuEq% = Cu% + (Mo% × 3.33).

The comparison in Table 14.7 shows a 14% increase in tonnage and increases in copper, gold, silver and rhenium grades and a decrease in molybdenum grade. The changes are attributed to a combination of the inclusion of additional drilling data in the new estimate and to differences in the approach used to estimate grades in each of the models. Although the two estimates are based on different cut-off thresholds, it should be noted that the 2012 estimate is based on different metal prices and a copper-equivalent calculation that included contributions from copper, molybdenum, gold and silver, where the 2017 estimate excludes contributions from gold and silver in the CuEq calculation because these metals have lower confidence due to a lack of sample data in the older drill holes. Equivalent grades, calculated using both the 2012 and 2017 formulas, are included in the table for comparison purposes. The average equivalent copper grade is slightly higher in the new resource when compared using the same formula.

#### **14.19 Summary and Conclusions**

Based on the current level of exploration, the Tomichi deposit contains an Inferred mineral resource estimated at 711 million tonnes at a grade of 0.21% copper, 0.035% molybdenum, 0.017 g/t gold, 2.0 g/t silver and 0.22 g/t rhenium containing 3.3Blbs copper, 555Mlbs molybdenum, 393koz gold, 46Moz silver and 339klbs of rhenium. The resource exhibits reasonable prospects for eventual economic extraction using open pit mining methods.

Approximately 30-35% of the (older) drilling was not analyzed for gold, silver or rhenium content, and, as a result, the confidence in these estimates is lower than that of copper and molybdenum. However, there is sufficient data available to support estimates of Inferred mineral resources for these additional elements.

There is limited density data currently available for the Tomichi deposit. Based on this data, an average density of 2.6 t/m<sup>3</sup> is used to calculate resource tonnage. This is considered appropriate for these rock types. Additional density measurements are recommended.

The deposit remains open to further expansion at depth and to the north, east and southwest. Many of the current drill holes were terminated at depths ranging from 300 to 400 m below surface, in mineralization that is well above the base case cut-off threshold.



## **15 MINERAL RESERVE ESTIMATES**

Not applicable at present, as there are no mineral reserve estimates for the Project.



## **16 MINING METHODS**

Not applicable at present, as there is no mining methods information for the Project.



## **17 RECOVERY METHODS**

Not applicable at present, as there is no recovery methods information for the Project.



## **18 PROJECT INFRASTRUCTURE**

Not applicable at present, as there is no project infrastructure information for the Project.



## **19 MARKET STUDIES AND CONTRACTS**

Not applicable at present, as there are no market studies or contracts for the Project.



## **20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT**

Not applicable at present, as there is no environmental, permitting, social or community impact information for the Project.



## **21 CAPITAL AND OPERATING COSTS**

Not applicable at present, as there is no capital or operating cost information for the Project.



## **22 ECONOMIC ANALYSIS**

Not applicable at present, as there is no economic analysis information for the Project.

## 23 ADJACENT PROPERTIES

There are 45 historic (pre-1956) mines, prospects, or quarries identified within 4 km (2.5 miles) of the Project property and four within the Project property. No currently active mining or explorations projects are known for the Whitepine or Tomichi area. Gault Group (2013).

These historic mines, prospects, or quarries focused on mineralization that can be divided into two types: replacement deposits in Paleozoic rocks and vein deposits in pre-Cambrian and middle Tertiary rocks. The replacement deposits occur mostly in and near fault zones where rocks were chemically and structurally favorable for replacement. Replacement minerals include chalcopyrite, galena, tennantite-tetrahedrite and sphalerite in gangue. Many of the deposits are oxidized and show higher silver associated with anglesite, cerussite and malachite. Primary minerals include stephanite, native silver, enargite, and native gold. The vein deposits occur in Mount Princeton Quartz Monzonite with some veins hosted by pre-Cambrian granite. The veins are fissure filling of sulfide minerals with quartz gangue and can contain native gold and silver, tetrahedrite, chalcopyrite, galena, pyrite, and sphalerite. Gault Group (2013).

The historic mines, prospects, or quarries information presented herein is from published information and the authors of this technical report have not verified the information and the mineralization discussed is not necessary indicative of the mineralization on the Project property that is the subject of this technical report. Gault Group (2013).

## **24 OTHER RELEVANT DATA AND INFORMATION**

Environmental studies applicable to the Project area include four quarters (Q3 and Q4, 2011 and Q1 and Q2, 2012), surface water sampling and analysis performed in Robbins, Tomichi, and Copper Creeks, Lynx habitat inventory, and sound monitoring results from the 2012 Exploration Season. These three studies were performed by GGL. No social or community impact information has been developed for the Project at this time.

## **25 INTERPRETATION AND CONCLUSIONS**

### **25.1 Historic Property Data**

The Tomichi Copper-Molybdenum Project is an exploration property. Existing historic data track the exploration history of this property and give both a general and detailed insight into property geology and mineralization. The historic information is from five different exploration companies' efforts and allows for the following data summary.

Property mineral exploration and drilling was initiated in 1957 and completed in 2012 with 52 drill (core) holes being drilled for a total of 16,612 m (54,500 feet) of drilling. The average concentration range reported from the core samples analyzed was from 0.00% to 0.07% molybdenum and 0.00 to 0.45% copper. Highest copper concentrations were from 32 drill holes with reported average concentrations ranging from 0.20% to 0.45% copper. Copper values in 15 of these remained elevated when the drill holes reached total depth. The highest molybdenum concentrations were from 13 drill holes with reported average concentrations ranging from 0.05% to 0.07% molybdenum, of which nine holes were terminated in strong molybdenum. Spacing of historic drill holes and data availability on the property is adequate for the estimation of an Inferred Resource.

### **25.2 Analytical and Data Adequacy**

There is no information by which to evaluate how drilling, field, or exploration activities were conducted prior to Burnstone Ventures program in 2011-2014. There are no laboratory reports from previous operators; all mineral concentrations data are from information presented on drill logs or summary report sheets. Core from 31 drill holes were preserved and are available for examination and testing.

During the time periods associated with historic exploration presented herein it was not necessarily standard practice to include quality assurance procedures that are more commonplace today. Industry standards usually allow only personnel associated with a particular project to inspect and analyze samples. Companies would likely use established laboratories with reliable reputations. It is assumed that the laboratory results presented herein were from reputable laboratories and the results were correctly reported and transferred onto drill logs and summary reports.

Pending further details from the existing historic data and analytical results, additional evaluations, check assaying, and twinning of previous drill holes are required in order to confirm historic data analytical results. Comparisons of old and new (validated) sample data have been conducted and there is no evidence suggesting that the older sample data is invalid. The underlying database is considered to be sufficient to support estimates of mineral resources.

### 25.3 Key Interpretations

- The Tomichi granite complex is lithologically distinct from the Mount Princeton batholith (35.8-35.3 Ma); it is probably slightly younger, ~35-34.5 Ma.
- Copper-molybdenum mineralization is centred on the nested aplitic, seriate, and coarse porphyry phases (TGa, TGs, and TGcp) of the granite porphyry complex, the intrusions most closely associated with mineralization. The porphyry bodies appear to plunge steeply west (Figure 7-5), which suggests they have been tilted eastwardly, probably accompanying block faulting during opening of the Rio Grande rift, at ~30-26 Ma.
- The younger porphyritic microgranite (TPMG) is weakly veined and mineralized (mostly with molybdenum, not copper), and is late-mineral in age. It is lithologically similar to the Mount Antero Granite to the northeast, dated by  $^{40}\text{Ar}/^{39}\text{Ar}$  methods at 29.59 Ma (McIntosh and Chapin, 2004). The 30 Ma age obtained by Cyprus could have come from this rock.
- Both copper and molybdenum zones appear to be inverted teacup-shaped ore shells. The copper zone overlies and partially overlaps the molybdenum-rich core. A significant portion of the copper shell has been eroded, whereas the majority of the molybdenum zone is preserved.
- The deep hole TM-06 in the centre of the resource is anomalously low in both copper and molybdenum, due to (1) thick intervals of late-mineral TPMG; and (2) its location in the low-grade core of the deposit, mostly beneath the molybdenum shell (Figure 7-5).
- The Copper Hill fault strikes south-north, dips moderately west, and clearly displaced mineralized zones. Reconstruction of geologic and grade patterns along west-east section 9500N suggests ~850 m of post-mineral normal displacement. There is strong potential for offset mineralization in the hanging wall block in the west part of the property, beneath sericite-altered, pyritic rock. Climax' shallow holes 5 and 7 in this area both terminated in  $>0.1\%$  CuEq. There has been no deeper drilling in this area.
- A previously unrecognized stage of early-halo (EH) veining developed in the earlier porphyries and wall rocks. It is preferentially mineralized with chalcopyrite, and contains almost no molybdenite. Preliminary mapping outlines an undrilled area with  $>10\%$  early-halo veins at least 400 m by 150 m in extent, west of the Copper Hill fault. These appear pyritic at the surface, but are likely to grade downwards into chalcopyrite. Mapped intensity of EH veins suggests potential for  $>0.5\%$  copper at depth.
- The Tomichi resource lies within a 12 by 11 km porphyry style mineral cluster that includes carbonate replacement silver-lead-zinc±copper-gold ores in the Whitepine area to the south and the Monarch district to the east.

## 25.4 Conclusions

The Tomichi Copper-Molybdenum Project property area has more than 125 years of mining history. Based on Tomichi mining district history and Project property historic data, the following is concluded about the property:

- The Tomichi sulfide system has an areal extent of approximately five square km.
- The property displays zoned potassic, sericitic, and propylitic alteration similar to that in other porphyry systems
- Mineralization has been partially delineated over an area of approximately 1.2 km by 1.2 km and extending to a depth of at least 600 m. It is open to the east, north, southeast, and at depth.
- Based on the current level of exploration, the Tomichi deposit contains an Inferred mineral resource estimated at 711 million tonnes at a grade of 0.21% copper, 0.035% molybdenum, 0.017 g/t gold, 2.0 g/t silver and 0.22 g/t rhenium containing 3.3Blbs copper, 555Mlbs molybdenum, 393koz gold, 46Moz silver and 339klbs of rhenium. The resource exhibits reasonable prospects for eventual economic extraction using open pit mining methods.
- Tomichi is interpreted as a molybdenum-rich porphyry copper deposit that has the important characteristics of porphyry systems worldwide, including multiple intrusions, zoned hydrothermal alteration, and multiple stages of veining and sulphide mineralization.
- The Tomichi system shows close affinities with the quartz monzonitic-granitic porphyry molybdenum-copper class of deposits (Seedorff et al., 2005), which includes Liberty (Hall-Tonopah) and Buckingham, Nevada; Mount Tolman, Washington; Brenda, B.C.; and El Creston, Sonora.
- Comparisons of old and new (validated) sample data have been conducted and there is no evidence suggesting that the older sample data is invalid. The underlying database is considered to be sound in the support of estimates of mineral resources.
- The estimate of mineral resources is restricted within a pit shell generated using projected technical and economic parameters which are considered appropriate at this time. It is recommended that additional studies be conducted to further verify the parameters used to test the resource for reasonable prospects for eventual economic extraction.
- There is a risk that through additional drill testing of the deposit the resource model and the resource modeling parameters utilized in this study may need to be modified to include such new information.

## 26 RECOMMENDATIONS

### 26.1 Recommended Work Programs

The recommended work programs are divided into two phases. Phase I involves permitting and desktop study, along with focused mapping and re-logging of historic drill core. Phase II involves a program of in-fill and step-out exploration drilling, contingent on the results of Phase I.

#### Phase I (see Table 26.1):

1. Obtain and evaluate QA/QC results from Burnstone's re-assaying and 2012 drilling campaigns (see section 6.7). Compare results from upper parts of Burnstone angled holes TM-27 and -30 with those from Molycorp vertical holes drilled at the same sites (TM-09 and TM-10, respectively).
2. Develop on-going baseline environmental monitoring plans to be implemented before any field activities begin.
3. Complete a LiDAR survey of the property and immediate vicinity to acquire sub-meter scale topography.
4. Reprocess the 1974-76 Cities Service aeromagnetic maps to produce modern images and derivative products (e.g., reduced to pole and vertical derivative maps). This can normally be done from contour maps for a fraction of the cost of flying a new survey, by digitizing data along the flight lines.
5. Recover the Cyprus rock and soil geochemical maps referred to in Table 6.3 (item 10). These ~200 samples represent the only known geochemical survey on the property. The maps do not appear in Burnstone's archive of scanned documents and maps. Evaluate these data to assess whether they should be supplemented with a modern multi-element ICP soil and rock sample survey. A key element is tungsten, which Halley et al. (2015) showed to be an important proximal pathfinder element above porphyry copper deposits.
6. Complete 1:2,500 outcrop mapping of and immediately surrounding the resource area. Emphasis should be on refining distribution of the Paleogene intrusive phases and vein styles, especially EH veins. These were not recognized until September 2014, and their distribution should provide a guide to better grade copper.
7. Undertake targeted re-logging of 15-20 holes on west-east sections 4269200N and 4269800N, and south-north section 380900E. Exact holes to be logged will be prioritized into two stages. Re-logging is warranted to define the distribution of EH veins both spatially and against the sequence of intrusive phases. Ultraviolet-light logging should be used to identify possible scheelite in tungsten-anomalous zones.
8. Constrain the magnitude of post-mineral displacement on the Copper Hill fault through interpretation and reconstruction of geologic and grade patterns on re-logged sections 9200N and 9800N. Define target areas and likely depth ranges for fault-offset mineralized zones in hanging wall rocks.

9. Perform density measurements on 10 m intervals using all available drill core.

**Phase II (see Table 26.2):**

1. Submit a new Plan of Operations to the U.S. Forest Service for drill pad construction and exploration drilling, as prioritized by results of Phase I work. The application must allow for either vertical or angles core holes, with targeted depths up to 600 m. Re-apply for the previously proposed sites P2, P4, P6, P8, and P9 (all along existing roads) that were not drilled in 2012. These sites are in-fill holes intended to improve confidence in the resource. In addition, permit two step-out exploration holes on existing roads that require improvement for safe passage of a drilling rig and ancillary equipment:
  - P11: 380440E, 4268990N; west of TM-02 and south-southwest of TM-23. This will test the fault-offset target in the area of strongest mapped EH veins. Access will be by existing road from TM-23.
  - P12: 380256E, 4269166N; site of Climax hole 6. This is intended to drill the fault-offset target. A deeper hole angled to the northeast is recommended. Access is from the north by way of hole TM-26. This road is very narrow where it crosses the talus slope north of the proposed site, and will require considerable improvement.
2. Drill six core holes as prioritized by results of Phase I work. At least one of these should be at one of the proposed step-out holes P11 and P12.
3. Results from this drilling exploration should be tabulated and analyzed. If zones of significant mineralization are encountered and analytical results are confirmed then project goals for Phase II have been completed.
4. Initiate preliminary metallurgical analyses of coarse reject samples of mineralized material.
5. If Phase II results are positive, update the current resource calculation. Complete an updated NI 43-101 compliant Technical Report.

## 26.2 Costs

The cost estimates for Phase I and Phase II are shown in Table 26.1 and Table 26.2, respectively.

**TABLE 26.1: ESTIMATED COSTS (USD) FOR IMPLEMENTING PROPOSED PROJECT PHASE I**

<b>Phase I. Analyze, update, and augment historic information and secure outlying property position</b>	
Property Acquisition, Including Core Shed	\$90,000
Move, Organize, Core storage	\$26,000
Re-log Core,	\$110,000
Continue Geologic Mapping and LiDAR Acquisition	\$55,000
Reprocess 1970s Magnetic Survey	\$5,000
Baseline Environmental Data Gathering (Quarterly Water Sampling, Lynx Habitat Monitoring)	\$75,000
Technical personnel, senior and project	\$118,000
Analytical and thin section preparation, 200 samples	\$6,000
Preliminary Metallurgical Analysis	\$6,000
Supporting material, supplies, rentals, etc.	\$28,000
GIS Compilation, Analyze results	\$35,000
Support and analytical contingency (10%)	\$60,000
<b>Phase 1 Total Estimate</b>	<b>\$614,000</b>

**TABLE 26.2: ESTIMATED COSTS (USD) FOR IMPLEMENTING PROPOSED PROJECT PHASE II**

<b>Phase II. Exploration drilling, six core holes totaling 5,000 m (16,400 ft) of drilling, analyze results</b>	
Permitting (Federal, State, and County)	\$175,000
Drilling, mob-demob, drilling personnel	\$650,000
Equipment, supplies, materials	\$60,000
Drilling contingency (10%)	\$65,000
Technical personnel, senior and project	\$195,000
Analytical 2,500 samples	\$90,000
Supporting material, supplies, rentals, etc	\$56,500
Analyze drilling and sample results	\$75,000
Technical and support contingency (10%)	\$42,000
<b>Phase II Total Estimate</b>	<b>\$1,408,500</b>

## 27 REFERENCES

- Christiansen, E.H., Sheridan, M.F., and Burt, D.M., 1986, The geology and geochemistry of Cenozoic topaz rhyolites from the western United States: Geological Society of America Special Paper 205, 82 p.
- Chronic, J. and Chronic, H., 1972, Prairie peak and plateau, a guide to the geology of Colorado: Colorado Geological Survey Bulletin 32, 126 p.
- Dings, M.G. and Robinson, C.S., 1957, Geology and ore deposits of the Garfield quadrangle, Colorado: U. S. Geological Survey Professional Paper 289, 110 p.
- Epis, R. C., and Chapin, C. E., 1975, Geomorphic and tectonic implications of the post-Laramide, late Eocene erosion surface in the southern Rocky Mountains; in Curtis, B. F. (ed.), Cenozoic history of the southern Rocky Mountains: Geological Society of America, Memoir 144, pp. 45–74.
- Gault Group, LLC. 2011, NI 43-101 Technical Report on Historic Exploration Tomichi Copper-Molybdenum Project Gunnison County, Colorado. Prepared for Burnstone Venture, Incorporated Dated October 7, 2011
- Gault Group, LLC, 2013, NI 43-101 Technical Report on Historic Exploration Tomichi Copper-Molybdenum Project Gunnison County, Colorado. Prepared for Burnstone Ventures, Incorporated. Dated July 9, 2013
- Gibbard, P., Head, M.J., Walker, M.J.C., The Subcommittee on Quaternary Stratigraphy, 2009. Formal ratification of the Quaternary System/Period and the Pleistocene Series/Epoch with a base at 2.58 Ma: Journal of Quaternary Science, v. 25, p. 96–102.
- Gustafson, L.B., and Hunt, J.P., 1975, The porphyry copper deposit at El Salvador, Chile: Economic Geology, v. 70, p. 857-912.
- Holt, Inc., ND (late 1968 or early 1969), Tomichi project, Gunnison County, Colorado: Cyprus Mines' internal report, 39 p.
- Jacobson, H.S., 1984, The Tomichi prospect, Colorado: a link between porphyry copper and porphyry molybdenum systems: Presentation to Denver Region Exploration Geologists' Society, speaker's notes, 12 p.
- Journel and Huijbregts, Mining Geostatistics, 1978
- McIntosh, W.C. and Chapin, C.E., 2004, Geochronology of the central Colorado volcanic field: New Mexico Bureau of Geology and Mineral Resources Bulletin 160, p. 205-237.
- Mills, R.D., and Coleman, D.S., Temporal and chemical connections between plutons and ignimbrites from the Mount Princeton magmatic center: Contributions to Mineralogy and Petrology, v. 165, p. 961-980.
- Proffett, J.M., 2009, High Cu grades in porphyry Cu deposits and their relationship to emplacement depths of magmatic sources: Geology, v. 37, p. 675-678.

- Riedell, K.B., 2011, Geologic review of the Tomichi Mo-Cu project: Burnstone Ventures internal report, 5 September 2011, 8 p.
- , 2014a, Tomichi: petrographic results from early halo veins: Burnstone Ventures internal report, 19 November 2014, 8 p..
- , 2014b, Meeting with Jim Shannon, Dec 9th: Burnstone Ventures internal memorandum, 11 December 2014, 1 p.
- Seedorff, E., Barton, M.D., and Zurcher, L., 2010, Porphyry deposits of southwestern North America; space-time relationships at the regional scale and comparison with young arcs and magmatic centers: unpublished presentation, Society of Economic Geologists conference, Keystone, Colorado, 2-5 October 2010.
- Seedorff, E., Dilles, J.H., Proffett, J.M., Jr., Einaudi, M.T., Zurcher, L., Stavast, W.J.A., Johnson, D.A., and Barton, M.D., 2005, Porphyry deposits; characteristics and origin of hypogene features: Economic Geology 100th Anniversary Volume, p. 251-298.
- Streufert, R.K., 1999, Geology and mineral resources of Gunnison County, Colorado: Colorado Geological Survey Resource Series 37, 76 p.
- Sutolov, A., 1979, Copper porphyries: University of Utah Printing Services, Salt Lake City, 200 p.
- Toulmin, P., III, and Hammarstrom, J.M., 1990, Geology of the Mount Aetna volcanic center, Chaffee and Gunnison Counties, Colorado: U.S. Geological Survey Bulletin 1864, 44 p.
- Tweto, O., 1977, Nomenclature of Precambrian rocks in Colorado: U.S. Geological Survey Bulletin 1422-D, p. D1-D22.
- , 1979, Colorado geologic highway map and shaded elevation map: GTR Mapping and Colorado Geological Survey, 2006 edition.
- Wakelin, S., 2011, 2011 Tomichi project sampling and QAQC plan: Burnstone Ventures internal memorandum, 15 August 2011, 3 p.
- Walker, J.D., Geissman, J.W., Bowring, S.A., and Babcock, L.E., 2013, The Geological Society of America geologic time scale: Geological Society of America Bulletin, v. 125, p. 259-272.

## 28 DATE AND SIGNATURE PAGES

Paul D. Gray, BSc. (Honours), P.Geo QP Certificate.

To Accompany the Report titled “NI 43-101 Technical Report on the Tomichi Copper-Molybdenum Project, Gunnison County, Colorado” dated March 1<sup>st</sup>, 2017 (the “Technical Report”)

I, Paul D. Gray, P. Geo., of 910 - 1050 Pender Street, Vancouver, British Columbia, V6E 3S7 do hereby certify that:

1. I am a Consulting Geologist with Paul D. Gray Geological Consulting, of 910-1050 Pender Street, Vancouver, British Columbia, V6E 3S7.
2. I graduated with a Bachelor of Science degree in Earth Science from the Dalhousie University in 1997 and with an Honours Bachelor of Science degree in Earth Science from Dalhousie University in 2004.
3. I am a member of the Association of Engineers and Geoscientists of British Columbia, Registered in the Province of British Columbia (APEGBC No. 29833).
4. I have practiced my profession as a geologist for 21 years, working in British Columbia, the Yukon and Northwest Territories, the United States of America, Central America, South America, and Asia. In particular, I have worked as an exploration geologist with a focus on base metals and precious metals exploration in the Western US. Specifically, I have worked on Copper Porphyry mineralized systems in North America with direct experience with the design, implementation, management and control of Porphyry related exploration programs on such Porphyry Projects.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. Under contract to Gault Group, LLC, I co-authored the technical report titled “Updated Technical Report for the Tomichi Copper-Molybdenum Property, Gunnison County, Colorado, U.S.A.” dated March 1st, 2017 - the “Technical Report” and am responsible for all sections of this report with the exception of Section 14.
7. I conducted a Property Inspection of the Tomichi Property on February 26, 2017.
8. I have had no prior involvement with the Property that is the subject of this report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Report, the omission of which would make the Report misleading.
10. I am Independent of Libero Mining Corporation and the vendors of the Tomichi Property.
11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form. As of the



date of this Certificate, to the best of my knowledge, information and belief, the Technical Report contains all of the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by the Owners, including electronic publication on their websites accessible by the public.

Dated this 10th day of July, 2017.

“signed and sealed”

---

Paul D. Gray, P.Geol.

**CERTIFICATE OF QUALIFIED PERSON**  
**Robert Sim, P.Geol, SIM Geological Inc.**

I, Robert Sim, P.Geol, do hereby certify that:

1. I am an independent consultant of SIM Geological Inc., and have an address at 508 – 1950 Robson Street, Vancouver, British Columbia, Canada V6E 1E8.
2. I graduated from Lakehead University with an Honours Bachelor of Science (Geology) in 1984.
3. I am a member, in good standing, of the Association of Professional Engineers and Geoscientists of British Columbia, License Number 24076.
4. I have practiced my profession continuously for 33 years and have been involved in mineral exploration, mine site geology and operations, mineral resource and reserve estimations and feasibility studies on numerous underground and open pit base metal and gold deposits in Canada, the United States, Central and South America, Europe, Asia, Africa and Australia.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I am responsible for the preparation of Section 14 and portions of Sections 1, 12, 25 and 26 of the technical report titled “NI 43-101 Updated Technical Report for the Tomichi Copper-Molybdenum Project, Gunnison County, Colorado” dated July 10, 2017, with an effective date of March 1, 2017 (the “Technical Report”).
7. I have not visited the Tomichi property.
8. I am independent of Libero Mining Corporation and the vendors of the Tomichi property, applying all of the tests in Section 1.5 of NI 43-101.
9. I have had no prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101, Form 43-101F1 and the Technical Report, and confirm the portions of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.
11. As of 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.

Dated this 10th day of July, 2017.

“signed and sealed”

---

Robert Sim, P.Geol