

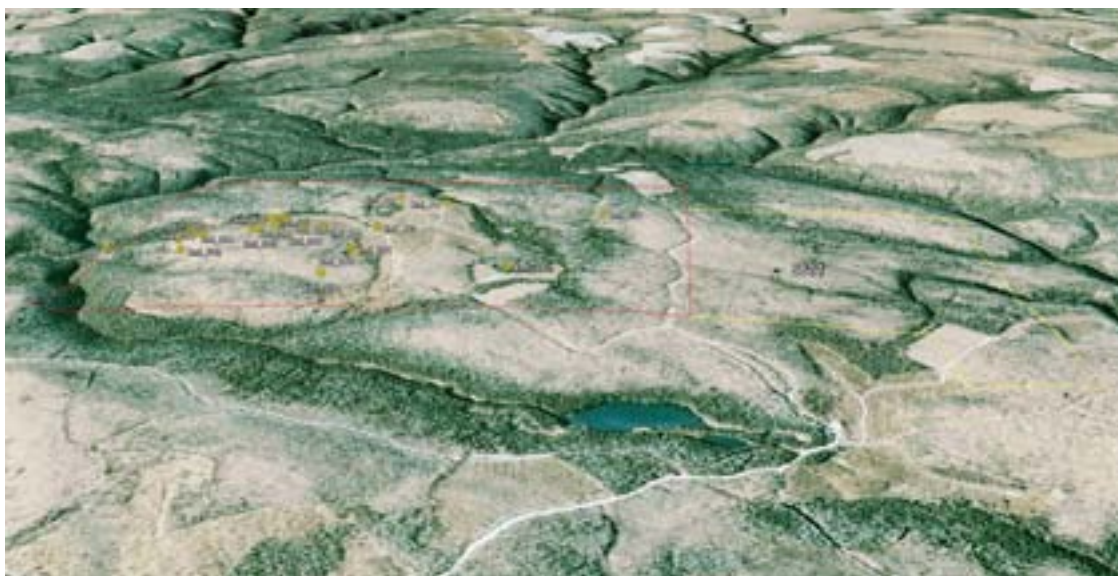
**CHRISTIAN DEROSIER GÉOLOGUE-CONSEIL INC.**

# **MURRAY BROOK MINERALS INC.**

1770 Grand Rang St- Pierre  
Sainte- Élisabeth d'Au-tray  
Quebec, Canada  
J0K2J0

## **TECHNICAL REPORT ON THE BURNTLAND COPPER-SILVER PROJECT**

RESTIGOUCHE COUNTY  
PROVINCE OF NEW BRUNSWICK  
NTS : 21 O/10  
**CANADA**



**Prepared by: Christian Derosier, P. Geo., M.Sc., D.Sc.**

**January 31, 2013**

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## TABLE OF CONTENTS

	<b>SUMMARY</b>	
<b>1.0</b>	<b>INTRODUCTION</b>	<b>2</b>
<b>2.0</b>	<b>RELIANCE ON OTHER EXPERTS</b>	<b>6</b>
<b>3.0</b>	<b>PROPERTY DESCRIPTION AND LOCATION</b>	<b>7</b>
<b>4.0</b>	<b>ACCESSIBILITY, TOPOGRAPHY, INFRASTRUCTURE, CLIMATE AND VEGETATION</b>	<b>11</b>
<b>5.0</b>	<b>HISTORY</b>	<b>18</b>
<b>6.0</b>	<b>GEOLOGICAL SETTING</b>	<b>35</b>
<b>7.0</b>	<b>DEPOSIT TYPES</b>	<b>44</b>
<b>8.0</b>	<b>MINERALIZATION</b>	<b>48</b>
<b>9.0</b>	<b>EXPLORATION</b>	<b>50</b>
<b>10.0</b>	<b>DRILLING</b>	<b>51</b>
<b>11.0</b>	<b>SAMPLING METHOD AND APPROACH</b>	<b>52</b>
<b>12.0</b>	<b>SAMPLE PREPARATION, ANALYSES AND SECURITY</b>	<b>53</b>
<b>13.0</b>	<b>DATA VERIFICATION</b>	<b>54</b>
<b>14.0</b>	<b>ADJACENT PROPERTIES</b>	<b>55</b>
<b>15.0</b>	<b>MINERAL PROCESSING AND METALLURGICAL TESTING</b>	<b>56</b>
<b>16.0</b>	<b>MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES</b>	<b>57</b>
<b>17.0</b>	<b>OTHER RELEVANT DATA AND INFORMATION</b>	<b>58</b>
<b>18.0</b>	<b>INTERPRETATION AND CONCLUSIONS</b>	<b>59</b>
<b>19.0</b>	<b>RECOMMENDATIONS</b>	<b>63</b>
<b>20.0</b>	<b>BIBLIOGRAPHY</b>	<b>65</b>
<b>21.0</b>	<b>DATE AND SIGNATURE PAGE</b>	<b>69</b>
<b>22.0</b>	<b>ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES</b>	<b>70</b>
<b>23.0</b>	<b>CERTIFICATE OF QUALIFICATION</b>	<b>71</b>
<b>24.0</b>	<b>CONSENT OF AUTHOR</b>	<b>73</b>

## LIST OF FIGURES

Figure No 1:	Presentation	1
Figure No 2:	Satellite view of the Legacy- Burntland area	4
Figure No 3:	Location and Hydrography	5
Figure No 4:	Part of the 21 O/10 Claims Map with the Burntland Blocks	8
Figure No 5:	Claims Map	10
Figure No 6:	Northwestern New Brunswick- Road Network	12
Figure No 7:	Physiography of Northern New- Brunswick	13
Figure No 8:	Topography of the area	15
Figure No 9	Satellite Picture of Burntland Lake area	17
Figure No 10:	Location of the Different Mineralized Zones	19
Figure No 11:	Compilation of Diamond Drill Holes	24
Figure No 12:	Part of the 1998 Aeromagnetic Survey	30
Figure No 13:	Compilation Map of the Burntland Lake Area	31

**ITEM 2.0****TABLE OF CONTENTS (cont.)****LIST OF FIGURES**

Figure No 14:	2012 Induced Polarization and Resistivity Surveys	33
Figure No 15:	Pseudo- Section and Inversion, L 5600N	34
Figure No 16:	Tectonic Map of New Brunswick	36
Figure No 17:	Part of Regional Geological Map	38
Figure No 17A:	Legend of the Regional Geological Map	39
Figure No 18:	Geological Map of the Burntland Lake area	41
Figure No 19:	Metallogenic Map of Northern New Brunswick	45
Figure No 20:	Model of Mineral Deposits associated to Intrusive Rocks	46

**LIST OF TABLES**

Table No 1:	Block 6244: List of Claims	7
Table No 2:	Block 6611: List of Claims	9
Table No 3:	Comparison of the Geological Settings of the Three Skarn Deposits in New Brunswick	47

## SUMMARY

On December 5, 2012, **MURRAY BROOK MINERALS INC.** acquired a 100% interest in 34 claims forming 2 Blocks covering a total area of 738.38 hectares, known as the Burntland Copper- Silver Project. This Project is located in the Restigouche County, Province of New Brunswick, Canada.

Bathurst and Edmundston are the two biggest cities of Northern New Brunswick. Bathurst, located on the south shore of the Chaleurs Bay is the administrative centre of the Bathurst Mining Camp.

The Burntland Copper- Silver Project is easily accessed from Bathurst or Edmundston and Saint- Quentin by paved highways and then by timber roads. It is located in a moderate relief cut by deep valleys which reflect erosion since Carboniferous time.

The mining property has been acquired from three prospectors of Bathurst for an initial cash payment of \$ 36,340.00 of the Company. They will receive a 1.5% Net Smelter Return from all metals extracted and sold of which, MBM may elect to buy back at its discretion, 0.5% of the NSR for an amount of \$ 500,000.00.

Copper mineralization in the area, was discovered in 1968 by a prospector named Raoul Legacy. This prospector discovered copper- bearing floats in the valley of the McKenzie Gulch. The two claims staked were optioned to Copperfields Mining Corporation Limited, a subsidiary of the Keevil Mining Group, which begun in August 1970, an exploration drilling program to follow up geophysical indications. This program resulted in the intersection of copper values in the first hole, which returned a 5.18 m section at a depth of 15.24 m, averaging 1.2% Cu, and a 1.43 m section at a depth of 30.48 m averaging 3.44% Cu. The subsequent drill holes delineated an historical mineral resources of 400,000 tonnes averaging 1.6% Cu (Legacy Copper Deposit).

From 1968 to 1978, the Keevil Mining Group worked on the whole area surrounding Legacy. The claims group has been covered by ground and airborne geophysical surveys including magnetometer, VLF, S.P., Resistivity, Induced Polarisation surveys, by geochemical surveys (soil, quaternary sediments, stream sediments), and mapping surveys. All those surveys were followed by trenching and drilling programs.

Those work resulted in the discovery of three copper occurrences associated to skarnified rocks: Burntland Lake at 4 km to the Southwest, the Endrocky and the Rockmack to the North.

On the Burntland Lake group of claims, four copper occurrences were found by trenching and drilling. Eighteen holes were drilled for a total length of 2,058.31 m. Those holes investigated RADEM and I.P. anomalies or were designed to test the possible down dip and lateral extensions of mineralization found in the trenches.

In 1989, Noranda Exploration Co Ltd. staked 58 claims covering the Burntland lake area, south of the Legacy copper deposit. The Burntland Lake area was staked due to the proximity of gold anomalies and indicator element anomalies to significant base metal occurrences and because gold had been intersected in drilling along strike (6.13 g/T Au over 0.52 m) at the Legacy Copper-Silver deposit.

In 1991, the McKenzie Gulch property comprised 357 claims which were staked under several licenses dates during 1991 and regrouped into one large block.

## SUMMARY (cont.)

The 1991 work program consisted of an airborne EM, magnetometer, VLF survey (277 km), flown by Aerodat at a 200 m interval; line cutting, soil sampling, prospecting, dipole-dipole and gradient I.P. surveys (total: 102 km), ground magnetometer (107.7 km) and VLF-EM surveys. A total of 140.2 km of grid lines were cut and 4,334 soil samples were collected at 25 m intervals along lines spaced 200 m apart. Very high level of Cu and Ag values trending at 45° were obtained. Those anomalies form kilometres- long continuous linear trends which are thought to parallel the glacial transport direction. Weak Au and As anomalies occur throughout the grid. All those surveys were followed by a trenching and drilling program.

A total of 3,758 m of trenching and backfilling was made. Trenches were mainly targeted on Cu soil anomalies with coincident IP anomalies. **A 0.6 m wide zone containing 4.82% Cu was encountered in the second trench.** The 1991 drill holes were targeted on bedrock Cu occurrences from the trenching program as well as Cu anomalies with chargeability coincidence. Twenty two (22) holes were bored for a total length of 3 454 m. Low grade chalcopyrite and magnetite bearing garnet- diopside skarn units were encountered. **The best interval was 5.44 m grading 1.56% Cu.** Garnet- diopside skarn thicknesses exceed 40 m in two intersections in MC-92-18.

In 2011, the Burntland group of claims was acquired by staking by three business men and prospectors from Bathurst. During Summer 2012, a 4.0 km line cutting grid was established in preparation for an I.P. / resistivity survey. The exploration work was focused on the central portion of the Burntland claims block. A pole-dipole deep I.P. / Resistivity survey was conducted along one kilometre cut lines that were surveyed to test the continuation of the Burntland zone to the NE and at depth. The survey indicates continued chargeability north of an area where Brunswick Mining and Smelting's hole MC-96-1 had intersected 0.39% Cu and 52 g/T Ag over 11.0 metres. In the same area, about 150 m NW, hole MC-92-13 had intersected 10.20 m grading 0.43% Cu. The survey also indicated that the area west of the four lines warrants further work.

The Burntland Copper- Silver Project, like the Legacy Copper-Silver deposit, is underlain by sedimentary rocks of the Silurian Matapedia Group which comprises the White Head Formation. This formation comprises dark grey variably calcareous argillite and siltstone, white limestone and a characteristic "ribbon rock" composed of well laminated limestone and limey argillite interbedded in 1-5 cm thick units.

The metamorphosed equivalent of these units consist of fine grained white marble, dark purple-grey hornfels, light green calcareous hornfels (porcellanite), and garnet-pyroxene skarn.

Felsic dykes and sills range in thickness from a few centimetres to greater than 100 m. Chill margins are generally missing. Sericitization and saussuritization commonly accompany fine- grained disseminated pyrite with traces of chalcopyrite in the felsic dykes. Other dykes may be cut by fault zones that may contain chalcopyrite mineralization. Thin calcite veins containing medium to coarse grained galena, sphalerite, pyrite and rarely molybdenite occur in some felsic dykes.

There is no known relationship between alteration in the dykes and the presence of mineralization in the surrounding sedimentary rocks. Some of the best zones of mineralization are cut by unaltered dykes and conversely barren garnet-pyroxene skarn lies in contact with highly altered chalcopyrite bearing dykes.

## SUMMARY (cont.)

The thickness of metamorphosed rocks adjacent to the dykes bears no relationship to the thickness of the dykes. One of the thickest skarn band intersected in diamond drill holes occurs in an area where only a few narrow dykes are present.

The contacts between contact metamorphosed and the relatively unmetamorphosed sedimentary rocks can be extremely abrupt. Garnet-pyroxene skarn were seen in contact with soft calcareous siltstone-argillite with no apparent faulting at the contact. The change from hornfels to weakly calcareous argillite takes place gradually over few tens of metres with the rock becoming less indurated across the transitional contact. Another common type contact is characterized by variably intense bleaching along fractures and zones of permeability, which demarcate the outer fringe of hydrothermal activity.

The narrow metamorphic aureoles indicate that this type of metamorphism is not a regional phenomenon. The high temperature mineralogy of the metasedimentary rocks is therefore probably the result of heat transfer by hydrothermal fluids migrating along both macro and micro-scale conduits rather than conductive heat transferred from the dykes.

Chalcopyrite- pyrrhotite mineralization is hosted primarily by silicified limestone and, to a lesser extent, in skarn as bed and irregular bodies within the silicified limestone. Most of the mineralization occurs along fractures in the silicified limestone with only a small component in disseminated form.

Garnet and pyroxene skarn is found within the outlined area of mineralization, usually adjacent to felsic dykes, but is generally only weakly mineralized. This is uncharacteristic when compared to other chalcopyrite mineralized zones found in the area, which generally exhibit a spatial association with magnetite or magnetic sulphide. Despite the pyrrhotite associated to the chalcopyrite, there is only a weak airborne magnetic feature over the Burntland and Legacy copper occurrences, which is arguably due to the mineralization itself since it extends hundreds of metres along strike. It has a limited strike extent of about 200 m but is known to extend to a depth of 400 m, below which it is untested.

Distribution of the mineralization is difficult to predict. Generally, in order to evaluate the full potential, the whole unit must be taken in consideration. The guides to exploration of copper skarn- type deposits are as follows:

- a) Thick limestones beds, coarse grained impure limestones;
- b) Close proximity to magmatic- hydrothermal centre such as porphyry copper deposits (Gaspé Mine);
- c) Large, well mineralized copper skarn deposits are rarely more than few hundred metres from their associated intrusions;
- d) Presence of channel ways for ore-forming fluids; fractures, faults, stockworks, breccias, and permeable stratigraphic horizons; skarn related to porphyry copper deposits tend to have greater vein and fracture fillings or densities than non-porphyry related skarns;
- e) Metal zoning. In some deposits, copper, gold and silver are concentrated near the skarn - marble contact whereas lead-zinc and silver tend to occur farther out in marble or other rocks. In porphyry copper districts, copper skarns with molybdenum tend to occur deep in the porphyry copper system whereas copper skarns with zinc occur farther away.

## **SUMMARY (cont.)**

More extensive work could add mineral resources along the SSW-NNE corridor delimited by the McKenzie Gulch Fault and the Rocky Gulch Fault, that could have an impact on the future project economics. Like at Gaspé Mine, open pit mining down to 200-300 m could be envisaged. The larger aeromagnetic anomaly lying in the south part of the Burntland claims block may correspond to the hinge of an anticline, permitting the accumulation of mineralized skarns and consequently of copper-silver mineralization.


Considering the above comments, the Burntland Copper-Silver Project merits additional work to bring the project to the mineral resources estimation level. A complete two-phase, success contingent exploration program, is strongly recommended. This program will include a digitalization of all the previous geophysical, geochemical and mapping surveys as well as the trenching and diamond drilling programs.

Phase I will comprise a full cover of the property by surface mapping and geophysical surveys followed by a deep searching geophysical survey such as the Quantech TITAN 24 survey able to test the ground from surface down to 700 m. The geophysical anomalies will be tested by trenching. The estimated budget for this Phase I is \$ 340 000.00.

Phase II will consist of a drilling program planned for the verification of the previous drilling, of the geophysical anomalies discovered following Phase I and a systematic drilling for the delineation of mineral resources. The budget for the execution of Phase II was estimated to \$ 660 000.00.

Total budget of the two-phase exploration program is \$ 1 000 000.00.



Client: <b>MURRAY BROOK MINERALS INC.</b>		Fait/ Made: C. Derosier P.Geo		Date: January 2013	
Projet/ Project <b>BURNTLAND COPPER -SILVER PROJECT</b>		Approb:		Échelle/ Scale: As Shown	
	<b>PRESENTATION</b>	Cont: 2013-256		Subdivision:	
				Figure No 1	



## 1.0 INTRODUCTION

On January 16, 2013, **MURRAY BROOK MINERALS INC.**, from Ste Elisabeth d’Autray, Quebec, mandated **C.D.G.C. Inc.** to review all the previous work executed on its newly acquired Burntland property located in Restigouche County, Province of New Brunswick, Canada (Figure no 1).

### 1.1 Scope of Work

The scope of services commissioned by **MURRAY BROOK MINERALS INC.** (“**M.B.M.I.**”) included the following terms:

- \* Examination of all previous work executed on the property,
- \* Examination of all document published on the Burntland area,
- \* Locate on map the previous exploration work,
- \* Compilation and plan drafting of all the geological information
- \* Prepare a technical report complying with the National Instrument (NI 43101).
- \* Propose an exploration program that will permit to better delineate and qualify mineral resources.

**C.D.G.C. Inc.** reviewed some company reports provided by **Murray Brook Minerals Inc.** as listed in Chapter 21 and consulted the files of Noranda Exploration Ltd. and **Golden Bay Resources Inc.** from Bathurst, New Brunswick.

**C.D.G.C. Inc.** started to work on the Burntland project on January 17, 2013 and visited the property on July 27, 1996. The field due diligence will take place as soon as the snow is melted.

### 1.2 Terms and Definitions

“**M.B.M.I.**” refers to **Murray Brook Minerals Inc.**, from Ste Elisabeth d’Autray, Quebec, Canada.

“**G.B.R.**” refers to **Golden Bay Resources Inc.** of Bathurst, New Brunswick, Canada.

### 1.3 Units and numerical system

Units in the **C.D.G.C. Inc.** report are in metric units unless as otherwise specified. Precious metal content is reported in grams of metal per metric tonne (g/T Au or Ag) except as otherwise stated. Tonnage figures are dry, metric tonnes unless otherwise stated. Reference to base metals reported in weight percent or in parts per million (ppm) metal.

The weight, the measurement as well as the currency convention which is used in the course of this study is in conformity with the nomenclature of the international system (IS). The cartographic reference system used for local mapping and drawing is Universal Transverse Mercator / 3° Gauss-Kruger, zone 19T.

## 1.0 INTRODUCTION (cont.)

Geographic coordinates:

UTM: NAD 83, zone 19T/21O/10W

651000 mE, 5282000 mN

Longitude: 66 59' 16" West

Latitude: 47° 30' 16.4" North.

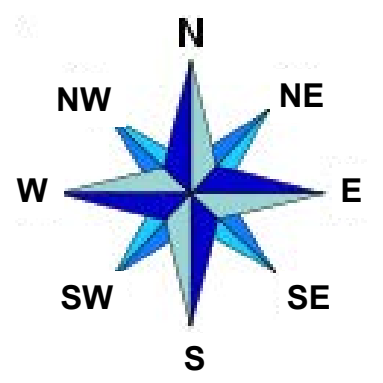
## 1.4 Limitations and Reliance on Information

**C.D.G.C.**'s opinion contained herein and effective January 31<sup>st</sup>, 2013, is based on information provided to **C.D.G.C.** by **M.B.M.I.** throughout the course of **C.D.G.C.**'s investigations as described in Section 4.1, which in turn reflect various technical and economic conditions at the time of writing as well as the field work executed on the property during a period of two days. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. This report includes technical information, which requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, **C.D.G.C.** does not consider them to be material.

**C.D.G.C.** is not an insider, associate or affiliate of **M.B.M.I.** and neither **C.D.G.C.** nor any affiliate has acted as advisor to **M.B.M.I.** or its affiliates in connection with this project.

The results of the review by **C.D.G.C.** are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings. **C.D.G.C.** has been informed by **M.B.M.I.** that there is no current litigation that may be material to the Legacy Project, and that **M.B.M.I.** is not aware of any pending litigation that may be material to the mining asset.

**C.D.G.C.** reviewed a limited amount of correspondence, pertinent maps and agreements to assess the validity and ownership of the exploration licenses. In addition, **C.D.G.C.** conducted an in-depth review of mineral titles and ownership; consequently, and it is our opinion that all titles are the property of **M.B.M.I.** and that they are in good standing. The title ownership and status information documented in this report was obtained from information provided by **Golden Bay Resources** and by **M.B.M.I.** and is considered current as of January 31<sup>st</sup>, 2013. However, **C.D.G.C.** does not accept any responsibility errors pertaining to this information.



0 15 km

SCALE

Client: **MURRAY BROOK MINERALS INC.**  
Projet/ Project **BURNTLAND COPPER- SILVER PROJECT**

Fait/ Made: C. Derosier P.Geo

Date: January 2013

Approb:

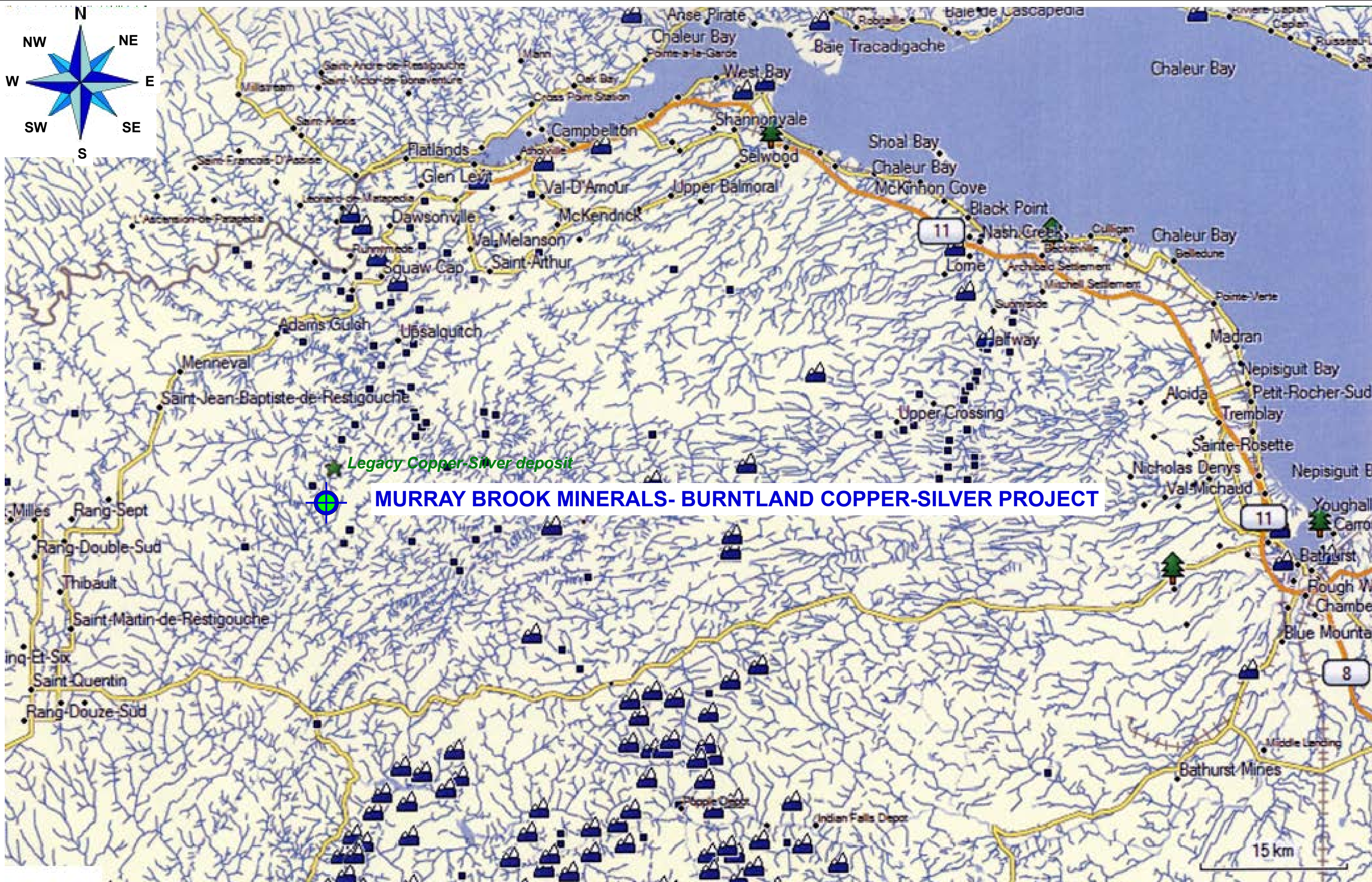
Échelle/ Scale: As Shown


 **SATELLITE VIEW OF THE LEGACY-BURNTLAND AREA**

Cont: 2013- 256

Subdivision:

Figure No 2



Client: <b>MURRAY BROOK MINERALS INC.</b>		Fait/ Made: C. Derosier P.Geo		Date: January 2013	
Projet/ Project <b>BURNTLAND COPPER- SILVER PROJECT</b>		Approb:		Échelle/ Scale: As Shown	
	<b>LOCATION AND HYDROGRAPHY</b>	Cont: 2013-256		Subdivision:	
				Figure No 3	



## 2.0 RELIANCE ON OTHER EXPERTS

This report was prepared for **M.B.M.I.** by the independent consulting firm of **C.D.G.C. Inc.** and is based in part on information not within the control of **MURRAY BROOK MINERALS INC.** While it is believed that the information contained herein will be reliable under the conditions and subject to the limitations set forth herein.

No other expert than the author was involved in the preparation of this technical report.

Various technical reports on geology, exploration and other related documents were provided by **M.B.M.I.** or obtained from the Department of Energy and Mines of New Brunswick.

**C.D.G.C.** has exercised all due care in reviewing the supplied information. The accuracy of the results and conclusions from the review, are reliant upon the accuracy and completeness of the supplied data. **C.D.G.C.** does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them.

Technical assessments of mineral properties are inherently forward-looking statements, which being projections of future outcome may differ from the actual outcomes. The errors in such projections can result from the inherent uncertainties in the interpretation of geological data.

### 3.0 PROPERTY DESCRIPTION AND LOCATION

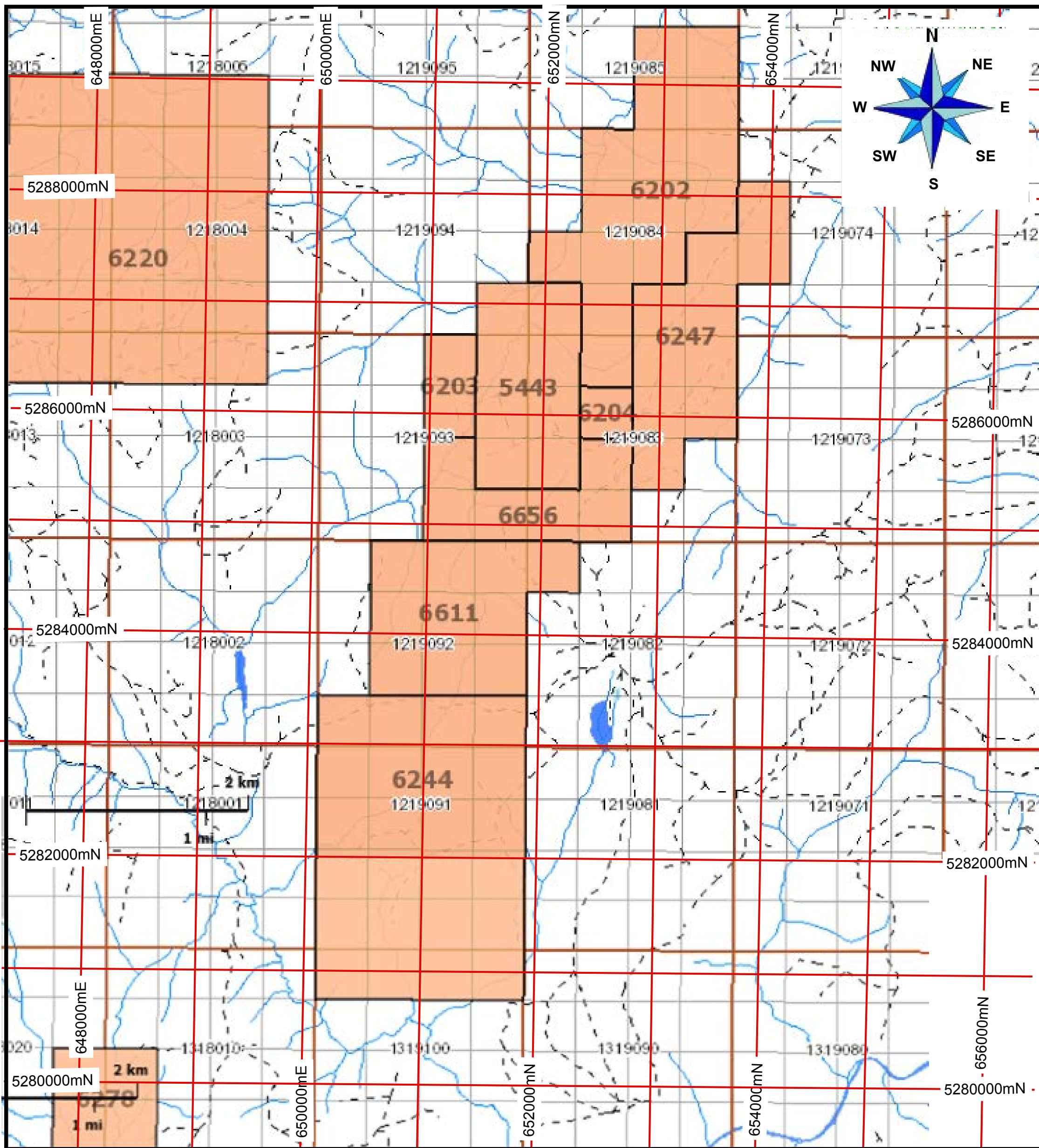
#### 3.1 Mining Property (Figure No 4)

The Burntland copper-silver mining property consists of two (2) blocks of claims which covers an area of about 738.38 ha. The blocks are situated southwest of the Upsalquitch River in the Parish of Saint Jean Baptiste de Restigouche, County of Restigouche, Province of New Brunswick, Canada. This mining property has been acquired from a group of three prospectors from Bathurst, NB.

The historical Burntland Copper - Silver mineralized zone is covered by Block 6244 (521.28 ha) that is composed of 24 claims (Figure No 5). Description of the claims and blocks is made on **TABLE No 1**:

<b>TABLE No 1</b>			
<b>BLOCKS</b>	<b>CLAIMS</b>	<b>AREA ha</b>	<b>EXPIRY DATE yyyy-mm-dd</b>
<b>6244</b>	1219091A	21.72	2013-12-09
	1219091B	21.72	2013-12-09
	1219091C	21.72	2013-12-09
	1219091D	21.72	2013-12-09
	1219091E	21.72	2013-12-09
	1219091F	21.72	2013-12-09
	1219091G	21.72	2013-12-09
	1219091H	21.72	2013-12-09
	1219091I	21.72	2013-12-09
	1219091J	21.72	2013-12-09
	1219091K	21.72	2013-12-09
	1219091L	21.72	2013-12-09
	1219091M	21.72	2013-12-09
	1219091N	21.72	2013-12-09
	1219091O	21.72	2013-12-09
	1219091P	21.72	2013-12-09
	1219092A	21.72	2013-12-09
	1219092B	21.72	2013-12-09
	1219092C	21.72	2013-12-09
	1219092D	21.72	2013-12-09
	1219100M	21.72	2013-12-09
	1219100N	21.72	2013-12-09
	1219100O	21.72	2013-12-09
	1219100P	21.72	2013-12-09
	<b>Total</b>	<b>521.28 Ha</b>	

This block of claims is recorded under the Murray Brook Minerals Inc.'s name (# 14898). The Burntland group has excess assessment credits of \$10,953.79. Work required amounts \$ 2,400.00 per year.



Client: **MURRAY BROOK MINERALS INC.**  
 Projet/ Project **BURNTLAND COPPER-SILVER PROJECT**

Fait/ Made: C. Derosier P.Geo

Approb:

**PART OF THE 21 O/10 CLAIMS MAP WITH THE BURNTLAND BLOCK**

Date: January 2013



Cont: 2013-256

Subdivision:

Figure No 4

Échelle/ Scale: 1: 50 000

### 3.0 PROPERTY DESCRIPTION AND LOCATION (cont.)

The second block (6611) named Burntland North, comprises 10 claims covering a total area of 217.20 ha. The claims are recorded in favour of Murray Brook Minerals Inc. (100%).

TABLE No 2			
BLOCKS	CLAIMS	AREA ha	EXPIRY DATE yyyy-mm-dd
6611	1219082M	21.72	2013-11-08
	1219092F	21.72	2013-11-08
	1219092G	21.72	2013-11-08
	1219092H	21.72	2013-11-08
	1219092I	21.72	2013-11-08
	1219092J	21.72	2013-11-08
	1219092K	21.72	2013-11-08
	1219092N	21.72	2013-11-08
	1219092O	21.72	2013-11-08
	1219092P	21.72	2013-11-08
TOTAL		217.20 ha	

This block has no excess assessment credit.

### 3.2 Murray Brook Minerals's Agreement (Figure No 5)

On December 5, 2011, three prospectors from Bathurst, NB , have agreed to transfer a 100% interest in the Burntland and Burntland North Copper-Silver Projects to **MBM** in accordance with the following terms:

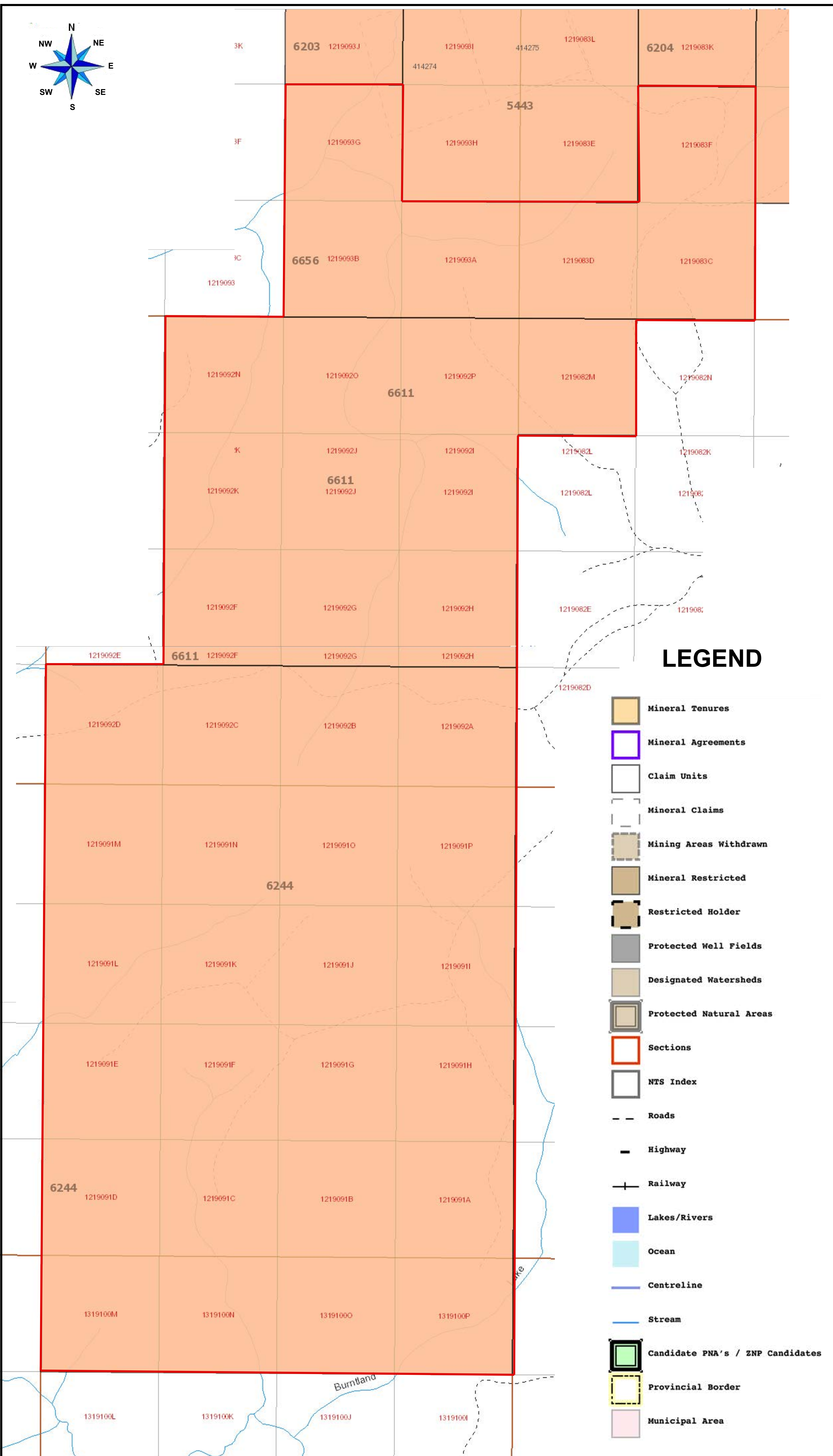
At the signature, payment of a total amount of \$ 36,340.00;

The Vendors will also receive a 1.5% Net Smelter Return (NSR) of which, **MBM** may elect to purchase, at its discretion, 0.5% of the NSR for an amount of \$ 500 000.00.

This royalty will be payable on a monthly basis, the 15 th day of each month and will be calculated for the sales made during a one month period.

On January 31, 2013, claims are all already transferred at 100% to **Murray Brook Minerals. Inc.**





## 4.0 ACCESSIBILITY, TOPOGRAPHY, INFRASTRUCTURE, CLIMATE AND VEGETATION

The Burntland Copper-Silver property is located in the Parish of Eldon (Saint-Jean Baptiste de Restigouche), Restigouche County, Province of New-Brunswick, Canada.

The closest important city is Bathurst, the administrative centre of the Bathurst mining camp with a population of 12 924 (2001, Census). The city is an important centre for mining, forestry, fishing and tourism and has the closest accommodations which are at approximately 80 minutes drive from the Legacy Copper Silver property. This property is situated at approximately 118 km W of Bathurst, at about 43 km from St-Quentin to the Southwest and 27 km east-north-east from Kedgwick (**Figures No 3 and 6**).

From Bathurst, Highway no 180, a the large paved road, runs westsouthwesterly and leads to St-Quentin. At km 71 (GPS waypoint: 680 974 E, 5 265 133 N), the Dalhousie Road joins the Highway 180. One has to take that road. A second gravel starting at GPS point 677796 E and 5 281 432 N exits westerly off the Dalhousie Road. Good truck access is also possible from the Kedgwick or Whites Brook area via good gravel roads and trails.

### 4.1 Topography (**Figures No 7 and 8**)

The Burntland Copper -Silver property is located in a moderate relief. Elevations range from 50 m to 335 m above sea level (ASL). The 100 m deep McKenzie Gulch runs up to the NE.

Burntland Copper-Silver property in northwestern New Brunswick is situated in the middle of a major physiographic division of the Appalachian Region of Canada: the Chaleur Uplands. This Chaleur Uplands is extending NE between the Edmundston Highlands to the North and the Miramichi Highlands to the South. This last covers the Bathurst Mining Camp. The present landscape of the study area, except for minor changes during the Quaternary Period, reflects erosion since Carboniferous time (Rampton et al. 1984).

The Chaleur Uplands are mainly underlain by Ordovician-Silurian and Devonian sedimentary and volcanic rocks. The Chaleur Uplands are sub-divided into the Saint-Quentin and Jacquet plateaus, Campbellton Hills, and the Chaleur Coastal Plain. The Saint-Quentin and Jacquet plateaus are gently undulating with relief between 30 and 60 m. The plateaus slope from 400 m in the south to 60 m in the north and display a gradient break approximately 15 km from the edge. The Saint-Quentin Plateau averages 300 m elevation with peaks up to 483 m. Major streams and tributaries are incised in V-shaped valleys, 75 to 180 m below the upland surface. Maximum local relief is 213 m, along the Little Tobique River.

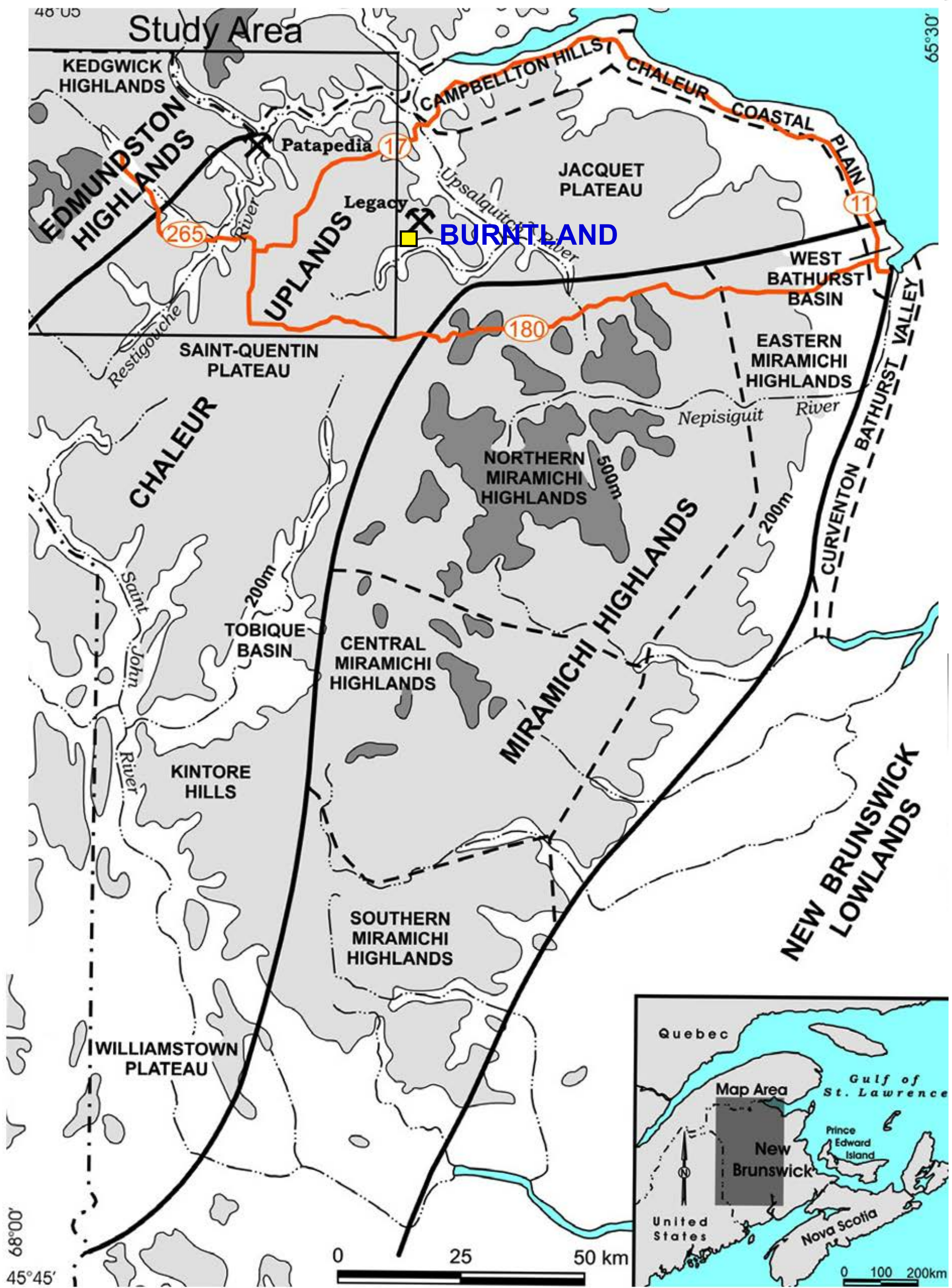
The Campbellton Hills are a group of structurally controlled ridges along the edge of the Saint-Quentin Plateau. The Chaleur Uplands are generally well drained and display a dendritic drainage.

More than 99 percent of the area is covered by glacial and post-glacial deposits commonly >2 m thick.









Client: <b>MURRAY BROOK MINERALS INC.</b>		Fait/ Made: C. Derosier P.Geo	
Projet/ Project <b>BURNTLAND COPPER- SILVER PROJECT</b>		Date: February 2012	
 <b>PHYSIOGRAPHY OF NORTHERN NEW BRUNSWICK</b>		Échelle/ Scale: As Shown	
		Cont: 2013-256	Subdivision:
		Approb:	Figure No 7

## **4.0 ACCESSIBILITY, TOPOGRAPHY, INFRASTRUCTURE, CLIMATE AND VEGETATION (cont.)**

### **4.2 Infrastructures**

Infrastructures for a mining project are excellent in that part of the Kedgwick area.

Because of the relatively short distance between the two main cities of this part of New-Brunswick (Bathurst and Saint-Quentin), it is not necessary to foresee the construction of a village for employees. A bus service can easily be organized from these two cities and from Kedgwick or Saint-Quentin as well. There is no power line or railroad available in the immediate area.

### **4.3 Climate**

Located southwest of the Chaleurs Bay, the Legacy Copper-Silver Project, has a typically continental flavour to its climate. During the winter, cold air, largely unaltered, frequently flows across New Brunswick from the centre of North America, and most storms affecting the Province originate either over the North Pacific or the Gulf of Mexico.

In summer, the predominant air mass is warm continental, with occasional incursions of hot, humid air from the Gulf of Mexico. On the other hand, influxes of moist Atlantic air produce mild spells in winter and periods of cool weather in summer.

Northwest New Brunswick is one of the part of the province that is least affected by the ocean. The distance of the sea-effect depends to a large degree on the wind direction, with onshore winds causing the most moderation. The cold Gulf waters retard warming of the air in spring, keep the summer maximum temperature low, and provide a slight warming of the air in fall, provided the winds are off the water.

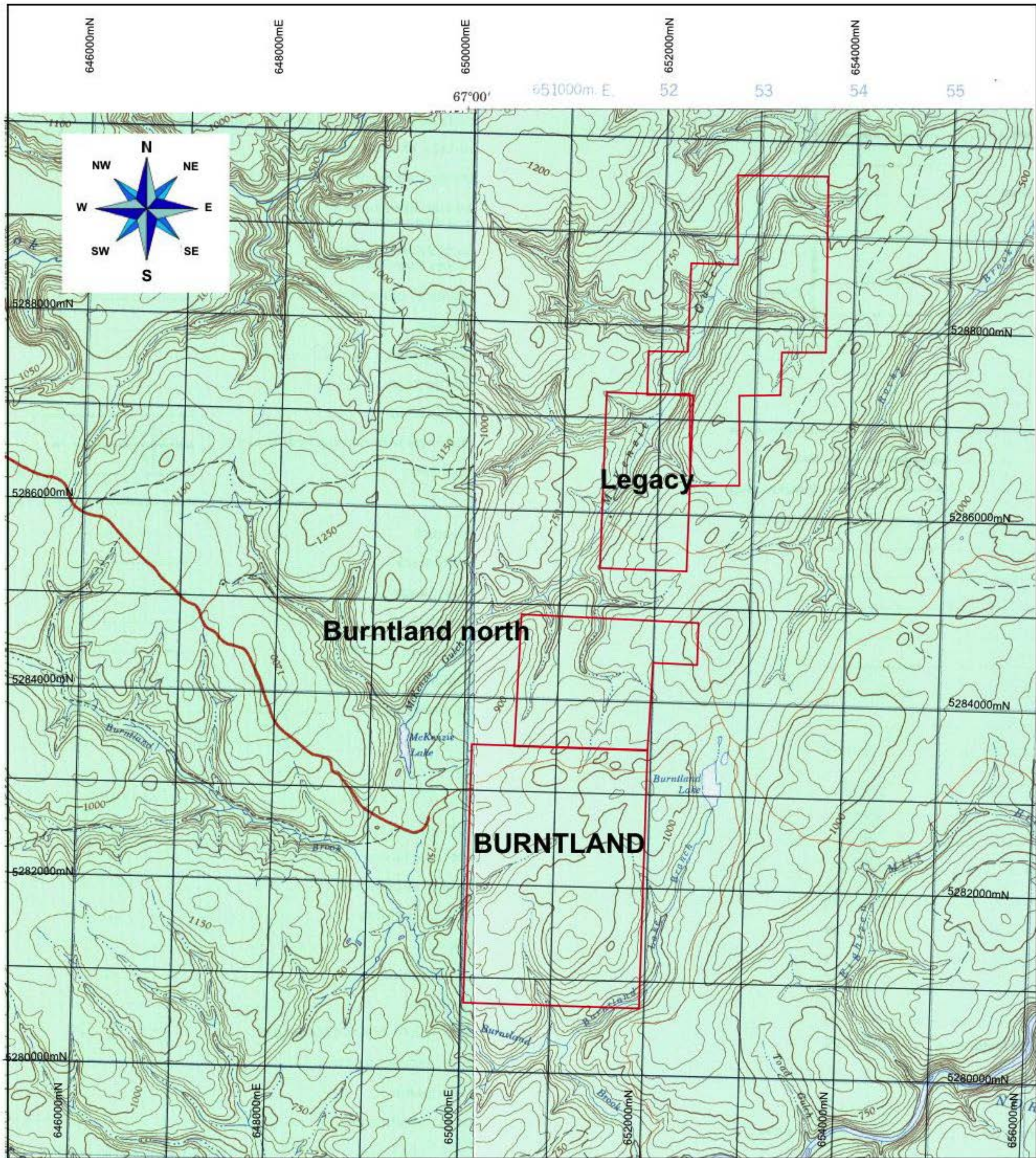
January is the coldest month and July is the warmest. Average daytime highs vary between 20 and 28°C in summer. These temperatures are reached fairly in the day, by 11 a.m. or noon. The highest temperature ever recorded in the area is 39°C.

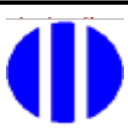
In winter, temperatures decrease noticeably from east to west. The area is more directly in the path of continental air masses. It experiences very cold winters with a mean temperature of -13°C in January. Frigid temperatures are not infrequent in the Legacy Copper-Silver Project area with extreme low temperatures of -30 to -35°C reported every winter. The Legacy Copper-Silver Project area generally receives between 300 and 400 cm of snow annually for about 33% of its annual total of precipitation.

The most significant feature of a New Brunswick winter is the marked variability in temperature from day to day. This is a consequence of the highly contrasting and fast moving weather systems which traverse the province very two or three days.

Spring and early summer are generally dry, but there is ample water during the growing season. The area records about 1200 mm of rainfall a year, with the heaviest amounts falling during





<div> <div>Client: <b>MURRAY BROOK MINERALS INC.</b></div> <div>Project/ Project: <b>BURNTLAND COPPER-SILVER PROJECT</b></div> <div>  <div> <div>TOPOGRAPHY OF THE AREA</div> </div> </div> </div>	Fait/ Made: C. Derosier P.Geo		Date: January 2013	
	Approb:		Échelle/ Scale: 1: 50 000	
	Cont: 2013-256	Subdivision:	Figure No 8	



#### **4.0 ACCESSIBILITY, TOPOGRAPHY, INFRASTRUCTURE, CLIMATE AND VEGETATION (cont.)**

the summer months.

Winds generally blow predominantly from the west and northwest in the cold months and from the south and southwest in the warm months. Wind speeds average 15 to 20 km/h in winter and 12 to 15 km/h in summer.

#### **4.4 Population and Services**

The region is rich in land resources, in mineral resources, in plant and animal resources.

The Kedgwick area is a large timber producer. Agricultural products include hay, corn and potatoes.

Manpower can easily be found in the Saint- Quentin- Kedgwick area. The local population is familiar with mining and would be the principle source for the work force if a mine was to be open.

#### **4.5 Vegetation**

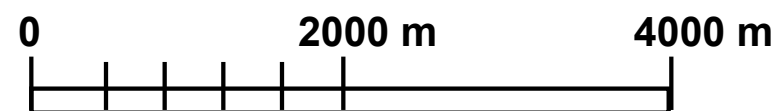
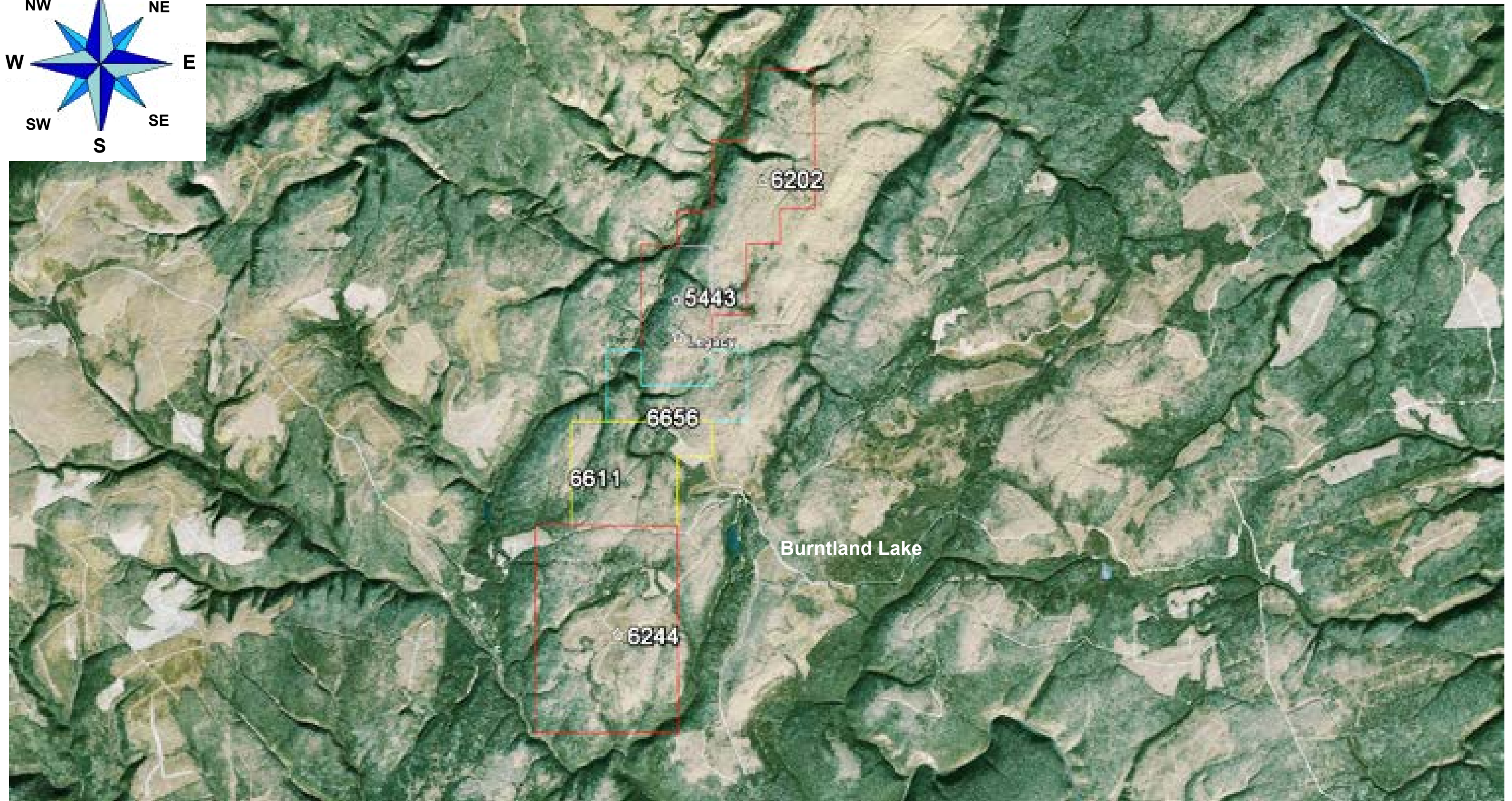
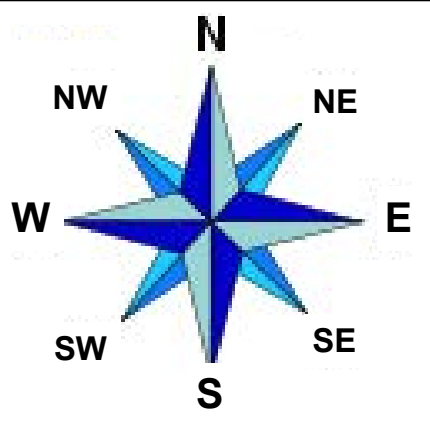
Rock exposures are very few on the property especially the slopes of the gulch as mentioned above.

The Northeast quarter and the SE quarter of the property are notably free of rock exposures.

Poplars and birch dominate the higher elevations, mixed with pines and firs .

The area surrounding the Legacy Project is covered by extensive thin Pleistocene glacial and glacio-lacustrine deposits. It has recently been logged and in part re-vegetated.

The only physiographic features located on the property are several low ridge-like accumulations of glacial gravel consisting of sand, cobbles and boulders.



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Projet/ Project <b>BURNTLAND COPPER-SILVER PROJECT</b>		Approb:		Échelle/ Scale: As Shown	
	<b>SATELLITE PICTURE OF BURNTLAND LAKE AREA</b>	Cont: 2013-256		Subdivision:	
				Figure No 9	



## 5.0 HISTORY

Copper mineralization in the area, was discovered in 1968 by prospector Raoul Legacy. The prospector discovered copper- bearing floats in the valley of the McKenzie Gulch. Following this discovery, a group of companies of Toronto, Canada, the Keevil Mining Group Limited staked a large band along the McKenzie Gulch.

### 5.1 From 1968 to 1980

#### 5.1.1. Legacy Copper-Silver property

**Copperfields Mining Corporation Limited's** attention, ( a subsidiary of the Keevil Mining Group Limited) was drawn to the area by this discovery and an option agreement was signed. A diamond drilling program begun in August 1970 to follow up geophysical indications, resulted in the intersection of copper values in the first hole, which returned a 5.18 m (17 feet) section at a depth of 15.24 m, averaging 1.2% copper, and a 1.43 m section at a depth of 30.48 m averaging 3.44% Cu. To the end of October 1970, the company had completed 18 holes along a strike length of 115.82 m (380 feet) and to a vertical depth of 182.88 m (600 feet). All holes except hole No 9 had encountered economic copper mineralization. The best intersection obtained was in DDH No 17 which returned a continuous section of 59.34 m (194.70 feet) averaging 1.22% Cu. Three important copper bearing zones were encountered in this hole:

- 1) From 152.40 m to 163.68 m, averaging 3.16 % Cu over 11.28 m;
- 2) From 167.64 m to 178.06 m, averaging 1.84 % Cu over 10.42 m;
- 3) From 188.98 m to 202.45 m, averaging 1.22% Cu over 13.47 m.

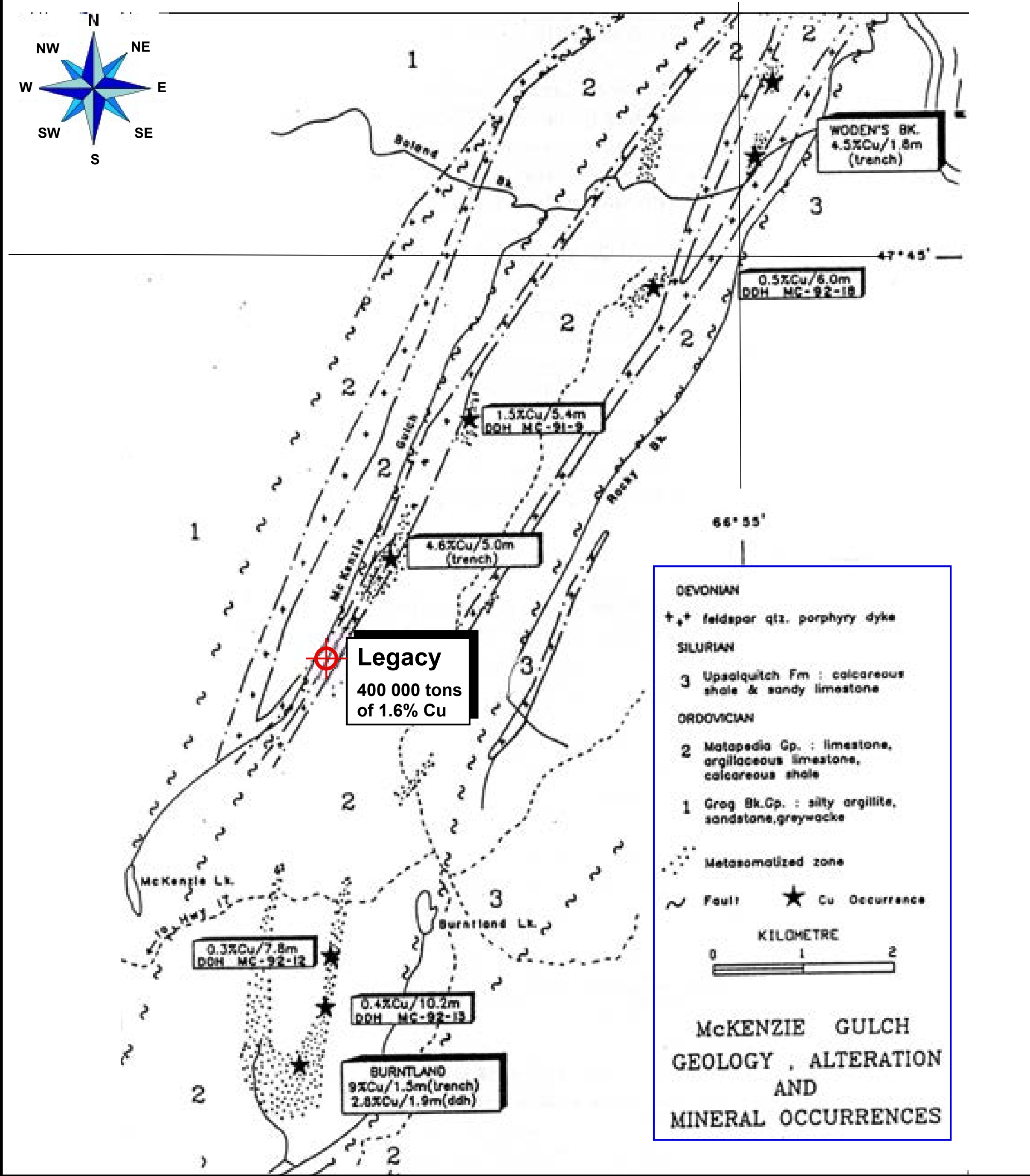
#### 5.1.2. Keevil Mining Group Limited


At the same time, the Group which staked the area surrounding the Legacy discovery, started to work at about 4 km south on strike, on its Burntland claims and to the North on the Endrocky and Rockmark properties (**Figure No 10**).

Initial evaluation of the area was aided with reference to the G.S.C. Aeromagnetic Series Map Sheets and G.S.C. Map 14-1964, "the Geology of Upsalquitch Forks" and an aeromagnetic survey was flown in 1969, in the SE and NW directions by Satellite for a total length of 3721 km. This survey covered 672 claims of the 886 claims staked previously.

##### 5.1.2.1 Burntland Group of Claims

During the period from 1968 to 1969, Magnetometer, Radem (84.32 km) and I.P. surveys (36.32 km) were carried out on the property. Those surveys were followed by a diamond drilling program. Air magnetic anomalies of small areal extent were investigated by a reconnaissance soil and stream silt geochemical surveys. This was followed by a geological mapping and the



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Project/ Project: <b>BURNTLAND COPPER- SILVER PROJECT</b>		Date: January 2013	
		Échelle/ Scale: As Shown	
	<b>LOCATION OF THE DIFFERENT MINERALIZED ZONES</b> (Source: Gower and Walker; 1993)	Cont: 2013-256	Subdivision:
		Approb:	Figure No 10

## 5.0 HISTORY (cont.)

digging of three trenches. In 1969, the claims group was also covered by an airborne magnetometer survey (# 471929) for a total length of 3,722 km.

Eighteen holes, (AXT core size, 1.18 inches in diameter), were drilled for a total of 2 058.31 m. The holes investigated the Radem and I.P. anomalies or were designed to test the possible down dip and lateral extensions of mineralization found in the trenches.

### 5.1.2.2. Endrocky (1970)

This group of 90 claims covering the Burntland lake, is situated at about 2 km SE of Legacy. In 1970, Keevil carried out Radem, Magnetometer and S.P. geophysical surveys as well as a mapping and a trenching program (4 trenches totalling 49.37 m in length).

The geology was found similar to Legacy and Rockmack properties, but the geophysical surveys failed to return definite anomalies.

In the Fall of 1970, copper mineralization was found 100 m north of the northern boundary, on the neighbouring property (Rockmack). Grids were extended and geophysical surveys were executed.

Two drill holes (E-1 and E-2) investigated a magnetic anomaly and intersected weak copper mineralization in a siliceous and garnetiferous skarn. The second anomaly was verified by hole E-3. Weak pyrite and pyrrhotite mineralization was found.

### 5.1.2.3. Rockmack (1970)

This group of claims (89 claims) is located about 1 km NE of Legacy.

Keevil carried out Magnetometer, I.P., Radem and S.P. geophysical survey followed by a mapping survey and a trenching program.

Interesting anomalies were picked up and

Three holes (R-70-1, 2 and R-69-2) were drilled for a total length of 283.77 m.

In 1971, a 388 km long VLF survey was carried out on the property, followed in 1972 by a geochemical survey (196 samples), magnetic, electrical and VLF surveys and a 40 drill holes program (R series), totalling 2146.4 m.

No more work seems to have been conducted by the Keevil Mining Group and its subsidiaries after 1978.

## 5.0 HISTORY (cont.)

### 5.2 From 1980 to 1998

#### 5.2.1. Noranda Exploration Company Limited/ Brunswick Mining and Smelting Limited

In 1989, Noranda Exploration Co Ltd. ("Noranda") staked 58 claims covering the Burntland lake area, south of the Legacy copper deposit. Previously, this ground was owned by the Keevil Mining Group.

The Burntland Lake area was staked due to the proximity of gold anomalies and indicator element anomalies to significant base metal occurrences and because gold had been intersected in drilling along strike (6.13 g/T Au over 0.52 m) at the Legacy Copper-Silver deposit.

Noranda undertook an aggressive geological and prospecting program followed by till, soil and stream sediment geochemical surveys.

Several multi- element anomalies (Ag, Sb, As, Pb and Cu) were delineated west of the Burntland Copper Prospect.

In 1991, the McKenzie Gulch property comprised 357 claims which were staked under several licenses dates during 1991 and regrouped into one large block. The claim block encompasses Brunswick Mining and Smelting 's Burntland Lake claim block as well as two blocks of nine claims staked by Raoul Legacy. The claim group covers approximately 20 km of strike length over 3 km wide belt of interbedded limestones and limey clastic sedimentary rocks of the Matapedia Group known to contain Cu mineralized skarn bodies. Other than the Legacy deposit, several other new Cu occurrences were identified during 1990-1991 work program comprising two styles of mineralization:

- 1) A 5.0 m interval of 4.60% Cu was found in a trench, hosted by sheared and silicified limestone;
- 2) Several low and high grade Cu bearing garnet-diopside-magnetite-chlorite skarn intervals were intersected in drill holes.

The 1991 work program consisted of an airborne EM, magnetometer, VLF survey (277 km), flown by Aerodat at a 200 m interval; line cutting, soil sampling, prospecting, dipole-dipole and gradient I.P. surveys (total: 102 km), ground magnetometer (107.7 km) and VLF-EM surveys followed by a trenching and drilling program.

A total of 140.2 km of grid lines were cut and 4334 soil samples were collected at 25 m intervals along lines spaced 200 m apart. Very high level of Cu and Ag values trending at 45° were obtained. Those anomalies form kilometres- long continuous linear trends which are though to parallel the glacial transport direction. Weak Au and As anomalies occurs throughout the grid.

## 5.0 HISTORY (cont.)

A total of 3 758 m of trenching and backfilling was made. Trenches were mainly targeted on Cu soil anomalies with coincident IP anomalies. **A 0.6 m wide zone containing 4.82% Cu was encountered in the second trench.**

The 1991 drill holes were targeted on bedrock Cu occurrences from the trenching program as well as Cu anomalies with chargeability coincidence. Twenty two (22) holes were bored for a total length of 3 454 m.

Low grade chalcopyrite and magnetite bearing garnet- diopside skarn units were encountered. **The best interval was 5.44 m grading 1.56% Cu.** Garnet- diopside skarn thicknesses exceed 40 m in two intersections in MC-92-18.

**High grade Cu, 4.60 % Cu over 5.0 m, was found in a trench at 105+00 N, 93+00 E** hosted by a shear zone in silicified limestone. Unfortunately, this mineralization seems do not extend at depth.

Trenching indicated that the soil anomalies were largely glacially transported and that many of the chargeability highs were due to low concentrations of disseminated pyrite in porphyry dykes and sills. Numerous chargeability highs and magnetite anomalies remain untested on the property.

In June 1992, 83 new claims in four separate blocks were stacked to cover areas of favourable geology or airborne geophysical anomalies. The company covered part of the new blocks by a soil geochemical survey (2 394 samples at 50 m interval on lines at 400 m apart ) and dug 14 trenches (1 464 m) on Cu soil anomalies and close to mineralized boulders found during a prospecting party.

No significant Au and As anomalies were picked-up. Significant Cu anomalies were identified . The highest Cu value (970 ppm) occurs near several other anomalous values in the L 114+00 N, to L 117+00 N area but is not part of a well defined trend. Significant Cu anomalies were also identified in the sampling done east of the main grid where strong multi- site, multi- line anomalies occur with Cu values up to 391 ppm. Ag values follow the Cu anomalies. However, highest silver value (4.4 g/T Ag) was obtained on line L 104+00 N with no apparent association with copper.

### 5.2.2. Noranda Exploration Company Limited/ Brunswick Mining and Smelting Limited (1993)

The McKenzie Gulch property was enlarged in 1993 and covered 440 claims. The 1993 program comprised trenching of 5 untested targets and infilling all the previous trenching.

The five areas trenched in 1993 were lower priority trenches and no significant mineralized zones were encountered.

## 5.0 HISTORY (cont.)

### 5.3. Period from 1998 to 2012

From 1998 to 2009, the McKenzie Gulch area seemed dormant since no activity is reported in the Government files. By meantime, Noranda was acquired by Xstrata which was then looking for partners for developing the Bathurst mining camp in order to keep the mines and concentrator in activity.

The Department of Natural Resources and Energy of New Brunswick prepared detailed, chronologically ordered historical summaries and description of each of the four main Burntland copper occurrences. Those documents are referenced as Unique Reference Numbers (URNs) 0463, 0464, 1145 and 1147.

#### 5.3.1. Burntland Brook Reference Number 463 ( Figure No 13 )

Significant assays over three dimensions (drilled) but poorly constrained or no tonnage estimate

Sulphides occur in fractures & as blebs in calcareous and argillaceous sedimentary rocks of the Late Ordovician-Early Silurian - Matapedia Group. These rocks are altered to a silicified garnet-magnetite-epidote? skarn. Skarn development is related to Devonian feldspar & quartz-feldspar porphyry dykes.

One sample from this zone assayed 0.01 oz/t gold.

The skarn zone is less than 1 km west of a prominent NNE-trending Rocky Brook Fault, which is part of the McKenzie Gulch Fault system.

Detailed Description: The area was initially staked by Teck Corp. in 1967 to cover a Cu-Mo soil geochemical anomaly associated with a weak airborne magnetic anomaly. Ground magnetic and S.P. surveys were carried out (assessment file 471921).

In 1969, a detailed S.P. survey was followed by a trenching program. Trenches 3 and 4 encountered copper mineralization with a 1.5 m chip sample assaying 9% Cu. Radem, I.P. and magnetic surveys were carried out to identify drilling targets.

Eighteen holes were drilled and some sub-economic copper mineralization (generally less than 1%) was found. **The best assays were 2.18% Cu and 20.6 oz./ton Ag over 1.9 m in hole no. 1 and 2.9% Cu over 1 m in hole no. 13.** Mineralization occurs in silicified sedimentary rocks and garnetiferous grey and green skarn associated with numerous porphyry dykes. Minor molybdenum (maximum 0.11%) and gold (maximum 0.34 g/ T Au) were noted. Drill Holes 5, 9 and 16 intersected sections of massive pyrrhotite in siliceous sedimentary rocks, whereas drill holes 8, 10 and 15 outlined a magnetite-bearing skarn zone north of the discovery trenches.





0 650m 1300m

**MURRAY BROOK MINERALS INC.**

**BURNTLAND COPPER-SILVER PROJECT**  
**COMPILATION OF DIAMOND DRILL HOLES**

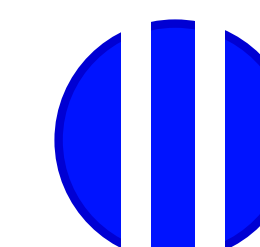
210/10 West  
Restigouche County, New Brunswick, Canada

Prepared by C. Derosier, D.Sc., P. Geo.

Date: January 2013

Scale: As Shown

*Christian Derosier Géologue Conseil Inc.*



(Source: DEPARTMENT OF NATURAL RESOURCES AND ENERGIE OF NEW BRUNSWICK, 2013)

**Figure No: 11**



## 5.0 HISTORY (cont.)

Keevil Mining Group Ltd. carried out work on the Burntland Property in 1968 and 1969 (471908) on a known copper occurrence. They did magnetometer, Radem, SP, and IP surveys, trenching, and diamond drilling (18 holes). They did not find the mineralization to be economic.

In 1974, Duncan R. Derry trenched a Cu soil anomaly extending for 1 200 m northeast of the Burntland Brook showing. Boulders of mineralized skarn were found but the underlying bedrock was barren (assessment file 471903).

The Burntland Brook area was staked by Noranda Exploration in 1990 to cover an area of anomalous geochemistry. The exploration target was late-stage precious metal mineralization associated with structural traps in a zoned porphyry- skarn system (assessment file 473865). Such mineralization would not necessarily coincide with copper concentrations. In this regard, a Ag- Sb- As- Pb- Cu anomaly west of the Burntland Brook copper skarn was considered prospective.

In the 1980s, Noranda staked claims near Burntland Lake and conducted an heavy metal concentrate till survey to evaluate the gold potential of the belt. In 1991, Noranda's exploration focus changed from Au to Cu. Noranda Exploration (474178, 1992) carried out an airborne survey for magnetic, VLF- EM and multi- frequency EM data; line cutting, soil sampling, prospecting, dipole-dipole and gradient IP surveys, ground magnetometer and VLF- EM surveys, trenching, and diamond drilling (22 holes totalling 3 454 m) over the entire McKenzie Gulch claim block. Several new copper occurrences were discovered during trenching and drilling programs in 1991 and 1992. Low-grade chalcopyrite and magnetite-bearing garnet-diopside skarn units were found; the best interval was 5.44 m grading 1.56% Cu. The skarn thicknesses were greater than 40 m in two intervals in drill hole MC-92-18. Many chargeability highs and magnetic anomalies remain untested on the McKenzie Gulch property, which extends from the Burntland Lake area north to Boland Brook.

Noranda carried out work for BM&S in 1992 (474337-1993) on the McKenzie Gulch and McKenzie Gulch Extension properties. Soil sampling was done outside of the initial grid area and more trenching was done within the initial grid area. Some unexplained Cu-in-soil anomalies were found; detailed prospecting led to the discovery of mineralized boulders. More trenching was done to follow up on these findings. Soil sampling to the east and west of the initial grid identified areas moderately- to strongly-anomalous in Cu. **Trenching exposed a 1 to 3 m wide zone of greater than 2.5% Cu in two separate composite grabs** near Line 119+60N. Another significant Cu occurrence was recognized on Line 122N - **5.4 m of 1.56% Cu in DDH MC- 91- 9**. Two weakly mineralized skarn intervals were intersected at 200 and 300 m vertically in DDH MC- 92- 18.

Noranda Exploration (474433, 1994) carried out trenching of five untested targets to the north of this occurrence near Burntland Lake and one further north near the Wodens Rock Brook South occurrence. No significant mineralization was encountered.



## 5.0 HISTORY (cont.)

Noranda Exploration carried out soil sampling and prospecting in 1991 in the Burntland Lake area targeting late-stage gold mineralization associated with the skarn-porphyry system. Re-sampling of old trenches gave precious-metal assays up to 1 g/t Au and 87 g/t Ag (assessment file 473981). Three samples ran between 6 and 8% Cu. The best samples came from an old trench at line 82+00N, 106+50, which is also the site of the strongest geochemical anomaly. There are several unexplained geochemical anomalies in this area to be further explored. Note: it is very difficult to locate the grid according to the grid sketch; the staking sketch is fairly accurate, but the grid sketch is not.

In 1992, Noranda carried out soil sampling, prospecting, and trenching on the Burntland Lake Claim Group for Brunswick Mining & Smelting (474330, 1993). Drilling in early 1992 encountered widely spaced low-grade skarn-hosted copper mineralization. Trenching of these occurrences showed that the mineralization is most likely continuous over considerable distances. Trenching of untested magnetic highs was recommended.

Noranda Exploration Company, Limited carried out work on the Burntland Lake Project area (474432, 1994). A Transient EM survey was done over part of the grid; the area covered the Burntland Lake deposit and drill-intersected mineralization to the north (0.43% Cu over 10.2 m). The survey did not provide much useful information. A deep-penetrating EM was recommended over areas of known metasomatism and/or mineralization.

Noranda Mining and Exploration Inc. assessment report 474866 (Burntland Lake Group) reported drilling at the Burntland Brook Showing (Mineral Occurrence 463) drill holes MC- 96- 1, -2 and -3.

Moore and Lentz (1996; in Current Research 1995, NBDNRE, MRR 96-1, pp. 121-153.) describe copper-skarn-associated felsic intrusive rocks in the McKenzie Gulch area to the north of this occurrence.

This occurrence (along with drill hole collar positions) is located on the most recent bedrock geology map of the area (Wilson 2007). This map shows that most of the area of this occurrence is underlain by calcareous to clastic rocks of the White Head Formation; however, the Silurian Upsalquitch Formation underlies the eastern part of the area. The north-northeast trending Rocky Gulch fault occurs approximately 1 km to the east of this showing.

### 5.3.2. Burntland Brook Reference Number 464 ( Figure No 13 )

This is a significant occurrence with assays over 1 or 2 dimensions (channel sample or several grab samples). Cu-Zn sulfides occur as fracture fillings, replacement laminae and disseminations in a skarn zone within fractured and silicified limestone of the White Head Formation (Matapedia Group).

## 5.0 HISTORY (cont.)

Mineralization is related to, & locally found within, porphyry dykes. There is about 3% visible sulfides in the 29 m wide zone which dips 85 southeast.

The limestone strikes northeast & dips steeply. Mineralization is associated with feldspar & quartz-feldspar porphyry dykes.

The skarn zone has a possible plunge of 20° south.

Keevil Mining Group Ltd. discovered copper mineralization at Burntland Brook in 1969. Duncan R. Derry acquired claims in the Burntland Lake area in 1974 (Assessment Reports 471902, 471903) to investigate copper stream silt geochemical anomalies and frost-heaved skarn boulders found along the road.

Field work included soil and silt sampling, magnetometer and I.P. surveys, prospecting, mapping and trenching. Trenching over coincident I.P. and Cu soil geochemical anomalies near the road revealed about 3% disseminated sulphide minerals in a skarn zone 30 m wide striking northeast and dipping steeply. The mineralization is described as finely disseminated and fracture coatings of chalcopyrite and pyrrhotite. Chip samples across 1.2 m and 2.4 m assayed 0.18% Cu and 0.11% Cu respectively.

The skarn is intruded by numerous narrow feldspar-porphyry dykes. A total of nine trenches were dug at Burntland North with those north of the road exposing weakly mineralized skarn. Noranda Exploration carried out soil sampling and prospecting in 1991, and was testing the potential for late-stage gold mineralization associated with the skarn-porphyry system. Re-sampling of old trenches gave precious-metal assays **as high as 1 g/t Au and 87 g/t Ag** (assessment file 473981). Three samples assayed between 6 and 8% Cu. The best samples came from an old trench at line 82+00N, 106+50, which is also the site of the strongest geochemical anomaly.

There are several unexplained geochemical anomalies in this area to be further explored. Note: it is very difficult to locate the grid according to the grid sketch; the staking sketch is fairly accurate, but the grid sketch is not.

In 1992, Noranda carried out soil sampling, prospecting, and trenching on the Burntland Lake Claim Group for Brunswick Mining & Smelting (474330, 1993). Drilling in early 1992 encountered widely spaced low-grade skarn-hosted copper mineralization. Trenching of these occurrences showed that the mineralization is most likely continuous over considerable distances.

Noranda Exploration Company, Limited carried out work on the Burntland Lake Project area in 1994 (Assessment Report 474432). A Transient EM survey was conducted over part of the grid; the area covered the Burntland Lake deposit, and drill-intersected mineralization to the north (0.43% Cu over 10.2 m). The survey did not provide much useful information. A deep-penetrating EM was recommended over areas of known metasomatism and/or mineralization.

## 5.0 HISTORY (cont.)

Moore and Lentz (1996; in Current Research 1995, MRR 96-1) describe similar copper-skarn- associated felsic intrusive rocks in the McKenzie Gulch area to the north.

Noranda Mining and Exploration Inc. assessment report 474866 (Burntland Lake Group) reported drilling at the Burntland Brook Showing (Mineral Occurrence 463) drill holes MC-96-1, -2 and -3.

The results of airborne geophysical surveys were reported by Noranda in Assessment Report 475951.

The most recent geological mapping in the area was by Wilson (2007; MP 2007-30) who includes the host rocks in the White Head Formation. Wilson (2007) also noted a number of felsic dikes in the area.

### 5.3.3. Burntland Brook Reference Number 1145 ( Figure No 13 )

This is a minor occurrence; mineralization present but no significant assay values, if at all carried out.

Minor occurrence of sulphide mineralization associated with skarn alteration of limestone of the White Head Formation (Matapedia Gp.)

Brunswick Mining and Smelting (474178, 1992) did work on their McKenzie Gulch Claim Group. Several anomalies were outlined from a magnetometer survey, one being located at 54 + 00N and approximately 106 + 50E.

Two holes were drilled along Line 54 + 00N; MC-92-13 (at 108 + 00E) and MC-92-21 (at 110 + 50E). The best assay from MC-92-13 is 1.056% Cu, 0.004% Co, 0.24 g/tonne Ag, and 0.020 g/tonne Au over 1.0 m.

In drill hole MC-92-21, there are a number of intersections of sparse sulphide mineralization (pyrite, chalcopyrite, magnetite, molybdenite, sphalerite, galena, pyrrhotite); these minerals occur mostly in trace or minor amounts to stringers, between 463.34 and 588.34 m; best assays are 0.47% Cu, 0.07% Pb, 0.17% Zn, 3.09 g/T Ag over 0.72 m and 0.46% Cu, 0.08% Pb, 0.22% Zn, 2.74 g/T Ag over 1.00 m.

In more recent work on the McKenzie Gulch Claim Group by Brunswick Mining and Smelting (474337, 1993 and 474433, 1994), there is no work done in the area of this occurrence.

The location of this occurrence is placed near the collar position of drill hole MC-92-13 (approximate); it was digitized from the grid map in assessment report 474178. A third drill hole, MC-96-1, was drilled near by (Assessment Report 474866).

## 5.0 HISTORY (cont.)

The area was most recently mapped by Wilson (2007; MP 2007-30) who places this occurrence at the contact between the White Head and Upsalquitch formations. This is similar to the Burntland Brook occurrence (Mineral occurrence 463), that is located approximately 900 m southwest of this occurrence.

### 5.3.4. Burntland Brook Reference Number 1147 ( Figure No 13 )

This is a minor occurrence. Mineral present but no significant assay values, if at all carried out.

In 1992 Brunswick Mining and Smelting (assessment report 474178) conducted work on their McKenzie Gulch Claim Group. Several anomalies were outlined from a magnetometer survey; along Line 60N, there seem to be two anomalies, one at about 99 + 00E and another at about 106 + 00E.

Two holes were drilled along Line 60 + 00N; MC-92-22 (at about 98 + 00E) and MC-92-12 (at about 105 + 50E) that are approximately 850 m apart. The best assays from hole MC-92-22 are 0.05% Cu, 0.12% Pb, 0.36% Zn, 14.06 g/T Ag over 0.9 m and 0.23% Cu, 0.09% Pb, 0.22% Zn, 6.51 g/T Ag over 0.7 m. The position of this occurrence is the collar location of DDH MC-92-22 (Figure No 11).

In drill hole MC-92-12, there are mineralized skarn zones from 26.26 to 27.65 m (“roughly 4-6% total sulphide with probably 0.4 to 0.5% Cu”) and from 30.35 to 38.12 m (alteration varies from weak to strong; mineralization varies from 3 up to 10% pyrrhotite-pyrite-chalcopyrite); mineralization also occurs in some intervals of calcareous siltstone or porphyries. Best assays from hole MC-92-12 are 0.011% Cu, 0.001% Co, 6.84 g/tonne Ag, 1.630 g/tonne Au over 0.79 m and 0.624% Cu, 0.007% Co, 0.55 g/tonne Ag, 0.015 g/tonne Au over 1.0 m.

In more recent work on the McKenzie Gulch Claim Group by Brunswick Mining and Smelting (474337, 1993 and 474433, 1994), there is no work done in the area of this occurrence.

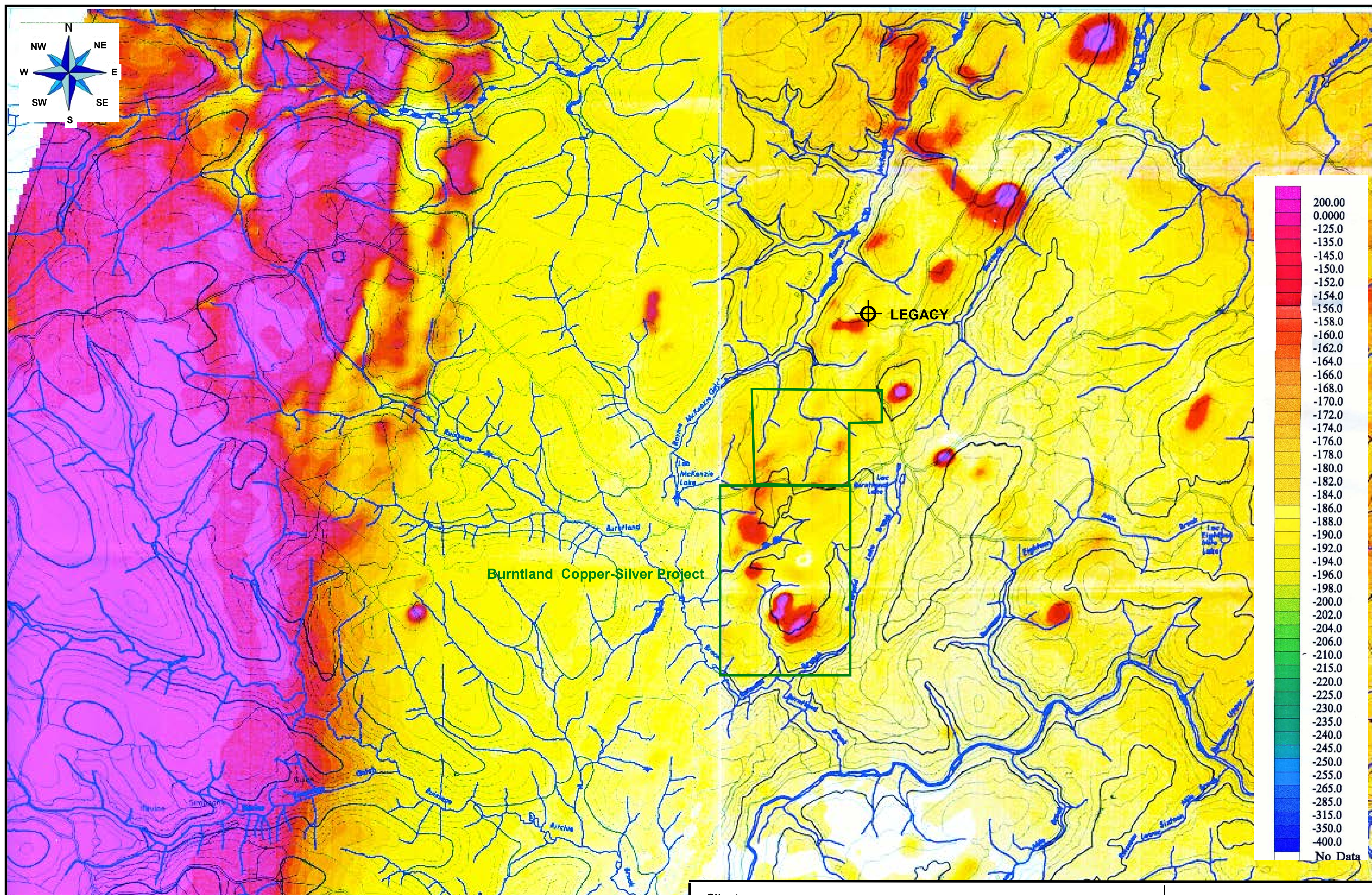
The location of this occurrence is approximate; it was plotted from a small scale grid map in assessment report 474178. The area was mapped by Wilson (2007; MP 2007-30) who assigned the rocks underlying this occurrence to the White Head Formation (Matapedia Gp.).

On Wilson’s map this occurrence is plotted north of the collar of DDH MC-92-22.

### 5.3.5. 1998: Magnetic Anomaly Map (Residual Total Field) (Figure No 13).

In 1997, an electromagnetic-magnetic-radiometric survey was carried out by Aerodat Inc. for the Federal and Provincial Governments. The airborne survey was flown from July 18, 1997 to October 6, 1997. The results of this survey were published in 1998.





Client:

**MURRAY BROOK MINERALS INC.**

Fait/ Made: C. Derosier P.Geo

Project/ Project:

**BURNTLAND COPPER- SILVER PROJECT**

Date: January 2012

Échelle/ Scale: 1: 50 000



**PART OF THE 1998 AEROMAGNETIC SURVEY**  
(Open File 3621, GSC, 1998, 210/10 and /11, Residual Total Field)

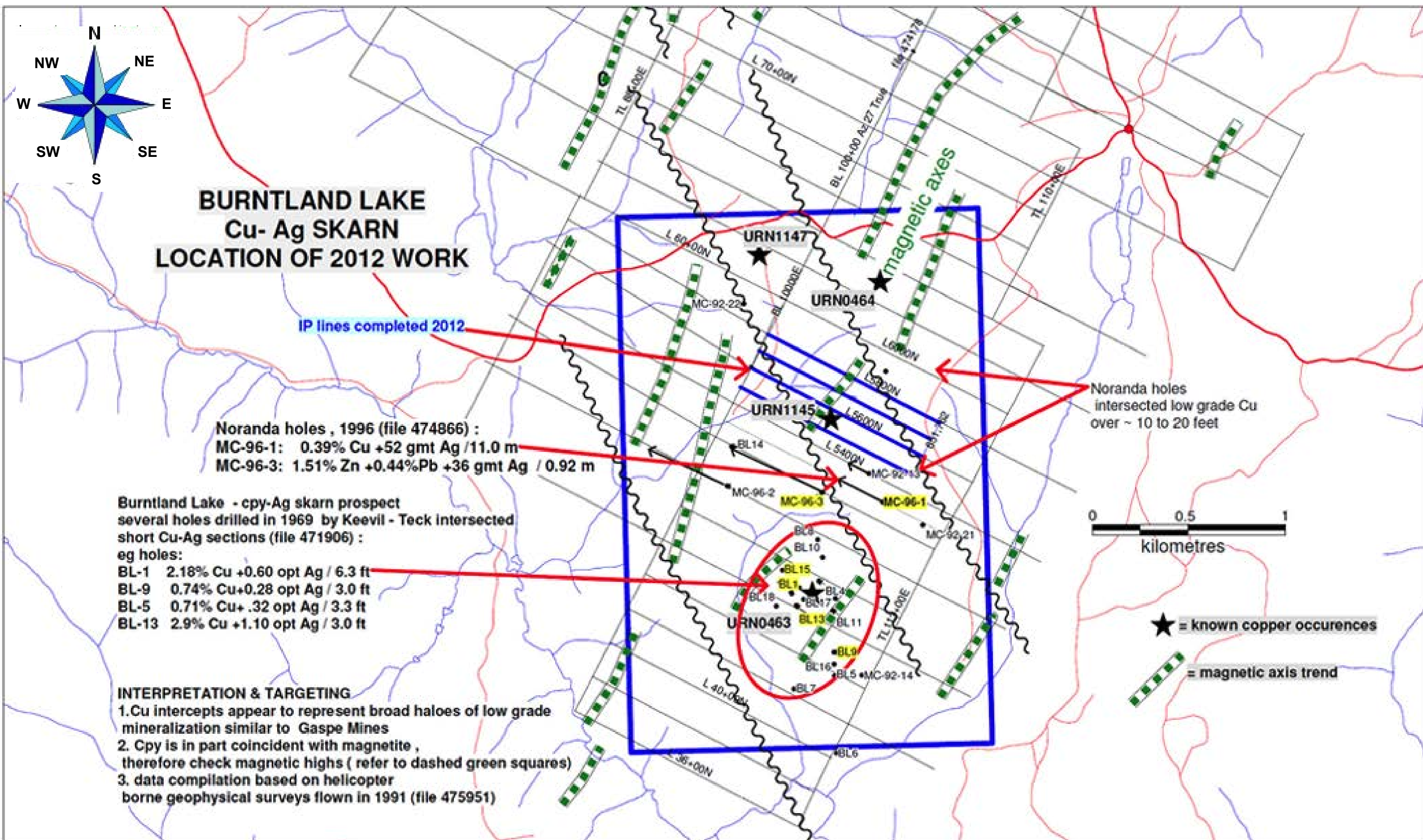
Cont: 2012-256

Subdivision:

Approb:

Figure No 12





(Sources: R. Mann, 2012)

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Date: January 2012

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Échelle/ Scale: As Shown

 **COMPILATION MAP OF THE BURNTLAND LAKE AREA**

Cont: 2012-256

Subdivision:

Figure No 13

## 5.0 HISTORY (cont.)

Maps are at 1: 50 000 scale. Figure No 12 shows parts of maps 21O/10 (west) and 21 O/11 (east). Some relatively strong magnetic anomalies are found in the south part of the Burntland Lake Block and more diffuse anomalies are concentrated in the western part and extending on Burntland North, in direction of the Legacy deposit.

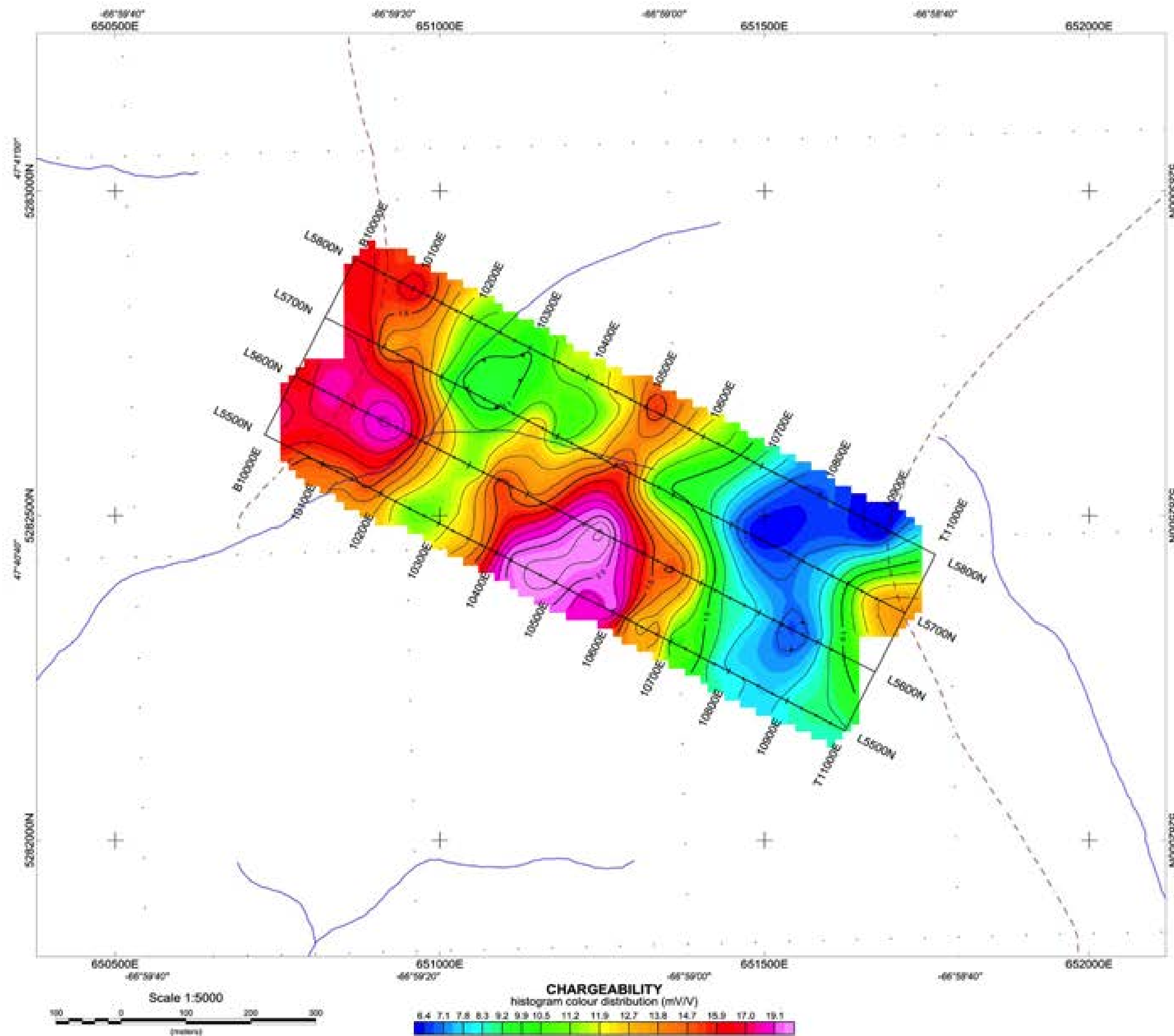
### 5.3.6. 2011 Staking of the Burtland Lake property and geophysical survey

In 2011, the Burntland group of claims was acquired by staking by three business men and prospectors from Bathurst. During Summer 2012, a line cutting grid was established in preparation for an I.P. / resistivity survey. The exploration work was focused on the central portion of the Burntland claims block. A 4.0 km grid was established with lines oriented at 117°, parallel with lines installed by Noranda Exploration in 1992 (see Figures No 13 and 14).

A pole-dipole deep I.P. /Resistivity survey was conducted by Vickers Geophysics Inc. of Bathurst. The choice of this survey was based on geochemical, geological and geophysical data from the Burntland Claim area. The objective of the survey was to define and delineate, near surface and at depth, areas of disseminated to massive sulphide mineralization that may be associated with significant economic mineralization. The choice of an IP/resistivity survey is to locate disseminated mineralization with the chargeability (also referred to as IP) and associated resistivities that may be electrically conductive or resistive. The induced polarization (IP) survey employed the pole-dipole array with six potential dipoles (n=1 to 6) with dipole “a” spacing equal to 25 metres (m) giving a calculated depth of 75 m. The IP/Resistivity survey covered a total of four thousand line-metres (4 000 m). One of the Pseudo Section is presented on Figure No 15.

The survey covers 4.0 km along one kilometre cut lines that were surveyed to test the continuation of the Burntland zone to the NE and at depth. Figure no 13 shows the location of these four IP tested lines. The survey indicates continued chargeability north of an area where Brunswick Mining and Smelting’s hole MC-96-1 had intersected 0.39% Cu and 52 g/T Ag over 11.0 metres. In the same area, about 150 m NW, hole MC-92-13 had intersected 10.20 m grading 0.43% Cu. The survey also indicated that the area west of the four lines warrants further work.

# CONTOURED CHARGEABILITY, n=1 to 6 filter



(Sources: Vickers Geophysics, 2012)

Client: **MURRAY BROOK MINERALS INC.**

Projet/ Project: **BURNTLAND COPPER-SILVER PROJECT**

**2012 INDUCED POLARIZATION & RESISTIVITY SURVEYS**  
(Chargeability n =1 to 6 filter contours, Pole - dipole)

Fait/ Made: C. Derosier P.Geo	Date: January 2012
Approb:	Échelle/ Scale: As Shown
Cont: 2012-256	Subdivision:
Figure No 14	





## **6.0 GEOLOGICAL SETTING**

### **6.1 Regional geology (Figures No 16 & 17)**

The Burntland Copper- Silver project area is underlain by rocks that are part of the Gaspé Belt (Bourque et al. 1995), also referred to as the Matapédia Cover Sequence (Fyffe and Fricker 1987; van Staal and de Roo 1995). The Gaspé Belt, extending from northern Maine through northern New Brunswick and into the Gaspé Peninsula, Quebec, is subdivided into three tectonostratigraphic zones which are from northwest to southeast: the Connecticut Valley-Gaspé Synclinorium, the Aroostook-Percé Anticlinorium, and the Chaleurs Bay Synclinorium (Bourque et al. 1995).

The Burntland Deposit area is underlain by sedimentary rocks of the Silurian Upsalquitch Formation of the Chaleurs Bay Synclinorium (St. Peter 1978; Carroll 2003a; Plate 2005-3A). The Aroostook-Percé Anticlinorium is host to the oldest rocks in the Gaspé Belt, namely the Upper Ordovician Grog Brook Group (siliciclastic rocks), the Upper Ordovician to Lower Silurian Matapédia Group (carbonate dominated sequence of rocks) and the Silurian Perham Group. On the western flank of the Aroostook-Percé Anticlinorium, between the Lower Downs Gulch and Restigouche-Grand Pabos faults, the Matapédia Group is conformably overlain by Silurian rocks of the Perham Group. The Connecticut Valley-Gaspé Synclinorium consists of Late Silurian to early Devonian siliciclastic rocks of the Fortin and Gaspé Sandstones groups (Carroll 2003a). The simplified bedrock geology of the area is shown on Figure 16.

The stratigraphic description of the Northern part of New Brunswick is made on page 37.

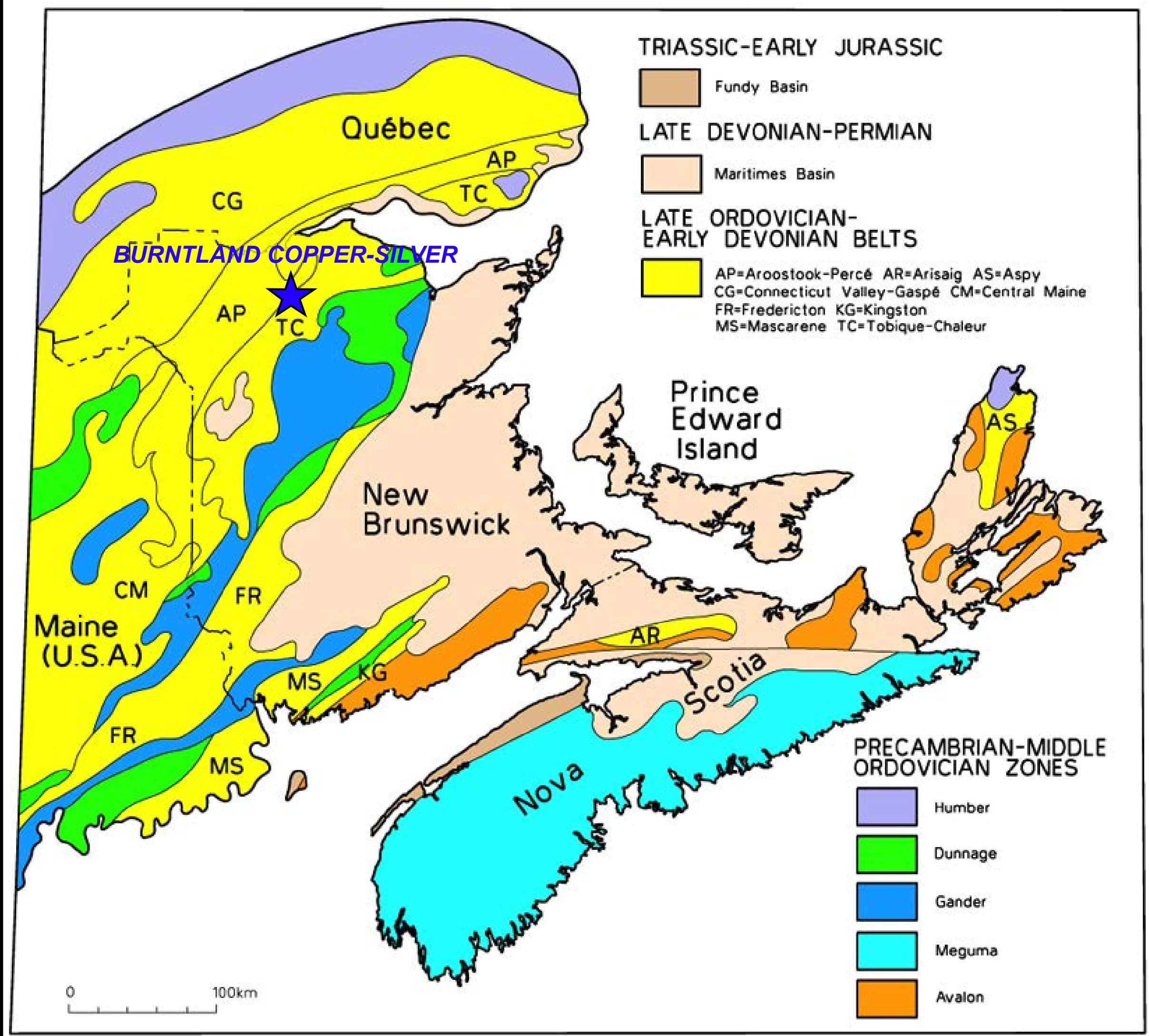
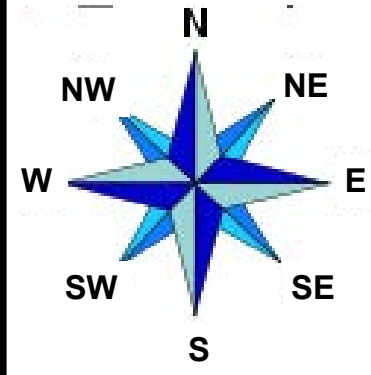
### **6.2 Local Geology**

The McKenzie Gulch (grouping the Burntland and Legacy occurrences), Patapedia and Popelogan deposits are the most interesting skarn deposits in the Upsalquitch River area. All three of these deposits are hosted by limestones of the Late Ordovician to Early Silurian Matapedia Group and are spatially related to northeast trending faults and to syntectonic felsic intrusions.

The McKenzie Gulch area is fault bounded. The McKenzie Gulch Fault marks the western contact of the Matapedia Group with the coeval Grog Brook Group; the eastern boundary follows the Rocky Gulch Fault, across which lies the Upsalquitch Formation of the Chaleurs Group. Numerous feldspars+/- quartz porphyritic and occasionally equigranular felsic dykes and sills follow the north-northeasterly trending faults.

The Matapedia Group rocks comprise dark grey variably calcareous argillite and siltstone, white limestone and a characteristic “ribbon rock” composed of well laminated limestone and limey argillite interbedded in 1-5 cm thick units. The metamorphosed equivalent of these consist of fine grained white marble, dark purple-grey hornfels, light green calcareous hornfels (porcellanite), and garnet-pyroxene skarn.

The dominant structural fabric in the area is a pronounced NNE trending sub-vertical cleavage, which parallels lithological contacts and the major fault zones. This cleavage is axial planar to tight isoclinal upright folds with shallow doubly-plunging fold axes.



(Source: NB-NR-1-2008)

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Project/ Project		Date: January 2013	
		Échelle/ Scale: As Shown	
	TECTONIC MAP OF NEW BRUNSWICK	Cont: 2012-256	Subdivision:
		Approb:	Figure No 16

## 6.0 GEOLOGICAL SETTING (cont.)

### STRATIGRAPHIC COLUMN OF THE NORTHERN NEW BRUNSWICK

#### DEVONIAN

**Dmi:** Medium- to fine-grained, dark green, locally feldspar porphyritic diabase and gabbro.

**Dfi:** Pink to orangeish pink, fine-grained, variously feldspar- and/or quartz-phyric aplite and felsite.

#### LATE SILURIAN – EARLY DEVONIAN

##### GASPÉ SANDSTONES GROUP

**York Lake Formation (DYLs):** Greenish grey to grey, thick- to thin-bedded, variously micaceous, fine- to medium grained, noncalcareous to locally weakly calcareous, locally carbonaceous sandstone, and grey mudstone.

##### FORTIN GROUP

**Témiscouata Formation (DTCs):** Dark grey, micaceous, thin- to medium-bedded, weakly calcareous to non-calcareous siltstone interbedded with thin- to medium bedded, weakly calcareous, grey sandstone; locally, minor polymictic conglomerate.

**Gin Creek Member (DTCGC):** Dark grey, strongly calcareous, micaceous, thin-bedded siltstone and argillaceous limestone.

**Tracy Brook Formation (SDTRs):** Grey to greenish grey, locally reddish grey, thin- to medium bedded, variously micaceous, weakly to moderately calcareous, fine-grained sandstone and siltstone; locally, well developed cross-bedding and cross-lamination. Red and green siltstone occurs intermittently near the top of the unit. Locally graptolite bearing.

#### EARLY SILURIAN

##### CHALEURS GROUP

**UPSALQUITCH FORMATION (SUPs):** Medium grey to greenish grey, weakly calcareous to strongly calcareous, thin- to locally thick-bedded, fine-grained sandstone, siltstone and shale. Thick-bedded, fossiliferous debris flows occur locally. Bed-forms are characteristic of turbidite deposition and are commonly bioturbated.

##### PERHAM GROUP

**Gounamitz Lake Formation (SGOs):** Medium grey, thin- to thick-bedded, moderately calcareous, fine-grained, massive sandstone interbedded with thin- to medium- bedded, weakly calcareous, well laminated and cross-bedded, grey to greenish grey, fine-grained sandstone. Minor maroon-red and greyish green shale near the top of the unit. Laminated and cross-bedded varieties are locally graptolite bearing. Minor calcilutite near the base of the unit.

#### LATE ORDOVICIAN – EARLY SILURIAN

##### MATAPÉDIA GROUP

**White Head Formation (OSWHLs):** Medium grey to dark blueish grey, thin- to medium-bedded, locally laminated, calcilutite and strongly calcareous, greyish black mudstone. Minor calcarenite near the base of the unit.

**Pabos Formation (OPAs):** Thin- to thick-bedded, fine- to coarse-grained calcareous sandstone interbedded with thin- to medium-bedded, calcareous siltstone and shale; minor thin- to medium-bedded, dark bluish grey calcilutite occurs near the top of the unit.

#### LATE ORDOVICIAN

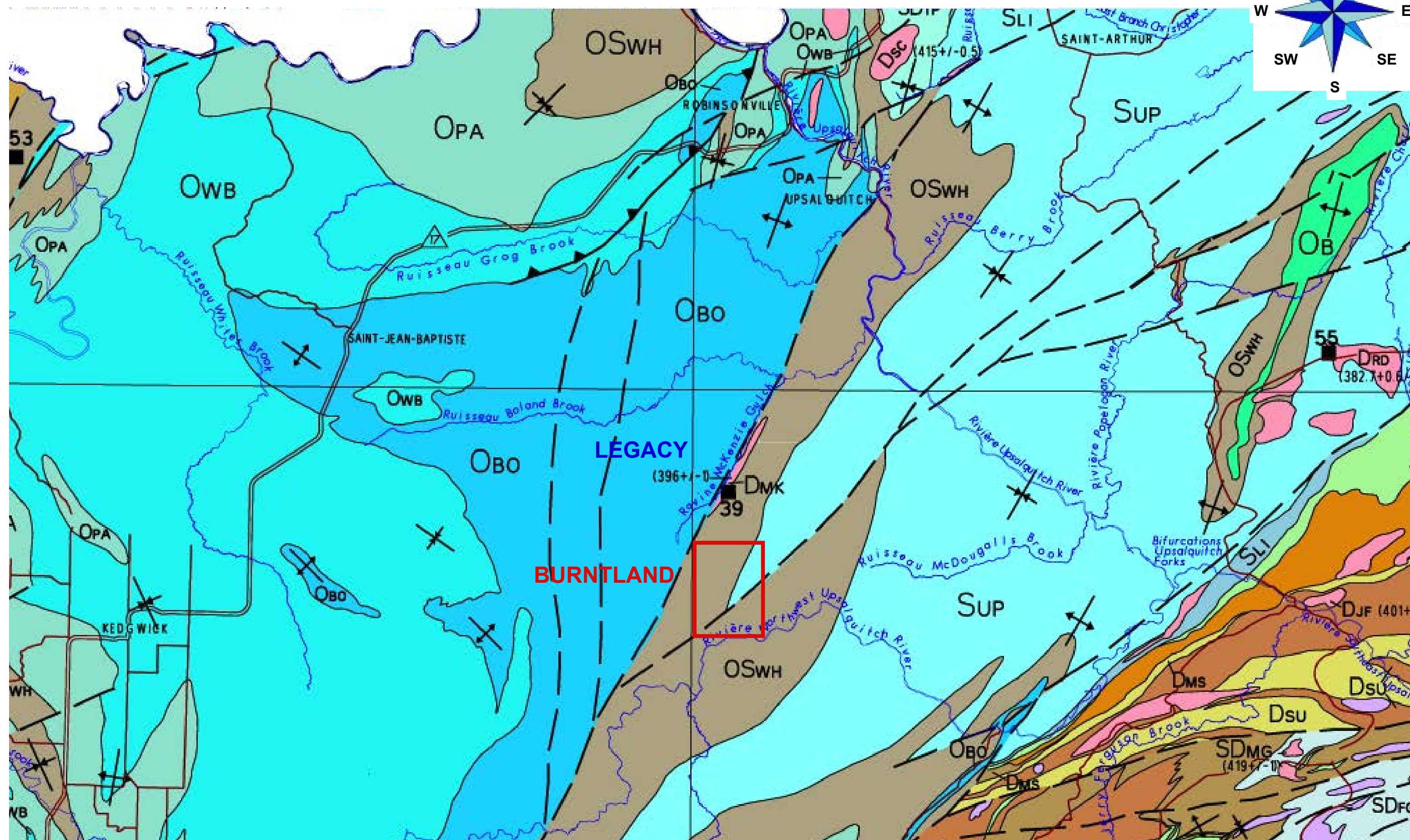
##### GROG BROOK GROUP

**Whites Brook Formation (OWBcc):** Thick- to medium-bedded, moderately mature, medium dark grey, weakly calcareous, fine- to coarse-grained sandstone interbedded with thin- medium-bedded, medium dark grey, noncalcareous, siltstone and shale. Graded bedding, cross- and parallel lamination typify deposition by turbidity flow.

**Boland Brook Formation (OBOMc):** Medium- to thick-bedded, noncalcareous, dark grey siltstone interbedded with thin-bedded, medium grey, weakly calcareous fine-grained sandstone. Minor immature carbonaceous laminae locally. Minor polymictic conglomerate near the base of the unit.

**Ritchie Brook Member (OBORB):** Thin-bedded, dark grey to black, locally pyretic, carbonaceous shale and siltstone. Not greater than 30 metres in thickness.





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**PART OF THE REGIONAL GEOLOGICAL MAP**  
 (Source: NR-3 MRN Canada)

Fait/ Made: C. Derosier P.Geo

Date: January 2013

Approb:

Échelle/ Scale: 1: 250 000

Cont: 2012-256

Subdivision:

Figure No 17

# LEGEND

SEDIMENTARY ROCKS	MAFIC VOLCANIC ROCKS	FELSIC VOLCANIC ROCKS	INTRUSIVE ROCKS
<p><b>LATE CARBONIFEROUS</b></p> <p>Medium- to fine-grained, terrestrial, clastic rocks (Pérou Group - Clifton Formation)</p> <p><b>EARLY CARBONIFEROUS</b></p> <p>Coarse- to medium-grained, terrestrial, clastic rocks (Mabou Group - Atholville and Red Pine Brook formations; Perot Group - Bonaventure Formation)</p> <p><b>EARLY DEVONIAN</b></p> <p>Medium- to fine-grained, terrestrial to nearshore-marine, siliclastic rocks (Gaspé Sandstone Group - York Lake and Campbellton formations)</p> <p>Fine-grained, offshore, deep-marine, siliclastic rocks (Forin Group - Temiscouata Formation)</p> <p>Fine- to medium-grained, terrestrial to nearshore-marine, siliclastic rocks (Tobique Group - Greys Gulch Formation; Dalhousie Group - Mitchell Settlement Formation)</p> <p>Medium- to fine-grained, nearshore- to offshore-marine, siliclastic rocks (Tobique Group - Cosigen Mountain and Wapake formations; Dalhousie Group - Jacques River, Burnside and Big Hole Brook formations)</p> <p><b>LATE SILURIAN - EARLY DEVONIAN</b></p> <p>Medium- to fine-grained, offshore-marine, siliclastic rocks (Forin Group - Tracy Brook Formation; Chaleurs Group - Free Grant Formation)</p> <p>Fine-grained, nearshore-marine, calcareous, siliclastic rocks (Chaleurs Group - Indian Point Formation)</p> <p>Nearshore-marine, carbonate rocks and associated fine-grained, calcareous, siliclastic rocks (Chaleurs Group - West Point and LaPlante formations)</p> <p><b>EARLY - LATE SILURIAN</b></p> <p>Fine- to medium-grained, offshore- to deep-marine, calcareous and locally ferruginiferous, siliclastic rocks (Petham Group - New Sweden and Jemland formations)</p> <p>Medium- to fine-grained, offshore- to deep-marine, siliclastic rocks (Petham Group - Gouramitz Lake Formation; Chaleurs Group - Glenville and Upsalquitch formations; Kingsdeer Group - Gordon Meadow Brook Formation)</p> <p>Nearshore-marine, carbonate rocks and associated fine-grained, calcareous, siliclastic rocks (Chaleurs Group - Limestone Point and La Vieille formations)</p> <p>Coarse- to medium-grained, terrestrial to nearshore-marine, clastic and volcanoclastic rocks (Chaleurs Group - Weir, Simpson's Field, South Charlo and Nine Mills formations)</p> <p><b>LATE ORDOVICIAN - EARLY SILURIAN</b></p> <p>Fine-grained, calcareous turbidites and deep-marine carbonate rocks (Matapédia Group - White Head Formation)</p> <p><b>LATE ORDOVICIAN</b></p> <p>Medium- to fine-grained, calcareous to non-calcareous, siliclastic turbidites (Matapédia Group - Pabos Formation)</p> <p>Medium- to fine-grained, medium- to thick-bedded, lithic turbidites (Grog Brook Group - Whites Brook Formation)</p> <p>Fine-grained, thin-bedded, siliclastic turbidites (Grog Brook Group - Boland Brook Formation)</p> <p>Medium- to fine-grained, thin- to medium-bedded, lithic turbidites (Tetagouche Group - Tassoganope Formation; Fournier Group - Elmerie and Millstream formations)</p> <p>Medium- to fine-grained, medium- to thin-bedded, lithic turbidites and fine-grained, ferruginiferous, siliclastic rocks and chert (California Lake Group - Boucher Brook Formation; Tetagouche Group - Little River Formation; Sheephouse Brook Group - Blacks Lake Formation)</p> <p><b>MIDDLE ORDOVICIAN</b></p> <p>Medium- to fine-grained, thin- to medium-bedded, lithic turbidites (Fournier Group - Pointe Verte Formation; California Lake Group - Mount Britain, Canoe and Landing Spruce Lake formations; Tetagouche Group - Nepisiguit Falls Formation)</p> <p><b>LATE CAMBRIAN - EARLY ORDOVICIAN</b></p> <p>Medium- to fine-grained, thin-bedded, lithic turbidites (Miramichi Group - Patrick Brook Formation)</p> <p>Medium- to fine-grained, thin- to medium-bedded, quartzose to lithic turbidites (Miramichi Group - Knights Brook Formation)</p> <p>Medium- to fine-grained, medium- to thick-bedded, quartzose turbidites (Miramichi Group - Chain of Rocks Formation)</p>	<p>Medium- to coarse-grained, terrestrial volcanoclastic rocks (Tobique Group - Wapake Formation; Dalhousie Group - Val d'Amour Formation)</p> <p>Mainly andesitic flows and tuffs (Dalhousie Group - Mitchell Settlement, Val d'Amour and Burnside formations)</p> <p>Mainly basaltic flows and tuffs (Dalhousie Group - Val d'Amour Formation; Tobique Group - Greys Gulch; Cameron Mountain, Cosigen Mountain and Wapake formations)</p> <p>Basaltic flows (Chaleurs Group - Bryant Point Formation)</p> <p>Basaltic to andesitic tuffs and flows (Belmont Group - undivided; includes Popelogan and Goulette Brook formations)</p> <p>Alkaline and tholeiitic basalts (Fournier Group - Somersy, Pointe Verte, Devenaux formations and Belledune River Mélange)</p> <p>Alkaline basalts (Tetagouche Group - Little River Formation; California Lake Group - Boucher Brook Formation; Sheephouse Brook Group - Blacks Lake Formation)</p> <p>Alkaline and tholeiitic basalts (Tetagouche Group - Hayden Lake and Flat Landing Brook formations; California Lake Group - Caroe Landing and Spruce Lake formations)</p>	<p>Felsic volcanic rocks (Dalhousie Group - Val d'Amour and Archibald Settlement formations; Tobique Group - Greys Gulch, Cosigen Mountain and Wapake formations)</p> <p>Felsic volcanic rocks (Chaleurs Group - Bryant Point and Benjamin formations)</p> <p>Felsic volcanic rocks (Tetagouche Group - Flat Landing Brook Formation; Sheephouse Brook Group - Seveigne River Formation)</p> <p>Felsic volcanic rocks (Tetagouche Group - Nepisiguit Falls and Hayden Lake formations)</p> <p>Felsic volcanic rocks (Sheephouse Brook Group - Clearwater Stream Formation)</p> <p>Felsic volcanic rocks (California Lake Group - Spruce Lake and Mount Britain formations)</p>	<p><b>EARLY JURASSIC</b></p> <p>Tholeiitic diabase</p> <p><b>LATE SILURIAN TO LATE DEVONIAN</b></p> <p>Felsic to intermediate intrusive rocks</p> <p>Mafic intrusive rocks</p> <p><b>MIDDLE ORDOVICIAN</b></p> <p>Foliated felsic intrusive rocks</p> <p>Foliated mafic intrusive rocks</p> <p><b>NEOPROTEROZOIC TO EARLY CAMBRIAN</b></p> <p>Foliated gabbro</p>
<p>Tectonic mélange</p> <p>Fault</p> <p>Thrust fault</p> <p>Location of radiometric date</p> <p>Anticline, syncline</p>			

Client: **MURRAY BROOK MINERALS INC.**

Projet/ Project **BURNTLAND COPPER- SILVER PROJECT**



**LEGEND OF THE REGIONAL GEOLOGICAL MAP**

Fait/ Made: C. Derosier P.Geo

Date: January 2013

Échelle/ Scale: NONE

Cont: 2012-256

Subdivision:

Approb:

Figure No 17A



## 6.0 GEOLOGICAL SETTING (cont.)

A later deformation with more widely spaced sub-vertical axial planar cleavage trending  $150^\circ$  is also evident. This trend is parallel to a fault set. One particular  $150^\circ$  fault is located 3 km NNE of the Legacy deposit. It is intruded by a dyke and is filled with chalcopyrite- pyrrhotite and magnetite mineralization thus indicating that this fault predates the intrusive and mineralizing events. Numerous creeks also follow that direction.

Felsic dykes and sills range in thickness from a few centimetres to greater than 100 m. Colour ranges from red to cream to brownish in fresh samples. Aphanitic and equigranular dykes are present but most of the dykes are feldspar- quartz porphyric. Chill margins are generally missing. Sericitization and saussuritization commonly accompany fine- grained disseminated pyrite with traces of chalcopyrite in the felsic dykes. Veinlets of magnetite and pyrrhotite cross-cut some dykes. Other dykes may be cut by fault zones that may contain chalcopyrite mineralization. Thin calcite veins containing medium to coarse grained galena, sphalerite, pyrite and rarely molybdenite occur in some felsic dykes.

There no known relationship between alteration in the dykes and the presence of mineralization in the surrounding sedimentary rocks. Some of the best zones of mineralization are cut by unaltered dykes and conversely barren garnet-pyroxene skarn lies in contact with highly altered chalcopyrite bearing dykes.

The thickness of metamorphosed rocks adjacent to the dykes bears no relationship to the thickness of the dykes. One of the thickest skarn band intersected in diamond drill holes occurs in an area where only a few narrow dykes are present.

The contacts between contact metamorphosed and the relatively unmetamorphosed sedimentary rocks can be extremely abrupt. Garnet-pyroxene skarn can be seen in contact with soft calcareous siltstone- argillite with no apparent faulting at the contact. The change from hornfels to weakly calcareous argillite takes place gradually over few 10's of metres with the rock becoming less indurated across the transitional contact. Another common type contact is characterized by variably intense bleaching along fractures and zones of permeability, which demarcate the outer fringe of hydrothermal activity.

The narrow metamorphic aureoles indicate that this type of metamorphism is not a regional phenomenon. The high temperature mineralogy of the metasedimentary rocks is therefore probably the result of heat transfer by hydrothermal fluids migrating along both macro and micro-scale conduits rather than conductive heat transferred from the dykes.

Mineralization consist of epidote, dark greenish chlorite and magnetite and often occur in the garnet- pyroxene skarn when sulphides are present. The presence of magnetite, although not always co-extensive with the chalcopyrite- pyrrhotite and/or pyrite mineralization, provides a weak magnetic target for exploration. The skarn occurs as thick beds and as veinlets within hornfelsic or porcellanite sedimentary rocks. Sulphide minerals are generally associated to coarse- grained variety of skarn.

It can be concluded from the different observations that the thermal effect from the dykes on



# LEGEND

## LATE SILURIAN to EARLY DEVONIAN

- SDMG<sub>fl</sub>** MULLIGAN GULCH PORPHYRY: Greyish green, maroon, or pink feldspar porphyry; minor pink felsite.
- SD<sub>fl</sub>** Pink microgranite, locally sparsely feldspar-phyrlic.

## SILURIAN

### CHALEURS GROUP

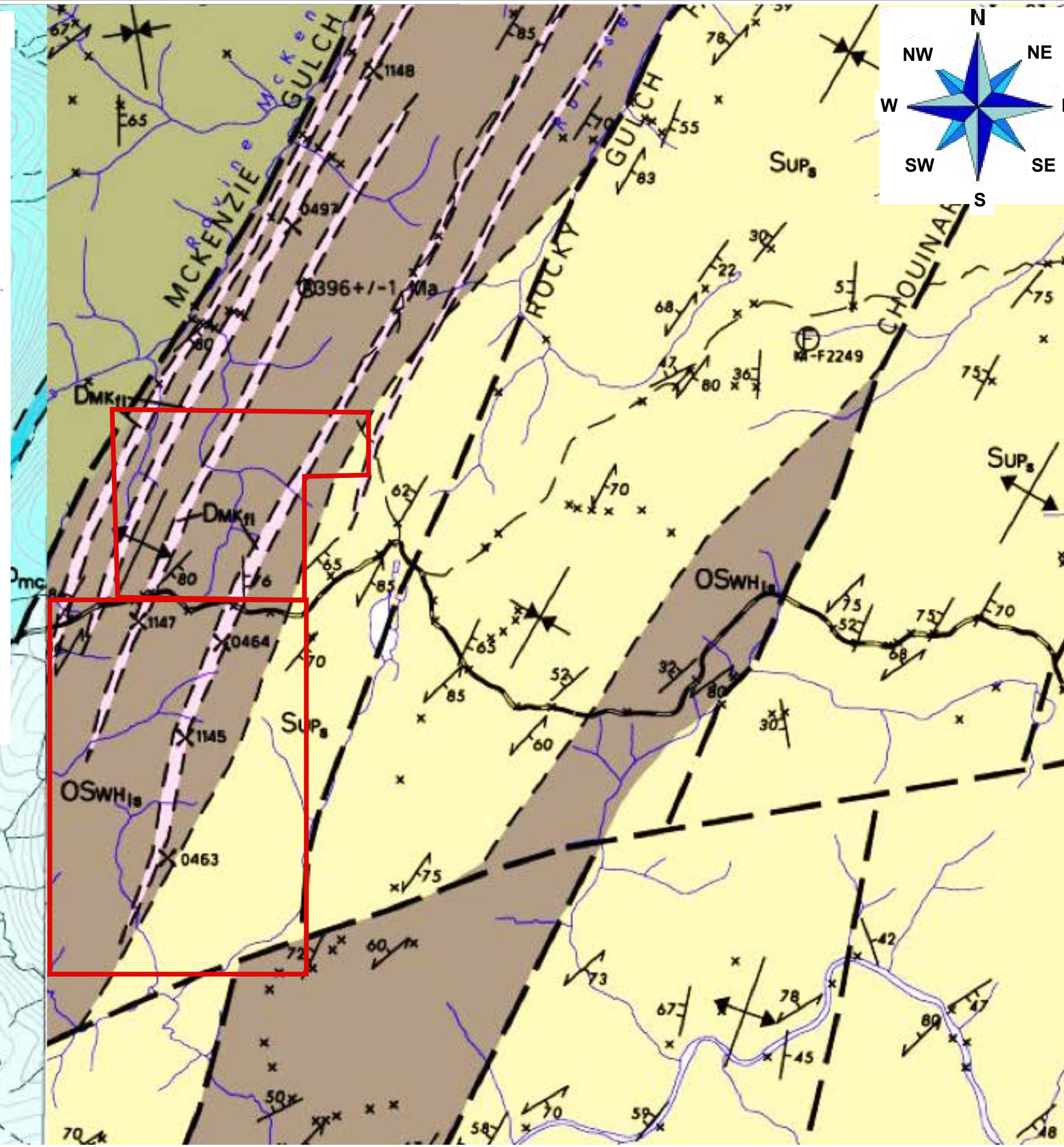
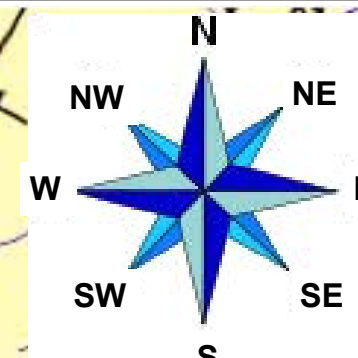
- SFG<sub>s</sub>** FREE GRANT FORMATION: Medium grey, thin- to medium-bedded, fine- to medium-grained, locally calcareous, quartzose sandstone and siltstone; minor dark grey mudstone.
- SLP** LAPLANTE FORMATION: Greyish green to dark grey, thin- to thick-bedded, locally fossiliferous, calcareous mudstone and fine-grained sandstone, and local light grey, pink or white biohermal limestone, minor calcarenite and thin-bedded maroon mudstone.
- SSF<sub>s</sub>** SIMPSONS FIELD FORMATION: Reddish maroon or dark green, thick-bedded, fine- to very coarse-grained polyolithic sandstone and conglomerate, and minor grey, parallel-laminated, fine-grained sandstone.
- SBE<sub>fv</sub>** BENJAMIN FORMATION: SBE<sub>fv</sub> - Pink to maroon, aphyric to sparsely porphyritic flow-layered rhyolite; minor felsic tuff, basalt and conglomerate. SBE<sub>ft</sub> - Pink, maroon, or light green lithic and lithic-crystal lapilli tuff. SBE<sub>mv</sub> - Dark green to dark grey, massive to amygdaloidal basalt.
- SBE<sub>ft</sub>**
- SBE<sub>mv</sub>**
- SBP<sub>mv</sub>** BRYANT POINT FORMATION: SBP<sub>mv</sub> - Dark grey, dark green, and maroon massive to amygdaloidal basalt; minor volcanic cobble-boulder conglomerate and felsic tuff.
- SBP<sub>fv</sub>** SBP<sub>fv</sub> - Pink to maroon quartz- and feldspar-phyrlic rhyolite, felsic crystal tuff and lithic-crystal tuff. SBP<sub>cc</sub> - Dark maroon to reddish brown, rhyolite-basalt-cobble/boulder conglomerate.
- SBP<sub>cc</sub>**
- SLI<sub>s</sub>** LIMESTONE POINT FORMATION: Light grey, thin-bedded, parallel-laminated, calcareous fine-grained sandstone; minor calcarenite and pale grey fossiliferous limestone.

- SUP<sub>s</sub>** UPSALQUITCH FORMATION: Grey to greenish grey, thin-bedded, non-calcareous to moderately calcareous siltstone and fine-grained sandstone, commonly bioturbated and parallel- or cross-laminated; minor calcilutite.

## LATE ORDOVICIAN to EARLY SILURIAN

### MATAPÉDIA GROUP

- OSWH<sub>ls</sub>** WHITE HEAD FORMATION: Dark grey, thin-bedded calcilutite interbedded with calcareous mudstone; minor light grey, parallel laminated, fine-grained calcareous sandstone.
- OPA<sub>s</sub>** PABOS FORMATION: Medium to dark grey, thin-bedded calcareous siltstone and fine-grained sandstone, minor calcarenite and calcilutite.



Source: NB- MP-2007-33

## MURRAY BROOK MINERALS INC.

Projet/ Project: **BURNTLAND COPPER- SILVER PROJECT**

Fait/ Made: C. Derosier P.Geo



## GEOLOGICAL MAP OF THE BURNTLAND LAKE AREA

Date: January 2013

Cont: 2012- 256

Subdivision:

Échelle/ Scale: 1: 50 000

Approb:

Figure No 18



## **6.0 GEOLOGICAL CONTEXT (cont.)**

the surrounding country rocks are usually minimal. Mineralization in the country rocks also has no known direct relationship to proximity of barren or altered mineralized dykes. It is felt, therefore, that dyke emplacement occurred over a time period that exceeded the mineralizing-metasomatic event but exploited the same zones of weakness that were utilized by migrating hydrothermal fluids.

### **6.3 The Legacy Deposit**

The Legacy Deposit, discovered in 1968, is located roughly situated 3 km NE of McKenzie Lake and outcrops at the crest of the slope east of McKenzie Gulch.

Chalcopyrite- pyrrhotite mineralization is hosted primarily by silicified limestone and, to a lesser extent, in skarn as bed and irregular bodies within the silicified limestone. Most of the mineralization occurs along fractures in the silicified limestone with only a small component in disseminated form.

Garnet and pyroxene skarn is found within the outlined area of mineralization, usually adjacent to felsic dykes, but is generally only weakly mineralized. A parallel band of marble with more appreciable skarn occurs roughly 100 metres southeast of the Legacy Deposit but it contains only minor amounts of copper mineralization. This is uncharacteristic when compared to other chalcopyrite mineralized zones found in the area, which generally exhibit a spatial association with magnetite. Despite the pyrrhotite associated to the chalcopyrite, there is only a weak airborne magnetic feature over the Legacy Deposit, which is arguably due to the mineralization itself since it extends hundreds of metres along strike. It has a limited strike extent of about 200 m but is known to extend to a depth of 400 m, below which it is untested.

Even though the Legacy Deposit is unusual vis à vis the other copper occurrences found in the skarn in the belt (Popelogan, Patapedia, Rockmack, etc.) with respect to lack of garnet- pyroxene skarn mineralogy and lack of magnetite, it does contain the best historical mineral resources which were estimated by Copperfields in 1971. This copper mineralization is contained in three, steeply dipping mineralized zones varying from 1.5 m to 12.20 m in width. The steeply dipping zones are confined along strike with a plunge to the NNE of about 50°. Therefore, they have a pipe-like shape. The termination of mineralization along strike occurs abruptly in both directions but it is not known if this abrupt contact is due to faulting or is mainly the limit of hydrothermal fluid migration away from the fault along which the fluids and gas travelled. An abrupt contact such as this between bleached and unbleached calcareous rocks exposed in the open pit at Needle Mountain in Murdochville, Gaspé.

The NE trending stratigraphy is offset by a steep, north dipping fault trending at 150° roughly 50 m north of the mineralized surface outcrop.

### **6.4 The Burntland Lake Occurrence (Figure No 18)**

The Burntland Lake occurrence is situated 2 km south -southwest of Burntland Lake and was

## 6.0 GEOLOGICAL CONTEXT (cont.)

also discovered in 1968. Eighteen (18) drill holes and numerous surface trenches were completed in 1969 in the immediate vicinity. Mineralization is hosted in green magnetic garnetiferous skarn but no mineral resources were estimated since that time, mainly due to the lack of continuity between drill holes.

The best drill intersection was in BL-01 drilled beneath the surface showing that contained 2.18% Cu over a 1.90 m interval. The area is somewhat unique in the belt because metasomatic effects are widespread and not restricted to narrow linear zones.

## 6.5 Other Copper-Silver Occurrences

Trenching and diamond drilling made by Noranda in 1991 and 1992 resulted in the discovery of several new copper mineralized zones of skarn-hosted chalcopyrite. Copper mineralization is generally hosted by coarse-grained, magnetite-chlorite-bearing garnet - pyroxene skarn. Significant occurrences are shown on Figure No 10.

Trenching 1.5 km NNE of the Legacy Deposit encountered a **5.0 m wide mineralized zone averaging 4.6% Cu in a shear zone** within silicified limestone near the contact of a porphyritic dyke. Subsequent diamond drilling and trenching along strike indicated that this mineralization was of very limited extent.

A 142 m section of skarn and porcellanite hornfels with traces of copper and up to 15 % disseminated magnetite located south of Boland Brook. This drill hole tested a strong, deep-seated magnetic feature. Significant copper mineralization, however, was confined to a 0.60 m wide zone containing 0.48% Cu. These significant zones of well developed skarn and associated chalcopyrite were discovered in the early 1970's by Noranda north of Boland Brook and are associated with strong magnetic anomalies. The main showing consisted of a 200 m long zone with numerous outcrops containing chalcopyrite and pyrite. The mineralization occurs as massive fracture fillings in skarn and in dense banded hornfels. One drill hole in this zone encountered a 15.2 m wide zone of skarn which contained **a 1.5 m section of 1.35 % Cu**.

Another occurrence located approximately 1 km to the NNE comprises skarn hosted chalcopyrite, pyrrhotite and pyrite in a roughly sub-circular area 180 m across.

The third occurrence outcrops intermittently over a 300 m length trending-up the north slope of the Boland Valley. Traces of chalcopyrite and minor pyrite occur throughout this zone of extensive skarn.

Two magnetite-chalcopyrite bearing mineralized zones were encountered NNE of the Burntland Lake occurrence. The drill holes were based upon weak but distinct magnetic highs. **A 10.2 m interval with 0.40% Cu** in the most southerly drill hole was part of a broad area of metasomatically altered rock. The mineralized interval (0.30% Cu over 7.8 m) in the northern drill hole was part of a much narrower zone of skarn and bleaching. Subsequent trenching along strike from these intersections encountered a 175 m wide zone of metasomatized sediments and porphyry dykes in the vicinity of the southerly drill hole. Grades of the mineralization however did not significantly improved in the following trenching.

## 7.0 DEPOSIT TYPES

The McKenzie Gulch (which includes Legacy and Burntland ), Popelogan, Patapedia in New Brunswick, Gaspé Copper and Madeleine Mines in Quebec are copper deposits associated to skarns with many of the characteristics of a porphyry, situated within a NE trending belt of Cu and Cu-Mo deposits stretching from Northern Maine to eastern Gaspé and widely considered to be of skarn-type.

The McKenzie Gulch, Patapedia and Popelogan deposits (Figure No 19) are the most interesting skarn deposits in the Upsalquitch River area. All three of these deposits are hosted by limestone of the Late Ordovician to Early Silurian Matapedia Group and are spatially related to northeast trending faults and to syntectonic felsic intrusions.

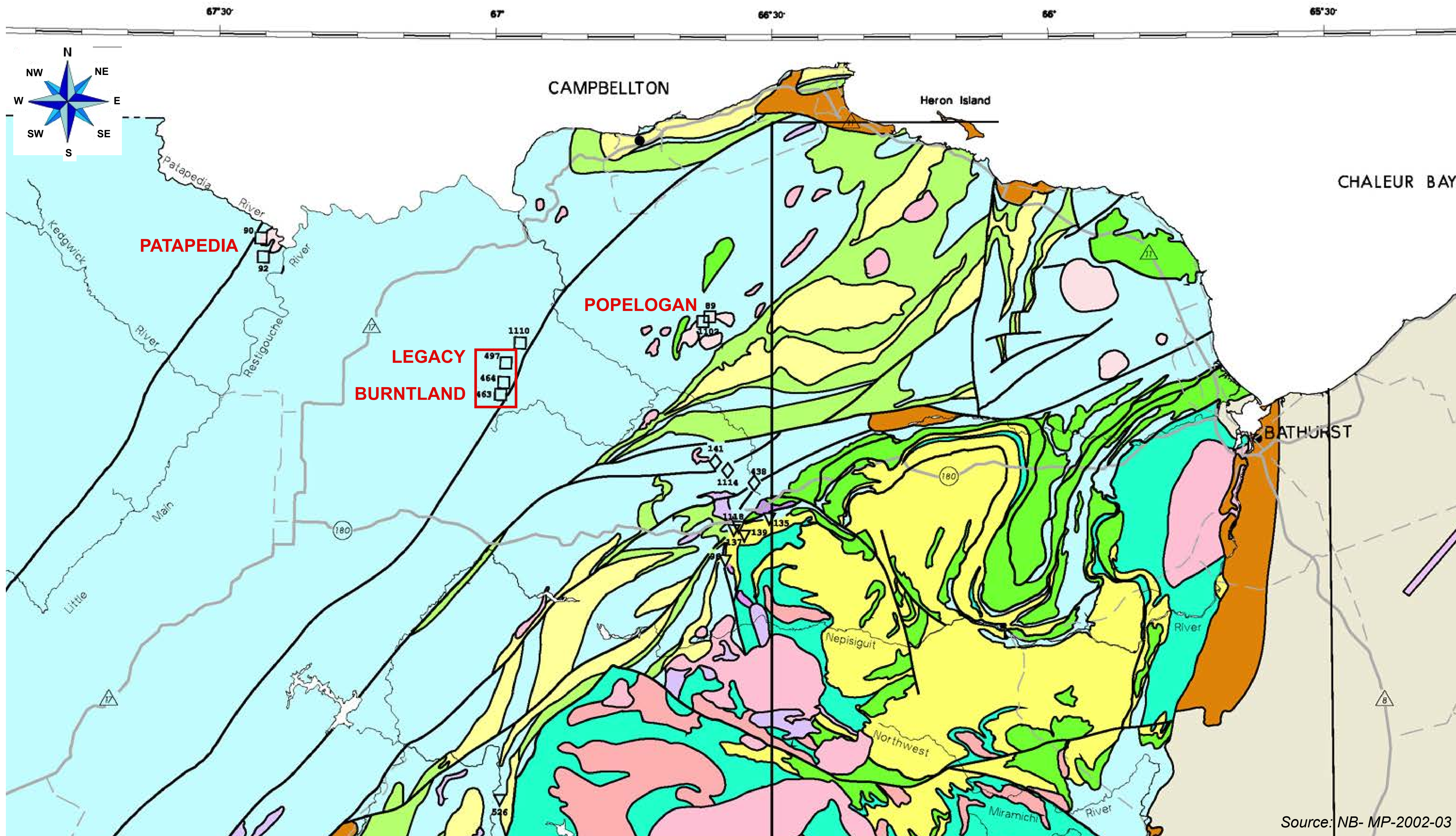
The mineralization is pyrometasomatic, associated to granitic intrusive plutons, of the same family than the porphyric type deposit. In Canada, skarn deposit account for approximately 10% of Canada's copper production and approximately 6% of its reserves. World significant skarn copper deposits occur scattered around the World. In China and Utah, skarns are an important source of copper. Canadian deposits mined range from 100 000 tonnes averaging 1.5% Cu to 200 million tonnes averaging 0.4% Cu. but most of the economic deposits contain 1 to 20 million tonnes and average 1 to 2% Cu.

Most skarn deposits occur in mobile belts, in or near limestones or impure limestones , at or near contacts with mafic to felsic intrusions. The very large skarn copper deposits occur mainly in porphyry copper districts.

The genetic model consists of a hydrothermal replacement (Figure No 20), with lesser open space filling, products of hydrothermal systems related to emplacement of intrusions. Metals may have been derived from the intrusions, or from surrounding country rocks.

Limestone can be altered at different degrees based on the nature of the mineralizing fluids, temperature and intensity of the phenomenon. The limestone may be simply silicified, but also be metamorphosed in skarn or porcellanite.

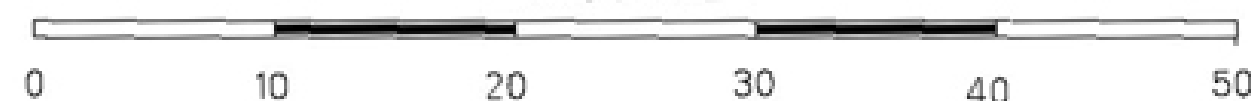
The mineralization observed in association to this phenomenon of alteration consists of sulphides (pyrite, pyrrhotite, sphalerite, chalcopyrite, etc.) in dissemination, as flakes in the rock, or within veins and veinlets which may cut the unit. Distribution of the mineralization is difficult to predict. Generally, in order to evaluate the full potential, the whole unit must be taken in consideration.



Source: NB- MP-2002-03

SCALE 1:500 000

KILOMETRES



MILES



Client:

**MURRAY BROOK MINERALS INC.**

Projet/ Project

**BURNTLAND COPPER- SILVER PROJECT**



**METALLOGENIC MAP OF NORTHERN NEW BRUNSWICK**

Fait/ Made: C. Derosier P.Geo

Date: January 2012

Échelle/ Scale: 1: 500 000

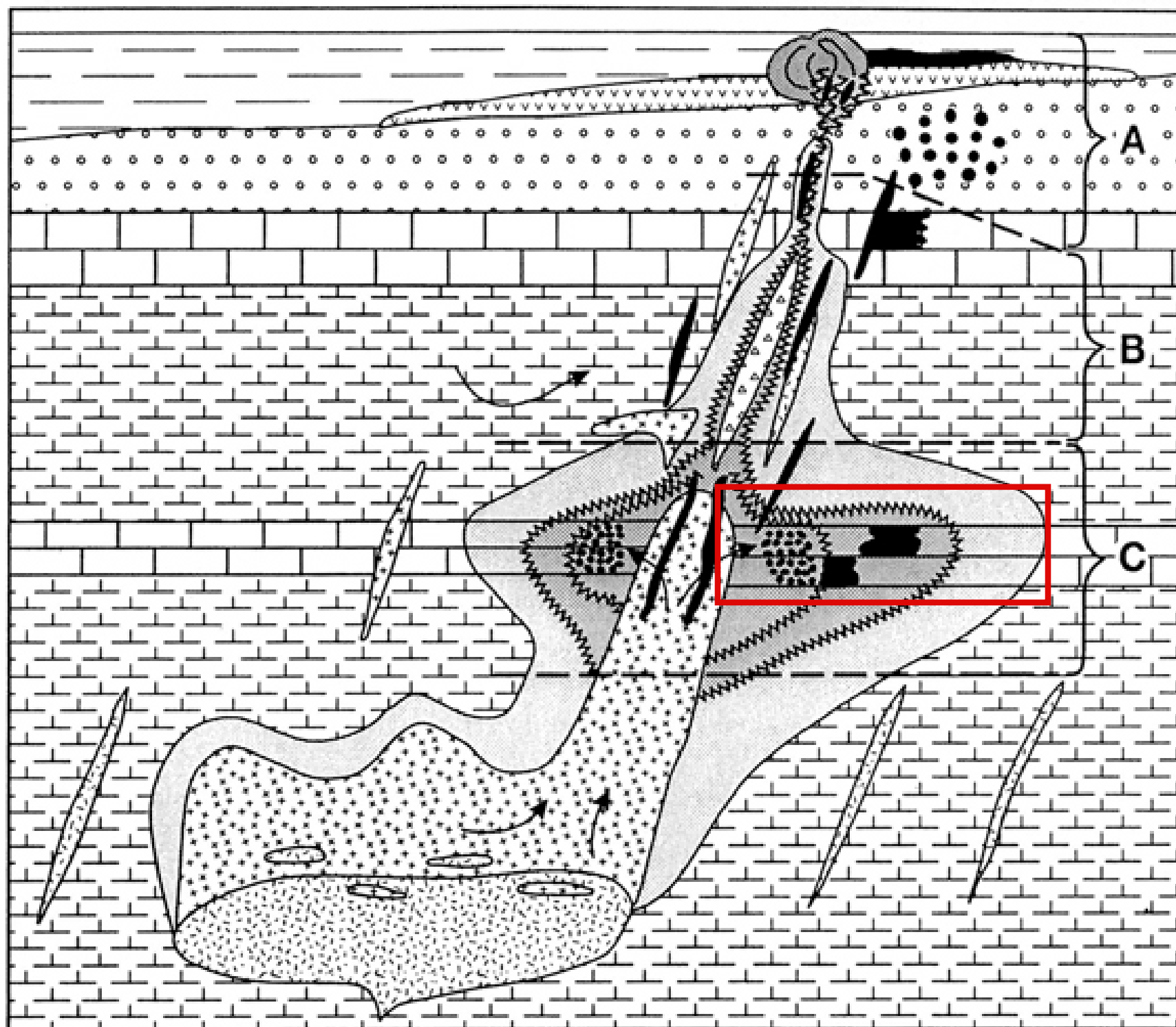
Cont: 2012-256

Subdivision:

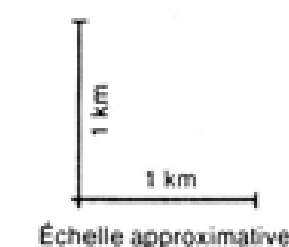
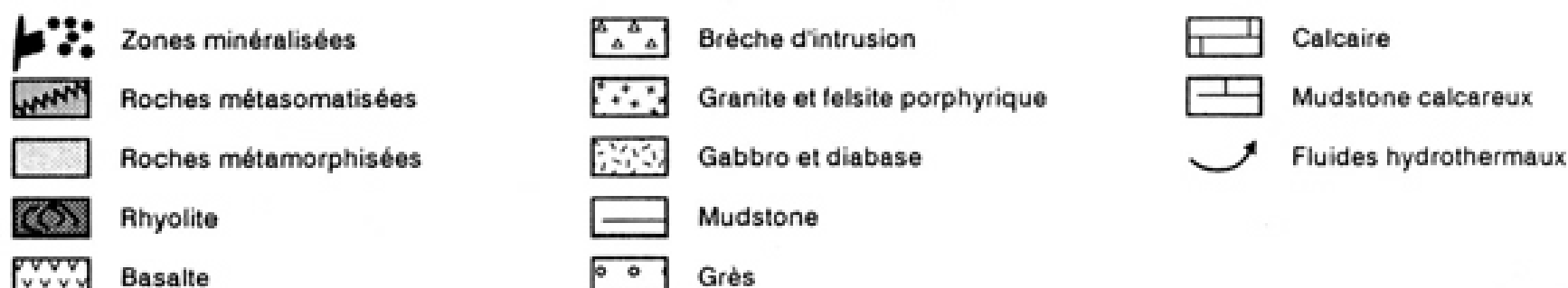
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Figure No 19





	TYPES DE GÎTES	EXEMPLES EN GASPÉSIE
A	<b>Gîtes associés au volcanites:</b>	
	Sulfures massifs volcanogènes, Zn-Pb-Cu ou Besshi	
	Sedex	
	Gîtes épithermaux	
	Minéralisations disséminées dans la matrice des grès	Synclinal du mont Alexandre, centre-nord de la Gaspésie
B	<b>Gîtes périphériques:</b>	
	Veines de type Cordillère	Périphérie de Murdochville, périphérie des monts McGerrigle, dôme de Lemieux
	Skarns et sulfures massifs à Zn-Pb-Ag qui remplacent des calcaires	
C	<b>Gîtes associés aux stocks:</b>	
	Porphyres cuprifères	Mont Copper, mont Porphyre, Patapédia
	<u>Skarns cuprifères</u>	Zone C de Murdochville, Sullipek
	<u>Sulfures massifs cuprifères qui remplacent des marbres</u>	Zone E de Murdochville



SOURCE: PRO 95-09

Client: **MURRAY BROOK MINERALS INC.**  
 Projet/ Project **BURNTLAND COPPER-SILVER PROJECT**

Fait/ Made: C. Derosier P.Geo	Date: January 2012
Approb:	Échelle/ Scale: As Shown
Cont: 2012-256	Subdivision:
	Figure No 20

## 7.0 DEPOSIT TYPES (cont.)

The guides to exploration of copper skarn- type deposits are as follows:

- a) Thick limestones beds, coarse grained impure limestones;
- b) Close proximity to magmatic- hydrothermal centre such as porphyry copper deposits (Gaspé Mine);
- c) Large, well mineralized copper skarn deposits are rarely more than few hundred metres from their associated intrusions;
- d) Presence of channel ways for ore-forming fluids; fractures, faults, stockworks, breccias, and permeable stratigraphic horizons; skarn related to porphyry copper deposits tend to have greater vein and fracture fillings or densities than non-porphyry related skarns;
- e) Metal zoning. In some deposits, copper, gold and silver are concentrated near the skarn - marble contact whereas lead-zinc and silver tend to occur farther out in marble or other rocks. In porphyry copper districts, copper skarns with molybdenum tend to occur deep in the porphyry copper system whereas copper skarns with zinc occur farther away.

A brief comparison of the McKenzie Gulch, Patapedia and Popelogan areas is summarized in the following Table No 3:

**TABLE No 3**

### **COMPARISON OF THE GEOLOGICAL SETTINGS OF THE THREE SKARN DEPOSITS IN NEW BRUNSWICK.**

<b>Copper Deposits</b>	<b>McKenzie Gulch</b>	<b>Popelogan</b>	<b>Patapedia</b>
<b>Geological Formation</b>	Matapedia Group White Head Formation	Matapedia Group Upsalquitch Form.	Matapedia Group
<b>Shape, Sequence</b>	Steeply dipping	Shallow dipping	Steeply dipping
<b>Intrusive Stock</b>	No known intrusive	Exposed	No known Intrusive
<b>Dyke swarm</b>	Yes	Yes	Yes
<b>Dyke alteration</b>	No relationship to mineralization	Unknown	Confined to metasomatic aureole
<b>Gangue</b>	Garnet-pyroxene host	Quartz-diopside	Garnet -pyroxene
<b>Gold- Arsenic</b>	No arsenopyrite-gold zone	No arsenopyrite-gold zone	Arsenopyrite-gold
<b>Thermal aureole</b>	Linear thermal aureole	Roughly equidimensional around central intrusive stock	Sub-equidimensional

## 8.0 MINERALIZATION

Until now, the exploration work realized in the Burntland Copper - Silver Project area indicate that the mineralized zones consist of horizons of limestone interbedded with a sequence of more or less calcareous argillite. Felsic dykes, intruded in the stratigraphic plans continually interrupt the sedimentary formations.

The argillite is described as a fine grained rock, dark grey, generally finely bedded, which contain a variable content of limestone.

The limestone when found unaltered, is a pale grey-cream rock, fine to medium grained and showing 1 cm to more than 1 m thick layers. In proportion as limestone was altered, its grains become finer and bedding grow burred. The silicified layers are indurated and no longer react with diluted HCl. When the limestone suffered a more intense metasomatism, lenses of skarn begin to develop. In typically skarnified sections, the rock is massive, fine grained, pale grey to green and contains amounts of garnet and pyroxene.

Minerals present in the skarn when sulphides are found, comprise dark green chlorite, epidote, magnetite, garnets and pyroxene. The sulphides comprise pyrite, pyrrhotite and chalcopyrite as well as minor galena and sphalerite. Arsenopyrite is pretty rare in the Legacy deposit. Sulphide minerals are generally associated with coarse grained varieties of skarn.

Everywhere in the drill holes, felsic dykes with porphyric quartz- feldspars. During the previous work, a particular attention was given to the observation of alteration levels of those dykes. The hypothesis saying that the intrusions could be at the origin of the mineralization has not been verified. It has not been possible to establish a link between the intrusions and the mineralization.

At the moment, it is believed that the intrusions constitute a distinct geological event of the emplacement of the mineralization. Those intrusions have benefited the same zones of weakness than the hydrothermal fluids which have left the copper.

Figure No 19 shows a schematic cross-section of the main mineralized zone. It concerns a more or less silicified and skarnified layer of limestone, in which pyrrhotite, pyrite and chalcopyrite are observed as dissemination, scattered flakes or veinlets. The mineralized veinlets are carbonated and may be 3 cm in thickness, concordant or discordant to the original bedding.

The envelope of mineralization or the host limestone presents an orientation and a dip conformable to the local stratigraphy (NNE-SSW) with a sub-vertical dip to the NW. Its true width varies from 30 to 50 m ( including the associated QFP dykes) and contain the mineralization over large sections. The main layer of mineralized limestone has been laterally followed over a distance of about 300 m.. However, it is outcropping only over a distance of 125 m. The west limit could correspond to an interpreted fault or the hinge of a fold. The east limit corresponds to a major N-S trending fault with a steep dip to the East. This Blecha Fault has been recognized during the previous work. It constitutes the higher limit of the mineralized zone when observed on a longitudinal section. On such a section, the fault definite a line with a plunge of about 65° to the NE. It would suggest a dextral fault with an undetermined reject.

## 8.0 MINERALIZATION (cont.)

The lower limit of the mineralized zone is less well defined. In the SE part of the mineralized zone, some drill holes bored during the first drilling programs returned disappointing results and consequently seemed to circumscribe the lower limit of the zone. On the longitudinal section, the previous geologists had indicated a “pyrrhotite zone” of which the trace was parallel to the trace of the Blecha Fault. However, when re-examining the drill logs and more particularly those bored on the NE extension of the zone, it is observed that the zone extends at depth at this location.

Like in the gangue, the mineralized zone is cut by FQP dykes. Those dykes are little mineralized and have not been sampled and assayed.. When present, sulphides are concentrated along the dyke margins, at the contact with the mineralized zone.

In 1997, the Raudin’s consulting geologist tried to see if the mineralized zone presented some lateral tendencies. In the previous documents, it was mentioned that the mineralized zone become richer and thicker at depth. This positive assertion was supported by the presence of some thin veins of semi- massive sulphides intersected in the deepest drill hole (hole S-78-3). This drill hole effectively intersected some rich sulphide veins. However, if the whole zone is considered, an intersection of 0.54% Cu over 12 m is obtained, which is comparable to the other intersections. Although on surface, the historical resource calculation (Not compliant with NI- 43-101) mentions a grade of 1.60 % Cu, it seems that to arrive at this result, one had passably discriminated the mineralized intersections. When the limits of the mineralization which correspond to the geological contacts are used, grades obtained over higher thicknesses, are lower. Thus, the examined informations seem to indicate that the grade does not vary too much within the explored limits.

Concerning the thickness of the mineralized zone, an examination of the cross- sections shows a tendency to an increase of the true thickness at depth. At the beginning of the exploration programs, several drill holes have been drilled to the north, mostly down-dip and thus exaggerate the thickness of the mineralized zone. In its upper part, the mineralized zone has a true thickness of 10 m which increases to 15 m in the lowest levels. This thickness may comprise two or three sub-zones, which might be the result of an intense folding.

Concerning the alteration observed in the mineralized zone, there is no uniformity in the description by the different geologists during the period of eight years. According to the documents obtained, it seems that the alteration increases at depth. The first short drill holes report the occasional presence of ovoid structures, but more often, the limestone is simply described as altered or silicified . More at depth, skarns are more frequently reported.

Consequently, the thickness and alteration of the mineralized zone would show a tendency to increase at depth, but the grade does not seem to be affected by those changes.

Concerning gold, the few reported values are rather low. With some exception, they do not exceed 0.5 g/T Au. Only one value exceeds 1.0 g/T Au over an intersection of 0.30 m. It is difficult to understand the tendencies. But gold must be systematically verified in the future.

## **9.0 EXPLORATION**

Since the signature of the Agreement between **M.B.M.I.** and the three prospectors, no exploration work has been carried out on the Burntland Copper-Silver Project by the applicant Issuer or by an other party on behalf of the Issuer.

No other work has been executed by prospectors or New Brunswick Natural Resources and Energy Department's staff since 2009 and no drilling has been made since our visit of the property (July 1996).



## 10.0 DRILLING

A description of the historical drilling conducted on the Burntland Copper- Silver Project is provided in Chapter 5.0.

From 1968 to 1998, a total of 65 diamond drill holes was bored on the gossan and the massive sulfide zone. The total length of the drilling is 14 645 metres.

Since signing the agreement with the three prospectors from Bathurst, N.B., **M.B.M.I** has not conducted any drilling program on the Burntland Copper- Silver Project.

## 11.0 SAMPLING METHOD AND APPROACH

**M.B.M.I.** has not conducted any geochemical or drill hole sampling on the Burntland Copper-Silver Project. According to the review of the N.B.D.N.R.E.'s files, there are limited reviews of the sampling method and approach in the historical assessment reports.

In the historical reports, the sampling methods used were samples derived from the stream and soil geochemical surveys conducted from 1968 and 1999, float sampling, trench sampling and core samples derived from diamond drill holes.

No historical sampling protocol has been noted in the different reports. No sampling protocol was discussed as part of the historical resource estimate reports.

For the historical diamond drill holes, the sampling was typically conducted in varying lengths which ranged from 0.20 m to 1.5 m with the bulk of the sampling conducted on less than 1 m intervals. Most of the early holes were sampled using a core splitter. The last DDH campaign (1998, Noranda), core size was BQ (36.5 mm ø). The majority of this core was sampled using a diamond grit saw.

It is said that some representative samples of the core from 1978 and 1996 are stored in the Government's coreshack in Madran, NB.

## **12.0 SAMPLE PREPARATION, ANALYSES AND SECURITY**

**M.B.M.I.** has not conducted any geochemical or drill hole sampling on the Burntland Copper-Silver project.

At this time, **M.B.M.I.** has not implemented any Quality Assurance/ Quality Control (QA/QC) procedures.

In the previous documents received from the Department of Natural Resources and Energy of New Brunswick and from the Company, there is no evidence that a QA/QC protocol was applied at the time.

### 13.0 DATA VERIFICATION

**C.D.G.C.**'s first visit to the Burntland Copper- Silver Project was conducted on July 26, 1996. During the inspection, several trenches and old casings were visited. The visit also included the observation of outcrops. Visual observation, digital photos and Global Positioning System (GPS) measurements were used to conduct and record the results of this inspection.

In summary, it is C.D.G.C.' S opinion that while the results of the previous diamond drilling program give comfort in the presence of potentially economic mineralization at the Murray Brook deposit, there is currently insufficient data of the required quality to produce a NI 43-101 compliant resource estimate. Significantly more exploration work is considered necessary both to verify the existing data and also to provide sufficient additional data of the demonstrably quality required to support indicated or measured mineral resource categories.

## 14.0 ADJACENT PROPERTIES

The Bathurst Mining Camp is known for its 23 massive sulfide deposits with geological mineral resources in excess of 1 million tonnes each, with a total of 10 deposits having been brought into production since the 1950's. However, in 2008 only the Brunswick # 12 mine is still operating at a rate of 10 000 tonnes per day.

While most of the major deposits were discovered in the 50's and 60's by airborne geophysical surveys, geological mapping, prospecting and stream geochemical methods, mining has occurred in the district since the beginning of the Twentieth Century.

Recently, some claims have been staked by some prospectors immediately North of the Burntland Copper-Silver Project (See Figure No 4). Block 6656 (Legacy South) was staked by Jean- Frances Cousens on December 23, 2012.

On the NE side, Block #6248 (Northern Block) comprises 7 claims which were staked on December 14, 2011 by Alonzo D. Sonier from Bathurst.

On the East side, an other prospector, Fernand Robichaud from Bathurst, staked, on December 14, 2011, 10 claims representing the Block # 6247 (Rocky Brook Group).

On the South side, Fernand Robichaud staked 6 claims which constitute the Block # 5931 (Rocky Brook). The claims were staked on December 16, 2011.



## **15.0 MINERAL PROCESSING AND METALLURGICAL TESTING**

**M.B.M.I.** has performed no metallurgical testing on the mineralization at the Burntland Copper-Silver Project.

The previous owners of the Burntland Project have never carried out metallurgical studies on the core or the mineralization from trenches.

However, one can expect to obtain a good recovery using conventional concentration. The same type of mineralization has been mined at Gaspé Mine, Murdochville, Qc. without any metallurgical problem and the copper recovery was excellent.

## **16.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

**M.B.M.I.** has performed no mineral resource calculation on the Burntland project.

## **17.0 OTHER RELEVANT DATA AND INFORMATION**

The author is not aware of any other relevant data and information on the Burntland Copper-Silver Project, which is not already included in this technical report.

## 18.0 INTERPRETATION AND CONCLUSIONS

On December 5, 2012, **MURRAY BROOK MINERALS INC.** acquired a 100% interest in 34 claims forming 2 Blocks covering a total area of 738.38 hectares, known as the Burntland Copper- Silver Project. This Project is located in Restigouche County, Province of New Brunswick, Canada.

The Burntland Copper- Silver Project is easily accessed from Bathurst or Edmundston by paved highways and then by timber roads. It is located in a moderate relief cut by deep valleys which reflect erosion since Carboniferous time.

The Burntland Copper- Silver Deposit is underlain by sedimentary rocks of the Silurian Mata-pedia Group which comprises the White Head Formation. This formation comprises dark grey variably calcareous argillite and siltstone, white limestone and a characteristic “ribbon rock” composed of well laminated limestone and limey argillite interbedded in 1-5 cm thick units. The metamorphosed equivalent of these consist of fine grained white marble, dark purple-grey hornfels, light green calcareous hornfels (porcellanite), and garnet-pyroxene skarn.

Felsic dykes and sills range in thickness from a few centimetres to greater than 100 m. Chill margins are generally missing. Sericitization and saussuritization commonly accompany fine- grained disseminated pyrite with traces of chalcopyrite in the felsic dykes. Other dykes may be cut by fault zones that may contain chalcopyrite mineralization. Thin calcite veins containing medium to coarse grained galena, sphalerite, pyrite and rarely molybdenite occur in some felsic dykes.

There no known relationship between alteration in the dykes and the presence of mineralization in the surrounding sedimentary rocks. Some of the best zones of mineralization are cut by unaltered dykes and conversely barren garnet-pyroxene skarn lies in contact with highly altered chalcopyrite bearing dykes.

The thickness of metamorphosed rocks adjacent to the dykes bears no relationship to the thickness of the dykes. One of the thickest skarn band intersected in diamond drill holes occurs in an area where only a few narrow dykes are present.

The contacts between contact metamorphosed and the relatively unmetamorphosed sedimentary rocks can be extremely abrupt. Garnet-pyroxene skarns are seen in contact with soft calcareous siltstone- argillite with no apparent faulting at the contact. The change from hornfels to weakly calcareous argillite takes place gradually over few 10's of metres with the rock becoming less indurated across the transitional contact. Another common type contact is characterized by variably intense bleaching along fractures and zones of permeability, which demarcate the outer fringe of hydrothermal activity.

The narrow metamorphic aureoles indicate that this type of metamorphism is not a regional phenomenon. The high temperature mineralogy of the metasedimentary rocks is therefore probably the result of heat transfer by hydrothermal fluids migrating along both macro and micro-scale conduits rather than conductive heat transferred from the dykes.



## 18.0 INTERPRETATION AND CONCLUSIONS (cont.)

Garnet and pyroxene skarn is found within the outlined area of mineralization, usually adjacent to felsic dykes, but is generally only weakly mineralized. A parallel band of marble with more appreciable skarn occurs roughly 100 metres southeast of the Legacy Deposit but it contains only minor amounts of copper mineralization. This is uncharacteristic when compared to other chalcopyrite mineralized zones found in the area, which generally exhibit a spatial association with magnetite. Despite the pyrrhotite associated to the chalcopyrite, there is only a weak airborne magnetic feature over the Burntland and the Legacy mineralized zones, which is arguably due to the mineralization itself since it extends hundreds of metres along strike. It has a limited strike extent of about 200 m but is known to extend to a depth of 400 m, below which it is untested.

Chalcopyrite- pyrrhotite mineralization is hosted primarily by silicified limestone and, to a lesser extent, in skarn as bed and irregular bodies within the silicified limestone. Most of the mineralization occurs along fractures in the silicified limestone with only a small component in disseminated form.

Distribution of the mineralization is difficult to predict. Generally, in order to evaluate the full potential, the whole unit must be taken in consideration.

The guides to exploration of copper skarn- type deposits are as follows:

- a) Thick limestones beds, coarse grained impure limestones;
- b) Close proximity to magmatic- hydrothermal centre such as porphyry copper deposits (Gaspé Mine);
- c) Large, well mineralized copper skarn deposits are rarely more than few hundred metres from their associated intrusions;
- d) Presence of channel ways for ore-forming fluids; fractures, faults, stockworks, breccias, and permeable stratigraphic horizons; skarn related to porphyry copper deposits tend to have greater vein and fracture fillings or densities than non-porphyry related skarns;
- e) Metal zoning. In some deposits, copper, gold and silver are concentrated near the skarn - marble contact whereas lead-zinc and silver tend to occur farther out in marble or other rocks. In porphyry copper districts, copper skarns with molybdenum tend to occur deep in the porphyry copper system whereas copper skarns with zinc occur farther away.

Copper- skarn type mineralization of the Legacy Copper- Silver Project was discovered in 1968 by prospector Raoul Legacy. The prospector discovered copper- bearing floats in the valley of the McKenzie Gulch.

At the same time, the Keevil Mining Group Limited which staked the area surrounding the Legacy discovery, started to work at about 4 km south on strike, on its Burntland and to the north on the Endrocky and Rockmark properties.

During the period from 1968 to 1969, Magnetometer, Radem (84.32 km) and I.P. surveys (36.32 km) were carried out on the property. Those surveys were followed by a diamond

## 18.0 INTERPRETATION AND CONCLUSIONS (cont.)

drilling program. Air magnetic anomalies of small areal extent were investigated by a reconnaissance soil and stream silt geochemical surveys. This was followed by a geological mapping and the digging of three trenches. In 1969, the claims group was also covered by an airborne magnetometer survey for a total length of 3,722 km.

Trenches No 3 and 4 encountered copper mineralization with a 1.5 m chip sample assaying 9% Cu.

This was followed by a eighteen drill holes program totalling 2 058.31 m. The holes investigated the Radem and I.P. anomalies or were designed to test the possible down dip and lateral extensions of mineralization found in the trenches. **The best assays were 2.18% Cu and 706.29 grammes per tonnes Ag over 1.9 m in Hole no 1 and 2.9% Cu over 1 m in Hole No 13 (Occurrence No 463).**

In 1989, Noranda Exploration Co Ltd. staked 58 claims covering the Burntland lake area because of its proximity to gold anomalies and indicator element anomalies to significant base metal occurrences and because gold had been intersected in drilling along strike (6.13 g/T Au over 0.52 m) at the Legacy Copper-Silver deposit. Noranda undertook an aggressive geological and prospecting program followed by till, soil and stream sediment geochemical surveys.

In 1991, the Burntland Lake property was included in the McKenzie Gulch group of claims. The claim group covered approximately 20 km of strike length over a 3 km width. Other than the Legacy deposit, several other new Cu occurrences were identified during 1990-1991 work program. Low- grade chalcopyrite and magnetite- bearing garnet- diopside skarn units were found. The best interval was 5.44 m grading 1.56% Cu. The skarn thicknesses were greater than 40 m in two intervals in drill hole MC-92-18.

Noranda carried out work for BM&S in 1992 on the McKenzie Gulch and McKenzie Gulch Extension properties. Soil sampling was done outside of the initial grid area and more trenching was done within the initial grid area.

More trenching was done to follow up on these findings. Soil sampling to the east and west of the initial grid identified areas moderately- to strongly-anomalous in Cu. **Trenching exposed a 1 to 3 m wide zone of greater than 2.5% Cu in two separate composite grabs** near Line 119+60N. Another significant Cu occurrence was recognized on Line 122N - **5.4 m of 1.56% Cu in DDH MC- 91- 9**. Two weakly mineralized skarn intervals were intersected at 200 and 300 m vertically in DDH MC- 92- 18.

Trenching over coincident I.P. and Cu soil geochemical anomalies near the road revealed about 3% disseminated sulphide minerals in a skarn zone 30 m wide striking northeast and dipping steeply. The mineralization is described as finely disseminated and fracture coatings of chalcopyrite and pyrrhotite. **Chip samples across 1.2 m and 2.4 m assayed 0.18% Cu and 0.11% Cu respectively.** Re- sampling of old trenches gave precious-metal assays **as high as 1 g/t Au and 87 g/t Ag.**

## 18.0 INTERPRETATION AND CONCLUSIONS (cont.)

Occurrence # 1145 is a minor occurrence of sulphide mineralization associated with skarn alteration of limestone of the White Head Formation.

Two holes were drilled along Line 54 + 00N; MC-92-13 (at 108 + 00E) and MC-92-21 (at 110 + 50E). The **best assay from MC-92-13 is 1.056% Cu, 0.004% Co, 0.24 g/tonne Ag, and 0.020 g/tonne Au over 1.0 m.** In drill hole MC-92-21, there are a number of intersections of sparse sulphide mineralization (pyrite, chalcopyrite, magnetite, molybdenite, sphalerite, galena, pyrrhotite); these minerals occur mostly in trace or minor amounts to stringers, between 463.34 and 588.34 m. **Best assays are 0.47% Cu, 0.07% Pb, 0.17% Zn, 3.09 g/T Ag over 0.72 m and 0.46% Cu, 0.08% Pb, 0.22% Zn, 2.74 g/T Ag over 1.00 m.**

On Occurrence # 1147, two holes were drilled MC-92-22 and MC-92-12 that are approximately 850 m apart. **Best assays from hole MC-92-22 are 0.05% Cu, 0.12% Pb, 0.36% Zn, 14.06 g/T Ag over 0.9 m and 0.23% Cu, 0.09% Pb, 0.22% Zn, 6.51 g/T Ag over 0.7 m.**

In drill hole MC-92-12, there are mineralized skarn zones from 26.26 to 27.65 m and from 30.35 to 38.12 m with mineralization varying from 3 up to 10% pyrrhotite-pyrite-chalcopyrite. **Best assays from hole MC-92-12 are 0.011% Cu, 0.001% Co, 6.84 g/tonne Ag, 1.630 g/tonne Au over 0.79 m and 0.624% Cu, 0.007% Co, 0.55 g/tonne Ag, 0.015 g/tonne Au over 1.0 m.**

Considering the above observation and comments, the Burntland Copper-Silver Project merits additional work to bring the project to the mineral resource estimation and then to the pre-feasibility level.

Considering these conclusions, a complete two-phase, success contingent exploration program, is strongly recommended.

Like at Gaspé Mine, open pit mining down to 200-300 m could be envisaged.

## 19.0 RECOMMENDATIONS

### 19.1 Exploration Program

Based on the compilation of all available data, the economic potential of the Burntland Copper-Silver Project, on the existence of almost similar skarn-type deposits in the vicinity (Legacy, Patapedia and Popelogan) , the author's experience in the Appalachians, in volcanic massive sulfide and skarn- type deposits and in other similar metallogenical environment on other continents, the author has concluded that the Burntland Copper- Silver Project justifies the continuing exploration and development program outlined here for Cu-Ag and other associated mineralizations. It is important to have a particular attention to gold and molybdenum.

Given the size of the target, a substantial financial effort is needed. The proposed exploration program divided in two phases, is designed to explore the whole White Head Formation corridor from surface down to the -250 m level over the entire limestone, marble and skarn layers, to verify and qualify the historical mineral occurrences included in the metamorphosed envelope, to investigate the geophysical anomalies reported by the 2012 I.P. survey and to extend this survey to the whole property.

Phase I: This program will be conducted in parallel with a digitalization of all the geophysical, geochemical and mapping surveys as well as the trenching and diamond drilling programs. Phase I will also comprise a magnetometer survey over the whole property (including Burntland North), an I.P. survey over the skarn layers and a deep searching geophysical survey such as the Quantech TITAN 24 survey able to test the ground from surface down to 700 m.

Phase II will mostly consist of a drilling program planned for the verification of the previous drilling, of the geophysical anomalies discovered during Phase I and a systematic drilling for the delineation of mineral resources.

#### Phase I Surface surveys and digitalization

1. Continue to acquire and compile existing data on previous exploration results and mineralization, digitalization;
2. Surveying: establishing of the Burntland's bench marks, as well as the previous grid lines.
3. Carry out property-scale geological mapping with special attention paid to structure and lithogeochemistry. Limited prospecting and trenching over the geophysical and geochemical anomalies;
4. Geophysical surveys:      Magnetometer survey over the whole property;  
   I.P. survey over the whole property;  
   Quantech TITAN 24 survey on selected lines;
5. Examination of the previous core preserved in the NB Government's coreshack in Madran;



**19.0 RECOMMENDATIONS (cont.)****Phase II Diamond Drilling Program**

6. Exploration diamond drilling on new targets: 2 000 metres, NQ core size.

**19.2 Cost estimate****Phase I Surface surveys and digitalization**

1)	Compilation and digitalization of previous technical data	\$	22 000.00
2)	Line cutting: 85 km @ \$ 500.00/ km	\$	42 500.00
2)	Surveying and permanent bench marks	\$	10 000.00
3)	Prospecting, trenching and sampling	\$	12 000.00
	Geology:	\$	15 000.00
4)	Geophysical surveys:		
	Magnetometer survey: 85 km @ \$ 200.00/ km	\$	17 000.00
	Induced Polarization survey: n= 1-6, a= 50m	\$	90 000.00
	Quantec TITAN Survey:	\$	70 000.00
5)	Assaying: 160 samples @ \$ 50.00/ each	\$	8 000.00
6)	Supervision and Reporting of Phase I	\$	20 000.00
7)	Contingencies	\$	30 500.00

**Total Phase I** **\$ 340 000.00**

**Phase II Diamond Drilling Program**

Camp installation:	\$	20 000.00
for accommodation, coreshack and core racks		
Exploration Drilling: NQ core size: 2 000 m @ \$ 250.00 /m	\$	500 000.00
including core logging, sampling and assaying with QC/QA control		
Supervision:	\$	40 000.00
Administration and Contingencies	\$	47 000.00
Contingencies:	\$	53 000.00

**Total Phase II** **\$ 660 000.00**

**GRAND TOTAL** **\$ 1 000 000.00**

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**21.0 DATE AND SIGNATURE PAGE**

The effective date of this report is January 31, 2013

**TECHNICAL REPORT ON THE BURNTLAND COPPER- SILVER PROJECT**

Prepared for **Murray Brook Minerals Inc.**

1770 Grand Rang St- Pierre

Ste Élisabeth d'Autray

Quebec, Canada

J0K 2J0



Signed in Saint-Lazare, on January 31, 2013

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Christian Derosier, M.Sc., D.Sc., P. Geo.

C.D.G.C. Inc.

1957 montée Harwood

Saint-Lazare, Qc., Canada

J7T 2N3

## **22.0     ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES**

Not applicable.

## 23.0 CERTIFICATE OF QUALIFICATION

I, Christian Derosier, of the City of Saint-Lazare, Province of Quebec,  
do hereby certify that :

1. I am a Senior Geologist with a business address at : 1957 montée Harwood, Saint-Lazare, Quebec.
2. I am responsible for the preparation of the technical report titled " Technical Report on the Legacy Copper- Silver Project, Province of New Brunswick, Canada" and dated February 29th, 2012 and owned by Murray Brook Resources Inc. of Ste- Elisabeth d' Autray, Quebec.
3. I have graduated and obtained a D.Sc. degree in geological sciences at the University of Paris, France, in 1971. I have practiced my profession since that time and have worked for SNC Inc. during ten years, Rio Algom Ltd from 1982 to 1986 and then as consulting geologist for my own Company.
4. I have more than 40 years of experience in mining exploration and mining development. I worked on several pre-feasibility and feasibility studies in my quality of geologist or consulting geologist. I have prepared and made numerous mineral resource and reserve calculations for productive mines as well as developed precious metals, base metals and industrial minerals projects. I am well aware of the different methods of calculation and the geostatistics applied to metallic and non-metallic projects as well as industrial mineral projects. To date, I have spent more than six years doing resource and reserve calculations;
5. I have several years of experience in underground mining and surface exploitation (open-pits and quarries) in Canada and abroad, for different commodities including: gold, silver, copper, Iron-titanium-vanadium, limestone, asbestos, bauxite, copper-nickel, phosphate, salt, coal, copper-zinc, silica sands, vermiculite, micas, talc, graphite, feldspars and construction stones (granite and anorthosite);
6. I am a member of:       The Canadian Institute of Mines and Metallurgy since 1976;  
                                  The Prospectors and Developers Association of Canada  
                                  Ordre des Géologues du Québec (No 129)  
                                  Quebec Prospectors Association ( President from 1985 to 1987).
- 7       The author visited the property on May 12, 1996.  
  
I have read the definition of "Qualified person" set out in the 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 and relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
9. I have prepared this report in accordance with the guidelines of Policy Document 43-101.F1.
10. I have no interest, either direct or indirect, in the property described in the present report and I do not expect to receive any interest. I have no shares of **Murray Brook Resources Inc.** or Murray Brook Minerals Inc., nor do I expect to receive any interest in the securities of this Company. I am independent from the issuer and the vendors, applying all of the tests in section 1.4 of National Instrument 43-101.
11. That the present report is based on a study of data available on the property obtained from the New Brunswick Government, and from the Company. Prior to the present report, I have never been involved with the Burntland Project that is subject of the Technical Report.
12. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in the Technical Report, the omission to disclose which would make this report misleading.



## 23.0 CERTIFICATE OF QUALIFICATION

13. That as of January 31st, 2013 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;
11. The writer consents to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical report.

Saint Lazare

Dated: January 31st, 2013



Christian Derosier, P. Geo. # 129  
Senior Geologist, MSC., DSc.,

**24.0 CONSENT OF AUTHORS****TO:**

**Toronto Stock Exchange  
Ontario Securities Commission  
British Columbia Securities Commission  
Alberta Securities Commission  
L'Autorité Des Marchés du Québec**

I, Christian Derosier, P. Geo., M.Sc., D.Sc., of C.D.G.C. Inc., with a business address at 1957 montée Harwood, Saint-Lazare, Province of Quebec,

do hereby consent to the filing, with the regulatory authorities referred to above, of the Technical report titled: "Technical Report on the Burntland Copper- Silver Project, Province of New Brunswick, Canada" and dated January 31st, 2013 (the "Technical Report") and to the written disclosure of the "Technical Report" and of extracts from or a summary of the "Technical Report" in the written disclosure in the Annual Information Form of Murray Brook Minerals Inc. being filed.

Dated this 31st day of January 2013



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Signature of QP