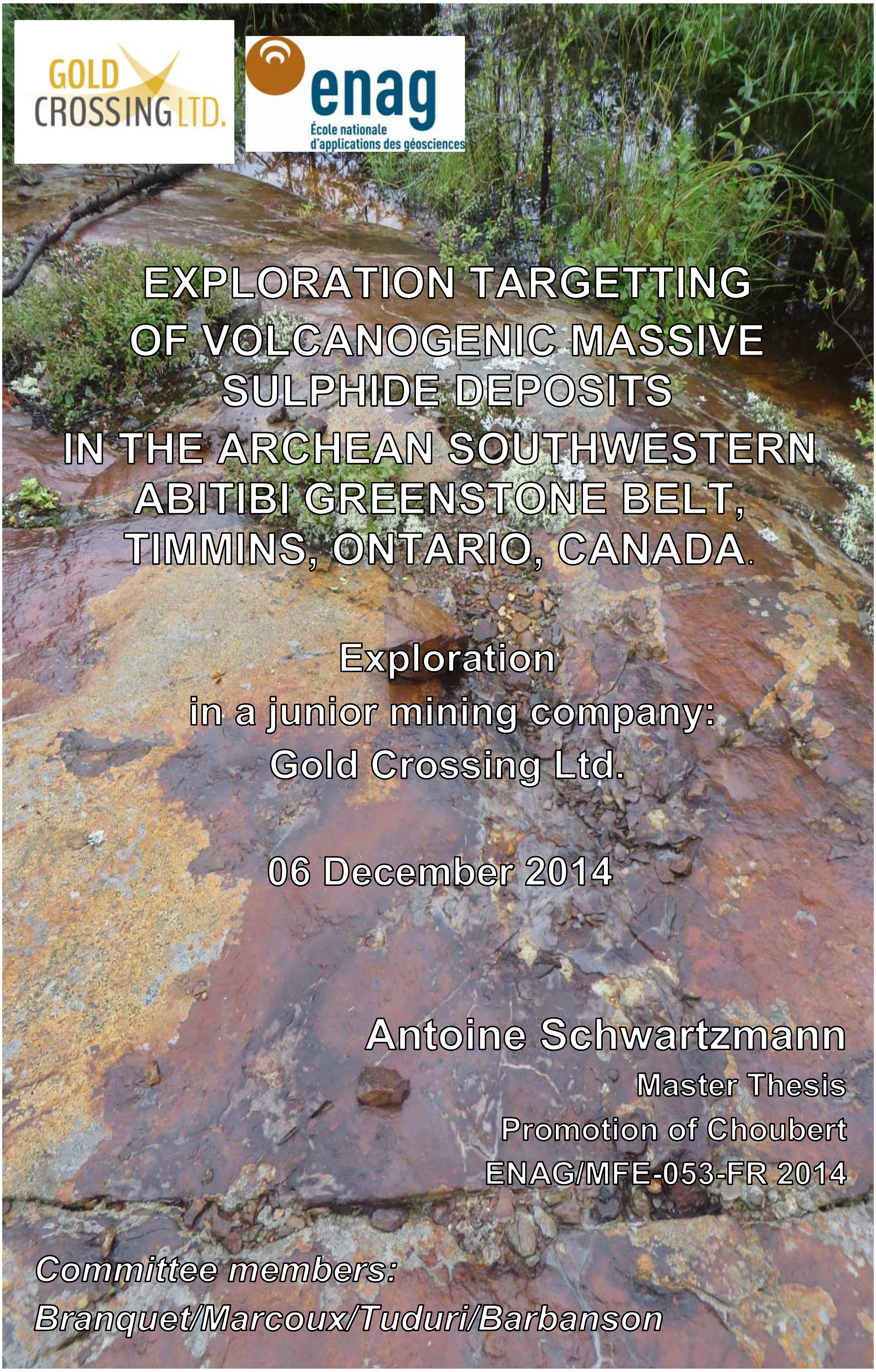

EXPLORATION TARGETTING OF VOLCANOGENIC MASSIVE SULPHIDE DEPOSITS IN THE ARCHEAN SOUTHWESTERN ABITIBI GREENSTONE BELT, TIMMINS, ONTARIO, CANADA.

Exploration in a junior mining company: Gold Crossing Ltd.

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Committee members:
Branquet/Marcoux/Tuduri/Barbanson

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Résumé Étendu

Introduction

Dans le cadre de l'exploration de la propriété Turnbull, détenu par Gold Crossing Ltd. et située au sud-ouest de Timmins, Ontario (figure 1), des travaux ont été effectués afin de pouvoir maximiser la probabilité de découverte de zones à fort potentiel minier et ainsi minimiser le risque d'exploration. Pour cela, l'identification de cibles favorables à la minéralisation a été nécessaire. Une méthode d'analyse a donc été mise en place pour atteindre cet objectif.

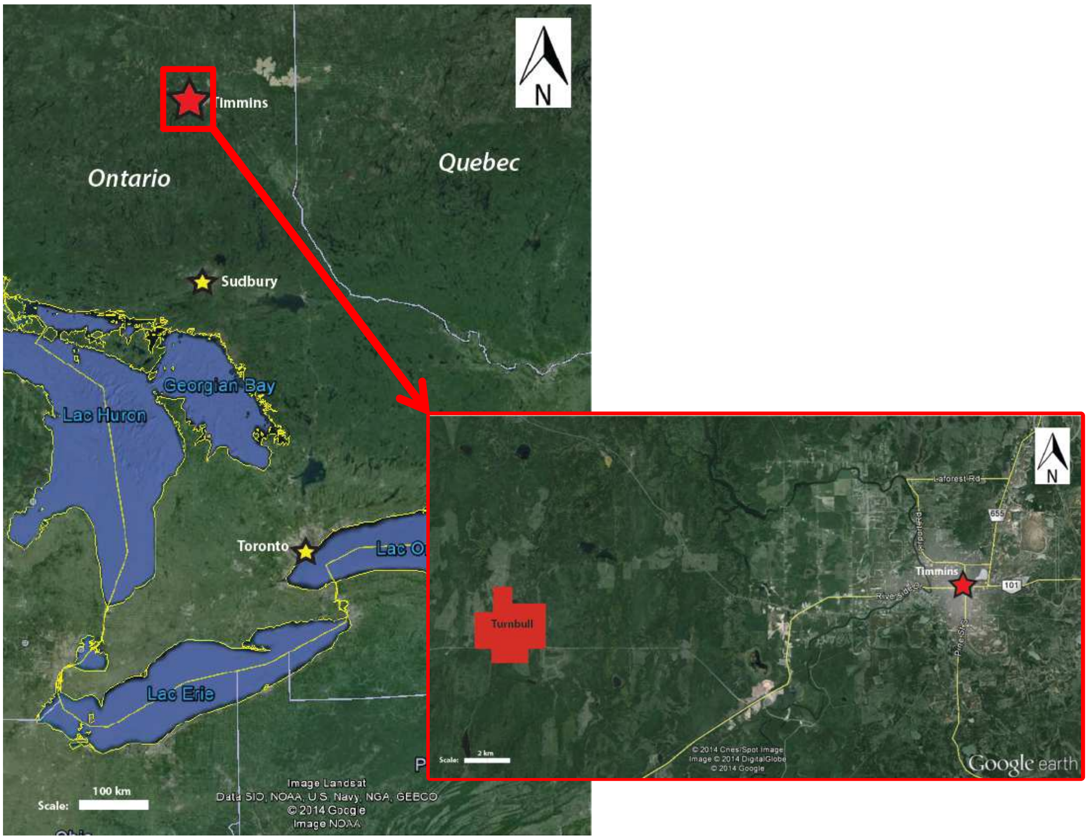

Figure 1: Carte de localisation de Timmins et de la propriété de Turnbull

Objectif

Ce travail est donc avant tout un exercice de ciblage en exploration minière ayant pour objectif de maximiser la probabilité de découverte d'un gisement. Cette réflexion culmine avec une proposition de forage accompagnée d'un budget pour l'exécution des travaux.

Pour cela, une étude de la géologie régionale, s'appuyant sur d'anciens travaux sur la propriété Turnbull, a été effectuée. Une analyse géochimique et géophysique a pu permettre la création d'une carte géologique plus précise et des travaux sur le terrain ont permis de confirmer et détailler cette carte géologique. Enfin, l'identification d'une zone favorable à un gisement de types VMS nous encourage à proposer une campagne de forage pour vérifier si les cibles ont un intérêt économique.

Géologie Régionale

La propriété Turnbull est située dans la partie sud de la ceinture de roche verte de l'Abitibi (SAGB) composée majoritairement de roche d'âge archéen supérieur. Toutes les roches du secteur de la propriété ont subi un métamorphisme au niveau du schiste vert.

Autour de Timmins, le SAGB est composé de plusieurs assemblages volcaniques, intrusifs et sédimentaires qui ont subi plusieurs déformations au cours de son évolution. Par là même, plusieurs types de minéralisations se sont aussi produits durant sa formation (Figure 2).

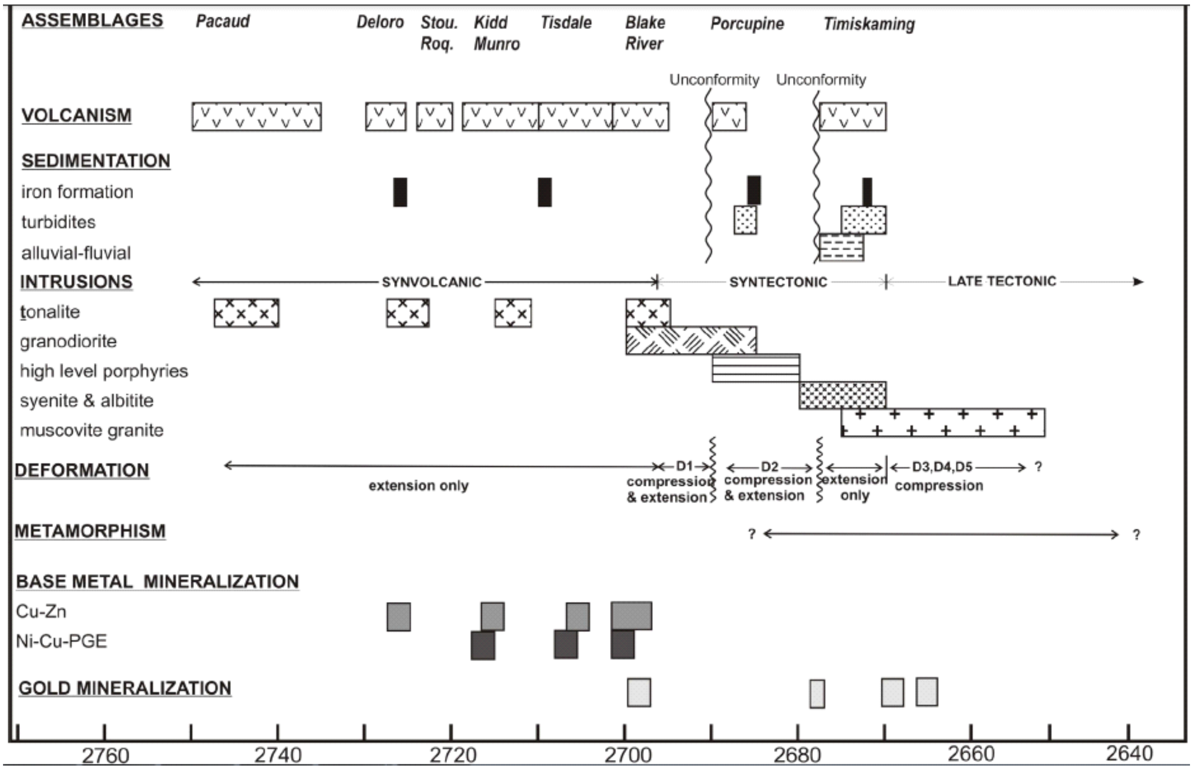

Figure 2: Liste des évènements pendant l'évolution du SAGB provenant de différentes sources : Ayer, Trowell and Josey 2004; Corfu 1993; Mortense 1993; Powell, Carmichael and Hodgson 1995; Bleeker, Parrish and Sager-Kinsman 1999; Davis et al. 2000; Heather 2001; Ayer et al. 2002; Ayer, Ketchum and Trowell 2002; Ayer et al. 2003; Dubé et al. 2004; Ayer et al. 2005 ; R. Bateman, J.A. Ayer, B. Dubé and M.A. Hamilton 2005

Types de gisements

Il existe deux grands types de gisement dans le SAGB : des gisements polymétalliques de type sulfure massif volcanogène (VMS) et des gisements aurifères de type orogénique. Parmi les gisements orogéniques, celui de Hollinger-McIntyre est un bon exemple avec des sources d'énergie, de fluides et de métal clairement identifiées, passant par des structures permettant le dépôt de minéralisation dans une roche encaissante.

Parmi les gisements de types VMS, mentionnons celui de Kidd Creek qui représente un des plus gros gisements de ce type au monde. Il est composé de roches volcaniques mafiques et felsiques bien particulières comme des ultramafiques komatiitiques et des rhyolites felsiques siliceuses.

D'autres VMS, telles que celui de Kam-Kotia, situé près de la propriété Turnbull, et celui de la Horne dans des roches du même âge, mais au Québec, sont eux aussi composés du même type de roches volcaniques mafiques et felsiques. Par contre, il est important de noter l'absence de komatiites dans les séquences volcaniques associées à ces gisements. La présence de basalte enrichi en Fe-Ti aux alentours du gisement de Kam-Kotia peut être un bon indicateur de gisements de type VMS. De plus, à proximité des zones minéralisées, une altération particulière composée de chlorite, séricite et cordiérite peut témoigner du mouvement des fluides hydrothermaux dans les zones de décharges où éventent les fluides hydrothermaux au fond de l'océan.

Géologie du Projet Turnbull

La géologie du secteur du projet Turnbull présente deux assemblages : le Kidd-Munro et le Blake River. Il est à noter que, dans ces unités, des gisements VMS ont été déjà découverts. Le Kidd-Munro est composé principalement de roches felsiques siliceuses surmontées par une succession de « pillow lava » mafiques.

Le Blake River est composée de deux unités distinctes. Une unité appelée « Kamiscotia volcanic complex » (KVC) est composée de rhyolite associée avec des brèches et des coulées pyroclastiques. La seconde, appelée « Kamiscotia gabbroic complex » (KGC), est une unité intrusive de composition plus mafique allant jusqu'à une composition felsique au bord de cette intrusion.

Ce contexte intrusif est visible dans d'autres districts, comme l'intrusion du Flavrian-Powell à Noranda ou bien l'intrusion du Chibougamau au Lac Doré contenant des gisements de type VMS.

Anciens Travaux

Depuis 1926 jusqu'à aujourd'hui, des travaux ont été effectués dans la zone d'étude Turnbull. Ils ont tous été rassemblés dans une base de données, puis leurs pertinences ont été vérifiées pour enfin pouvoir les intégrer. Ainsi des cartes géologiques, des données géophysiques et de forages ainsi que des analyses d'échantillons ont été intégrées dans un système d'information géographique (SIG) (*voir* Figures 22, 23, 24).

Lithogéochimie et Cartographie

Basée sur d'anciennes données d'analyses d'échantillons de roches et sur les recherches de W. H. MacLean et T. Barret, une étude lithogéochimique a permis de différencier les roches de la zone d'étude, puis de les rassembler en sous unité. Une carte géologique préliminaire a donc pu être créée (*voir* Figure 31).

Ce travail a eu pour but de confirmer les études lithogéochimiques précédentes par des observations de terrain et un échantillonnage des roches. De plus, une étude des terres rares a permis la mise à jour de la carte géologique, la rendant ainsi plus précise (*voir* Figure 34).

Trois unités ressortent de cette étude : une unité felsique que l'on présume d'âge « Kidd-Munro Assemblage » située à l'ouest, une unité mafique que l'on présume d'âge

« Kamiskotia Gabbroic Complex » au centre, puis une unité felsique située au nord-est et que l'on présume comme étant d'âge « Kamiskotia Volcanic Complex ».

Discussion

Les diagrammes de la figure 31 montrent une composition chimique différente entre les unités mafiques et felsiques. Un contact géologique est alors placé entre ces deux unités. De plus, comme le montre la figure 30, il semble que l'unité la plus felsique soit du « Kidd-Munro Assemblage » et la plus mafique fasse partie du « Kamiskotia Gabbroic Complex ». Dans ce cas, il y aurait un saut de 10 Ma (l'équivalent du « Tisdale assemblage ») entre ces deux formations. C'est donc pour cette raison que la possibilité d'une faille chevauchante entre ces deux unités est avancée. Les sondages carottés permettraient de vérifier la présence ou non de roche d'âge Tisdale ou de cette faille chevauchante.

Ce contact est important car, dans les deux types de gisements, il peut jouer le rôle de structure permettant aux fluides de passer en y déposant les métaux.

Dans le cas d'un gisement aurifère orogénique, la zone d'étude comporte des occurrences aurifères permettant de conforter la présence de cibles orogéniques. De plus, des intrusions porphyriques sont notées dans les descriptions lithologiques des indices minéralisées échantillonnées par d'anciens travaux (*voir* Table 2). Par contre, dans la SAGB, comme le montre l'étude des gisements aurifères de type orogénique dans la partie 5.1.2. du rapport, ces gisements se situent surtout en périphérie de la PDDZ et la zone d'étude est éloignée de cette zone de déformation. De plus, l'absence de sédiment de Timiskaming réduit le potentiel aurifère orogénique.

Pour les gisements de type VMS, les occurrences minéralisées repérées dans la figure 24 comme l'or, le cuivre et le zinc se situent pour la plupart au contact présumé entre les deux unités Kidd-Munro et Kamiskotia. En plus, sur cette carte, une altération de type sulfure et chlorite est visible dans les sondages carottés situés près du contact. Toujours sur la figure 24, l' « Ishikawa index » a pu mettre en évidence des zones d'altération en chlorite et séricite au sud de la propriété, proche du contact entre Kidd-Munro et le « Kamiskotia Gabbroiic Complex ». De plus, sur la figure 32, les observations effectuées sur le terrain ont pu confirmer la présence de ces roches altérées et minéralisées. Ce type d'altération est un très bon indicateur de la présence de gisement VMS.

La présence de Fe-Ti basalte dans les roches felsiques dans le sud de la propriété est aussi un bon indicateur de minéralisation de type VMS, comme le montre la présence de Fe-Ti basalte associé à la minéralisation du gisement de Kam-Kotia.

Les analyses lithogéochimiques ont permis de mettre en évidence des rhyolites de type FIIIb qui, de par leurs compositions et les âges U/Pb de la zone, pourraient être hypothétiquement du Kidd-Munro. Comme le dit Lesher et al. en 1986, “Because high-level subvolcanic magma chambers are considered to be essential components of ore-forming hydrothermal systems, FIII felsic metavolcanic rocks are prime exploration targets”: les rhyolites de type FIIIb ont le plus de chance de mettre en place un système de convection hydrothermale sous les fonds océaniques. C'est donc un autre point positif pour indiquer la présence d'un gisement de type VMS dans la zone d'étude.

Un levé géophysique aéroporté électromagnétique dans deux directions a permis de mettre en évidence certaines anomalies qui ont confirmé d'anciens forages. Par contre, certaines anomalies EM n'ont pas été forées.

A l'occasion de travaux de géophysique au sol de type polarisation provoquée (« PP ») dans la zone Turnbull, de bonnes réponses ont été mises en évidence (*voir* figure 23). Ces anomalies forment des corps de direction NW. Si l'on prolonge au sud de l'anomalie « PP » la plus au Nord, elle passerait par des points anomaux EM de haute intensité et non forés. Les autres anomalies « PP » se situent surtout aux alentours du contact présumé entre les unités supposées Kidd-Munro et Kamiskotia.

Chronogram: May 28, 2013 to October 30, 2014

Table 1: Chronogram showing the distribution and the sequence of tasks performed during the internship

Week	Dates	Month	Tasks
1	16->21	june	Compilation
2	23->28 june	june	Compilation
3	30->5	june-jully	Mapping / logining / Sampling / Interpretation of the datas
4	7->12	jully	Mapping / logining / Sampling / Interpretation of the datas; Field Work
5	14->19	jully	Mapping / logining / Sampling / Interpretation of the datas; Field Work
6	21->26	jully	Mapping / logining / Sampling / Interpretation of the datas; Field Work
7	28->2	jully-august	Mapping / logining / Sampling / Interpretation of the datas
8	4->9	august	Mapping / logining / Sampling / Interpretation of the datas
9	11->16	august	Mapping / logining / Sampling / Interpretation of the datas
10	18->23	august	Mapping / logining / Sampling / Interpretation of the datas; Field Work
11	25->30	august	Mapping / logining / Sampling / Interpretation of the datas; Analyses
12	1->6	september	Mapping / logining / Sampling / Interpretation of the datas; Analyses; Interpretation; rédaction du rapport + correction
13	8->13	september	Mapping / logining / Sampling / Interpretation of the datas; Analyses; Interpretation; rédaction du rapport + correction
14	15->20	september	Mapping / logining / Sampling / Interpretation of the datas; Analyses; Interpretation; rédaction du rapport + correction
15	22->27	september	Analyses; Interpretation; rédaction du rapport + correction
16	29-04	september-october	Analyses; Interpretation; rédaction du rapport + correction
17	6-11	october	Interpretation; rédaction du rapport + correction
18	13-18	october	Ciblage; rédaction du rapport + correction
19	20-25	october	Oral preparation
20	25-30	october	Oral preparation

Remerciements

Je tiens d'abord à remercier Charles BEAUDRY, Directeur de Gold Crossing Inc., pour m'avoir permis de réaliser ce stage au sein de l'entreprise et m'avoir soutenu et apporté avec pédagogie, disponibilité et efficacité l'encadrement et tous les conseils nécessaires à son bon déroulement. Je remercie d'autant plus la famille BEAUDRY pour leur gentillesse et l'accueil chez eux.

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Je terminerai par remercier toute l'équipe Choubert incluant les professeurs de l'Université d'Orléans et le BRGM.

1. Introduction, Location and Access

The southwestern part of the Abitibi Greenstone Belt contains some of the world largest zinc-copper and gold deposits and significant nickel-copper platinum group element (PGE) mineralization. Transported overburden covers most of the region and as a result there are few outcrops and very rare surface expression of mineralization. Therefore, exploration requires improved knowledge of the geological characteristics of existing deposits as well as the stratigraphic, plutonic and metamorphic architecture of the region. Exploration calls for extensive use of geophysical and geochemical techniques followed by diamond drilling to confirm our understanding of the local geology and, with some luck, discover new areas of mineralization.

This research project consists in mapping part of Turnbull Township (Figure 3), located 20 kilometers west of Timmins, Ontario. The result shows a better understanding of the area's Archean stratigraphy, volcanic facies, alteration and structures with the objective of defining volcanogenic massive sulphide (VMS) exploration targets.

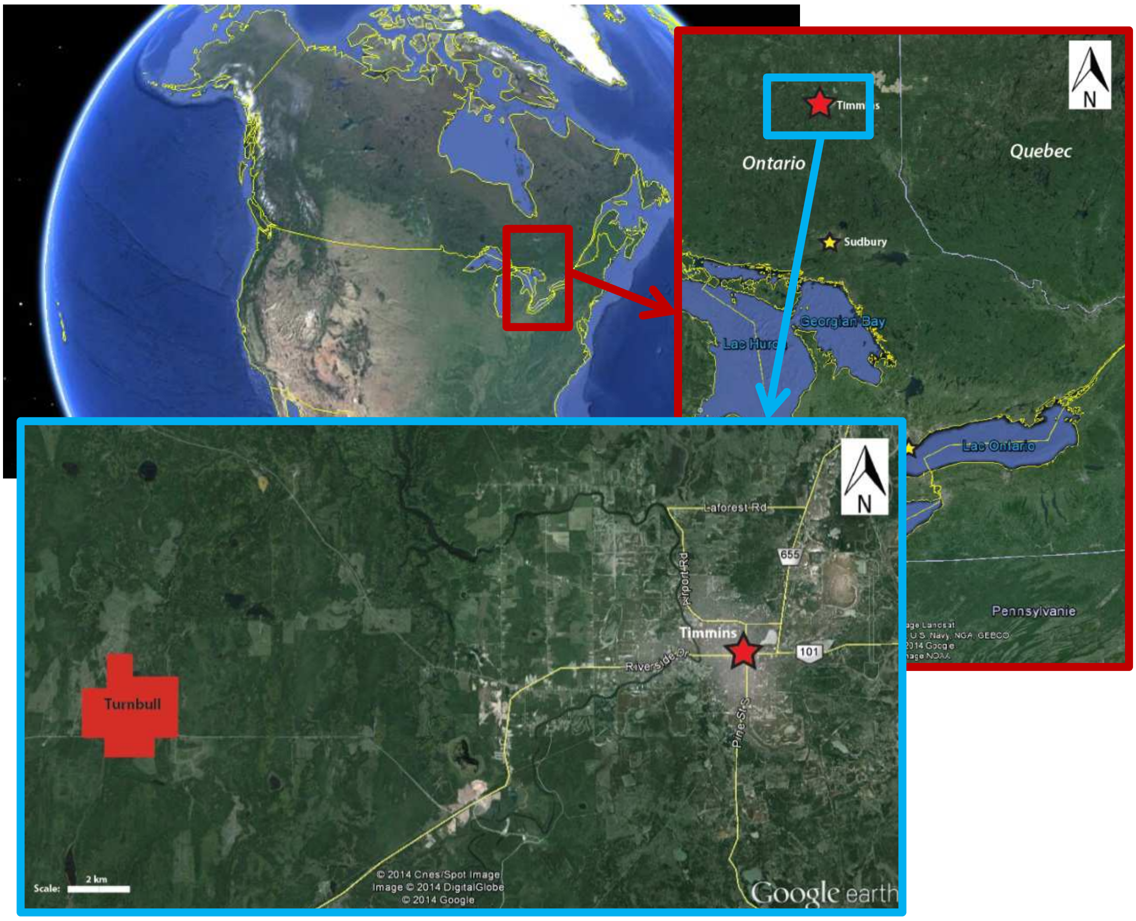


Figure 3: Turnbull area localization map

2. Objectives of Study

This study is an exercise in mineral exploration targeting with the objective of maximizing the probability of discovery.

The final deliverable of the study will be:

- An updated geological map of this area
- A map with the geographical position and map of proposed drill holes, with all the anomalies, which indicated where to place the drill holes.
- An exploration budget

The problem of the study is the evaluation of the degree of acceptance of failure risk in relation to the investment to drill test some exploration targets.

The answer leans on an analytical method including the following steps:

- Geological context.
- Geology of the Turnbull Property based on previous studies; everything compiled into GIS format.
- Chemo-stratigraphic mapping based on a method developed by T. J. Barret and W. H. MacLean, in the Turnbull township area.
- Limited field validation to confirm the chemo-stratigraphic interpretation.
- Limited sampling and whole rock analyses to complement and confirm existing results and interpretations.
- Identification of favorable targets, if present, on the basis of criteria specific to VMS-style mineralization and recognition of these elements in the GIS data within the Turnbull property.

3. Gold Crossing Inc.

Gold Crossing Inc. is a junior mineral exploration company that is in process of being constituted. The company's is planned to operate under a Generator-Discoverer business model and will be listed on the Venture Exchange in Toronto (TSXV). The company will be formed as a result of the reverse takeover of China Goldcorp (www.sedar.ca), a Capital Pool company, by International Explorers and Prospectors Inc. (IEP). IEP was created by the amalgamation of assets from several entities and its principal assets are comprised of more than 40 properties covering over 40,000 hectares of prime mineral rights in the Abitibi region of Ontario and Quebec. The properties range from greenfields targets to mineral occurrences to historical resources and even includes royalty properties, one of which is currently contributing revenue to the company.

The business strategy of Gold Crossing will be to acquire, by staking or purchase option, properties with gold and base metal potential and develop the properties to the point they can be farm-out to other companies in return for cash and financial work commitments. The objective will be to remain with a residual royalty that will allow the company to fund its ongoing exploration activities without the need for capital dilution through the issuance of equity.

The corporate structure of Gold Crossing will comprise a President-CEO, a Chief Financial Officer (CFO) and a five-member board of directors. Few employees will be hired and most of the technical resources will be provided by contractors.

The company will have a very small head office in Toronto and a more important exploration office in Timmins, Ontario. This will ensure minimal overhead, a feature that is very attractive to investors since more capital will be available for investing in mineral exploration.

Company management is of the opinion that the combination of a high quality, low risk mineral portfolio with an experienced management team and board of directors along with near term royalty revenue stream will be extremely attractive to the investment community and should favour substantial appreciation of value of the company's shares on the TSXV.

4. Regional Geology

The Turnbull property is located in the southwestern part of the Abitibi Greenstone Belt (SAGB) which forms a major component of the Archean Superior Province in the Canadian Precambrian Shield (Hathway and Thurston, 2003). All supracrustal rocks have been metamorphosed to greenschist facies or higher. As such the prefix term "meta", although not used, is assumed for all lithologies in the following text.

The SAGB is approximately centered on the town of Timmins, Ontario and extends from the Quebec border in the east, to the Kapuskasing Structural Zone, located about 150 kilometers to the west of Timmins (Figure 4).

The geology of the SAGB is known from surface mapping, diamond drilling and age-dating using primarily high precision thermal ionization mass spectrometry (TIMS) U/Pb geochronology of zircon crystals. The SAGB is composed of a suprastructural assemblage of volcanic and sedimentary rocks of different ages and chemical compositions and intruded by syn-volcanic and syn- to post-tectonic intrusions (Ayer et al., 2002).

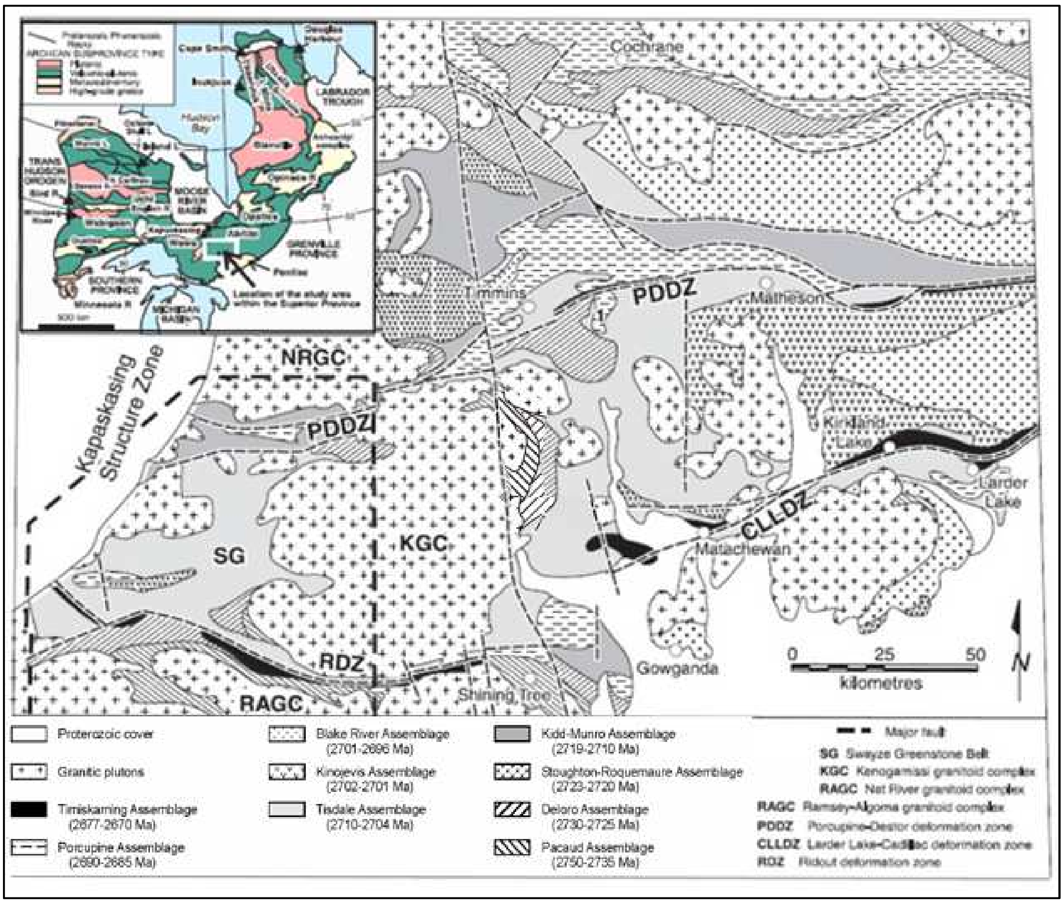


Figure 4: Distribution of supracrustal groups in the southern Abitibi greenstone belt (SAGB) (modified from Ayer et al. 2002)

The suprastructural assemblages (Goodwin et al., 1977; Pyke et al., 1982; MERQ-OGS, 1983; Jensen and Langford, 1985; Jackson and Fyon, 1991; Corfu et al., 1993; Heather and Shore, 1999, Ayer & al., 2002) are defined as regional map units that contain rocks sharing some, but not all, of the following properties: lithic attributes, geochemistry, facies associations, geophysical signatures, structural style and age, listed in Figure 5:

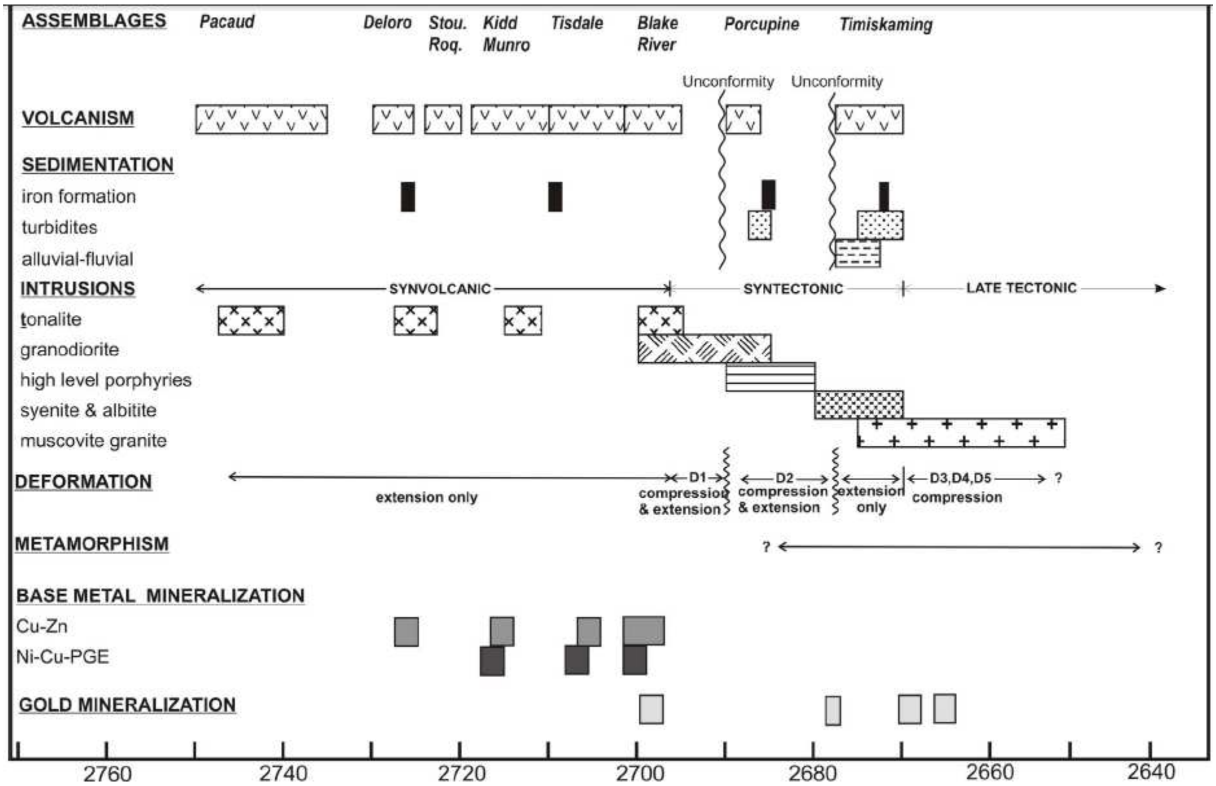


Figure 5: Timeline for the evolution of SAGB including the volcanic and sedimentary assemblages, intrusions, deformation, metamorphism and mineralization episodes. Geochronological data are from several sources (Ayer, Trowell and Josey 2004; Corfu 1993; Mortense 1993; Powell, Carmichael and Hodgson 1995; Bleeker, Parrish and Sager-Kinsman 1999; Davis et al. 2000; Heather 2001; Ayer et al. 2002; Ayer, Ketchum and Trowell 2002; Ayer et al. 2003; Dubé et al. 2004; Ayer et al. 2005, R. Bateman, J.A. Ayer, B. Dubé and M.A. Hamilton 2005)

The Deloro Assemblage (2730 - 2724 Ma) (Figure 6) is composed of mafic to felsic calc-alkalic volcanic rocks with some tholeiitic mafic volcanic rocks. It is typically capped by iron formation which implies that, in the early evolution of the SAGB, the Deloro Assemblage was an extensive regional stratigraphic sheet (Ayer et al., 2002).

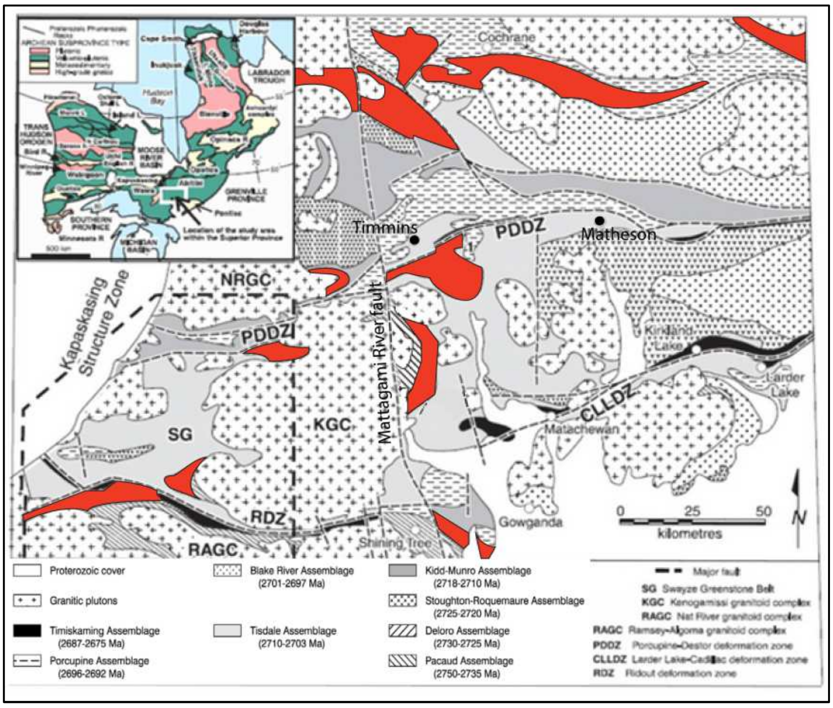


Figure 6: Deloro Assemblage in the SAGB (modified from Ayer et al., 2002)

The Stoughton-Roquemaure Assemblage (2723 - 2720 Ma) (Figure 7) was deposited over a short time interval and is composed predominantly of tholeiitic basalts and some felsic volcanic rocks and komatiite.

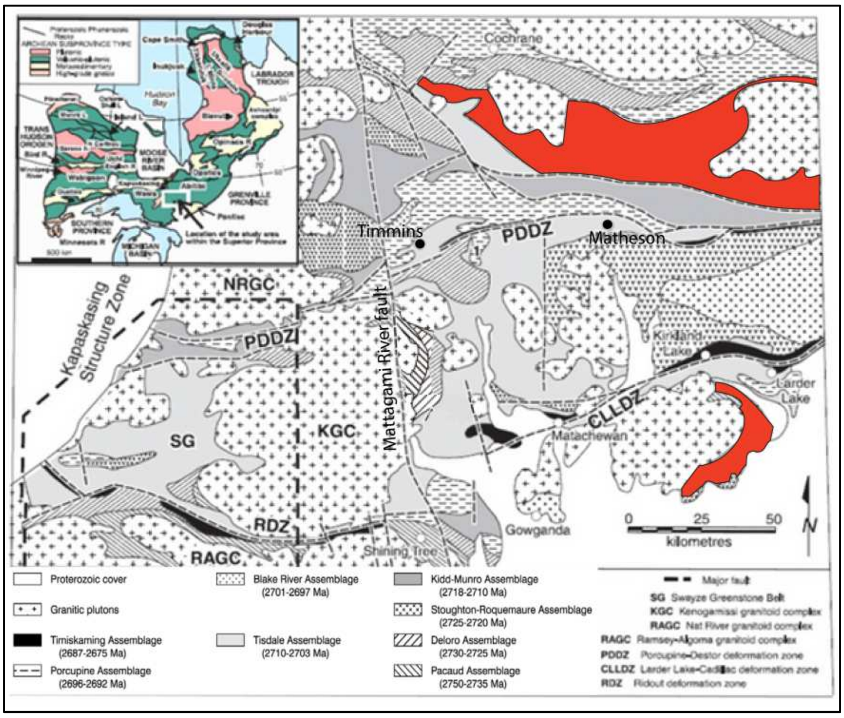


Figure 7: Stoughton-Roquemaure assemblage in the SAGB (modified from Ayer et al., 2002)

The Kidd-Munro Assemblage (2719 - 2710 Ma) (Figure 8) is divided into two parts:

- The lower part (2719 – 2717 Ma) is composed of intermediate to felsic calc-alkalic volcanic rocks.
- The upper part (2717 - 2710 Ma) is composed of tholeiitic mafic and komatiitic volcanic rocks with some accumulation of tholeiitic felsic volcanic rocks and graphitic sedimentary units.

Thanks to the Kidd Creek deposit, which is one of the world's largest copper/zinc mines (149,3 Mt at 2,89 % Cu, 6,36 % Zn, 0,22 % Pb, 92 g/t Ag, 0,05 g/t Au) (Hannington et al., 2005), we have a good understanding of this unit due to the amount of available information.

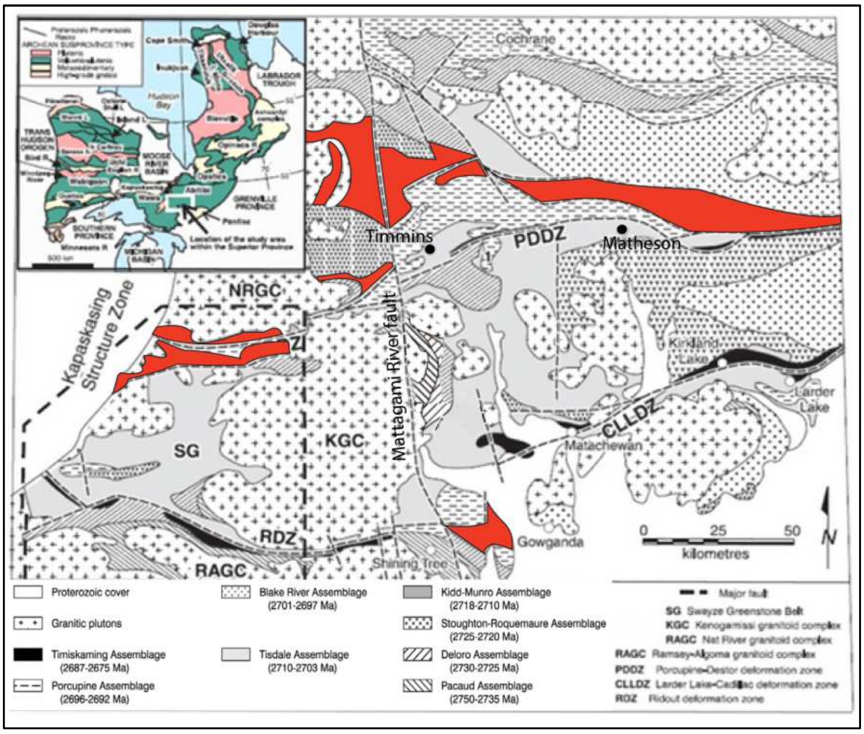


Figure 8: Kidd-Munro assemblage in the SAGB (modified from Ayer et al. 2002)

The Tisdale Assemblage (2710 - 2703 Ma) (Figure 9) is situated north of the Porcupine-Destor fault, where it overlies the Kidd- Munro Assemblage. It also borders the southern part of the Cadillac-Lader lake fault. The Tisdale assemblage is composed of tholeiitic basalt and rhyolite, komatiite and intermediate to felsic calc-alkalic volcanic rocks.

This assemblage is host to the principal orogenic gold deposits of the Timmins district, which are porphyry intrusion-related hydrothermal systems. The Hollinger mine and the Dome mine, which produce respectively 987 t and 509 t of gold, are both hosted by tholeiitic basalt, granitic intrusives and meta-sedimentary rocks. Komatiitics rocks are common at the Dome mine. (M. Jebrak & E. Marcoux, 2008).

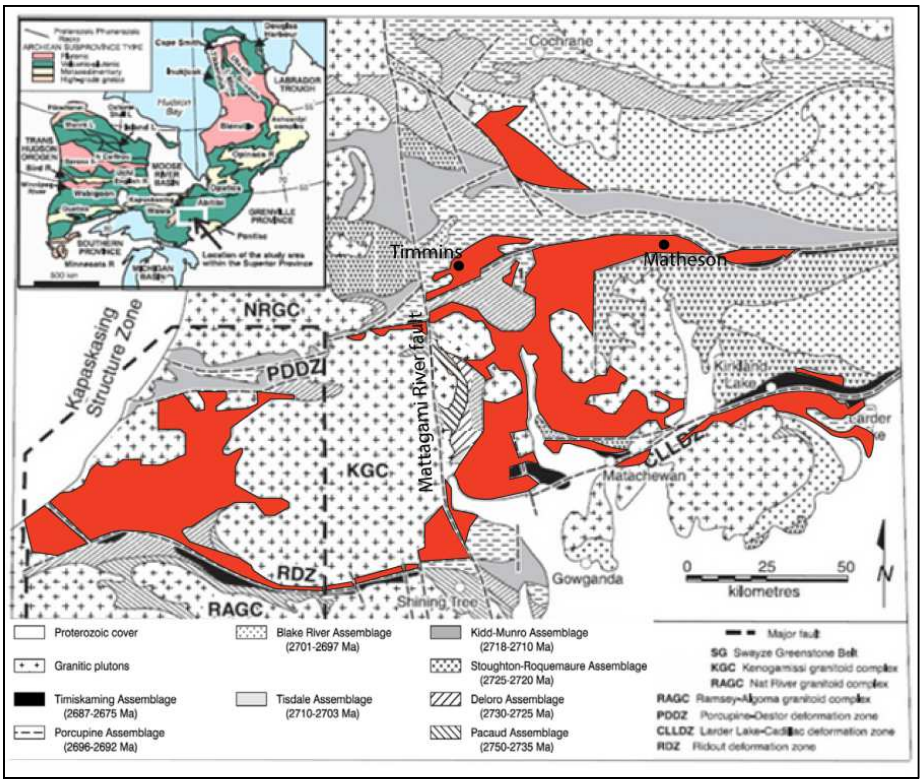


Figure 9: Tisdale Assemblage in the SAGB (modified from Ayer et al. 2002)

The Blake River Assemblage (2701 - 2697 Ma) (Figure 10) as described in Quebec (Fowler and Jensen, 1989) is truncated by the Porcupine-Destor fault zone (PDFZ) to the north and the Cadillac-Larder Lake fault zone to the south. To the west of the Mattagami River Fault, the Kamiskotia Volcanic Complex (KVC) (2701 - 2698 Ma) has the same age as the Blake River Group but is located north of the PDFZ.

The Blake River group is predominantly composed of mafic to felsic tholeiitic and calc-alkalic volcanic rocks. The felsic volcanics consist largely of rhyolite, rhyolitic breccia and lapilli tuff, and are intruded by some intermediate to felsic sills considered part of the "granophyric zone" of the Kamiskotia Gabbroic complex (KGC) (e.g., Barrie, 1992).

Numerous VMS deposits and occurrences are present in the Blake River Assemblage, including the world-class Horne deposit (54.3 Mt at 6.1 g/t Au, 11.7 Moz Au) and the La Ronde deposit (59 Mt at 4.31 g/t Au, 45 g/t Ag, 0.33 percent Cu, and 2.17 percent Zn) in Quebec (Mercier-Langevin et al., 2007). In the Kamiskotia district the Kam-Kotia deposit, the Jameland, the Canadian Jamieson and the Genex deposits are all situated in the KVC. These deposits provide further geological understanding of the Kamiskotia Assemblage (Hocker S.M., 2005).

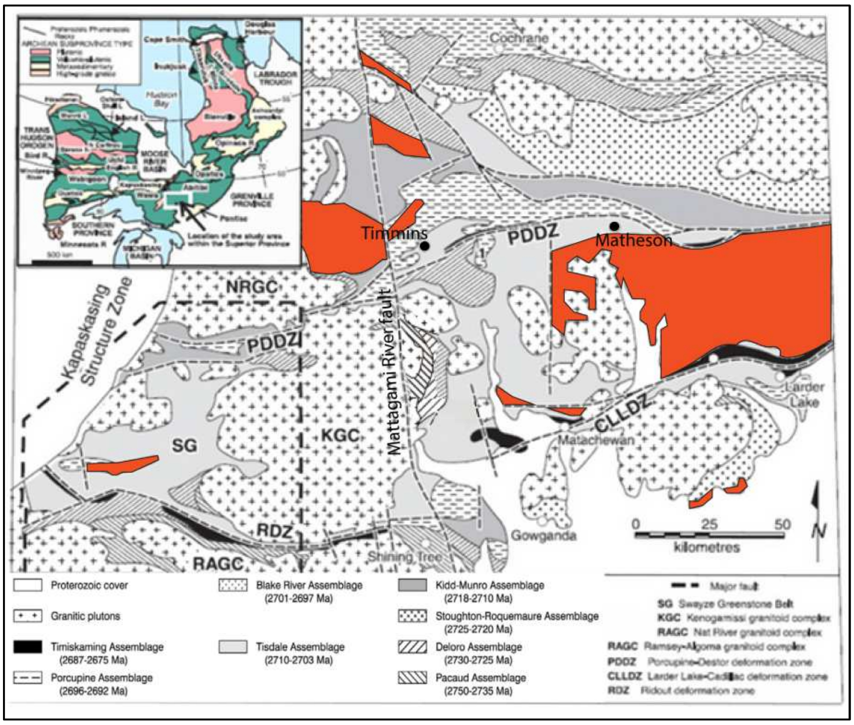


Figure 10: Blake River Assemblage in the SAGB (modified from Ayer et al. 2002)

The Porcupine Assemblage (2696 - 2692 Ma) is composed of wacke, siltstone and mudstone forming a distally deposited turbidite sequence. Locally, this assemblage may contain minor conglomerate and iron formation (Ayer & al., 2002). The assemblage is located in contact with the Porcupine Destor Fault in the Timmins area (Figure 11) and unconformably overlies the Kidd-Munro and Tisdale assemblages (Bleeker and Parrish, 1996).

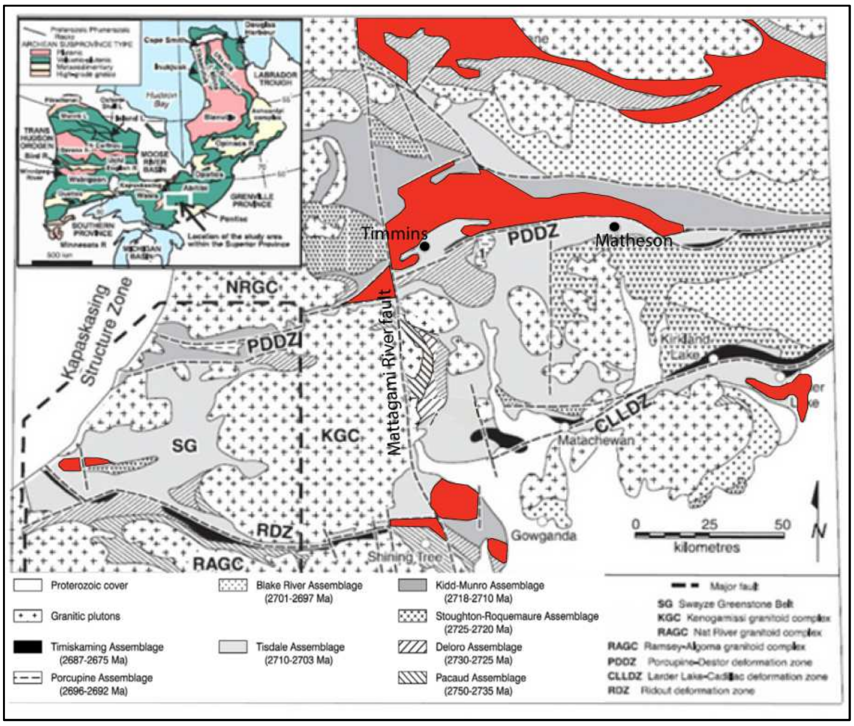


Figure 11: Porcupine Assemblage in the SAGB (modified from Ayer et al., 2002)

The Timiskaming Assemblage (2687 - 2675 Ma) is syn-tectonic in age and predominantly formed as small pull-apart basins filled with clastic sedimentary and some volcanic rocks. An angular unconformity separates the unit with the older assemblages close to the Porcupine-Destor, Cadillac-Larder Lake and Ridout faults (Figure 12). The dominant rock types are conglomerate, sandstone and mafic to intermediate alkalic to calc-alkalic volcanic rocks.

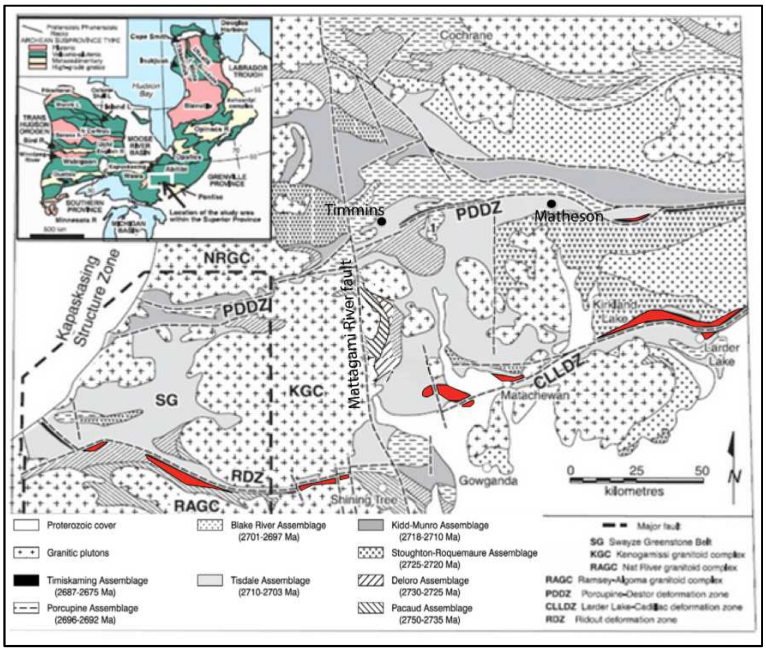


Figure 12: Timiskaming Assemblage in the SAGB (modified from Ayer et al., 2002)

Several periods of deformation are recorded in the region and two major, crustal-scale deformation zones, the Porcupine Destor Deformation Zone (PDDZ) and the Cadillac-Larder Lake Defomation Zone (CLLDZ) (figure 13).

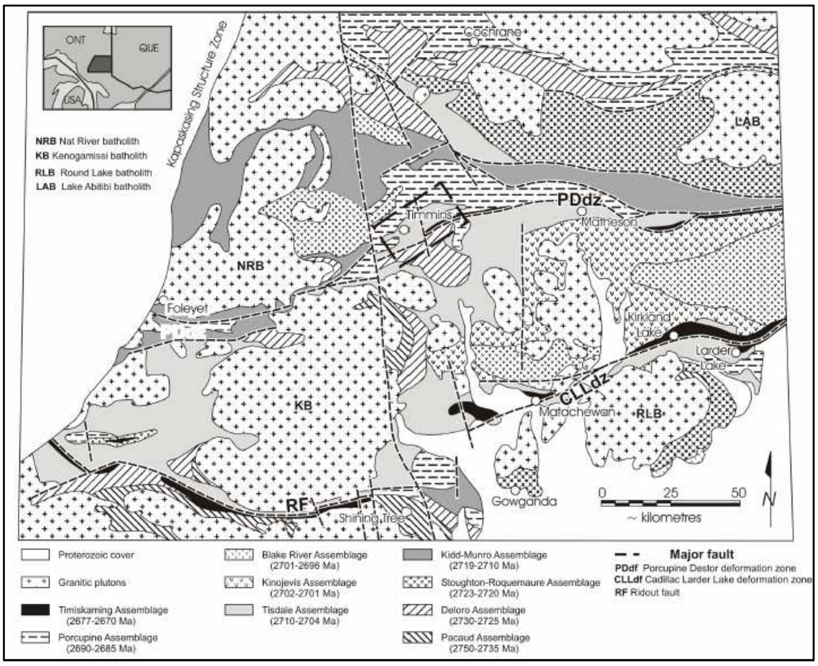


Figure 13: Map of the Abitibi Subprovince showing the distribution of assemblages (Ayer et al., 2002). Location of the PDDZ and the CLLDZ.

These two deformation zones (PDDZ and CLLDZ) were subjected to the same type of movement during the same time periods (Figure 14). The first deformation (D1) was an extension up to the end of Blake River Assemblage deposition. The second deformation (D2) is a south-over-north thrusting which occurred at the unconformity between the Blake River and the Porcupine assemblages. At this time, most of the gold mineralization observed in the Timmins–Porcupine gold camp was produced and most of the deposits formed to the north of the PDDZ.

A second major unconformity, formed between the Porcupine and the Timiskaming assemblages, shows a transpressive deformation (D3). This deformation allowed the filling of small basins along the PDDZ and the CLLDZ with the sediments of the Timiskaming Assemblage in places where either fault opened up (i.e. pull-apart basins). The deformation increased over time and the PDDZ shows a lateral movement of 100 km. (Hodgson, 1983, Mueller et al., 1996, Calvert and Ludden, 1999; Daigneault, Mueller and Chown, 2002).

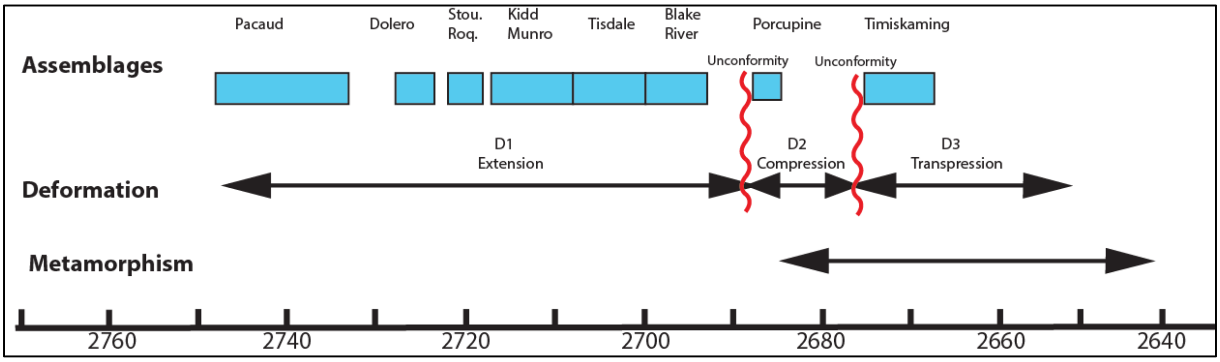


Figure 14: Distribution of the deformation and the metamorphism during the time of the Abitibi Subprovince.

Younger faults, formed by brittle deformation are present in the Timmins area. As an example, the NNW trending Mattagami River fault has an 8 to 10 kilometer left-lateral offset. There are several other faults with similar, characteristic brittle deformations such as the Montreal-River fault and the Black River fault, indicating a post tectonic age. All these faults seem to originate off the Phanerozoic-aged Timiskaming rift zone located to the south of the SAGB and centered on Lake Temiskaming.

The metamorphic grade of rocks in the Timmins area is generally lower to middle greenschist facies (Thompson, 2003). There have been multiple episodes of metamorphism between 2677 to 2643 Ma (Powell, Carmichael and Hodgson, 1995), characterized by different structural styles, foliation and mineral growth stages. The pressures estimated on both sides of the PDFZ are around 200 MPa.

5. Mineral Deposit Types

The Timmins area is famous for two types of world-class deposits. It is an orogenic gold district associated with the two major deformation zones of the Abitibi, PDDZ and the CLLDZ. As well, the region is an important district for VMS deposits with the Kidd Creek mine, by far the largest Archean massive sulphide deposit in the world.

5.1. Orogenic Gold Deposits

The Timmins area is a world-class orogenic gold district with numerous multi-million ounce deposits. Studies in the region have been very helpful to improve our general understanding of this important deposit type.

As a rule, orogenic gold systems include (Figure 15):

a) A source of energy, fluids and metals that enables the system to work
b) Pathway structures where the mineralization can migrate
c) Host rocks properties available to trap the mineralization

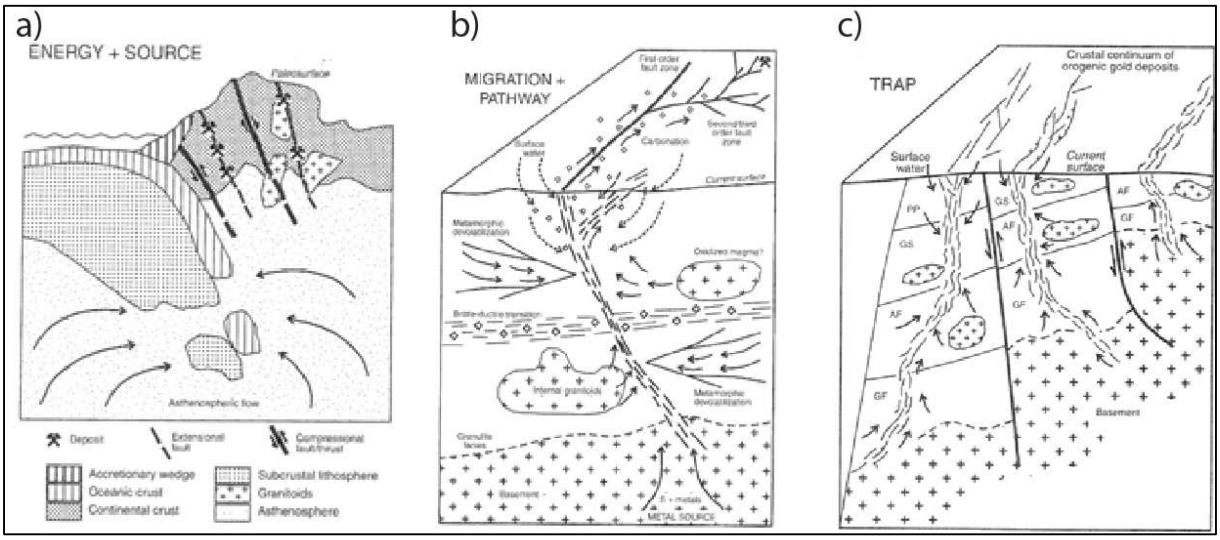


Figure 15: Gold orogenic deposit (a) Energy and source of fluids (b) Pathway and migration of fluids (c) Mineralization traps (Hagemann et al., 2000)

The fluids in an orogenic system are composed of surface water, metamorphic and magmatic fluids (Figure 16 (a)). The alteration of the host rock is different depending of the proximity of the main fluid passageways. A proximal zone, an intermediate zone and a distal zone of alteration are often visible (Figure 16 (b)) (Colvine et al., 1988; Groves et al., 1989; Ho et al., 1990; McCuaig and Kerrich, 1998, S. G. Hagemann, 2000).

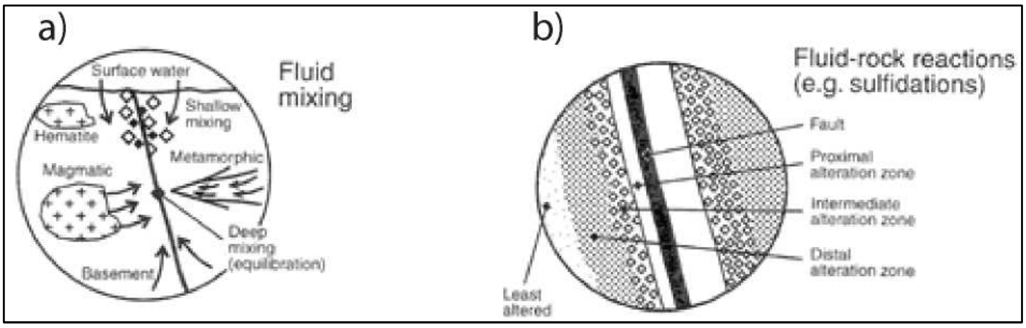


Figure 16: Fluid mixing (a) and fluid-rock (b) reaction in gold orogenic deposit (Hagemann et al., 2000)

5.1.1. Hollinger-McIntyre Deposits

The deposits in the Hollinger-McIntyre gold system are orogenic "porphyry style" gold deposits. The mineralization occurs in alkalic to calc-alkalic basalt of the Timiskaming assemblage near the PDDZ (Smith and Kesler, 1985; Mason and Melnik, 1986; Wood et al., 1986; Spooner et al., 1987; Channer and Spooner, 1991; S. G. Hagemann, 2000).

Two mineralization styles are present in these mines:

1 An intrusion-hosted vein quartz-feldspar "porphyry style" with disseminated Cu, Mo, Au, Ag and sulfides in the wall rock and the veins. Hydrothermal alteration is visible with distal anhydrite and proximal Sericite-Albite. This type of mineralization has 4 paragenetic sequences shown in Figure 17.

2 A gold-rich quartz-carbonate vein system with ankerite, albite, scheelite, chlorite, tourmaline, sulfide, tellurides, native bismuth and gold. The mineralization is situated in a northeast-southwest trending, brittle ductile Hollinger shear zone characterized by a northeastern-striking foliation that dips 80°. The different stages of vein formation seem to be synchronous with the establishment of the shear zone and controlled by favorable lithological units, stratigraphic contacts and the position of the porphyry feeder.

Figure 17: Paragenetic sequences of Hollinger intrusion-hosted vein quartz-feldspar porphyry style (modified from Hagemann et al., 2000)

5.1.2. Summary of Favourable Exploration Features of Orogenic Gold Deposits in Timmins Area

In the SAGB, orogenic deposits have a specific geology. To find positive orogenic targets in this area there are some important characteristics:

- Gold mineralization is spatially related to the PDDZ.
- Gold mineralization is synchronous with the formation of the Timiskaming assemblage
- Gold mineralization is located in association with alkalic to calc-alkalic porphyry intrusive rocks

5.2. Volcanogenic Massive Sulphide Deposits (VMS)

The SAGB is a world-class volcanic-hosted massive sulphide (VMS) district (Figure 18).

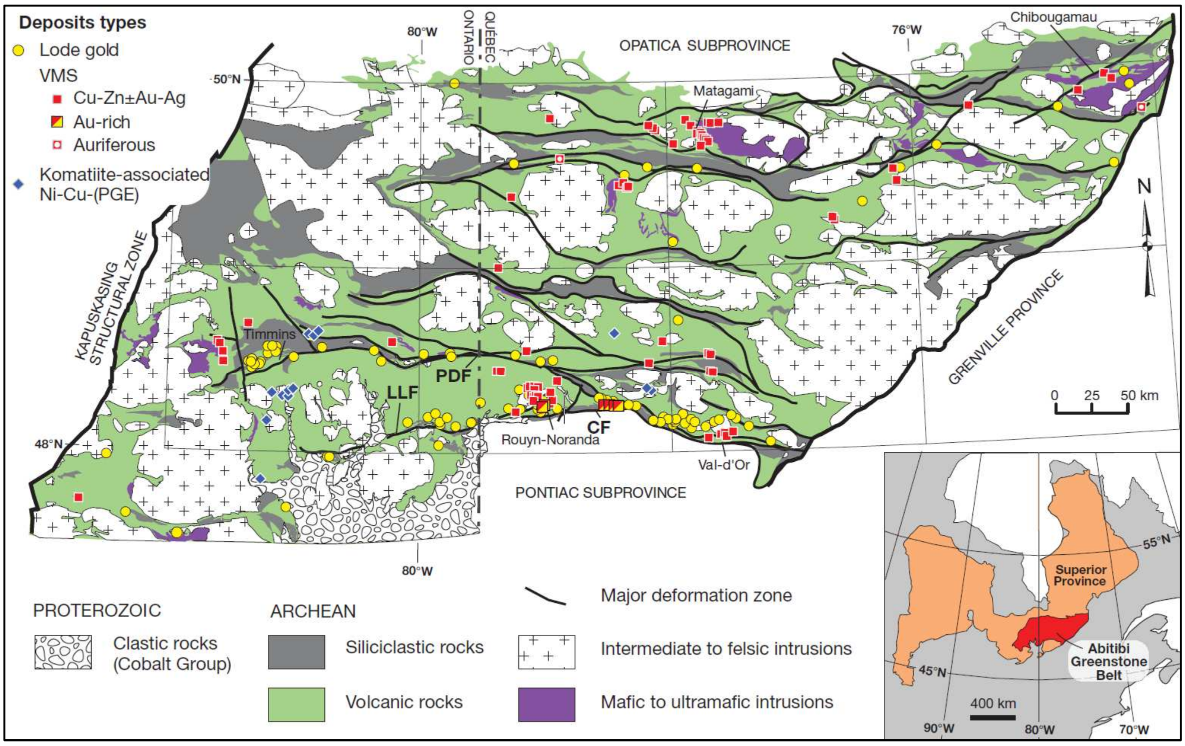


Figure 18: Location and distribution of the major VMS (>200,000 t ore, including production, reserves, and resources), greenstone-hosted Au (>100,000 oz Au, including production, reserves, and resources), and komatiite-associated Ni-Cu-(PGE) deposits of the Abitibi greenstone belt. Abbreviations: CF = Cadillac segment of the Larder Lake-Cadillac deformation zone, LLF = Larder Lake segment of the Larder Lake-Cadillac deformation zone, PDF = Porcupine-Destor deformation zone. Map modified from McNicoll et al. (2014). Data modified from Franklin et al. (2005), Gosselin and Dubé (2005), Galley et al. (2007a), Mercier-Langevin et al. (2011a).

VMS deposits are sulfide mineral-rich rock found in intimate association with their volcanic host rocks. They are generally composed of massive pyrite and are enriched in zinc, copper, silver and gold.

This deposit type forms where hydrothermal convections cells are established in certain volcanic sequences (Figure 19).

In Archean sequences, VMS deposits are typically associated with felsic rocks that have elevated high field strength elements and rare earth elements. Rhyolites are often highly siliceous indicating very high temperature of the melts (Lescher et al., 1986 and Hart et al., 2004).

The igneous geochemistry of mafic and felsic rocks associated with VMS deposits can be a useful tool to detect rocks with high fertility potential (Piercey, 2007).

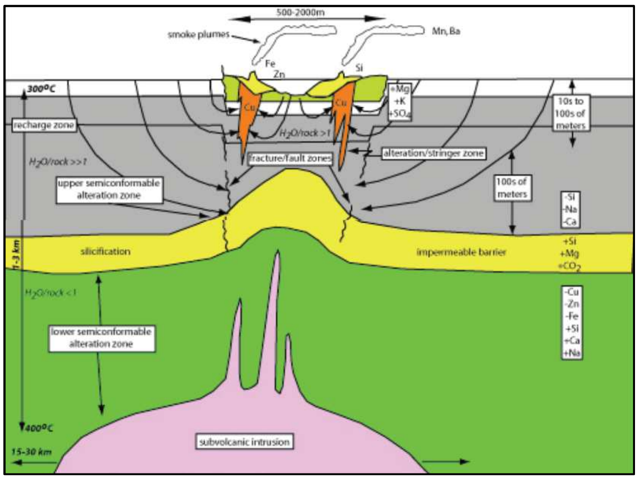


Figure 19: Model for the setting and genesis of volcanogenic massive sulphide (VMS) deposits (from Franklin et al., 2005)

The Timmins area has two ages of VMS mineralization: the Kidd Creek deposit in Kidd-Munro dating between 2716-2714 Ma, which is the biggest mine in the Timmins camp. The second period of VMS mineralization corresponds to the Kam-Kotia mine in Blake River Assemblage, dated between 2702-2698 Ma. In the Quebec part of the SAGB, some very large deposits have been mined from the Blake River Assemblage, such as the Horne mine.

The following are very high level descriptions of some of the characteristic VMS deposits in the Timmins and Noranda camps in the SAGB.

5.2.1. Kidd Creek deposit

Kidd Creek Mine is located 24 km north of Timmins, Ontario. Since 1963, the production and reserves from the volcanogenic massive sulphide (VMS) deposit total about 147.88Mt grading 2.31% Cu, 6.18% Zn, 0.22% Pb and 87g/t Ag and 0.01 Au (Bleeker et al., 1999). The decision to mine as deep as 3 km may bring total production to 175Mt and now it totals 25% of global Archean VMS ore (Hannington et al., 2005).

The Kidd Creek deposit is composed of mafic volcanic rocks, ultramafic rocks (Komatiite), felsic volcanic rocks (siliceous rhyolites) associated with massive sulfide ore, Intermediate volcanic rocks, sedimentary rocks where graphite is present and Granitoids (Figure 20).

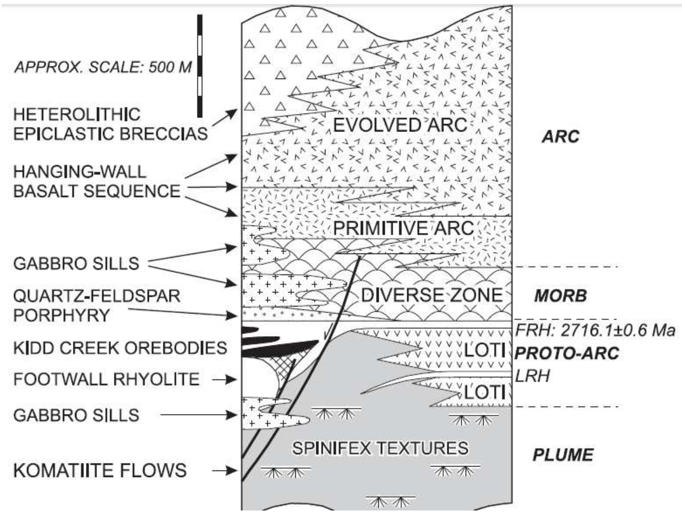


Figure 20: Generalized stratigraphic column for the Kidd Volcanic Complex (KVC), showing the position of the Kidd Creek orebodies relative to other major lithological units. Stratigraphic bottom and top of the sequence are unconstrained. Interpreted geodynamic settings on the right-hand side of the column are those of Wyman et al. (1999). Abbreviations: FRH = distal footwall rhyolite horizon dated at 2716.1 ± 0.6 Ma (Bleeker et al., 1999), LRH = lower rhyolite horizon.

5.2.2. Kam-Kotia Deposit

The Kam-Kotia deposit is in many ways typical of volcanic associated Cu-Zn deposits found in mafic-dominant bimodal stratigraphy (Barrie et al., 1999).The mine produced intermittently between 1943 and 1966 approximately 6 Mt at 1.1% copper, 1.17% zinc and 0.1oz/t Ag. The composition and nature of the mafic and felsic volcanic rocks change from the stratigraphic footwall to the hanging wall.

Two chemically distinct types of rocks are associated with the Kam-Kotia volcanic-associated massive sulfide deposit: Fe-Ti basalts and highly siliceous rhyolites.

In the immediate stratigraphic hanging wall, Fe-Ti basalts are present in the KVC. They were produced by the crustal fractional crystallization of the Kamiskotia Gabbroic Complex (KGC) (Barrie et al., 1991)

In the hanging wall and the footwall of the deposit, high silica rhyolites (FIIIb) are present. These rocks are derived from basalt partial melting at mid- to upper crustal depths with limited upper crustal fractionation. The mineralization is synchronous with mixed magma, basalt-high silica rhyolite tuffs with quenched and eutaxitic mafic fragments (Barrie et al., 1999)

According to Barrie et al., 1999 during metal deposition, the fractionation of tholeiitic parent rocks produces Fe-Ti basalts. The fractionation is initiated by a temperature increase of the mafic magma chamber; which is caused by the proximity and conductive heat of a felsic magma chamber. The injection of the felsic chamber in the mafic chamber produces a mixed magma called Fe-Ti basalt.

The extrusion of Fe-Ti basalts apparently permits the mineralization of the Kam-Kotia sulfide system. This system could exist in other places in the Kamiskotia district and could be useful to find other volcanic associated deposits.

The Kam-Kotia deposit has many similarities to the Kidd Creek deposit in regards to the presence of basalt, rhyolite, and high silica rhyolite, with volumetrically minor amounts of evolved basalt and andesite. Nevertheless, the Kam-Kotia doesn't possess any komatiitic extrusive rocks. Although they are outwardly similar to Kidd Creek, the deposits in the Kamiskotia area occur in both mafic and felsic volcanic rocks. The synvolcanic faults or intrusion are important for the mineralization and the hydrothermal alterations (chlorite, sericite and cordierite).

5.2.3. The Horne Deposit

The Horne volcanogenic sulfide deposit was discovered in 1928 in the Noranda district and produces 53.7 Mt with 2.2% Cu, 13g/t Ag and 6.1g/t Au. This area is a big caldera filled by massive flows, andesitic pillows and fragmental rhyolites. Numerous synvolcanic faults crosscut the formations. The deposit is composed of pyrite, chalcopyrite and sphalerite. The deposits form mounds adjacent to felsic domes with stockwork and alteration zones composed with chlorites in the center and sericite in the borders. The chlorite was transformed to cordierite during metamorphism. The lenses of mineralization are indicated by chert layers and exhalite horizons (M. Jebrak & E. Marcoux, 2008).

5.2.4. Summary of Favourable Exploration Features of Archean VMS Deposits in Timmins Area.

In the SAGB, VMS deposits have a specific geology. To find positive VMS targets in this area there are some important characteristics:

- The presence of high silica rhyolites (FIIIb)
- Hydrothermal alteration composed of chlorite, sericite and cordierite
- Widespread sulphide mineralization
- Synvolcanic intrusions (which may be difficult to detect) to provide a heat source
- The presence of the Fe-Ti basalts, which are often a good indicator of the presence VMS mineralization.
- Presence of exhalative horizons or clear breaks in the volcanic regime indicating the presence of a period of quiescence in the volcanism.

6. Geology of Turnbull Project Area

The Turnbull project area is located in the southeast corner of Turnbull township (figure 21).

Volcanic rocks of two distinct assemblages are thought to be present on the property. Age dating of rocks in the area confirm the presence of the Kidd-Munro (2,719 – 2,710 Ma) and Blake River (2,701 – 2,697 Ma) assemblages. Both these units are known to contain gold, zinc and copper deposits and occurrences. Dating is not currently sufficient to locate the boundary between these two units.

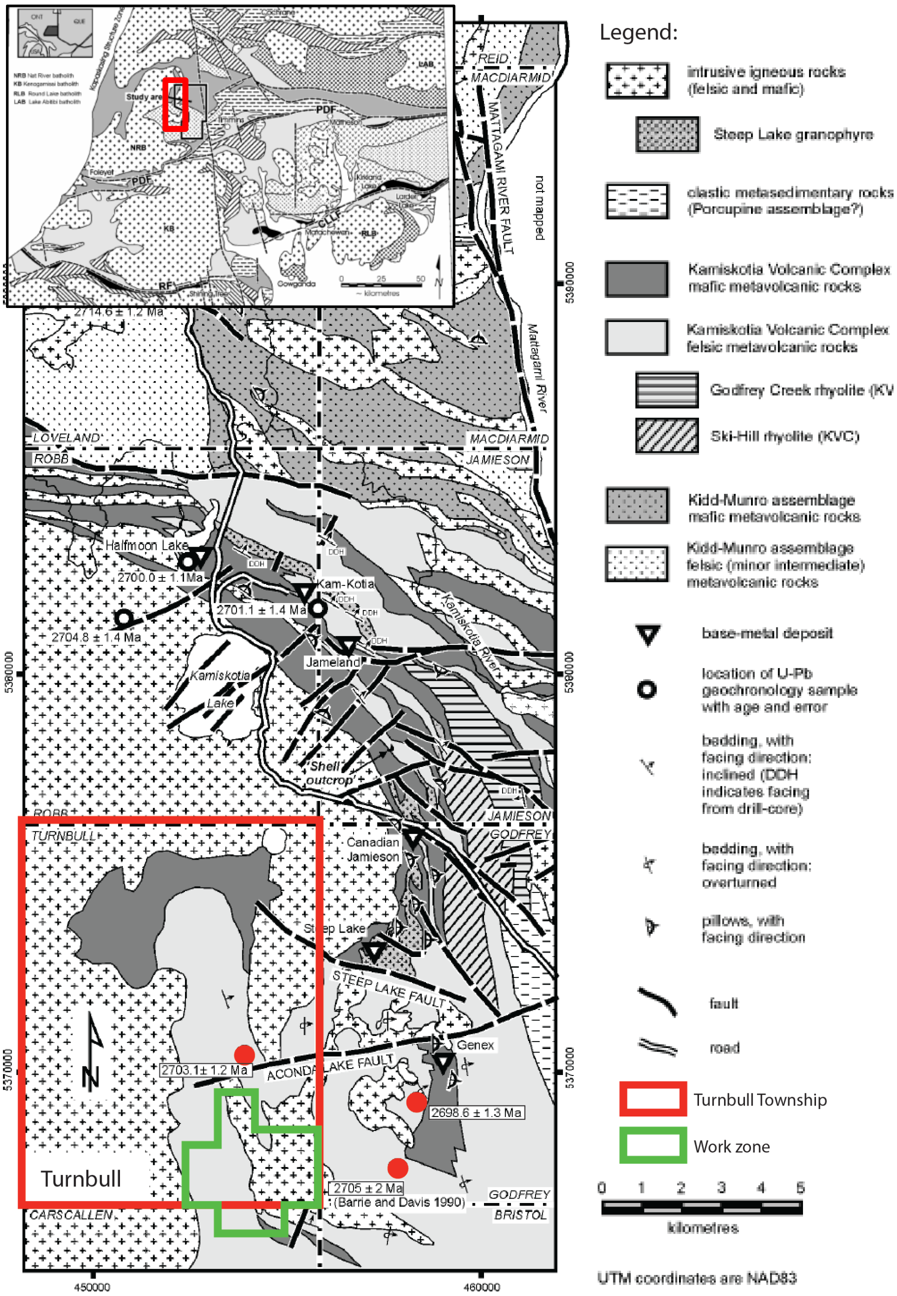


Figure 21: Geological sketch map of the Kamiskotia area, with locations of known VMS deposits and samples used for U-Pb geochronology (Hathway et al., 2005).

The Kidd-Munro Assemblage in the project area is composed of felsic high-silica aphyric rhyolites overlain by a thick succession of massive pillowed basalt. This formation may also include some felsic lapilli tuff units. There is some evidence of Komatiites (ultramafic) in Carscallen and Bristol Townships (Figure 21).

The volcanic rocks of the Blake River Assemblage overlie the Kidd-Munro Assemblage in the project area. Barrie (1992) highlights that the Blake River Assemblage rocks are assigned to the Kamiskotia Gabbroic Complex (KGC) and the Kamiskotia Volcanic Complex (KVC), including both mafic and felsic intrusive rocks. This volcanic complex with its underlying syn-volcanic intrusive complex constitute the Kamiskotia VMS district.

The KGC is subdivided into four zones on the basis of field and petrographic observations and geochemistry (Barrie, 1992):

- Partly layered, olivine-bearing cumulates of the Lower Zone (LZ) along the southern and western margin
- Gabbronorite and anorthositic gabbronorite cumulates of the Middle Zone (MZ)
- Partly layered, ferroan gabbro-norite, anorthositic gabbronorite and hornblende gabbro cumulates of the Upper Zone (UZ)
- Granophyric rocks of intermediate and felsic composition above and along strike with the UZ cumulates.

The UZ granophyre contact is irregular, with stopped blocks of partially hybridized granophyric rock within chloritized, quartz-rich UZ gabbro locally (Hart et al., 1984, Barrie et al., 2000).

The KVC is composed of two units:

- The KVC lower unit is composed of rhyolite, associated breccia and lapilli tuff, with low abundance of pillowed and massive mafic lava. This unit hosts all the known VMS deposits In the Kamiskotia district. At its contact with the KVC, the KGC has metamorphosed pillow-shaped structures with gradational migmatitic textures and the KVC has similar migmatitic textures, and also displays agmatitic textures, where partially melted rhyolite was injected into quenched gabbroic material (Barrie 2000)

- The KVC upper unit is composed of finely quartz- and feldspar-phyric to aphyric, finely flow-banded rhyolite and associated felsic lapilli tuff (Hathway et al., 2005).

The geology of the KGC has many similarities to the Flavrian-Powell subvolcanic intrusion in the Noranda (Santaguida et al., 1998) camp and the Chibougamau pluton in the Lac Doré complex in Chibougamau, Quebec (Mercier-Langevin et al., 2014). Both camps are known for their VMS deposits. These deposits suggest the same type of geology in the Kamiskotia district. The KGC pluton is a synvolcanic intrusion which may provide the heat source and some of the fluids in to the KVC. However there is a problem with the age of the KGC as it appears to be much older than the KVC. It is possible that more and better U/Pb dating in the area could indicate that the KGC was introduced simultaneously with the KVC.

7. Previous Work

The first studies done on the Turnbull area started in 1926 by J. E. Hawley who made the first map of the area. A regional study of the zone was made by L.G. Berry in 1944. In 1962, R. Middelton made a map using the outcrops observations complemented by geophysics. In 1985, Chevron Inc. collected 112 samples for whole rock analysis in this area, and completed a geological map. In 1992, Cambior Inc. explored the area and collected 194 rocks samples for whole rock lithogeochemical analyses including selected trace elements. They also produced a summary geological map. The Chevron and Cambior studies lack rare earth elements (REE) and in the Chevron case, trace element data and as such are insufficient for the present study. In 2003, Vaillancourt collected lithogeochemical data for the Timmins West study including samples from Carscallen, Denton, Bristol, Ogden and Deloro townships**.**

Studies	**Companies**
1926	Geology mapping of Carscallen, Bristol and Ogden townships (Hawley)
1944	Geology of the Robb-Jamieson Area (Berry)
1962-1964	AlsofMines Limited Sampling and geology (Middelton)
1979	Conwest Exploration conducted airborne and ground geophysics
1983-1985	Chevron conducted ground geophysics
1987	MNDM conducted an airborne magnetic and electromagnetic survey
1988	Granges conducted geophysics and diamond drilling
1995	Cambior Mines conducted geophysical, litho geophysical surveys and diamond drilling
2003	Lithogeochemical data for the Timmins West area: Carscallen, Denton, Bristol, Ogden and Deloro townships **(**Vaillancourt)
2005	Geological Setting of Volcanogenic Massive Sulphide Mineralization in the Kamiskotia Area: Discover Abitibi Initiative (Hathway)
2007	Explorers Alliance Corporation drilled one hole (ETC-00-1/2/3/4, ETC07-04/05, ETW-09-1/2/3)

7.1. Geological Mapping

The most recent work of this area was conducted by Hathway in 2005, who compiled all previous work, including exploration drill holes and U/Pb ages.

His work was done to understand the stratigraphy, volcanic facies, alteration and structural style of the late Archean volcanic succession that hosts copper-zinc volcanogenic massive sulphide (VMS) mineralization in the Kamiskotia area (Abitibi greenstone belt, Timmins district). He concluded that all the known VMS deposits in the study area occur within a restricted, east-facing stratigraphic interval in the upper part of the KVC.

Mafic and felsic volcanoclastic units, which can be replaced by VMS mineralization, and felsic coherent facies flows and/or domes, appear to be important potential targets (Hathway et al., 2005). Hathway et al., (2005) produced the 1/10 000 scale geological map part of shown in Figure 22.

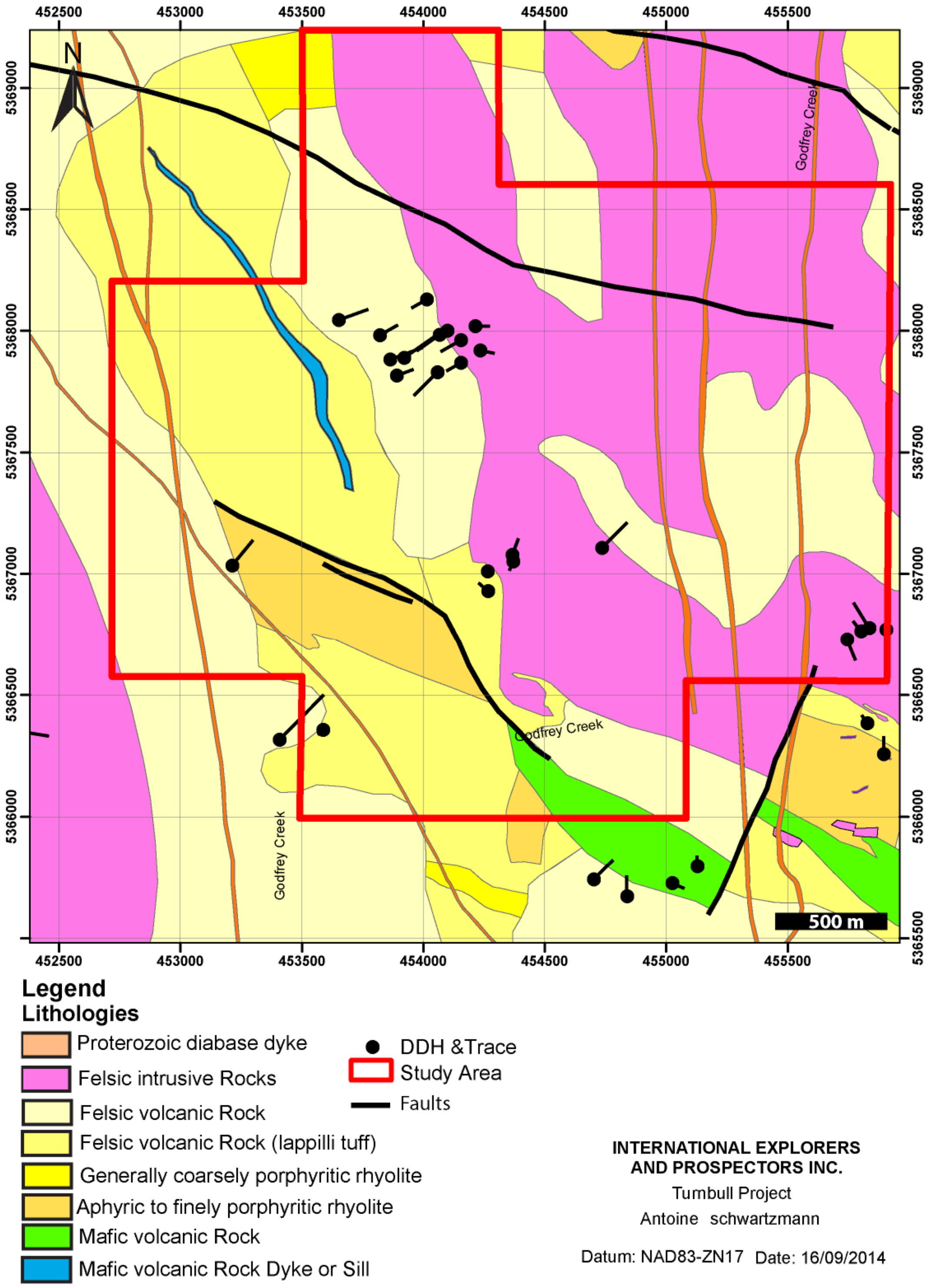


Figure 22: Geology of Turnbull Project area (modified from Hathway et al., 2005)

7.2. Airborne Geophysics

The geological understanding of this area is challenging because of the relative paucity of outcrops, making it complicated to generate targets for drilling. Metallogenic and exploration models of VMS deposits indicate that electromagnetic methods should provide a response over VMS deposits. Old explorers were well aware of this and strongly focussed their exploration on EM methods. However, graphite, which is also very conductive, is quite common as interflow sediments and sometimes even within VMS deposits themselves (see Kidd Creek mine) and as a result many, if not most VMS-target EM anomalies turned out to be barren graphite. More importantly, companies often neglected the geological context of the targets because the EM method is a direct deposit detection tool (Beaudry, pers. comm., 2014)

As shown in Figure 23, two airborne electromagnetic surveys have been flown over the project area. In one EM survey the lines are SE- NW and the other the lines are NE-SW. Most of the drilling (DDH) was concentrated near the EM anomalies. Also, the magnetic survey reveals the N to NNW Proterozoic diabase dykes, composed of quartz and olivine-bearing variants with plagioclase phenocrysts and magnetite crosscutting the volcanic assemblages. Most, but not all the airborne EM anomalies were drill tested with limited results so that the remaining potential for VMS deposits in the project area is to be found in the weaker conductors that have not been drill tested, or in non-conductive, possible zinc-rich, sulfide bodies.

7.3. Ground Geophysics

Induced Polarisation (IP) surveys were performed in the area. Results are plotted in figure 23 and a number of anomalies are apparent. The IP anomalies appear to trend towards a NNW direction and the absence of coincident EM anomalies or a significant drop in resistivity indicates they are not caused by conductive sulphides.

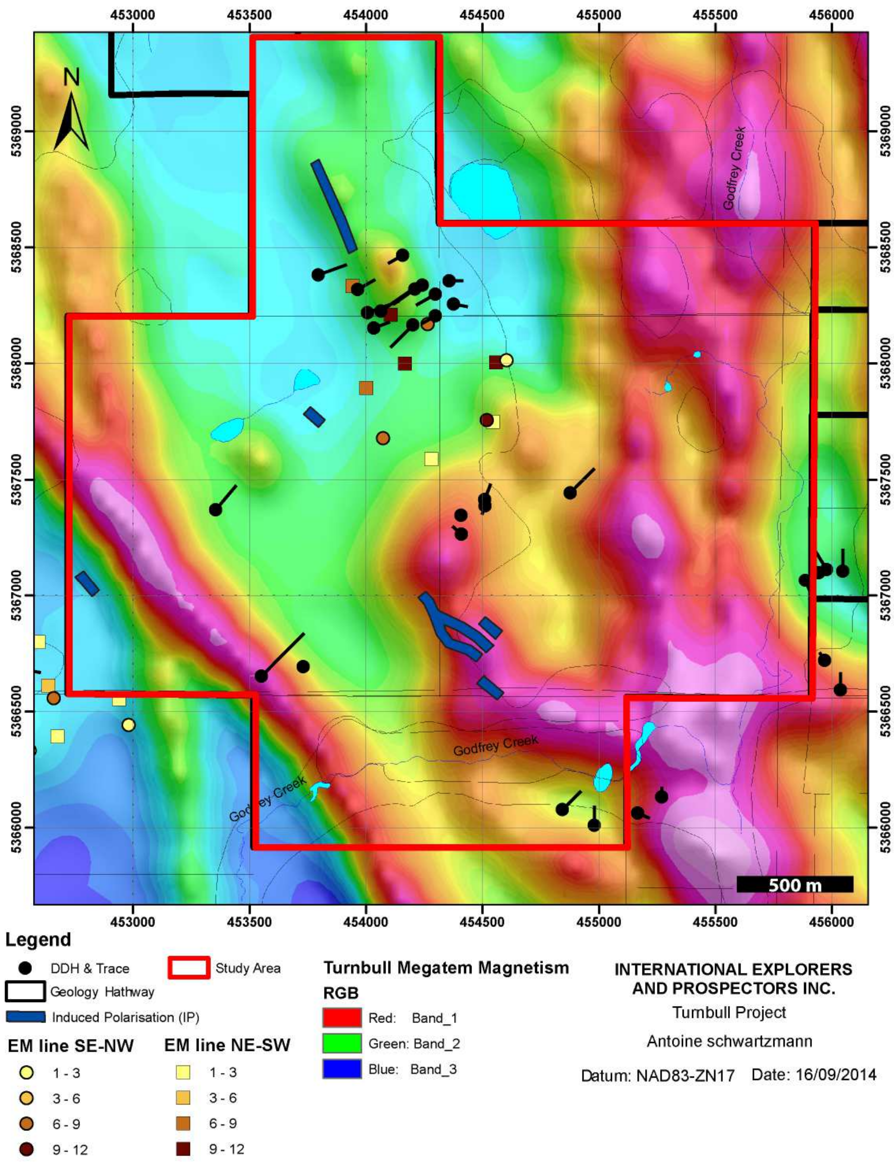


Figure 23: Electromagnetism (EM) and magnetics in the Turnbull area

7.4. Mineral Occurrences and Alteration

The map in Figure 24 shows results from sampling made by Chevron and Cambior (see above in Previous Work) along with mineral occurrences highlighted from previous exploration. The map reveals one gold (>0,1 g/t) and four zinc (>0,1 %) anomalies the area. On the other hand no copper or silver anomalies are present. In addition, samples collected in old drill holes indicate the presence of gold (>0,1 g/t), copper (>0,1 %) and zinc (>0,1 %) anomalies.

Grab samples collected by previous exploration companies are plotted on Figure 24 and listed on table 2. Some of these samples were collected near quartz porphyry dykes which seem to be alkalic to calc- alkalic intrusions.

The alteration of volcanic rocks is highlighted by the Ishikawa alteration index. This index relates to the replacement of plagioclase by sericite and chlorite during hydrothermal alteration (Ishikawa et al., 1976; Large et al., 2001). The alteration areas on the map (Figure 22) show index values up to 70%. Furthermore, visual observation of sulphides and chlorite in drill holes are also plotted in Figure 24.

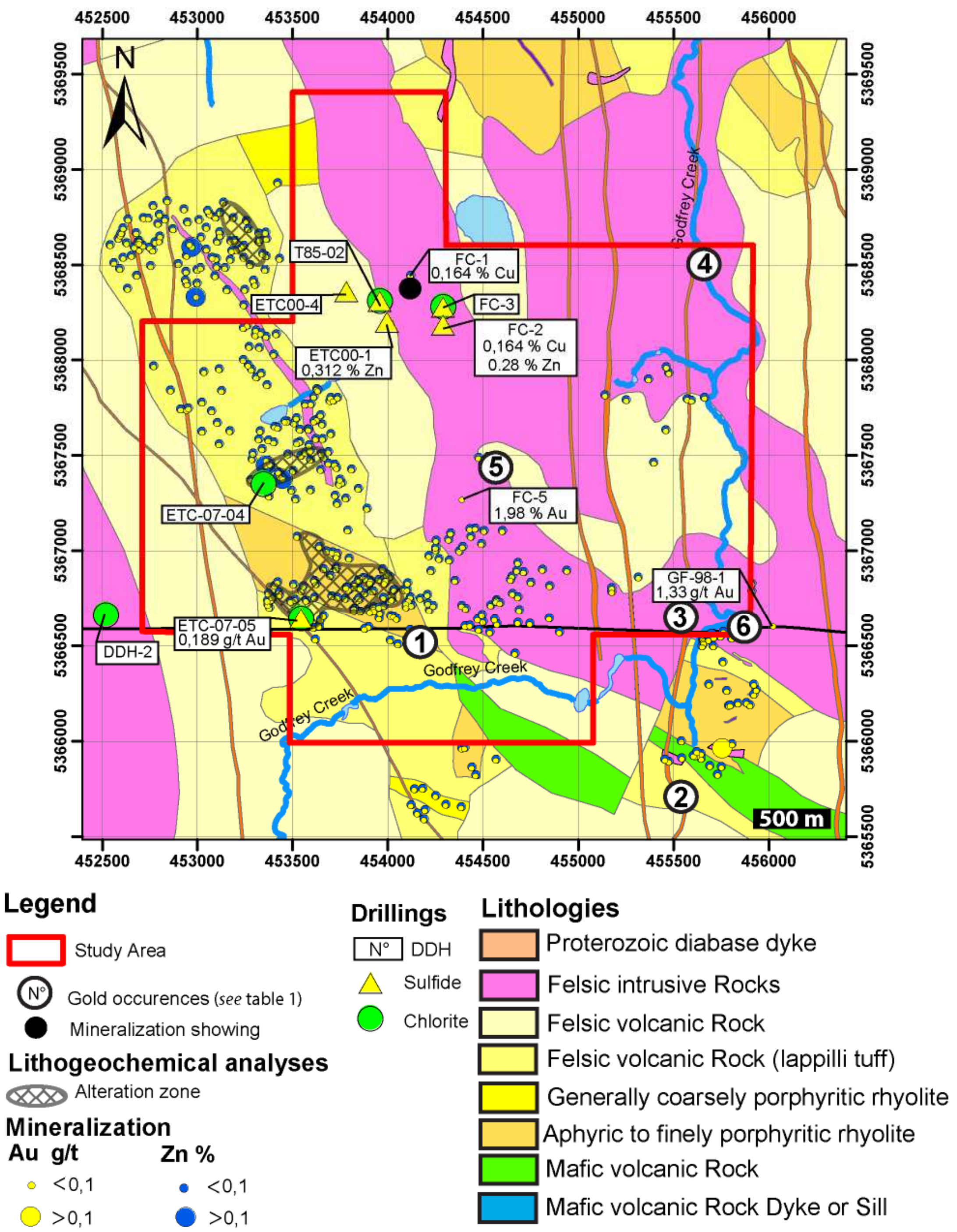


Figure 24: Gold, Zinc analysis and occurrences in the Turnbull study area (Geological map Hathway et al., 2005)

Table 2: Occurrences references

N° on map	Company	Age	Samples	Lithology	Au (g/t)
1	Fournier	1935	Native gold	Quartz stringers within quartz porphyry dikes which intrude mafic metavolcanics	0,93
2	Alsof Mines	1964	Grab sample	Quartz-carbonate veins occur in porphyry and rhyolite	16,79
3	Alsof Mines	1964	Grab sample	Quartz stringers within a quartz porphyry	2,49
4	Mason Property	1928	Grab sample	Two quartz veins trending NNW within granophyre	6,53
5	Chevron Inc.	1984	Grab sample	Quartz veins	31,1
6	Alsof Mines	1941	Grab sample	Felsic Metavolcanic	140,27

8. Lithogeochemistry

Lithogeochemical mapping in the Turnbull area is based on previous studies. W. H. MacLean and T. Barret (MacLean & Barrett, 1994) have developed a technique of differentiation for volcanics rocks. This technique is based on the immobile chemical elements of the parent rock during hydrothermal alteration and other interactive water-rock systems where they are concentrated during net mass loss and diluted by net mass gain. Figure 25 shows an example of an alteration profile of rhyolites on a TiO2 vs Zr diagram.

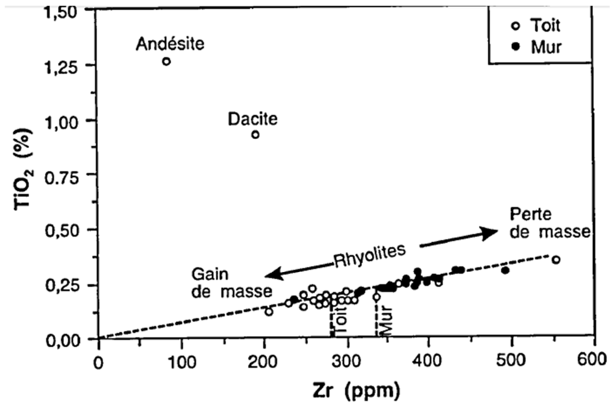


Figure 25: Alteration profile TiO2 according to Zr in host volcanic rocks (MacLean & Barrett, 1994)

They identified immobile elements such as the Al2O3, SiO2, TiO2, Y and Zr that can highlight differences between volcanic rocks. By comparing different data, they proposed differentiation diagrams (Figure 26), which will be used in the present study.

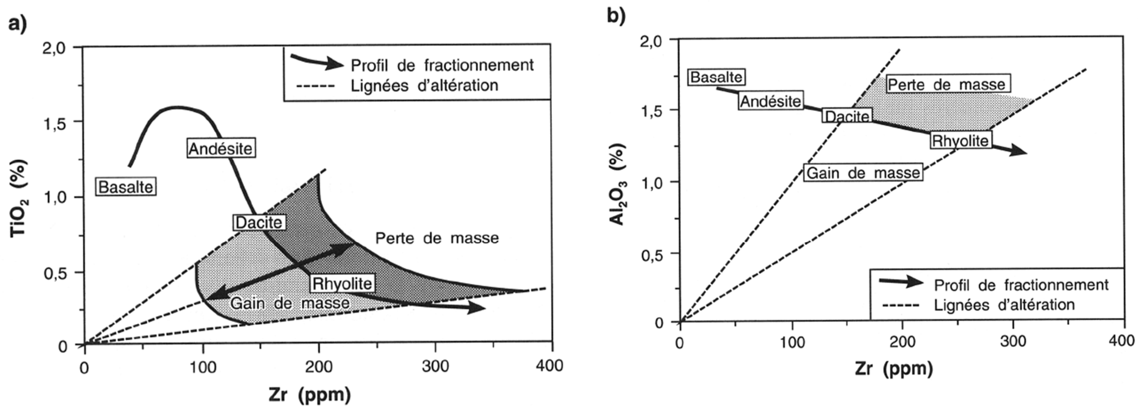


Figure 26: Alteration profile and fractionation in host volcanic rocks (a) TiO2 according to Zr (b) Al2O3 according to Zr (MacLean & Barrett, 1994)

8.1. Surface Mapping and Sampling

In order to distinguish the different rocks of the study area, whole rock data samples from drilling, Cambior (1995), Vaillancourt (2000) and Gold Crossing (2014) samples were used. 263 rock samples were compiled and projected on a Geographic Information Systems (GIS). These data were separated into four geographic zones (Figure 27).

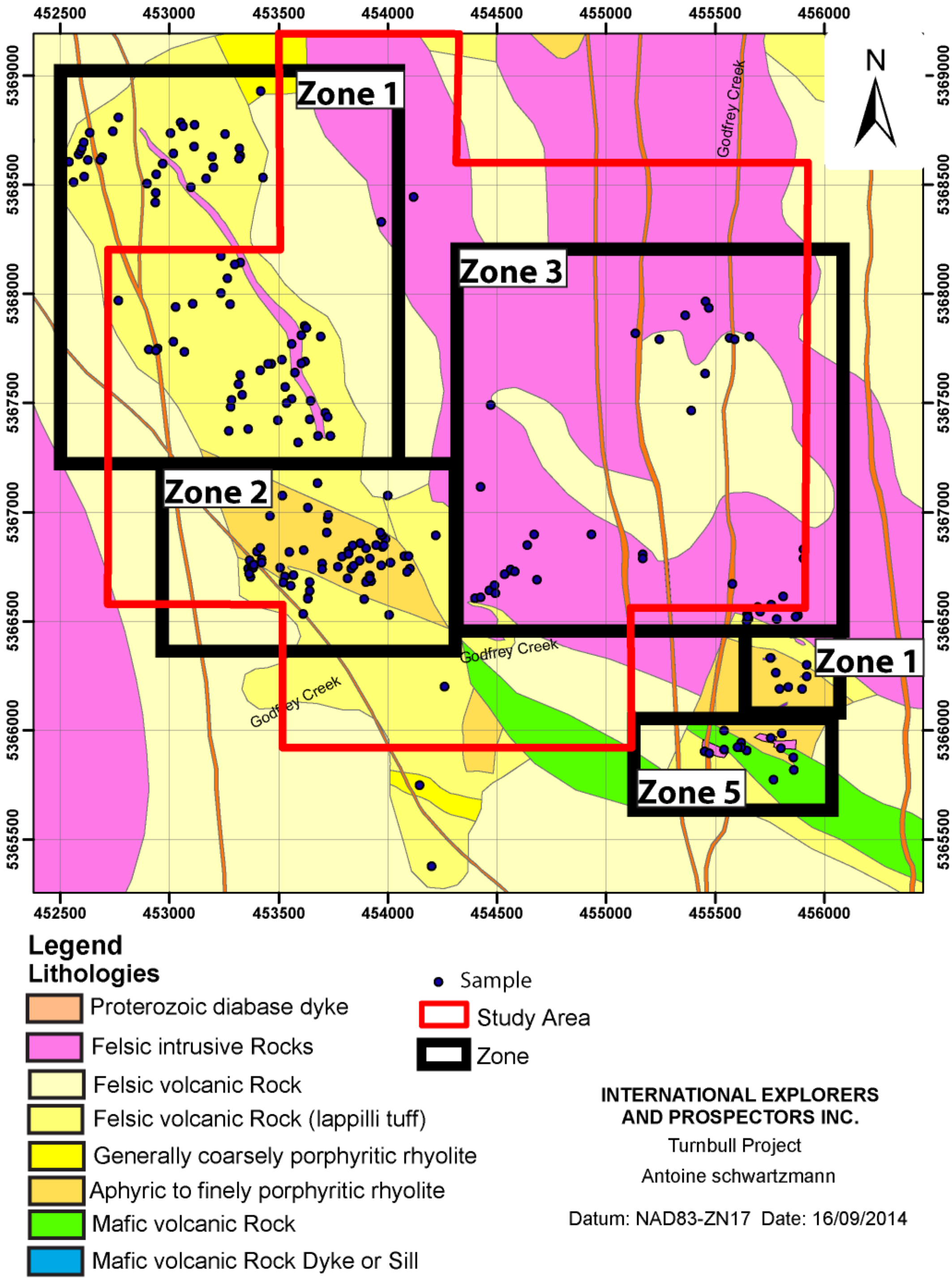


Figure 27: Distribution of the data in the Turnbull area (Geological map Hathway et al., 2005)

Data were projected onto various diagrams with Zr, being the immobile and incompatible element, used for comparison and plotted on the X axis, while the percentages of Al2O3, SiO2, Y, TiO2 are plotted on the Y axis (Figure 28). The number prefix to the symbols found to right side of the diagrams indicate the zone where samples were taken. The samples were geographically grouped by zone; afterwards they were grouped based on chemical composition. The chemical grouping is indicated by the letters in the diagrams.

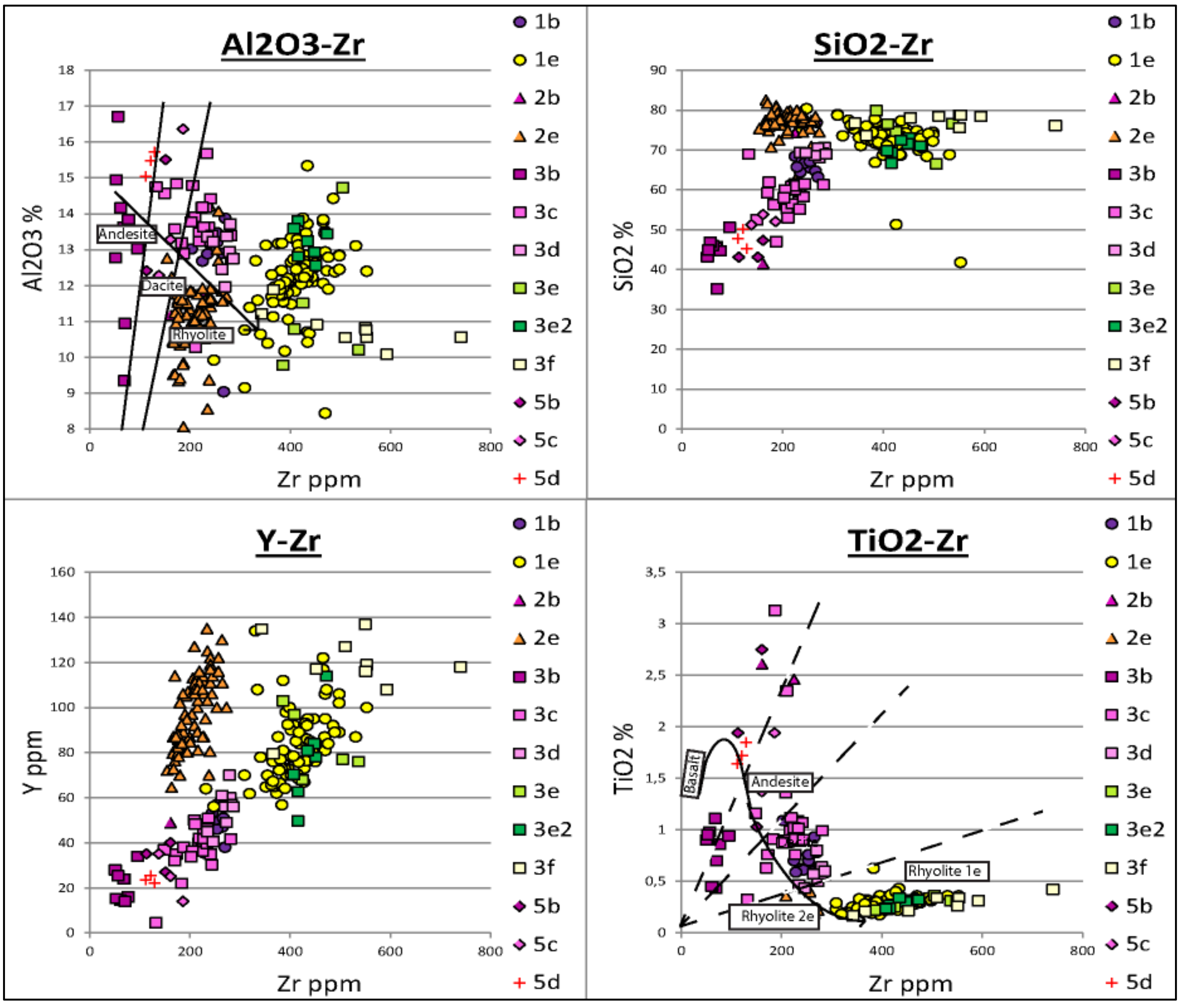


Figure 28 : Alteration profile and fractionation in host volcanic rocks from the Turnbull studied area (Al2O3, SiO2, Y, and TiO2 all according to Zr)

The grouping of the samples is a function of the chemical similarity and geographic proximity and may indicate different magma composition or ages for the volcanic flows. A geological map was created to illustrate the differences (*see* Figure 31). Three units have been distinguished:

- The first unit, is the most felsic and composed of categories 1e and 2e (Figure 29 (b)). These samples were classified thanks to the studies of Lesher et al. in 1986 and seem to be part of the Kidd-Munro assemblage (Figure 29 (a)). Samples classified as 1b, 2b and 5b, c are interpreted to be mafic dykes. Unit 5d, located in the southeastern part of the Turnbull study area has been interpreted as a Fe-Ti basalt.

- The second unit is more mafic and is composed with samples classified as 3b, c, and d. The limit of this mafic unit was delimited with the help of the magnetic survey. These samples may be part of the Kamiskotia Gabbroic Complex (KGC).

- A third unit, composed by 3e2 and 3f units, is different as the mafic unit considered as the KGC and it is composed of felsic rocks, which have a similar chemical response than the first felsic unit (Kidd-Munro). These samples may be part of the Kamiskotia Volcanic Complex (KVC).

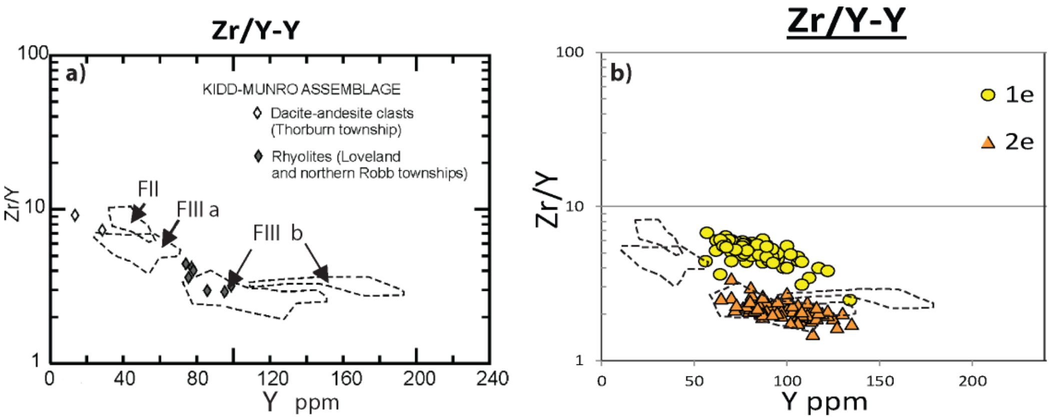


Figure 29: (a) Kidd–Munro assemblage felsic and intermediate rocks from Loveland, Robb and Thorburn townships (Lesher et al., 1986). (b) Felsic rocks from Turnbull area

The chemical composition of the unit considered as the Kidd-Munro Assemblage (felsic rock) and the KGC (mafic rock) is different. There is a contact between these two units shown on figure 30. There is a 10 Ma gap between these two units corresponding to the absent Tisdale Assemblage and there are no evidences of this type of rock in the Turnbull property. This gap could correspond to a hiatus in volcanic deposition or a thrust fault.

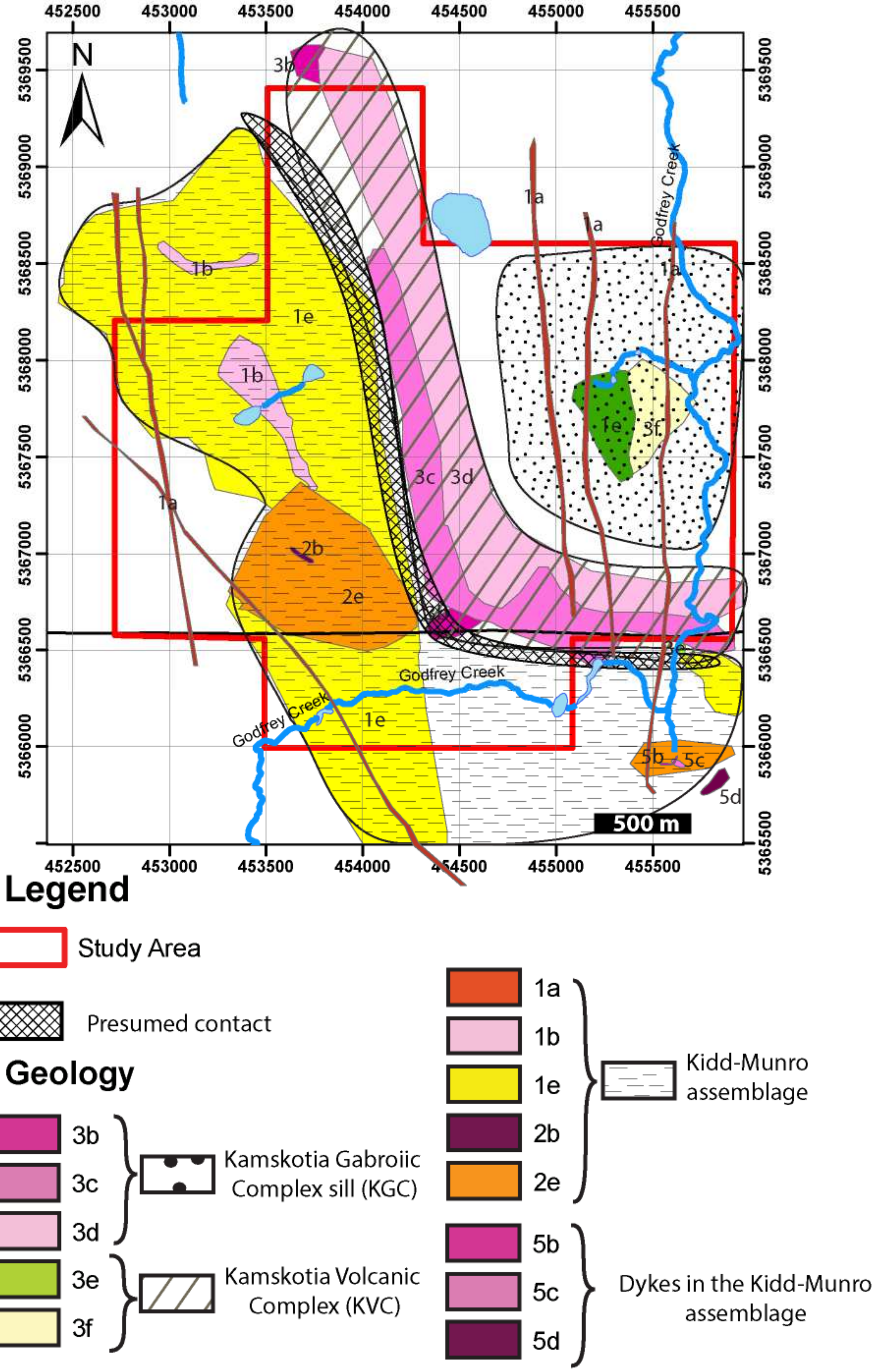


Figure 30 : Simplified geological map with the presumed fault

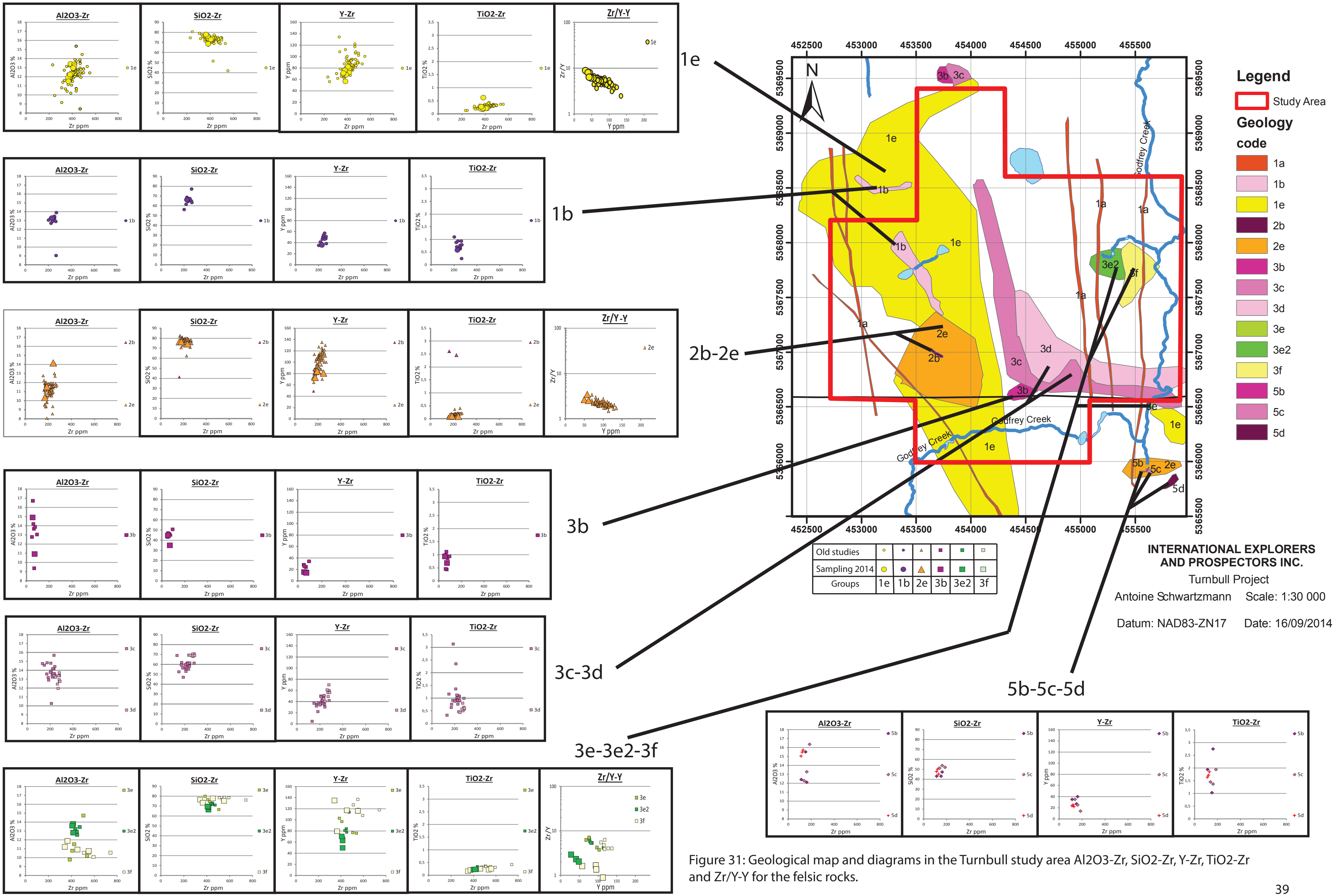


Figure 31: Geological map and diagrams in the Turnbull study area Al2O3-Zr, SiO2-Zr, Y-Zr, TiO2-Zr and Zr/Y-Y for the felsic rocks.

8.2. Field Mapping and Sampling

Three days of field work were undertaken to verify the mapping done by previous workers and to collect 32 samples for lithogeochemical analyses, including trace and rare earth elements. The samples were prepared and analysed by AcmeLabs® and the quality of results was controlled (Annex 7). Results are generally within 5% of published values for standards for major elements and within 10% of published values for trace elements.

Two kinds of rhyolite (2e and 1e) were observed in the field. Unit 2e (Figure 32 (a)) seems to have more silicified alteration and more deformation than 1e (Figure 32 (b)) which is more massive. In the unit 1e, the contact with the mafic intrusion 1b can be seen by lobes of mafic volcanic rock intruding rhyolite (Figure 32 (c)). On the geological map, the 2b unit is considered as a Fe-Ti basalt. But the field work revealed this anomaly as only a small sized mafic dyke of 2 meters wide (Figure 32 (d)). This is why this unit is not considered as a Fe-Ti basalt but more as a mafic dyke.

In the southeastern part of the area, unit 3e is a hyaloclastic lapilli tuff with rhyolite fragments. The mafic unit 3c is located near to unit 3e (Figure 32 (e)). In the northeastern part of the area, 3f is present as a massive rhyolitic rock and unit 3e2 is a rhyolitic lapilli tuff (Figure 32 (h)). These rocks are totally different than the mafic 3c and 3d units, but have more resemblance as the 1e, 2e felsic volcanic rocks.

Some alteration and mineralizations were observed in the field. In the southern part of the area, unit 3b is composed of a highly chloritised, pyritised, and carbonatised rock (Figure 32 (f)). Also, a very sulphidized and silicified mafic rock with no evidence of chloritisation occurs in the north part of the study area and seems to correspond to unit 3c (Figure 32 (g)).

All field observations and the lithogeochemical results of the samples collected in this study confirm the interpretation of historical sampling results by Chevron and Cambior.

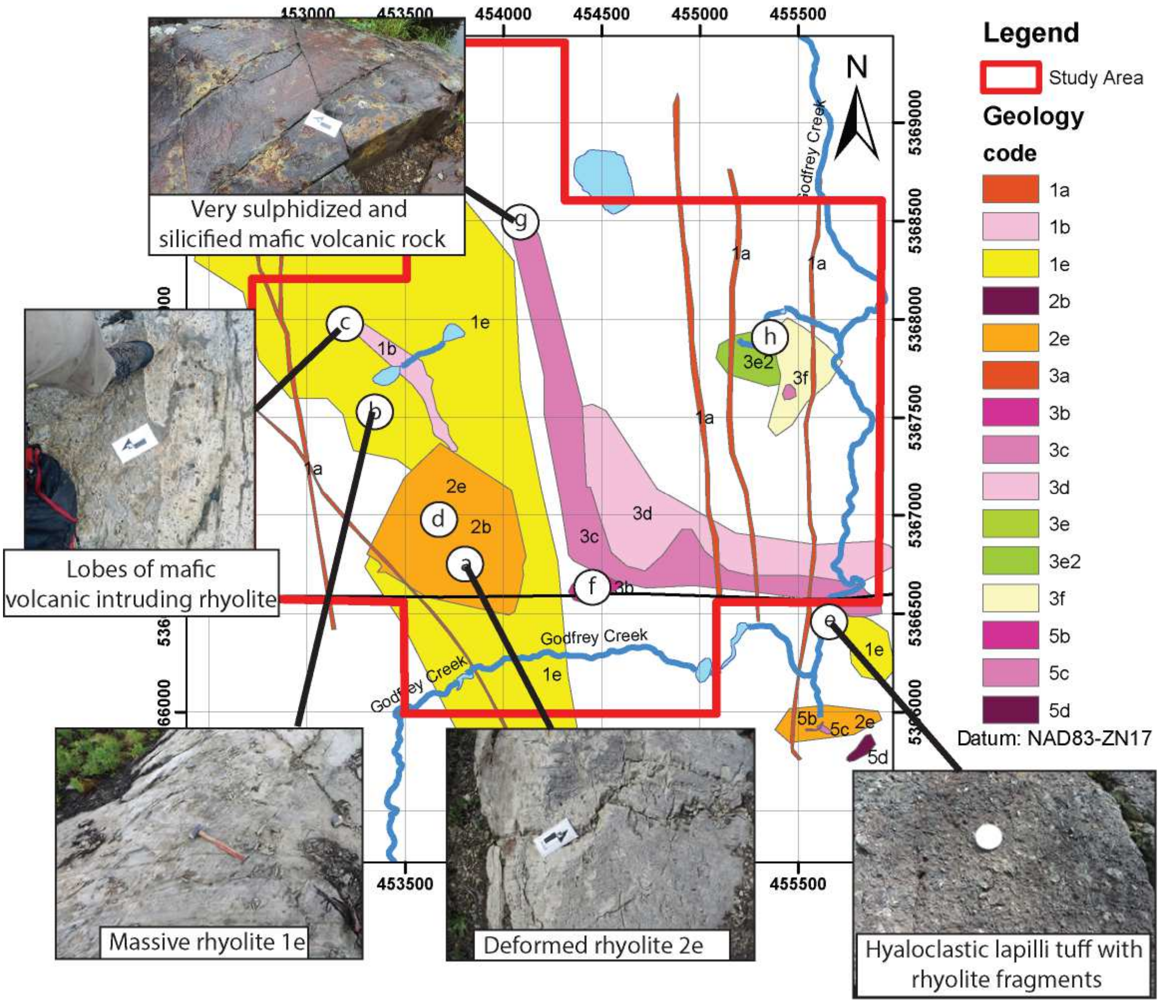


Figure 32: Field observation and correlation

The Rare Earth Element (REE) analyses were normalized to C1 chondrite (Sun and McDonough, 1989) and plotted on REE abundance diagrams. The samples were grouped by their compositional similarity and the results are plotted on a map of the Turnbull area (*see* Figure 34). The lithology classified as 3e2 above appears to have the same composition as the 1e rhyolite.

Unit 2e, an FIIIb rhyolite unit (figure 34c) shows a flatter REE profile than unit 1e (figure 34d). This suggests that it was formed from melting at shallower depth (see figure 33 in Hart et al., 2004).

All of these rocks are considered as FIIIb Rhyolite. FIII felsic volcanic rocks form as a result of ultramafic to mafic intrusions emplaced at shallow levels in the crust and within the zone of brittle fracture permeability (<10–15 km; e.g., Sibson, 2002) and are therefore the most favorable exploration targets, especially if volumetrically important in a single area (Lesher et al., 1985) because they have the most chance of setting up a hydrothermal convection cell beneath the ocean floor.

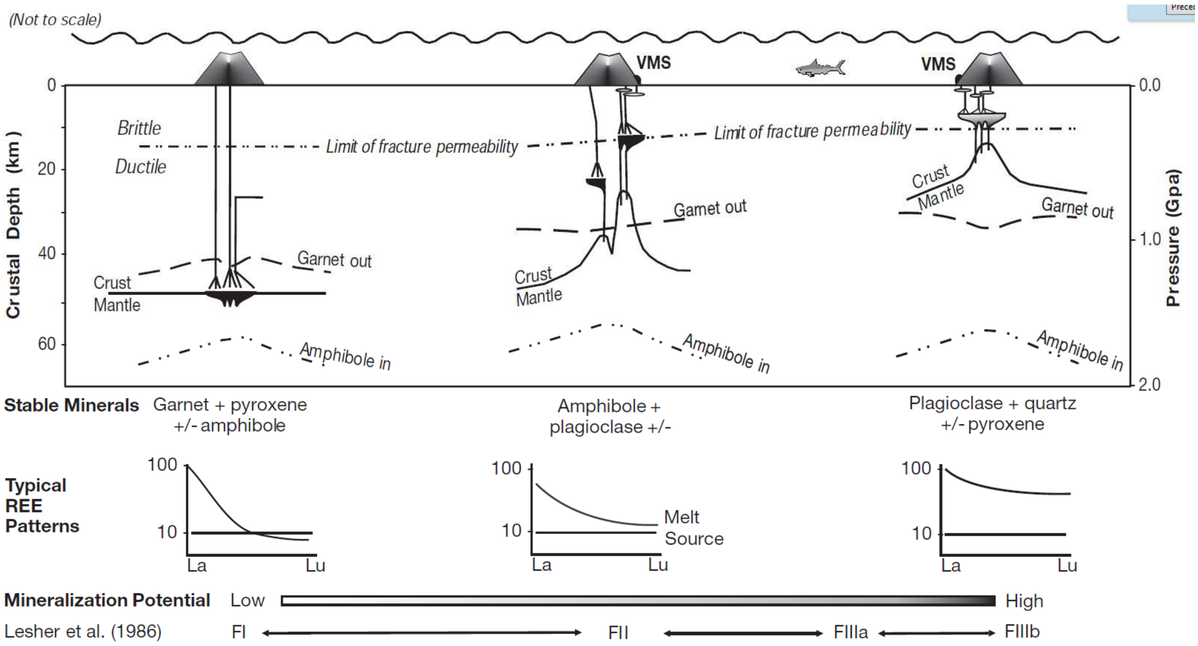
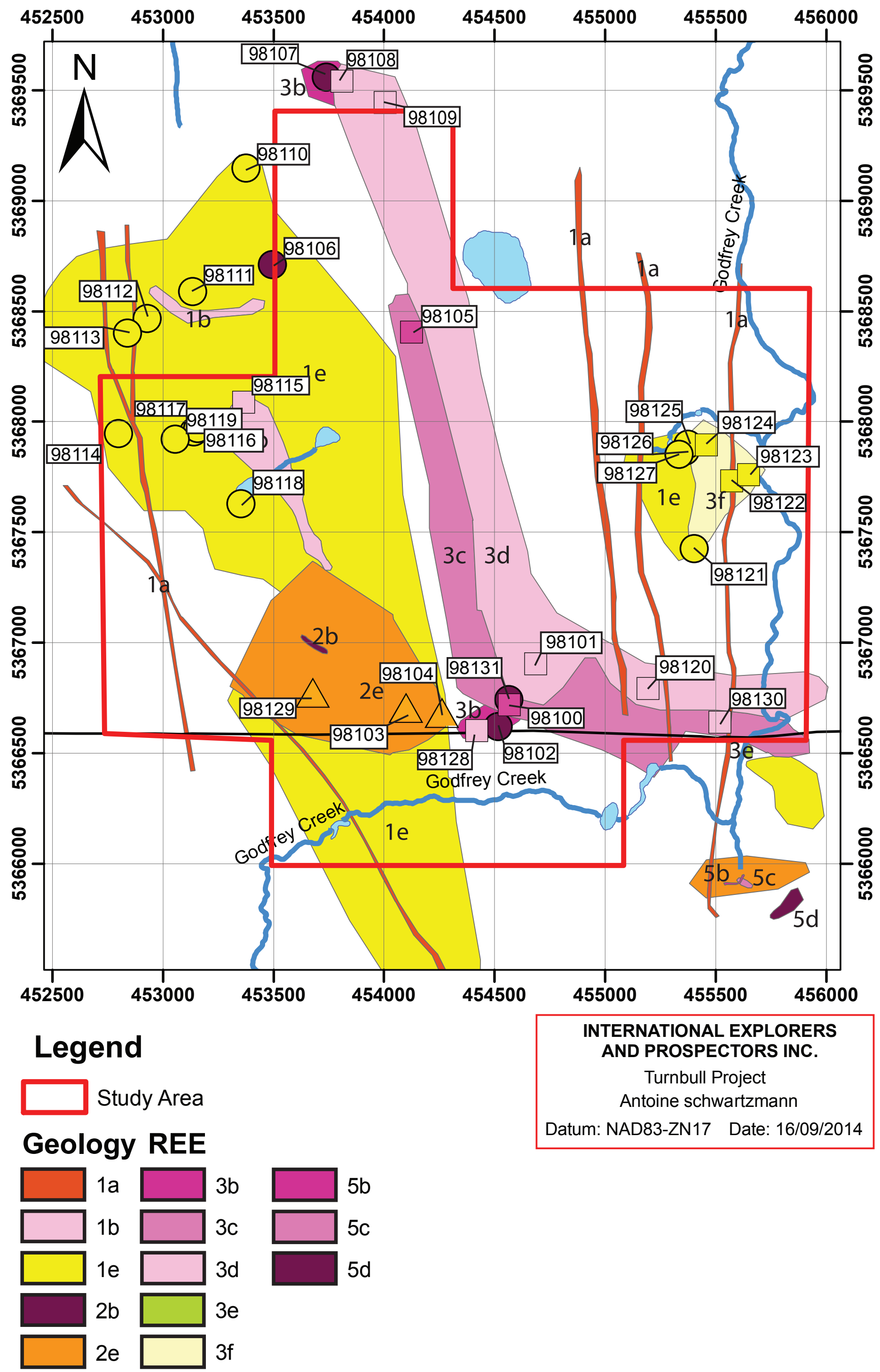


Figure 33: Conceptual petrogenetic model for the formation of FII and FIII-IV felsic volcanic rocks by partial melting at progressively shallower crustal depths in a rift environment. Combined high heat flow and an extensional-rift environment allow low-pressure, higher temperature crustal melting within the zone of brittle fracture permeability and promote convective seawater fluid flow. The complex arrangement of magma chambers depicted for FII felsic volcanic centers corresponds to the fact that FII felsic volcanic rocks forming below the maximum depth of convective fluid flow are barren, whereas those forming above this depth may be mineralized.

The 3 b, c and d mafic rocks, all have similar REE patterns and composition. Moreover, as Hart et al. 2004, the Rare Earths Element (REE) smooth and gradual curve of unit 3c (Figure 34 (a)) suggests that is more primitive than unit 3d, and could be due to deeper partial melting (Figure 33).

The samples situated near unit 3b and identified as 3bc (Figure 34 (f)) are completely different than other results and are thought to be altered.



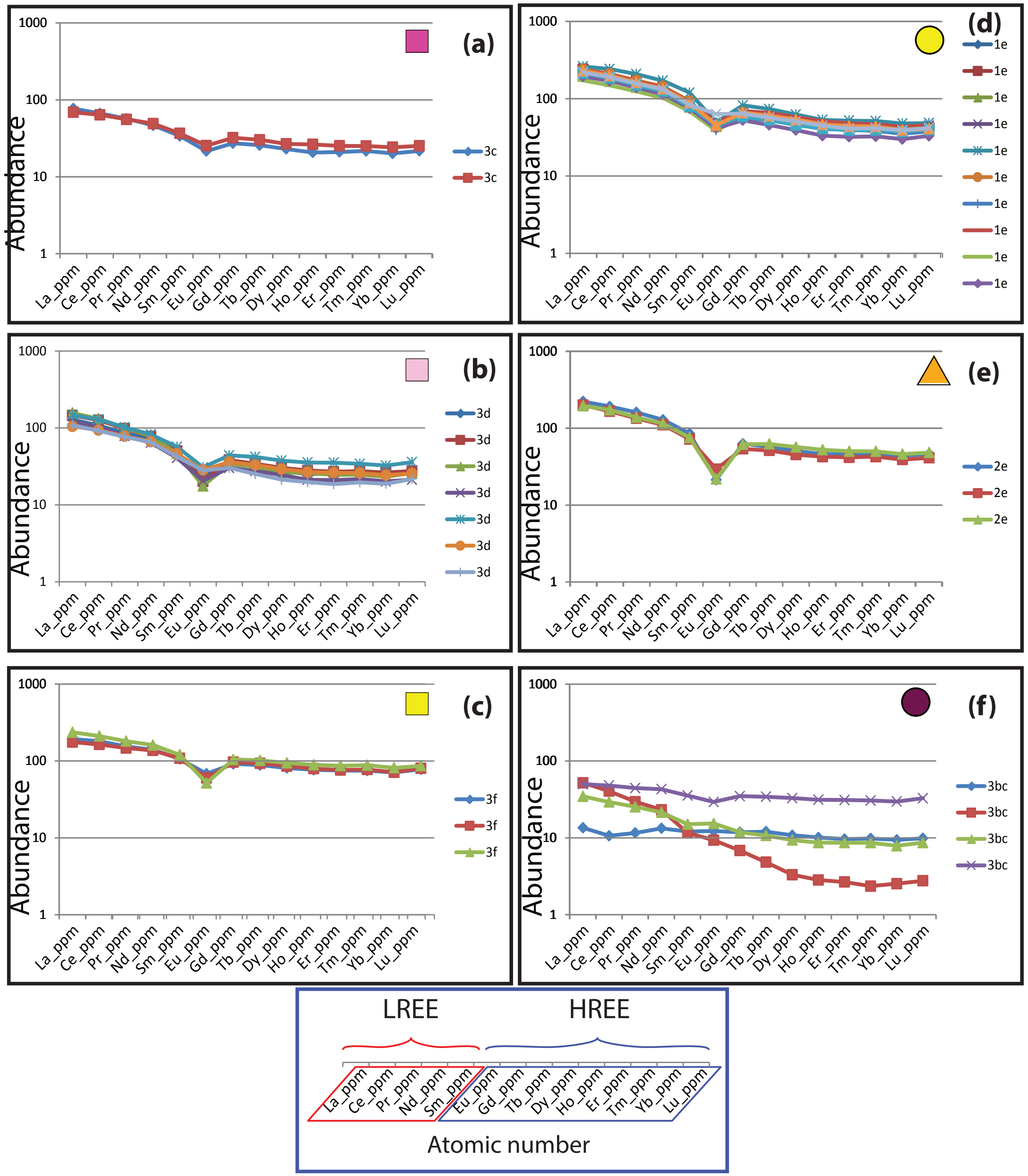


Figure 35: Rare earth elements diagrams and modified geology

9. Discussion

The purpose of this project was to identify quality gold orogenic VMS exploration or targets based on data compilation, field mapping and sampling in the Turnbull property owned by Gold Crossing.

The diagrams in figure 31 show a major contact between mafic and felsic units. Moreover, figure 30 the felsic unit is thought to be part of the “Kidd-Murno Assemblage” whereas the mafic unit has been interpreted as part of the “Kamiskotia Complex”. In this case, a gap of 10 Ma (equivalent to the Tisdale Assemblage) occurs between the two units. If this interpretation is correct then two possible hypotheses are possible: The first one is non-deposition of rocks from the Tisdale Assemblage, or secondly, a trust fault occurs between the felsic and mafic units and has removed the missing stratigraphy. Drill holes in the contact zone may confirm the presence of the Tisdale Assemblage or a trust fault.

The study area contains gold occurrences strengthening the presence of a gold orogenic deposit. Moreover, porphyry alkalic and calco-alkalic intrusions have been described in previous drill holes (*see* Table 2). However, the Turnbull property is far from the PDDZ. Additionally, the lack of Timiskaming sediment reduces the potential for orogenic gold deposits.

For the VMS deposit-type, the mineralized occurrences are plotted in figure 22. The gold, copper and zinc occurrences are often located close to the presumed contact between the Kidd-Munro and Kamiskotia units. Furthermore, sulphide occurrences and chloritic alteration are reported in drill cores near the contact. Moreover, the “Ishikawa Index” (*see* Figure 22) highlights alteration areas in the southern part of the property, also close to the presumed contact between the Kidd-Munro and the Kamiskotia units. In Figure 30, field observations confirm the presence of altered and mineralized rocks which are a favorable indicator of the presence of VMS-type deposits.

In the southern part of the Turnbull study area, Fe-Ti basalt are also present. These rocks could be a good indicator of mineralization, as shown in the Kam-Kotia area, where the mineralization is linked with the Fe-Ti basalt.

The lithogeochemical analyses highlighted FIIIb rhyolites, presumably dated the same age as the Kidd-Munro Assemblage. Regardless of age, FIIIb rhyolites tend to host many of the larger tonnage and higher grade VMS deposits (e.g., Kidd Creek, Neves Corvo, United Verde, Eskay Creek) and may represent preferred exploration targets (Hart et al. 2004). As well, in 1986 Lesher et al. noted: “Because high-level subvolcanic magma chambers are considered to be essential components of ore-forming hydrothermal systems, FIII felsic metavolcanic rocks have the most chance of setting up a hydrothermal convection cell beneath the ocean floor”. The FIIIb rhyolites indicate favorable environments for the formation of a VMS deposit-type in the study area.

An airborne electromagnetic (EM) geophysical survey, flown in two directions, has highlighted some bedrock anomalies. Some of these were tested by old drill holes but some remain apparently untested.

An Induced Polarization (IP) ground geophysical survey carried out by the present owners on the Turnbull property highlighted good responses (Figure 23). These anomalies have a preferential NW direction. The northern anomaly extends southward and aligns with a strongly conductive EM anomaly that remains untested.

The other IP anomalies are mainly around the presumed contact between the Kidd-Munro and Kamiskotia units. Furthermore, once the ground and an airborne magnetic geophysical surveys are combined, a positive correlation can be seen in specific areas, indicating VMS deposit-type potential, which corresponds to the presumed contact.

10. Recommendations & Budget

Pursuant to the anomalies outlined in the previous section a 4-hole, 1,000m diamond drilling program is proposed to test the most important targets. The proposed holes are summarized in table 3 and are plotted on figure 35 along with the essential anomalous features observers on the Turnbull property.

Table 3: position Azimuth, Dip and length of four proposed drill holes

Name	Zone	UTM_83E	UTM_83N	Azimut	Dip	Length (m)
A	17	454587	5366656	225	-55	250
B	17	454417	5366921	225	-55	250
C	17	454239	5368044	250	-55	250
D	17	453931	5368728	250	-55	250
					Total length	1000

Targets A to D all are targeted on the presumed contact between the Kidd-Munro and Kamiskotia Assemblages, at what is considered the top of the Kidd-Munro, composed mainly of FIIIb rhyolites with some Fe-Ti basalt intercalated locally. All holes should be collared towards the SW, from hangingwall to footwall, and through the contact zone which may be represented by a fault zone.

Hole A is located near an IP chargeability anomaly and mapping shows the footwall rocks nearby are altered. Overburden is expected to be less than 20 metres and the hole should intersect mafic volcanic rocks and, near the end a FIIIb rhyolite.

Hole B will test one of a number of IP chargeability anomalies in the immediate vicinity. The hole should intersect the same lithologies as described above for hole A.

Hole C will test a high amplitude EM anomaly located within the contact zone and on the continuity of the northern IP anomaly. The hole is expected to intersect mainly FIIIb rhyolites.

Hole D is located near the northern IP anomaly, which is a well defined chargeability anomaly on a single line survey. Overburden is expected to be between 10 to 20 metres and the hole should intersect mafic volcanic rocks and, near the end, some FIIIb rhyolites.

A budget of $130,000, as outlined in Table 4, will be required to undertake this program.

Table 4: Turnbull Project budget

Turnbull Project Budget			
Activity	**Units**	**Unit cost**	**Expenditure**
Geology Compilation	12	550	$ 6 600,00
Drilling (1,000 m)	1000	90	$ 90 000,00
Assays	100	40	$ 4 000,00
Lithogeochem	40	65	$ 2 600,00
Downthole EM Geophysics	4	1000	$ 4 000,00
Geology	12	500	$ 6 000,00
Rentals			$ 1 000,00
Consumables			$ 1 000,00
Room and Board			$ 1 800,00
Travel and Reporting			$ 1 000,00
Contingency ~10%			$ 12 000,00
Total			**$ 130 000,00**

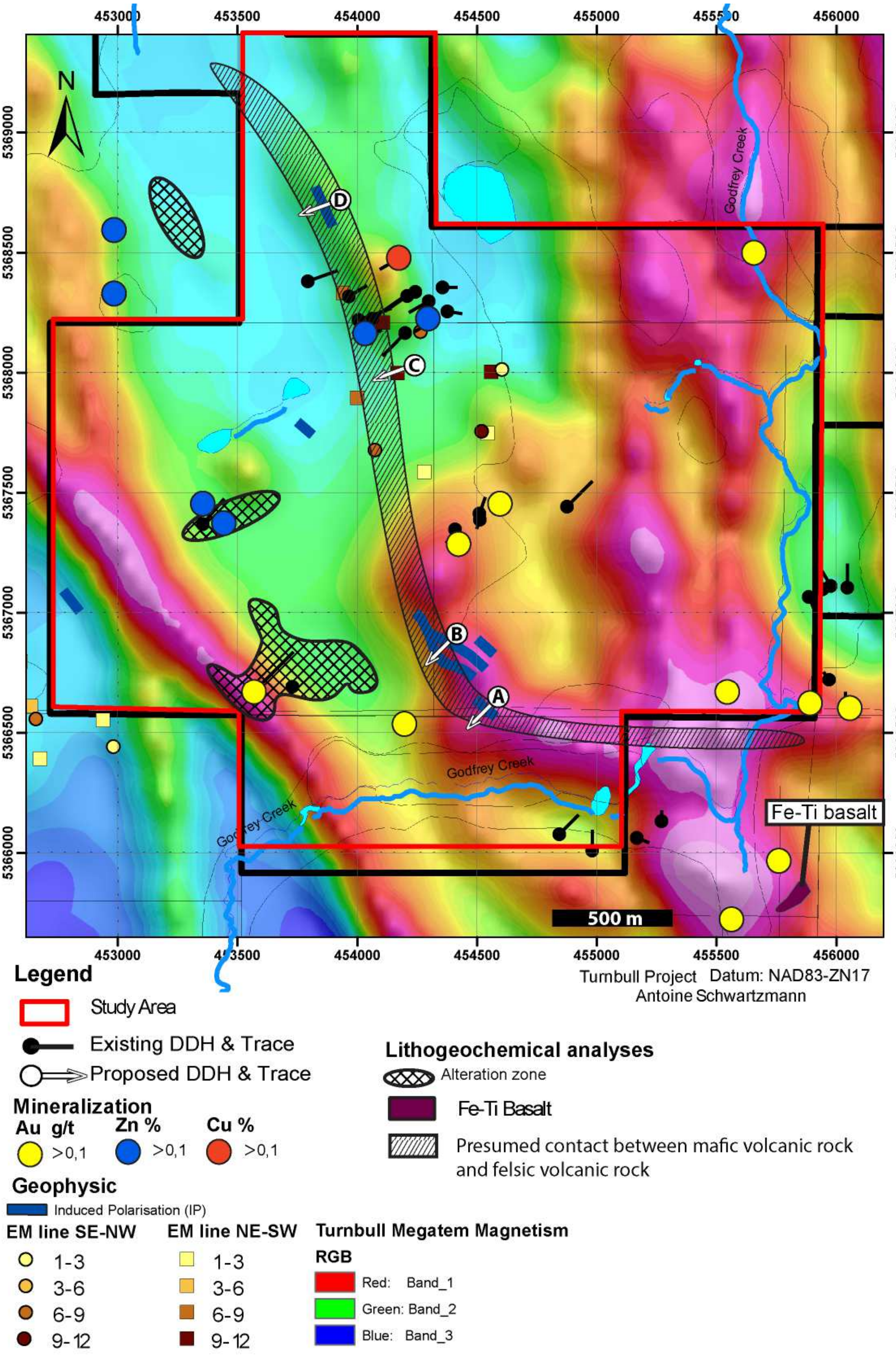


Figure 35: Map of proposed drill holes, with all the anomalies, which indicated where to place the drill holes

11. Conclusion

This internship was an immersion as an exploration geologist at Gold Crossing. In addition to the daily experience of learning as a junior exploration geologist, this internship has also permitted the realization of an exploration project.

A study of mineralization and structures found in the Southwestern part of the Abitibi Greenstone Belt (SAGB) was undertaken and the research has been used to define features that are favorable for the discovery of a VMS deposit.

In order to have a better understanding of the Turnbull area, previous work of old VMS and gold orogenic type of deposits found in the SAGB was used. Analyzing the previous work gave me tools and a great starting point for my project.

The study consisted of compiling all historical work available on the property from government assessment files followed by limited fieldwork to confirm previous mapping and to collect a suite of samples for high quality whole rock analyses. All the work confirmed the potential of the property to contain VMS-style mineralization. A number of targets have been identified for follow up drill testing.

As an exploration geologist, this internship was to increase my geological knowledge and skills. I acquired a specific geochemical analytical technique and organized my time in order to finalize the project and take the responsibility of the results in order to propose drill holes on the property.

Having the opportunity to work under the supervision of a senior geologist with extensive experience provided me with great training in exploration, as well as a new geographical and geological area. The mentoring these past six months allowed me to grow professionally and will benefit me in future geological projects.

In addition to developing my geological knowledge of mining sites in Canada, this internship gave me the opportunity of a daily working environment, developing further my adaptability and opening to the world of mineral exploration.

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Appendix 1: Gold Crossing, Vaillancourt and IE&PI data

Sample_ID	Company	Zone	UTM83E	UTM83N	Class	Description	Laboratory	SiO2	Al2O3	Fe203	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	Total	Y	Zr	Zr/Y	Au	Ag	Cu	Zn
								pct	pct	pct	pct	pct	pct	pct	pct	pct	pct	pct	pct	ppm	ppm		ppb	ppm	ppm	ppm
98100	Gold Crossing	17	454567,43	5366720,67	3c	Dark felsic rock qtz eyes	VAN14002815	57,98	13,77	10,19	0,13	2,86	3,79	4,33	0,48	0,875	0,149	5,3	99,83	33,8	202,3	5,985	0,7		1,4	48
98101	Gold Crossing	17	454686,21	5366907,70	3d	Dark felsic rock qtz eyes	VAN14002816	69,3	13,36	5,89	0,04	1,18	1,68	3,92	0,85	0,469	0,083	3,1	99,88	45	234,6	5,213			0,8	22
98102	Gold Crossing	17	454516,48	5366618,92	3b	Dark felsic rock qtz eyes	VAN14002829	44,89	14,94	11,82	0,16	8,49	5,77	2,89	0,05	0,95	0,052	9,7	99,78	15,3	52,5	3,431			9,8	76
98103	Gold Crossing	17	454095,28	5366710,14	2e	Felsic Rhyolite Silicified	VAN14002813	76,45	10,42	2,14	0,02	0,25	0,43	1,02	6,95	0,092	0,013	2,1	99,83	72,8	167,3	2,298	3,6	0,2	2,8	14
98104	Gold Crossing	17	454258,52	5366688,26	1e	Felsic Rhyolite	VAN14002817	76,04	11,53	3,41	0,04	0,41	0,51	5,05	0,59	0,281	0,033	2	99,89	67,3	366,1	5,440			1,4	48
98105	Gold Crossing	17	454127,09	5368408,43	3c	Sulfured rock mafic aphanitic and more feldspath grenu	VAN14002818	55,14	15,68	11,69	0,1	4,68	2,06	4,15	0,63	1,016	0,162	4,5	99,79	39,8	233,5	5,867			0,6	106
98106	Gold Crossing	17	453496,71	5368710,27	3c	Beeched rock apanitic no qtz eyes	VAN14002802	69	14,75	2,82	0,04	1,85	0,99	3,13	3,62	0,325	0,093	3,2	99,85	4,6	132,5	28,804		0,7	68,8	32
98107	Gold Crossing	17	453739,89	5369558,11	3b	sulfide bolder no qtz eyes	VAN14002830	35,14	10,94	26,28	0,27	2,89	5,72	2,2	0,07	0,698	0,067	15,6	99,84	14	70,1	5,007	1,6	0,2	63,3	120
98108	Gold Crossing	17	453810,41	5369541,52	3c	Toleitic diorite	VAN14002831	61,3	13,39	9,75	0,12	1,91	3,1	4,37	0,59	0,991	0,211	4,1	99,85	41,7	281,2	6,743			2,4	73
98109	Gold Crossing	17	454007,56	5369445,76	1e	Toleitic diorite	VAN14002832	66,88	13,18	5,75	0,09	1,09	2,56	4,41	1,3	0,626	0,118	3,8	99,84	56,8	383,5	6,752			2,9	63
98110	Gold Crossing	17	453377,66	5369145,34	1e	Felsic aphanitic qtz eyes	VAN14002803	71,17	13,13	4,02	0,06	1,48	0,93	0,82	3,76	0,257	0,047	4,1	99,82	68,6	416,3	6,069			3,2	108
98111	Gold Crossing	17	453136,80	5368586,73	1e	Dark massive felsic microgrenu	VAN14002804	72,88	11,74	4,95	0,08	1,33	0,64	3,64	1,45	0,192	0,023	2,9	99,82	72,3	378,2	5,231	1,7		0,6	32
98112	Gold Crossing	17	452930,37	5368466,17	1e	Dark massive felsic microgrenu	VAN14002805	72,53	11,89	3,95	0,11	1,05	1,01	3,76	2,04	0,19	0,027	3,2	99,78	66,4	379,9	5,721	0,8		4,3	111
98113	Gold Crossing	17	452841,10	5368399,44	1e	Dark microgrenu qtz, fldsp	VAN14002806	72,18	12,92	4,4	0,05	0,82	0,53	4,1	2,42	0,223	0,028	2,1	99,79	75,8	417	5,501	0,9		0,6	39
98114	Gold Crossing	17	452800,65	5367945,46	2e	Felsic seritised	VAN14002807	74,43	14,21	1,48	<0,01	0,92	0,05	4,26	2,45	0,088	0,008	1,9	99,84	80,5	240	2,981			0,3	6
98115	Gold Crossing	17	453367,64	5368090,60	1b	Dark aphanitic no qtz eyes	VAN14002808	65,72	13,28	5,44	0,17	2,32	1,9	0,86	4,16	0,588	0,111	5,2	99,77	35,5	228,5	6,437			20,4	97
98116	Gold Crossing	17	453142,04	5367952,07	1e	Autobreccia and massive Rhyolite with lobes	VAN14002809	71,84	12,1	5,67	0,05	1,41	0,43	3,56	1,97	0,212	0,026	2,5	99,8	64,1	390	6,084	1,9		0,4	33
98117	Gold Crossing	17	453158,44	5367968,83	1e	Felsic Rhyolite qtz eyes	VAN14002810	74,97	11,69	4,36	0,05	0,63	0,46	3,91	1,56	0,2	0,022	2	99,86	65,7	363,2	5,528			0,4	17
98118	Gold Crossing	17	453355,17	5367627,49	1e	Felsic Rhyolite qtz eyes	VAN14002811	71,11	12,73	3,98	0,05	1,05	2,34	2,04	2,54	0,22	0,035	3,8	99,84	78,5	406,7	5,181			0,5	16
98119	Gold Crossing	17	453056,90	5367919,98	1e	Felsic Rhyolite qtz eyes	VAN14002812	74,39	12,02	3,92	0,04	0,73	0,3	4,81	1,37	0,215	0,038	2	99,83	72,2	378,5	5,242			0,5	30
98120	Gold Crossing	17	455195,81	5366794,37	3d	Dark massive mafic chloritised	VAN14002819	69,22	13,22	4,51	0,1	0,89	1,29	2,77	2,97	0,433	0,06	4,3	99,8	40,6	246,2	6,064		0,4	87,3	104
98121	Gold Crossing	17	455402,95	5367425,57	3e2	granophyric texture	VAN14002820	66,67	13,8	4,34	0,05	1,81	2,54	1,34	3,98	0,269	0,039	4,9	99,77	49,7	415,4	8,358			7,9	24
98122	Gold Crossing	17	455574,03	5367734,59	3f	dark grenu granophyre	VAN14002821	75,6	10,76	3,9	0,04	1,02	0,37	3,24	2,21	0,262	0,019	2,4	99,77	116	551,1	4,751			0,8	81
98123	Gold Crossing	17	455650,85	5367763,44	3f	Felsic qtz eyes aphanitic to grenu	VAN14002822	78,04	10,91	2,99	0,05	0,27	0,11	4,63	1,25	0,215	0,018	1,4	99,83	117,1	453	3,868			0,7	21
98124	Gold Crossing	17	455458,35	5367897,80	3f	Felsic qtz eyes aphanitic to grenu	VAN14002823	76,75	11,21	2,94	0,03	0,43	0,43	3,76	2,75	0,164	0,005	1,3	99,79	134,8	343,1	2,545			1,2	52
98125	Gold Crossing	17	455374,44	5367896,90	3f	Felsic qtz eyes aphanitic to grenu	VAN14002824	73,65	11,88	3,76	0,06	1,05	0,65	4,34	1,54	0,21	0,024	2,7	99,81	79,5	366,3	4,608	2,2		7	35
98126	Gold Crossing	17	455361,62	5367865,65	3e2	Lapilli tuff	VAN14002825	69,3	12,81	5	0,06	1,56	1,84	4,23	1,49	0,239	0,038	3,3	99,82	62,7	415,6	6,628	4,1		1,2	39
98127	Gold Crossing	17	455335,99	5367850,40	3e2	Lapilli tuff	VAN14002826	69,82	13,59	4,58	0,05	1,33	1,41	4,29	1,96	0,237	0,037	2,5	99,78	70,3	407,6	5,798	0,6	0,1	151	31
98128	Gold Crossing	17	454419,65	5366605,36	3c	Very altered rock mineralised	VAN14002833	61,47	13,4	6,3	0,05	1,63	4,91	5,43	0,2	0,905	0,171	5,4	99,89	30,3	243,8	8,046			1,6	59
98129	Gold Crossing	17	453675,02	5366780,37	2e	Rhyolite silicified seritised and potassic alteration	VAN14002814	76,58	11,61	2,62	0,02	0,41	0,13	1,86	5,21	0,105	0,014	1,3	99,84	84,1	184,3	2,191			4,1	27
98130	Gold Crossing	17	455520,80	5366642,62	3c	Felsic rock no qtz eyes	VAN14002827	61,05	13,63	7,41	0,1	1,48	3,36	2,68	3,16	0,76	0,153	6	99,81	41,8	227,7	5,447			9,3	40
98131	Gold Crossing	17	454565,45	5366741,25	3c	Dark felsic rock qtz eyes	VAN14002828	52,92	10,27	15,71	0,14	3,88	4,98	0,59	0,8	2,35	0,355	7,8	99,78	48,4	210,6	4,351	4,9		31,6	133
00-CMV-023A	Villancourt	17	455879,46	5366526,00	3c	Medium to coarse grained	MetricLab	59,94	14,17	9,73	0,1	2,37	3,23	4,38	1,31	0,91	0,15	4,27	100,55	37,38	223,53	5,980				
00-CMV-087a	Villancourt	17	455860,45	5365817,01	5d	Large pillows	MetricLab	47,78	15,04	10,66	0,11	3,56	6,22	5,62	0,34	1,64	0,25	9,12	100,34	23,41	111,33	4,756				
00-CMV-088a	Villancourt	17	455801,45	5365917,01	2e	Massive, rare microphenocrysts	MetricLab	75,39	12,76	1,84	0,02	0,9	0,33	6,33	0,44	0,08	0,01	1,32	99,43	71,99	154,21	2,142				
00-CMV-088b2	Villancourt	17	455801,45	5365917,01	3b	Coronitic texture	MetricLab	46,82	16,71	9,27	0,11	5,9	4,78	1,81	3,25	0,98	0,07	10,4	100,1	25,43	56,68	2,229				
00-CMV-092a	Villancourt	17	455767,45	5365773,01	5d	Large pillows	MetricLab	45,24	15,72	13,02	0,09	4,46	4,95	6	0,06	1,85	0,26	8,73	100,38	22,02	129,27	5,871				
00-CMV-415a	Villancourt	17	455782,46	5366509,99	3c	Medium to coarse grained	MetricLab	61,53	14,18	8,24	0,07	2,48	2,88	5,78	0,38	1,02	0,19	3,83	100,58	36,15	224,71	6,216				
01LAH-0219A	Villancourt	17	455755,00	5366329,00	1e	Quartz-phyric, flow-banded	MetricLab	73,14	13,12	2,94	0,05	0,62	0,98	6,21	0,81	0,24	0,03	1,86	100	64,82	351,64	5,425				
01LAH-0219B	Villancourt	17	455754,00	5366329,00	3b	Amoeboidal pillows, blue	MetricLab	46,07	14,16	7,47	0,13	7,93	6,8	3,32	1,72	0,45	0,04	12,87	100,96	14,56	61,1	4,196				
01LAH-0220	Villancourt	17	455869,00	5366521,00	3c	Quartz-diorite, magnetite-bearing	MetricLab	59,9	14,79	8,6	0,1	2,71	5,14	4,22	1,18	0,9	0,15	2,51	100,2	36,35	205,2	5,645				
01LAH-0221	Villancourt	17	455858,00	5365874,00	5d	Amoeboidal pillows, blue	MetricLab	50,14	15,48	10,23	0,09	4,03	7,21	5,62	0,06	1,72	0,29	5,99	100,86	25,4	121,4	4,780				
01LAH-0225	Villancourt	17	454147,00	5365747,00	1e	Quartz-phyric, tuff	MetricLab	74,45	12,3	2,88	0,06	0,25	1,17	4,34	2,55	0,2	0,03	2,01	100,24	66,76	363,15	5,440				
01LAH-0226	Villancourt	17	454202,00	5365378,00	1e	Syn-volcanic porphyry dike	MetricLab	73,56	11,39	4,2	0,07	1,64	2,16	2,94	1,18	0,18	0,03	3,32	100,67	61,79	319,19	5,166				
03-BHA-0098	Falconbridge	17	453461,00	5366982,00	2e	rhyolite flow-banded	MetricLab	76,82	10,62	1,88	0,05	0,57	1,2	2,81	4,11	0,09	0	2,44	100,61	79,08	174	2,20			0	39
03-BHA-0099	Falconbridge	17	453679,00	5367133,00	2e	rhyolite flow-banded	MetricLab	77,96	11,49	1,57	0,04	0,31	0,48	2,59	4,23	0,1	0	1,51	100,29	94,72	193,9	2,05			5	111
03-BHA-0102	Falconbridge	17	453680,00	5367349,00	2e	rhyolite quartz and feldspar phyric	MetricLab	77,81	11,28	1,53	0,04	0,27	0,79	2,75	4,04	0,1	0	1,69	100,31	85,83	176,7	2,06			0	83
03-BHA-0105	Falconbridge	17	454000,00	5367076,00	2e	rhyolite flow-banded	MetricLab	77,35	11,86	1,11	0,02	0,44	0,5	1,2	7,46	0,1	0,01	1,38	101,44	84,58	200,8	2,37			0	41
03-BHA-0295	Falconbridge	17	454261,00	5366198,00	1e	aphyric rhyolite; fine flow banding	MetricLab	80,36	9,92	1,01	0,04	0,11	0,33	2,75	4,73	0,12	0,01	1,01	100,38	56,09	247,4	4,41			30	28
T85-02	Falconbridge	17	453970,23	5368327,89	1e	Rhyolite X	MetricLab	74,4	13,29	2,45	0,03	0,91	1,34	3,76	2,5	0,13	0,04	1,57	100,5	64	232	3,63	0	0	20	220
ETC-07-04	IE&PI	17	453361,03	5367379,01	1e		MetricLab	73,82	12,2	5,04	0,03	1,22	0,18	2,53	3,27	0,176	0,029	1,4	99,9	92,5	395,5	4,30			145,3	145
ETC-07-05	IE&PI	17	453556,03	5366661,96	2e	Rhyolite X	MetricLab	77,89	11,77	1,25	0,01	0,49	1,01	3,19	2,51	0,1	0,02	1,7	99,97	86,7	175		0,1	0,6	2	4
ETC-07-05-1	IE&PI	17	453556,03	5366661,96	2e		MetricLab	77,89	11,77	1,25	0,01	0,49	1,01	3,19	2,51	0,1	0,02	1,7	99,97	86,7	175	2,00			2	2
ETC-07-05-10	IE&PI	17	453556,03	5366661,96	2e		MetricLab	77,51	11,24	1,95	0,03	0,69	0,86	2,16	3,06	0,1	0,02	2,3	99,95	76,3	170	2,20			6	6
ETC-07-05-11	IE&PI	17	453556,03	5366661,96	1e		MetricLab	71,73	12,42	4,48	0,06	1,4	1,52	0,07	4,36	0,22	0,05	3,6	99,9	65,1	383	5,90			4	4
ETC-07-05-12	IE&PI	17	453556,03	5366661,96	2e		MetricLab	77,45	10,46	2,35	0,05	0,83	1,46	0,04	4,36	0,09	0,02	2,8	99,87	79,6	166	2,10			6	6
ETC-07-05-13	IE&PI	17	453556,03	5366661,96	2e		MetricLab	77,75	12	2,23	0,01	0,83	0,25	0,14	4,52	0,1	0,01	2,1	99,95	81,5	183	2,20			15	15
ETC-07-05-2	IE&PI	17	453556,03	5366661,96	2e		MetricLab	77,86	11,61	1,42	0,02	0,53	0,6	2,93	3,29	0,1	0,02	1,6	99,93	88	176	2,00			3	3
ETC-07-05-3	IE&PI	17	453556,03	5366661,96	2e		MetricLab	75,58	11,9	1,92	0,04	0,65	1,01	1,1	5,56	0,1	0,03	2	99,85	81,1	169	2,10			5	5
ETC-07-05-4	IE&PI	17	453556,03	5366661,96	2e		MetricLab	76,69	11,93	1,64	0,02	0,46	0,48	2,19	4,85	0,1	0,02	1,5	99,87	82,9	176	2,10			7	7
ETC-07-05-5	IE&PI	17	453556,03	5366661,96	2e		MetricLab	74,78	10,95	2,38	0,07	0,79	1,43	2,09	4,56	0,09	0,01	2,7	99,81	87,1	172	2,00			3	3
ETC-07-05-6	IE&PI	17	453556,03	5366661,96	1e		MetricLab	69,74	13,28	4,32	0,05	1,11	1,24	2,04	3,8	0,23	0,04	4	99,85	70,5	414	5,90			6	6
ETC-07-05-7	IE&PI	17	453556,03	5366661,96	2e		MetricLab	75,94	12,04	1,63	0,03	0,4	1,37	2,23	3,94	0,1	0,01	2,2	99,93	81,4	173	2,10			6	6
ETC-07-05-8	IE&PI	17	453556,03	5366661,96	2e		MetricLab	76,66	12	2,15	0,04	0,92	0,7	0,12	4,6	0,1	0,01	2,6	99,94	92,3	183	2,00			5	5
ETC-07-05-9	IE&PI	17	453556,03	5366661,96	1e		MetricLab	68,83	13,46	4,4	0,06	1,05	2,68	0,79	4,2	0,22	0,03	4,2	99,96	76,3	432	5,70			3	3

Appendix 2: Cambior data

Sample_ID	Company	Zone	UTM83E	UTM83N	Class	Description	Laboratory	SiO2 pct	Al2O3 pct	Fe203 pct	MnO pct	MgO pct	CaO pct	Na2O pct	K2O pct	TiO2 pct	P2O5 pct	LOI pct	Total pct	Y ppm	Zr ppm	Zr/Y	Au ppb	Ag ppm	Cu ppm	Zn ppm
GX-14001	Cambior	17	455813,00	5366613,00	3c	Massive Diorite	MetricLab	59,7	13,26	9,93	0,1	3,1	3,75	2,47	1,69	0,89	0,32	4,91	100,12	46	235	5,11	11	0,6	23	36
GX-14003	Cambior	17	455758,00	5366575,00	3c	Massive Diorite	MetricLab	58,2	14,42	10,54	0,1	2,64	3,13	4,09	1,12	1,07	0,33	4,37	100,01	35	241	6,89	8	0,5	5	52
GX-14004	Cambior	17	455697,00	5366565,00	3c	Massive Diorite	MetricLab	58,4	13,24	11,4	0,1	2,46	3,82	4,41	0,58	1,06	0,41	4,19	100,07	40	232	5,80	8	0,5	40	23
GX-14005	Cambior	17	455706,00	5366544,00	3c	Felsic Lapilli Tuff	MetricLab	56,5	13,23	11,53	0,1	2,25	4,81	4,01	0,97	1,12	0,41	5,09	100,02	42	219	5,21	11	0,4	14	32
GX-14006	Cambior	17	455647,00	5366534,00	3e	Felsic Lapilli Tuff	MetricLab	66,5	14,73	7,75	0,1	1,12	1,3	4,05	1,26	0,36	0,24	2,52	99,93	77	505	6,56	8	0,4	5	28
GX-14007	Cambior	17	455649,00	5366527,00	3e	Felsic Lapilli Tuff	MetricLab	74,6	11,51	4,58	0	0,7	1,38	4,14	0,58	0,25	0,31	1,9	99,95	68	425	6,25	8	0,2	7	14
GX-14008	Cambior	17	455650,00	5366519,00	3e	Felsic Lapilli Tuff	MetricLab	76,6	10,21	3,08	0	0,55	2,21	3,22	0,91	0,31	0,31	2,58	99,98	76	537	7,07	11	0,2	2	9
GX-14009	Cambior	17	455653,00	5366513,00	3e	Felsic Lapilli Tuff	MetricLab	76,5	10,78	3,26	0	0,55	1,66	4,19	0,5	0,24	0,3	2,02	100	97	408	4,21	9	0,3	9	13
GX-14010	Cambior	17	455646,00	5366499,00	3e	Felsic Lapilli Tuff	MetricLab	79,9	9,78	2,01	0	0,58	1,39	3,93	0,47	0,22	0,29	1,64	100,21	103	386	3,75	11	0,2	3	11
GX-14012	Cambior	17	455644,53	5365907,41	5c	Massive Diorite	MetricLab	52	16,36	8,32	0,1	3,02	5,71	6,01	0,3	1,94	0,61	5,82	100,19	14	186	13,29	10	0,5	3	29
GX-14013	Cambior	17	455620,53	5365922,41	5c	Massive Diorite, Silicified & Weak Epidote	MetricLab	53,8	13,28	11,02	0,1	4,29	9,37	1,92	0,13	1,37	0,39	4,6	100,27	25	161	6,44	87	0,4	13	26
GX-14014	Cambior	17	455611,53	5365921,41	5b	Silicified Diorite	MetricLab	43,1	12,41	12,93	0,2	4,35	8,28	1,25	2,15	1,94	0,41	13,55	100,57	35	113	3,23	15	0,7	2	34
GX-14015	Cambior	17	455603,53	5365922,41	5c	Strongly Silicified Diorite	MetricLab	51,2	12,28	11,04	0,1	3,02	5,96	2,86	1,5	1,45	0,39	9,87	99,67	35	138	3,94	9	0,6	4	45
GX-14016	Cambior	17	455619,53	5365942,41	5b	Massive Diorite	MetricLab	43,1	15,51	12,96	0,2	7,37	6,62	3,75	0,13	1,03	0,2	9,15	100,02	27	151	5,59	15	0,8	14	38
GX-14017	Cambior	17	455540,53	5365998,41	2e	Quartz Porphyry	MetricLab	70,9	14,07	3,59	0,1	1,45	2,13	0,53	3,88	0,4	0,26	2,92	100,23	116	257	2,22	9	0,2	2	75
GX-14018	Cambior	17	455541,54	5365910,41	5b	Massive Diorite	MetricLab	47,3	12,11	19,26	0,2	4,78	7,57	1,95	0,46	2,75	0,53	3,15	100,06	40	161	4,03	8	0,7	79	80
GX-14021	Cambior	17	455473,54	5365893,41	5a	Magnetic Diabase Dyke	MetricLab	51,1	13,62	13,95	0,2	5,62	9,19	2,46	1,15	1,22	0,35	1,52	100,38	27	112	4,15	11	0,4	120	54
GX-14022	Cambior	17	455452,54	5365902,41	2e	Quartz Porphyry	MetricLab	78,8	9,37	1,37	0	0,62	2,74	2,43	1,39	0,22	0,31	2,65	99,9	70	238	3,40	7	0,2	7	10
GX-14023	Cambior	17	455754,53	5365963,41	1e	Altered Rhyolite (Py)	MetricLab	77,1	11,55	2,24	0	0,34	0,74	4,64	1,01	0,23	0,3	1,87	100,02	112	386	3,45	7	0,1	4	15
GX-14024	Cambior	17	455754,53	5365963,41	1e	Altered Rhyolite, Carbonated (5% Py)	MetricLab	76,2	11,59	2,5	0	0,57	1,29	5,11	0,77	0,19	0,31	1,66	100,19	108	335	3,10	196	0,1	7	14
GX-14025	Cambior	17	455806,53	5365984,41	2e	Quartz Porphyry & Feldspar	MetricLab	62,5	11,93	1,2	0	1,36	0,27	6,18	0,11	0,1	0,31	16,15	100,11	87	225	2,59	10	0,2	2	13
GX-14026	Cambior	17	455920,53	5366297,40	1e	Quartz Porphyry & Feldspar	MetricLab	72,9	12,41	3,47	0	0,4	1,13	4,41	2,05	0,31	0,27	2,44	99,79	108	473	4,38	12	0,2	2	8
GX-14027	Cambior	17	455919,53	5366244,40	1e	Quartz Porphyry & Feldspar	MetricLab	70,5	11,9	4,46	0	0,61	2,26	3,92	1,9	0,3	0,26	3,92	100,03	84	476	5,67	8	0,3	2	22
GX-14028	Cambior	17	455899,53	5366188,40	1e	Quartz Porphyry & Feldspar	MetricLab	74,1	12,38	3,94	0	0,52	1,46	3,86	2	0,34	0,31	1,41	100,32	89	489	5,49	7	0,3	2	13
GX-14029	Cambior	17	455836,53	5366197,40	1e	Quartz Porphyry & Feldspar	MetricLab	72,2	12,45	3,63	0	0,47	1,33	4,48	2,22	0,32	0,26	2,48	99,84	102	498	4,88	9	0,2	3	7
GX-14030	Cambior	17	455795,53	5366188,40	5a	Magnetic Diabase Dyke	MetricLab	45,4	10,91	16,79	0,2	4,25	6,45	0,55	2,55	1,99	0,46	10,45	100	100	489	4,89	13	1	47	100
GX-14033	Cambior	17	455778,53	5366262,40	1e	Massive Rhyolite	MetricLab	71,3	12,23	4,39	0	0,47	1,73	4,86	1,28	0,4	0,35	2,56	99,57	73	428	5,86	8	0,3	1	16
GX-14034	Cambior	17	454467,00	5366641,00	3b	Altered Diorite, Iron Carbonate	MetricLab	45,4	13,63	11,3	0,1	7,02	7,77	2,34	0,1	1,11	0,26	10,78	99,81	24	68	2,83	9	1,1	50	60
GX-14035	Cambior	17	454494,00	5366629,00	3b	Altered Diorite, Iron Carbonate	MetricLab	44,7	13,84	11,46	0,2	7,71	8,09	2,62	0,16	0,86	0,25	10,32	100,21	16	77	4,81	12	1,1	107	73
GX-14036	Cambior	17	454490,00	5366664,00	3b	Sericite Altered Diorite, Iron Carbonate	MetricLab	43,1	12,77	10,91	0,2	6,77	8,44	0,75	1,7	0,9	0,24	14,46	100,24	28	51	1,82	11	1,2	134	88
GX-14037	Cambior	17	454535,00	5366715,00	3c	Diorite-Gabbro	MetricLab	56,3	13,19	10,12	0,1	3,42	4,8	3,72	0,59	0,91	0,37	6,4	99,92	22	183	8,32	6	0,6	15	102
GX-14038	Cambior	17	454563,00	5366732,00	3c	Sheared Mafics	MetricLab	47	12,89	19,39	0,1	5,58	4,42	0,36	0,47	3,13	0,56	6,08	99,98	38	187	4,92	9	1,4	97	550
GX-14039	Cambior	17	454563,00	5366736,00	3c	Diorite-Gabbro	MetricLab	55,2	13,91	12,26	0,1	3,41	4,13	2,58	2,54	1,36	0,37	4,13	99,99	50	209	4,18	13	0,8	15	141
GX-14040	Cambior	17	454583,00	5366728,00	3c	Diorite-Gabbro	MetricLab	59,5	14,18	9,42	0,1	3,01	4,16	3,34	0,46	1,09	0,38	4,4	100,04	43	232	5,40	10	0,6	7	130
GX-14041	Cambior	17	454639,00	5366849,00	3d	Quartz Diorite	MetricLab	68,1	13,37	5,37	0	1,23	2,49	2,5	2,53	0,5	0,31	3,71	100,11	49	273	5,57	7	0,3	2	80
GX-14042	Cambior	17	454672,00	5366897,00	3d	Quartz Diorite	MetricLab	69,5	13,71	6,4	0	1,32	1,31	3,07	1,15	0,64	0,32	2,5	99,92	60	280	4,67	11	0,4	3	83
GX-14043	Cambior	17	454473,00	5367489,00	3d	Quartz Porphyry & Silicified Feldspar	MetricLab	70,6	12,76	3,98	0,1	1,04	2,14	3,6	1,1	0,57	0,31	3,8	100	57	283	4,96	9	0,3	3	90
GX-14046	Cambior	17	454427,00	5367116,00	3c	Diorite-Gabbro	MetricLab	59,2	13,58	7,12	0,1	2,24	6,51	4,85	0,28	0,63	0,35	5,3	100,16	32	170	5,31	8	0,6	3	96
GX-14048	Cambior	17	454220,00	5366894,00	1e	Sericite Altered Quartz Porphyry & Feldspar, Sheared	MetricLab	78,7	10,76	3,11	0	0,44	0,69	3,73	0,69	0,29	0,3	1,2	99,91	70	309	4,41	9	0,2	3	100
GX-14049	Cambior	17	453372,00	5366703,00	1e	Medium Grained Tuff	MetricLab	77,8	11,72	2,01	0	0,3	1,16	3,49	1,13	0,26	0,29	1,85	100,01	73	383	5,25	25	0,2	5	135
GX-14050	Cambior	17	453365,00	5366718,00	2e	Medium Grained Tuff	MetricLab	78,5	11,3	1,27	0,1	0,4	1,11	4,42	0,95	0,17	0,29	1,69	100,2	81	216	2,67	6	0,1	4	80
GX-14051	Cambior	17	453376,00	5366741,00	2e	Lapilli Tuff	MetricLab	74,5	11,7	3,57	0,1	1,48	1,45	2,46	1,92	0,22	0,27	2,3	99,97	100	273	2,73	4	0,3	13	209
GX-14052	Cambior	17	453385,00	5366744,00	2e	Lapilli Tuff	MetricLab	80,8	9,85	1,94	0	0,41	0,48	3,48	1,58	0,18	0,27	1,11	100,1	89	187	2,10	7	0,2	13	109
GX-14053	Cambior	17	453387,00	5366759,00	2e	Bedded, Fine Grained Tuff	MetricLab	77,3	11,93	1,97	0	0,52	0,3	3,07	3,17	0,21	0,26	1,18	99,91	111	241	2,17	5	0,1	5	79
GX-14054	Cambior	17	453362,00	5366741,00	1e	Medium Grained Tuff	MetricLab	78,9	9,15	2,87	0,1	0,42	1,45	2,15	1,81	0,23	0,24	2,72	100,04	70	309	4,41	6	0,1	3	104
GX-14055	Cambior	17	453387,00	5366758,00	2e	Lapilli Tuff	MetricLab	77,7	10,87	1,75	0	0,56	0,68	3,41	2,76	0,19	0,28	1,81	100,01	111	219	1,97	14	0,1	8	105
GX-14056	Cambior	17	453368,00	5366779,00	2e	Bedded Felsic Tuff	MetricLab	76,2	11,35	2,39	0,1	1,24	1,25	2,14	3,18	0,17	0,27	1,79	100,08	87	199	2,29	6	0,2	3	281

Appendix 2: Cambior data (suite 1)

Sample_ID	Company	Zone	UTM83E	UTM83N	Class	Description	Laboratory	SiO2 pct	Al2O3 pct	Fe203 pct	MnO pct	MgO pct	CaO pct	Na2O pct	K2O pct	TiO2 pct	P2O5 pct	LOI pct	Total pct	Y ppm	Zr ppm	Zr/Y	Au ppb	Ag ppm	Cu ppm	Zn ppm
GX-14057	Cambior	17	453401,00	5366819,00	2e	Massive Rhyolite	MetricLab	78,3	11,02	2,12	0	0,63	0,68	3,03	2,4	0,2	0,29	1,22	99,89	106	209	1,97	5	0,2	5	107
GX-14058	Cambior	17	453416,00	5366836,00	2e	Silicified & Epidoted Felsic Tuff, Cherty	MetricLab	77,1	11,25	2,02	0	0,3	0,99	3,15	2,98	0,19	0,31	1,56	99,85	116	219	1,89	7	0,1	2	88
GX-14059	Cambior	17	453423,00	5366783,00	2e	Felsic Tuff, Quartz Eyes	MetricLab	77,4	12,69	1,57	0	0,57	0,09	2,33	3,41	0,21	0,33	1,31	99,91	122	257	2,11	6	0,1	1	81
GX-14060	Cambior	17	453423,00	5366768,00	2e	Massive Rhyolite	MetricLab	77,2	11,76	2,49	0,1	0,77	0,65	3,01	2,78	0,18	0,3	0,92	100,16	108	215	1,99	9	0,1	5	73
GX-14061	Cambior	17	453517,00	5367076,00	2e	Bedded Felsic Tuff, Cherty	MetricLab	77,6	11,59	2,08	0	0,41	0,57	2,66	3,03	0,19	0,29	1,45	99,87	106	244	2,30	6	0,1	4	103
GX-14062	Cambior	17	453727,00	5366986,00	2e	Bedded Felsic Tuff	MetricLab	78	11,61	1,83	0	0,41	0,54	2,17	3,31	0,19	0,29	1,53	99,88	112	231	2,06	8	0,2	3	94
GX-14063	Cambior	17	453725,00	5366969,00	2b	Quartz Porphyry	MetricLab	41,5	11,17	15,28	0,3	3,74	6,15	0,12	3,75	2,61	0,49	14,95	100,06	49	161	3,29	12	2,6	45	151
GX-14064	Cambior	17	453722,00	5366906,00	2e	Bedded Felsic Tuff	MetricLab	74,2	10,62	3,4	0,1	0,94	1,73	1,32	3,68	0,36	0,32	3,45	100,12	92	209	2,27	6	0,3	9	146
GX-14065	Cambior	17	453635,00	5367021,00	2b	Bedded Felsic Tuff	MetricLab	74,3	11,86	2,41	0	0,7	0,62	1,95	3,39	2,46	0,31	1,88	99,88	107	225	2,10	8	0,2	6	103
GX-14066	Cambior	17	453615,00	5366826,00	2e	Bedded Tuff with Block and Lapilli	MetricLab	77,5	10,64	1,67	0,1	0,7	0,96	0,37	5,51	0,15	0,29	2,1	99,99	103	216	2,10	11	0,3	2	85
GX-14067	Cambior	17	453549,00	5366816,00	2e	Massive or Laminated Rhyolite	MetricLab	79,6	10,56	1,36	0	0,43	0,65	2,72	2,94	0,17	0,36	1,38	100,17	108	209	1,94	8	0,2	24	79
GX-14068	Cambior	17	453508,00	5366744,00	2e	Bedded Felsic Tuff	MetricLab	79,9	10,77	1,43	0	0,24	0,26	2,92	2,97	0,17	0,3	0,95	99,91	111	228	2,05	10	0,1	4	101
GX-14069	Cambior	17	454103,00	5366741,00	2c	Bedded Felsic Tuff (Py), Cherty	MetricLab	54,6	14,56	10,45	0,2	5,46	7,58	1,52	4,38	0,17	0,29	1	100,21	114	216	1,89	11	0,4	4	106
GX-14070	Cambior	17	454090,00	5366725,00	2e	Bedded Felsic Tuff (5% Py)	MetricLab	76,7	11,42	1,75	0	0,48	0,77	1,42	5,27	0,17	0,33	1,46	99,77	122	241	1,98	12	0,2	4	84
GX-14071	Cambior	17	454076,00	5366797,00	2e	Bedded Felsic Tuff	MetricLab	72,4	11,18	3,84	0,1	0,71	1,3	1,16	5,18	0,16	0,26	3,7	99,99	105	193	1,84	15	0,6	28	142
GX-14072	Cambior	17	454095,00	5366797,00	2e	Quartz Porphyry (+ Feldspar)	MetricLab	77,5	9,8	2	0,1	0,39	1,44	1,67	4,47	0,13	0,36	2,13	99,99	106	186	1,75	6	0,1	5	80
GX-14073	Cambior	17	453977,00	5366839,00	2e	Bedded Felsic Tuff (Py)	MetricLab	77,2	11,19	1,5	0	0,61	1	0,97	5,2	0,17	0,35	1,74	99,93	103	216	2,10	10	0,1	4	75
GX-14074	Cambior	17	453984,00	5366847,00	2e	Bedded Felsic Tuff (Py)	MetricLab	77	11,25	1,82	0	0,52	0,81	0,67	5,65	0,17	0,36	1,73	99,98	100	215	2,15	11	0,1	4	85
GX-14075	Cambior	17	453990,00	5366876,00	2e	Bedded Felsic Tuff	MetricLab	77,8	11,3	1,4	0	0,4	0,43	1,03	5,55	0,17	0,32	1,73	100,13	106	228	2,15	6	0,1	6	83
GX-14076	Cambior	17	453972,00	5366892,00	2e	Bedded Felsic Tuff	MetricLab	79,6	8,56	2,1	0,1	0,67	0,96	2,94	2,87	0,17	0,25	1,82	100,04	125	235	1,88	16	0,1	5	114
GX-14077	Cambior	17	453967,00	5366906,00	2e	Felsic Tuff	MetricLab	77,2	11,86	1,95	0	0,42	0,48	2,49	3,76	0,19	0,27	1,37	99,99	130	264	2,03	8	0,1	7	100
GX-14078	Cambior	17	453947,00	5366849,00	2e	Felsic Tuff	MetricLab	78,6	11	1,13	0	0,38	0,57	0,82	6,1	0,16	0,3	1,12	100,18	97	204	2,10	8	0,2	6	115
GX-14079	Cambior	17	453900,00	5366833,00	2e	Felsic Tuff, Cherty	MetricLab	74,9	10,61	3,83	0,1	0,74	0,51	1	5,17	0,16	0,22	2,83	100,07	111	210	1,89	8	0,2	2	108
GX-14080	Cambior	17	453875,00	5366857,00	2e	Felsic Tuff	MetricLab	78,2	11,59	2,02	0	0,55	0,18	1,84	4,16	0,17	0,27	1,04	100,02	114	245	2,15	12	0,1	3	81
GX-14081	Cambior	17	453840,00	5366847,00	2e	Massive Rhyolite	MetricLab	79,3	10,41	1,93	0	0,44	0,39	0,73	5,32	0,15	0,26	0,91	99,84	97	190	1,96	7	0,5	7	104
GX-14082	Cambior	17	453820,00	5366821,00	2e	Deformed Felsic Tuff	MetricLab	77,4	11,54	1,91	0	0,59	0,78	1,71	3,61	0,19	0,27	1,82	99,82	135	234	1,73	51	0,4	1	82
GX-14083	Cambior	17	453820,00	5366808,00	2e	Weakly Altered Felsic Tuff	MetricLab	78,4	11,18	1,84	0,1	0,48	0,57	2,48	3,03	0,18	0,34	1,53	100,13	108	225	2,08	16	0,4	5	78
GX-14084	Cambior	17	453792,00	5366795,00	2e	Felsic Tuff	MetricLab	77,9	11,01	1,53	0	0,56	0,92	0,7	4,94	0,18	0,31	1,96	100,01	127	209	1,65	5	0,1	5	88
GX-14085	Cambior	17	453771,00	5366749,00	2e	Feldspar Porphyry	MetricLab	75,3	13,01	1,98	0	0,79	0,77	0,55	5,08	0,21	0,27	2,22	100,18	100	254	2,54	9	0,2	2	81
GX-14086	Cambior	17	453701,00	5366764,00	2e	Felsic Tuff, Large Bedding, Cherty	MetricLab	70,7	9,34	3,28	0,1	1,58	3,83	1,67	3,04	0,15	0,31	6	100	87	177	2,03	10	0,1	3	120
GX-14087	Cambior	17	453816,00	5366696,00	2e	Tuff with Block and Lapilli	MetricLab	77,6	9,41	2,15	0,1	0,93	1,81	0,81	4,05	0,2	0,28	2,77	100,11	102	180	1,76	7	0,2	8	115
GX-14088	Cambior	17	453833,00	5366740,00	2e	Felsic Tuff, Cherty	MetricLab	77,2	11,63	1,63	0	0,55	0,68	1,79	4,23	0,2	0,23	1,81	99,95	119	241	2,03	6	0,1	4	136
GX-14089	Cambior	17	453843,00	5366753,00	2e	Intrusive Breccia, Lapilli Tuff	MetricLab	76,7	10,35	3,91	0	1,57	1,2	1,34	2,38	0,16	0,22	2,2	100,03	70	180	2,57	13	0,2	2	100
GX-14090	Cambior	17	453872,00	5366777,00	2e	Felsic Tuff, Rhyolite, Cherty	MetricLab	81,1	8,06	1,84	0	0,73	0,93	0,7	4,26	0,17	0,26	2,02	100,07	89	187	2,10	6	0,3	3	87
GX-14091	Cambior	17	453919,00	5366788,00	2e	Felsic Tuff, Large Bedding	MetricLab	77,7	11	1,88	0	0,68	0,66	0,85	4,92	0,19	0,26	1,85	99,99	108	209	1,94	6	0,2	3	100
GX-14092	Cambior	17	453971,00	5366755,00	2e	Bedded Felsic Tuff, Cherty	MetricLab	77,6	11,17	1,45	0	0,25	0,42	1,06	5,75	0,18	0,3	1,67	99,85	114	215	1,89	5	0,2	7	139
GX-14093	Cambior	17	454014,00	5366768,00	2e	Bedded Felsic Tuff	MetricLab	77,3	11,81	1,46	0	0,21	0,11	1,04	6,53	0,18	0,28	1,09	100,01	113	206	1,82	5	0,2	4	88
GX-14094	Cambior	17	453917,00	5366708,00	2e	Massive Rhyolite	MetricLab	82,5	9,52	1,06	0	0,11	0,11	1,99	3,5	0,15	0,26	0,74	99,94	87	167	1,92	86	0,1	13	103
GX-14095	Cambior	17	453918,00	5366697,00	2e	Massive Rhyolite	MetricLab	81,7	9,52	1,53	0	0,15	0,08	2,16	3,43	0,16	0,29	1,07	100,09	114	170	1,49	7	0,1	8	79
GX-14096	Cambior	17	453905,00	5366685,00	2e	Felsic Tuff, Cherty, Loc, Frag,	MetricLab	78,9	11,55	1,14	0	0,14	0,11	2,56	4,2	0,15	0,28	0,96	99,99	114	225	1,97	7	0,1	5	80
GX-14097	Cambior	17	453924,00	5366683,00	2e	Lapilli Tuff	MetricLab	78,8	11,24	1,61	0	0,41	0,57	2,1	3,25	0,19	0,25	1,54	99,96	95	231	2,43	7	0,2	12	104
GX-14098	Cambior	17	453900,00	5366679,00	2e	Lapilli Tuff (Spherules)	MetricLab	77,5	10,79	2	0	0,66	1,22	2,19	2,26	0,17	0,24	2,86	99,89	107	196	1,83	24	0,2	5	100
GX-14100	Cambior	17	452539,51	5368603,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,3	12,09	3,75	0,1	1,05	1,36	3,56	1,66	0,32	0,23	2,51	99,93	78	434	5,56	7	0,2	8	136
GX-14101	Cambior	17	452583,51	5368636,36	1e	Quartz & Feldspar Porphyry	MetricLab	75,9	10,66	2,99	0,1	0,74	1,08	3,6	2,05	0,3	0,31	2,14	99,87	81	438	5,41	7	0,2	5	138
GX-14102	Cambior	17	452593,51	5368652,36	1e	Quartz & Feldspar Porphyry	MetricLab	77,3	10,42	2,93	0	0,91	0,37	3,84	2,11	0,36	0,38	1,31	99,93	95	435	4,58	8	0,3	2	141
GX-14103	Cambior	17	452598,51	5368667,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,2	12,58	4,18	0,1	0,87	0,98	3,87	1,66	0,3	0,38	1,9	100,02	93	431	4,63	6	0,2	2	109
GX-14104	Cambior	17	452607,51	5368692,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,8	12,51	3,57	0,1	0,79	1,2	4,54	1,22	0,31	0,34	1,82	100,2	76	450	5,92	8	0,3	2	96
GX-14105	Cambior	17	452634,51	5368736,36	1e	Quartz & Feldspar Porphyry	MetricLab	74,1	12,04	3,59	0,1	0,82	0,94	4,61	1,22	0,35	0,35	1,99	100,11	70	422	6,03	15	0,2	2	85
GX-14106	Cambior	17	452766,51	5368807,36	2e	Tuff with Block and Lapilli	MetricLab	80	10,52	1,22	0	0,35	0,65	3,89	1,55	0,14	0,42	1,17	99,91	87	228	2,62	8	0,1	3	71
GX-14107	Cambior	17	452740,51	5368742,36	4a	Magnetic Diabase Dyke	MetricLab	55,2	12,77	13,19	0,2	4,75	7,63	2,09	1,36	1,25	0,39	1,24	100,07	24	116	4,83	10	0,4	117	101

Appendix 2: Cambior data (suite 2)

Sample_ID	Company	Zone	UTM83E	UTM83N	Class	Description	Laboratory	SiO2 pct	Al2O3 pct	Fe203 pct	MnO pct	MgO pct	CaO pct	Na2O pct	K2O pct	TiO2 pct	P2O5 pct	LOI pct	Total pct	Y ppm	Zr ppm	Zr/Y	Au ppb	Ag ppm	Cu ppm	Zn ppm
GX-14108	Cambior	17	452691,51	5368625,36	1e	Quartz & Feldspar Porphyry	MetricLab	72,5	12,24	5,02	0,11	1,64	0,84	4,43	0,92	0,34	0,39	1,67	100,1	76	421	5,54	8	0,3	4	108
GX-14109	Cambior	17	452684,51	5368612,36	1e	Quartz & Feldspar Porphyry	MetricLab	74,3	12,24	3,77	0,1	1,27	0,49	4,36	1,2	0,31	0,39	1,58	100,01	78	444	5,69	7	0,2	4	112
GX-14110	Cambior	17	452627,51	5368612,36	1e	Quartz & Feldspar Porphyry	MetricLab	72,4	8,44	6,37	0,2	2,99	2,47	3,53	1,38	0,36	0,36	1,59	100,09	95	470	4,95	7	0,3	2	148
GX-14111	Cambior	17	452609,51	5368536,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,7	12,42	3,49	0,1	0,83	1,2	3,55	1,78	0,32	0,5	2,23	100,12	89	418	4,70	10	0,2	4	110
GX-14112	Cambior	17	452561,51	5368509,37	1e	Quartz & Feldspar Porphyry	MetricLab	72,3	12,25	4,09	0,1	0,62	0,76	3,73	2,47	0,32	0,35	1,9	98,89	76	434	5,71	15	0,3	15	804
GX-14113	Cambior	17	452897,51	5368503,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,4	12,47	4,93	0,1	1,73	0,08	3,31	1,43	0,29	0,37	1,89	100	75	425	5,67	11	0,3	2	135
GX-14114	Cambior	17	452940,51	5368546,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,5	12,35	4,07	0,1	1,17	0,85	4,24	1,07	0,28	0,33	2,04	100	92	434	4,72	11	0,3	1	84
GX-14115	Cambior	17	452970,51	5368594,36	1b	Diorite	MetricLab	64,4	12,88	8,22	0,2	2,52	2,57	1,87	1,83	0,93	0,45	4,02	99,89	46	235	5,11	15	0,6	51	1665
GX-14116	Cambior	17	453017,51	5368642,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,2	11,48	4,2	0,1	0,88	1,45	4,07	1,24	0,3	0,37	2,68	99,97	70	402	5,74	7	0,2	5	155
GX-14117	Cambior	17	453062,51	5368766,36	1e	Quartz Diorite / Quartz & Feldspar Porphyry	MetricLab	73,7	12,79	3,69	0	0,92	0,7	4,42	1,3	0,29	0,36	1,83	100	84	476	5,67	7	0,2	2	82
GX-14118	Cambior	17	453006,51	5368735,36	1e	Quartz & Feldspar Porphyry	MetricLab	73,8	12,83	3,73	0	1,43	0,18	4,74	0,95	0,33	0,32	1,57	99,88	89	498	5,60	12	0,2	3	86
GX-14119	Cambior	17	453052,51	5368783,36	1e	Quartz & Feldspar Porphyry	MetricLab	71,3	12,65	4,31	0,1	0,94	2,11	2,96	2,2	0,27	0,4	2,87	100,11	90	402	4,47	9	0,4	260	75
GX-14120	Cambior	17	453116,51	5368773,36	1e	Quartz & Feldspar Porphyry	MetricLab	68,4	14,43	5,1	0,1	0,95	0,66	3,16	3,36	0,32	0,3	3,32	100,1	92	486	5,28	11	0,2	35	87
GX-14121	Cambior	17	453418,50	5368927,35	1e	Quartz & Feldspar Porphyry	MetricLab	68,8	13,11	6,87	0	3,56	0,06	3,99	0,57	0,36	0,25	2,55	100,12	87	531	6,10	8	0,5	4	95
GX-14122	Cambior	17	453254,51	5368730,36	1e	Quartz & Feldspar Porphyry	MetricLab	74,8	13,84	2,06	0	1,37	0	1,74	3,53	0,34	0,39	2,02	100,09	122	466	3,82	9	0,1	2	69
GX-14123	Cambior	17	453196,51	5368626,36	1e	Quartz & Feldspar Porphyry	MetricLab	74	11,54	5,24	0,1	0,92	0,64	4,05	0,98	0,31	0,28	1,99	100,05	73	386	5,29	17	0,2	19	108
GX-14124	Cambior	17	453113,51	5368672,36	1e	Quartz & Feldspar Porphyry	MetricLab	76,8	10,17	4,3	0,1	0,63	0,55	4,28	1,1	0,3	0,36	1,64	100,23	73	389	5,33	7	0,3	38	88
GX-14125	Cambior	17	453428,51	5368530,36	1b	Diorite	MetricLab	67,1	13,47	6,45	0,1	1,81	1,67	2,88	2,14	0,76	0,38	3,17	99,93	46	254	5,52	8	0,3	9	145
GX-14126	Cambior	17	452938,51	5368462,36	1e	Quartz & Feldspar Porphyry	MetricLab	71,9	13,45	4,73	0	1,75	0,16	3,52	1,84	0,33	0,28	1,91	99,87	87	469	5,39	9	0,3	4	84
GX-14127	Cambior	17	452935,51	5368417,37	1e	Quartz & Feldspar Porphyry	MetricLab	73,8	12,45	4,54	0,1	1,02	0,27	4,26	1,5	0,33	0,3	1,47	100,04	85	412	4,85	15	0,4	150	164
GX-14128	Cambior	17	453098,51	5368487,36	1b	Feldspar Porphyry	MetricLab	63,2	13,88	7,37	0,2	2,33	3,33	4,53	1,46	0,78	0,36	2,63	100,07	38	270	7,11	6	0,5	10	141
GX-14129	Cambior	17	453169,51	5368526,36	1e	Quartz & Feldspar Porphyry	MetricLab	72,8	12,77	3,84	0,1	1,74	0,69	3,5	1,69	0,37	0,34	2,26	100,1	89	418	4,70	8	0,2	2	95
GX-14130	Cambior	17	453202,51	5368578,36	1e	Quartz & Feldspar Porphyry	MetricLab	68,7	15,34	4,38	0	1,25	1	3,04	2,88	0,43	0,33	2,58	99,93	78	434	5,56	8	0,2	3	18
GX-14131	Cambior	17	453319,51	5368617,36	1e	Quartz & Feldspar Porphyry	MetricLab	41,8	12,4	31,81	0,1	3,05	0,04	0,1	0,97	0,36	0,16	9,11	99,9	100	553	5,53	19	2,4	433	95
GX-14132	Cambior	17	453325,51	5368630,36	1e	Altered Quartz & Feldspar Porphyry	MetricLab	71,2	12,13	6,05	0,1	0,74	1,01	4,41	1,54	0,36	0,34	2,19	100,07	73	396	5,42	9	0,3	32	25
GX-14133	Cambior	17	453320,51	5368664,36	1e	Strongly Altered Quartz & Feldspar Porphyry	MetricLab	71,8	13,51	4,83	0	0,67	0,79	3,56	2,44	0,33	0,25	1,82	100	81	470	5,80	9	0,2	20	17
GX-14135	Cambior	17	452766,00	5367969,00	1e	Quartz & Feldspar Porphyry	MetricLab	75	12,11	3,15	0	1,42	0,67	4,77	0,69	0,26	0,31	1,62	100	95	447	4,71	8	0,2	4	21
GX-14136	Cambior	17	453030,00	5367939,00	1e	Quartz & Feldspar Porphyry	MetricLab	74,2	12,14	3,95	0,1	1,14	0,59	4,64	1	0,31	0,34	1,55	99,96	84	418	4,98	6	0,3	2	38
GX-14137	Cambior	17	453107,00	5367953,00	1e	Quartz & Feldspar Porphyry	MetricLab	73,9	11,78	4,26	0	0,64	1,41	3,73	1,41	0,26	0,33	2,36	100,08	70	393	5,61	5	0,3	9	16
GX-14138	Cambior	17	453236,00	5368171,00	1e	Quartz & Feldspar Porphyry	MetricLab	71,1	12,86	5,8	0,1	1,45	0,73	3,07	1,81	0,35	0,33	2,41	100,01	67	428	6,39	7	0,4	13	20
GX-14140	Cambior	17	453299,00	5368133,00	1e	Quartz & Feldspar Porphyry	MetricLab	72,7	11,13	3,62	0,1	0,69	3,03	2,59	1,78	0,26	0,35	3,74	99,99	76	366	4,82	7	0,3	26	12
GX-14141	Cambior	17	453326,00	5368142,00	1e	Brecciated Quartz & Feldspar Porphyry	MetricLab	73	11,97	5,46	0,1	2,05	0,49	1,17	2,45	0,32	0,41	2,71	100,13	65	370	5,69	5	0,3	24	417
GX-14142	Cambior	17	453265,00	5368070,00	1e	Intermediate Quartz Porphyry	MetricLab	75,3	10,64	3,55	0,1	0,73	1,81	2,45	2,21	0,25	0,36	2,54	99,94	78	341	4,37	7	0,2	3	21
GX-14143	Cambior	17	453236,00	5368002,00	1e	Quartz & Feldspar Porphyry	MetricLab	76	11,05	4,18	0	1,95	0,11	3,11	1,23	0,28	0,33	1,77	100,01	79	396	5,01	7	0,2	4	19
GX-14144	Cambior	17	453278,00	5367951,00	1b	Quartz & Feldspar Porphyry	MetricLab	76,9	9,04	5,3	0,1	1,01	1,04	1,27	2,27	0,24	0,29	2,64	100,1	51	267	5,24	6	0,3	22	19
GX-14145	Cambior	17	453018,00	5367779,00	1e	Altered Quartz & Feldspar Porphyry, Sericitized	MetricLab	74,4	11,83	3,85	0,1	0,52	0,95	3,84	1,66	0,29	0,4	2,2	100,04	62	373	6,02	6	0,2	6	17
GX-14146	Cambior	17	452939,00	5367740,00	1e	Quartz & Feldspar Porphyry, Laminated	MetricLab	51,3	13,88	13,2	0,2	5,48	9,69	3,51	1,03	0,29	0,31	1,66	100,55	87	425	4,89	7	0,4	71	33
GX-14147	Cambior	17	452947,00	5367748,00	1e	Altered Quartz & Feldspar Porphyry	MetricLab	72,7	11,84	3,75	0,1	0,86	2,67	3,37	0,93	0,35	0,31	3,09	99,97	92	409	4,45	5	0,2	26	19
GX-14148	Cambior	17	452907,00	5367744,00	1a	Magnetic Diabase Dyke	MetricLab	74,8	11,22	3,67	0,1	0,69	1,02	1,99	3,31	1,11	0,29	1,56	99,76	32	87	2,72	6	0,5	118	46
GX-14149	Cambior	17	453069,00	5367734,00	1e	Intermediate Quartz & Feldspar Porphyry	MetricLab	69,9	13,33	4,51	0,1	0,8	0,46	4,32	3,44	0,28	0,31	2,66	100,11	78	402	5,15	7	0,3	3	16
GX-14150	Cambior	17	453285,00	5367513,00	1e	Weakly Sil, and Ser, Quartz and Feldspar Porphyry	MetricLab	72,2	13,17	4,5	0,1	0,8	0,41	2,64	3,35	0,31	0,28	2,18	99,94	87	376	4,32	6	0,2	19	22
GX-14151	Cambior	17	453280,00	5367481,00	1e	Sil, and Ser, Quartz and Feldspar Porphyry?	MetricLab	75,3	10,71	3,7	0	0,39	1,57	2,42	3,21	0,33	0,28	1,98	99,89	86	434	5,05	6	0,2	21	59
GX-14152	Cambior	17	453272,00	5367372,00	1e	Quartz & Feldspar Porphyry	MetricLab	72,3	11,92	3,56	0,1	0,39	2,33	3,27	1,85	0,26	0,3	3,34	99,62	81	386	4,77	5	0,2	5	86
GX-14153	Cambior	17	453496,00	5367420,00	1e	Intermediate Quartz (Feldspar?) Porphyry	MetricLab	72,2	12,69	4,3	0,1	1,61	0,73	1,76	3,15	0,33	0,39	2,77	100,03	92	428	4,65	7	0,2	1	73
GX-14154	Cambior	17	453536,00	5367499,00	1e	Lapilli Tuff (Quartz & Feldspar Porphyry?)	MetricLab	72,4	12,77	5,14	0,1	1,2	1,12	2,96	1,58	0,32	0,27	2,47	100,33	81	450	5,56	7	0,3	4	19
GX-14155	Cambior	17	453560,00	5367517,00	1e	Lapilli Tuff	MetricLab	74,1	11,8	5,27	0,1	1,35	0,79	2,64	1,27	0,28	0,31	2,13	100,04	79	395	5,00	6	0,4	12	19
GX-14156	Cambior	17	453613,00	5366534,00	2a	Quartz & Feldspar Porphyry (Py)	MetricLab	68,2	13,73	7,07	0	1,9	1,16	2,22	2,18	0,74	0	2,93	100,13	49	241	4,92	0	0	0	0

Appendix 2: Cambior data (suite 3)

Sample_ID	Company	Zone	UTM83E	UTM83N	Class	Description	Laboratory	SiO2 pct	Al2O3 pct	Fe203 pct	MnO pct	MgO pct	CaO pct	Na2O pct	K2O pct	TiO2 pct	P2O5 pct	LOI pct	Total pct	Y ppm	Zr ppm	Zr/Y	Au ppb	Ag ppm	Cu ppm	Zn ppm
GX-14157	Cambior	17	453646,00	5367509,00	1b	Diorite	MetricLab	68,4	12,68	6,6	0,1	2,14	1,12	1,45	2,23	0,7	0,33	4,29	100,04	39	225	5,77	6	0,5	4	39
GX-14158	Cambior	17	453714,00	5367454,00	1b	Diorite	MetricLab	61,5	13,24	9,07	0,1	2,55	3,37	2,87	1,42	0,88	0,35	4,82	100,17	41	219	5,34	8	0,7	5	82
GX-14159	Cambior	17	453726,00	5367435,00	1e	Diorite	MetricLab	73,1	12,45	5,22	0	1,53	0,52	3,14	1,41	0,3	0,29	2,02	99,98	86	426	4,95	9	0,3	3	25
GX-14160	Cambior	17	453642,00	5367425,00	1b	Diorite	MetricLab	56	13,02	11,12	0,1	2,88	3,8	3,3	1,21	1,09	0,41	7,03	99,96	35	203	5,80	6	0,8	21	110
GX-14161	Cambior	17	453589,00	5367318,00	1e	Lapilli Tuff	MetricLab	71,1	10,39	4,04	0,1	0,77	4,57	1,97	1,82	0,33	0,34	4,73	100,16	70	355	5,07	12	0,3	10	48
GX-14162	Cambior	17	453737,00	5367349,00	1b	Locally Strongly Altered Diorite	MetricLab	64,7	12,89	6,94	0,1	2,83	2,11	3,96	1,11	0,93	0,42	4,16	100,15	47	265	5,64	8	0,5	4	56
GX-14180	Cambior	17	453333,00	5367536,00	1e	Quartz & Feldspar Porphyry	MetricLab	71,6	13,72	4,31	0,1	1,12	0,95	3,08	2,67	0,34	0,25	1,95	100,09	93	434	4,67	7	0,2	3	34
GX-14181	Cambior	17	453316,00	5367586,00	1e	Weakly Chloritized Quartz & Feldspat Porphyry	MetricLab	72,4	12,63	4,13	0	1,41	1,43	2,05	2,31	0,31	0,25	3,07	99,99	84	450	5,36	11	0,2	3	20
GX-14182	Cambior	17	453325,00	5367628,00	1e	Weakly Chloritized Quartz & Feldspat Porphyry	MetricLab	73,7	12,26	3,88	0	1,25	1,26	3,83	1,09	0,27	0,25	2,15	99,94	85	441	5,19	9	0,2	6	17
GX-14183	Cambior	17	453416,00	5367648,00	1e	Quartz & Feldspar Porphyry	MetricLab	69,9	12,94	4,17	0	0,94	0,82	4,13	1,49	0,3	0,24	1,99	96,92	106	470	4,43	9	0,2	1	16
GX-14184	Cambior	17	453467,00	5367679,00	1e	Quartz & Feldspar Porphyry	MetricLab	72,1	12,06	4,01	0,1	1,22	1,57	3,67	1,91	0,32	0,25	2,85	100,06	82	466	5,68	9	0,2	4	24
GX-14185	Cambior	17	453453,00	5367679,00	1e	Silicified Felsic Rock, Cherty with Quartz Veins	MetricLab	77,5	12,69	1,46	0	0,35	0,25	4,37	1,63	0,2	0,29	1,2	99,94	134	331	2,47	9	0,2	4	12
GX-14186	Cambior	17	453515,00	5367698,00	1b	Quartz & Feldspar Porphyry	MetricLab	66,7	13,21	5,49	0,1	1,18	2,96	4,07	1,62	0,61	0,34	3,77	100,05	53	244	4,60	8	0,4	10	54
GX-14187	Cambior	17	453560,00	5367769,00	1b	Feldspar Porphyry / Diorite	MetricLab	66,2	13,4	5,69	0,1	1,76	2,27	3,88	1,82	0,68	0,32	3,88	100	47	254	5,40	8	0,4	12	60
GX-14188	Cambior	17	453605,00	5367809,00	1e	Diorite	MetricLab	71,4	11,89	5,41	0,2	1,65	1,44	1	2,76	0,32	0,27	3,72	100,06	98	392	4,00	13	0,3	5	65
GX-14189	Cambior	17	453620,00	5367851,00	1e	Feldspar Porphyry	MetricLab	68,7	12,09	4,54	0,2	0,99	3,47	2,78	2,25	0,29	0,26	4,41	99,98	100	399	3,99	9	0,4	8	40
GX-14190	Cambior	17	453627,00	5367843,00	1e	Quartz & Feldspar Porphyry	MetricLab	74,5	12,85	2,82	0	0,65	0,99	2,45	2,97	0,31	0,27	2,15	99,96	106	498	4,70	7	0,1	3	11
GX-14191	Cambior	17	453694,00	5367804,00	1e	Bedded Felsic Tuff	MetricLab	74,6	12,08	3,56	0,1	0,58	1,17	2,69	2,58	0,31	0,28	2,24	100,19	92	428	4,65	7	0,3	3	17
GX-14192	Cambior	17	453621,00	5367689,00	1b	Feldspar Porphyry / Diorite	MetricLab	67,5	13,17	5,94	0,1	1,55	2,64	2,43	2,38	0,62	0,35	4,79	101,47	50	239	4,78	8	0,4	4	57
GX-14193	Cambior	17	453605,00	5367681,00	1b	Feldspar Porphyry / Diorite	MetricLab	65,5	13,2	5,75	0,1	1,42	2,52	3,72	2,1	0,7	0,33	4,6	99,94	50	254	5,08	5	0,3	6	55
GX-14194	Cambior	17	453575,00	5367638,00	1b	Diorite / Magnetic Diabase Dyke	MetricLab	66,8	13,33	5,69	0,1	1,33	2,63	4	1,81	0,63	0,29	3,42	100,03	57	254	4,46	19	0,4	14	56
GX-14195	Cambior	17	453531,00	5367572,00	1e	Tuff with Block and Lapilli	MetricLab	71,9	13,77	5,06	0	1,16	0,29	3,11	1,93	0,28	0,25	2,17	99,92	117	466	3,98	6	0,2	2	25
GX-14197	Cambior	17	454118,51	5368442,36	3c	Quartz & Feldspar Porphyry, with semi-massive Py-Po	MetricLab	61,9	14,84	8,79	0,1	2,39	3,42	4,56	0,44	0,76	0,36	2,54	100,1	35	173	4,94	6	0,5	53	56
GX-14200	Cambior	17	454118,51	5368442,36	3b	Quartz & Feldspar Porphyry, with semi-massive Py-Po	MetricLab	45,8	9,35	30,13	0	1,74	1,89	2,6	0,42	0,43	0,21	7,49	100,06	24	69	2,88	7	1,4	268	33
GX-14213	Cambior	17	453642,00	5366638,00	2f	Gabbro	MetricLab	75,1	11,74	3,56	0,1	0,99	1,78	1,69	2,98	0	0,3	1,82	100,06	116	215	1,85	6	0,3	20	51
GX-14214	Cambior	17	453635,00	5366608,00	2e	Cherty Tuff, Silcified and Epidoted	MetricLab	79,9	11,14	1,91	0	0,31	0,06	1,56	3,07	0,2	0,26	1,46	99,87	89	215	2,42	9	1,2	17	8
GX-14215	Cambior	17	453635,00	5366602,00	2e	Cherty Tuff, Silcified and Epidoted	MetricLab	78,2	10,87	1,68	0,1	0,52	1	2,11	3,26	0,18	0,27	1,91	100,1	103	235	2,28	10	0,7	13	44
GX-14216	Cambior	17	453893,00	5366600,00	2e	Tuff with Block and Lapilli	MetricLab	78	10,97	2,48	0	0,33	0,79	2,49	2,8	0,18	0,26	1,64	99,94	117	241	2,06	6	0,2	8	45
GX-14217	Cambior	17	454007,00	5366529,00	2e	Tuff with Block and Lapilli	MetricLab	78,4	11,57	1,83	0	0,36	0,29	2,67	3,26	0,19	0,25	1,2	100,02	111	265	2,39	6	0,2	8	56
GX-14219	Cambior	17	454401,00	5366606,00	3b	Diorite / Andesite Porphyry (Feldspar)	MetricLab	50,6	13,03	9,16	0,1	5,96	5,38	3,59	0,7	0,94	0,29	10,31	100,06	34	95	2,79	5	1,1	183	63
GX-14221	Cambior	17	454425,00	5366609,00	3e2	Quartz & Feldspar Porphyry (5% Py)	MetricLab	71,5	12,93	3,38	0	1,53	1,69	4	1,33	0,3	0,29	3,02	99,97	84	448	5,33	7	0,3	9	29
GX-14222	Cambior	17	455392,00	5367465,00	3f	Quartz & Feldspar Porphyry, Erratic	MetricLab	78,4	10,08	3,07	0,1	0,82	0,61	4,18	0,71	0,31	0,29	1,4	99,97	108	593	5,49	6	0,3	5	85
GX-14223	Cambior	17	455454,00	5367634,00	3c	Quartz Diorite	MetricLab	61,2	13,62	9,25	0,1	2,63	3,26	4,22	0,64	0,89	0,3	3,9	100,01	51	237	4,65	6	0,7	5	63
GX-14224	Cambior	17	455567,00	5367796,00	3a	Magnetic Diabase Dyke	MetricLab	50,7	12,1	16,82	0,2	4,95	8,48	1,98	1,06	1,88	0,39	1,39	99,95	41	128	3,12	8	0,5	118	86
GX-14225	Cambior	17	455590,00	5367790,00	3f	Quartz Porphyry	MetricLab	76,1	10,56	4,77	0	0,97	0,95	2,44	1,87	0,42	0,26	1,61	99,95	118	741	6,28	6	0,3	3	61
GX-14226	Cambior	17	455657,00	5367804,00	3f	Quartz Porphyry	MetricLab	78,7	10,55	3,25	0	0,4	0,23	3,99	1,18	0,34	0,28	1,07	99,99	119	553	4,65	6	0,2	3	23
GX-14227	Cambior	17	455471,00	5367935,00	3f	Quartz Porphyry	MetricLab	78,4	10,55	3,93	0	0,32	0,23	4,12	1,08	0,34	0,23	0,83	100,03	127	510	4,02	7	0,2	9	80
GX-14228	Cambior	17	455457,00	5367964,00	3f	Quartz Porphyry	MetricLab	78,7	10,82	3,1	0	0,21	0,1	4,5	0,98	0,3	0,26	0,95	99,92	137	550	4,01	6	0,1	3	71
GX-14229	Cambior	17	455363,00	5367900,00	3e2	Breccia / Lapilli Tuff	MetricLab	73	12,56	4,47	0	1,12	1,28	4,16	1,31	0,3	0,25	1,66	100,11	78	451	5,78	10	0,4	6	29
GX-14231	Cambior	17	455246,00	5367791,00	3e2	Quartz Porphyry	MetricLab	71	13,44	3,15	0	0,88	2,41	2,85	2,24	0,32	0,27	3,47	100,03	114	473	4,15	6	0,3	3	24
GX-14232	Cambior	17	455134,00	5367818,00	3e2	Quartz Porphyry	MetricLab	72,4	13,24	3,88	0,1	1,18	1,87	1,91	2,87	0,34	0,26	2,04	100,09	81	435	5,37	11	0,3	5	31
GX-14233	Cambior	17	455169,00	5366806,00	3d	Quartz Porphyry	MetricLab	69,2	12,94	4,01	0,1	1,05	1,86	3,61	1,98	0,57	0,3	4,42	100,04	70	279	3,99	6	0,3	29	114
GX-14234	Cambior	17	455169,00	5366787,00	3d	Altered Epidoted Quartz Porphyry	MetricLab	70,4	11,96	4,56	0,1	0,7	2,28	3,81	1,57	0,8	0,3	3,53	100,01	56	270	4,82	5	0,3	28	95
GX-14235	Cambior	17	454934,00	5366898,00	3c	Diorite / Diabase	MetricLab	52,5	14,57	12,26	0,1	3,98	8,47	3,64	0,34	1,16	0,29	2,67	99,98	37	149	4,03	7	0,6	164	71
GX-14236	Cambior	17	455580,00	5366671,00	3c	Diorite	MetricLab	61,2	13,37	8,99	0,1	1,97	3,32	3,9	1,53	0,98	0,33	4,44	100,13	45	227	5,04	6	0,4	19	44
GX-14237	Cambior	17	455906,00	5366788,00	3d	Silicified & Epidoted Felsic Rock, Cherty	MetricLab	68,6	12,45	4,42	0	1,29	2,79	2,77	2,25	0,57	0,27	4,49	99,9	61	264	4,33	6	0,2	10	20
GX-14238	Cambior	17	455906,00	5366829,00	3d	Altered, Ankeritized Feldspar Porphyry	MetricLab	69	12,75	4,23	0	1,12	2,6	2,64	2,38	0,6	0,26	4,31	99,89	56	286	5,11	9	0,2	15	17
GX-14240	Cambior	17	454684,00	5366689,00	3c	Gabbro/Diorite	MetricLab	60,8	13,47	8,28	0,1	3,41	3,42	3,94	0,43	0,99	0,33	4,9	100,07	40	218	5,45	10	0,8	9	68
Outcrop-01	Cambior	17	453568,00	5366711,00	2e		MetricLab	79,13	11,66	1,83	0,02	0,26	0,10	2,94	3,72	0,10	0,02	0,10	99,88	78,2	178	2,27			2	2
Outcrop-02	Cambior	17	453523,00	5366678,00	2e		MetricLab	76,22	12,24	2,00	0,02	0,57	0,12	1,53	5,54	0,10	0,03	1,50	99,86	64,5	164	2,53			6	6
Outcrop-03	Cambior	17	453529,00	5366704,00	2e		MetricLab	77,59	11,12	2,22	0,03	0,31	0,22	2,72	4,12	0,10	0,02	1,40	99,86	80,4	177	2,20			9	9
Outcrop-04	Cambior	17	453643,00	5366679,00	2e		MetricLab	77,67	11,52	2,39	0,04	0,70	0,29	0,06	4,93	0,11	0,02	2,20	99,92	80,2	195	2,43			6	6
Outcrop-05	Cambior	17	453699,00	5366738,00	2e		MetricLab	76,53	11,53	1,78	0,03	0,51	0,68	2,15	4,53	0,10	0,01	2,00	99,87	82,5	176	2,13			4	4

Appendix 3 : Field Samples Whole Rock (Gold Crossing 2014)

Sample	Class	Reclassification	Batch_ID	Lab_ID	Date_Lab_Reception	Date_Lab_Ship	Zone	UTM83E	UTM83N	Rock	Sample_Type	Weight kg	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ni ppm	Sc ppm	LOI ppm	Sum ppm	K ppm	Ti ppm	P ppm
98100	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454567,43	5366720,67	Dark felsic rock qtz eyes	Rock	0,92	57,98	13,77	10,19	2,86	3,79	4,33	0,48	0,875	0,149	0,13	0,003	34	20	5,3	99,83	3984,71	5245,62	650,56
98101	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454686,21	5366907,70	Dark felsic rock qtz eyes	Rock	1,65	69,3	13,36	5,89	1,18	1,68	3,92	0,85	0,469	0,083	0,04	<0.002	<20	8	3,1	99,88	7056,26	2811,65	362,39
98102	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454516,48	5366618,92	Dark felsic rock qtz eyes	Rock	0,84	44,89	14,94	11,82	8,49	5,77	2,89	0,05	0,95	0,052	0,16	0,031	158	32	9,7	99,78	415,07	5695,24	227,04
98103	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454095,28	5366710,14	Felsic Rhyolite Silicified	Rock	1,82	76,45	10,42	2,14	0,25	0,43	1,02	6,95	0,092	0,013	0,02	<0.002	<20	2	2,1	99,83	57695,33	551,54	56,76
98104	1e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454258,52	5366688,26	Felsic Rhyolite	Rock	0,91	76,04	11,53	3,41	0,41	0,51	5,05	0,59	0,281	0,033	0,04	<0.002	<20	4	2	99,89	4897,88	1684,59	144,08
98105	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454127,09	5368408,43	Sulfured rock mafic aphanitic and more feldspath grenu	Rock	1,37	55,14	15,68	11,69	4,68	2,06	4,15	0,63	1,016	0,162	0,1	0,003	35	23	4,5	99,79	5229,94	6090,91	707,32
98106	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453496,71	5368710,27	Beeched rock apanitic no qtz eyes	Rock	1,37	69	14,75	2,82	1,85	0,99	3,13	3,62	0,325	0,093	0,04	<0.002	<20	3	3,2	99,85	30051,38	1948,37	406,06
98107	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453739,89	5369558,11	sulfide bolder no qtz eyes	Rock	1,48	35,14	10,94	26,28	2,89	5,72	2,2	0,07	0,698	0,067	0,27	0,014	81	20	15,6	99,84	581,10	4184,51	292,54
98108	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453810,41	5369541,52	Toleitic diorite	Rock	1,22	61,3	13,39	9,75	1,91	3,1	4,37	0,59	0,991	0,211	0,12	<0.002	<20	17	4,1	99,85	4897,88	5941,04	921,27
98109	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454007,56	5369445,76	Toleitic diorite	Rock	1,23	66,88	13,18	5,75	1,09	2,56	4,41	1,3	0,626	0,118	0,09	<0.002	<20	10	3,8	99,84	10791,93	3752,87	515,21
98110	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453377,66	5369145,34	Felsic aphanitic qtz eyes	Rock	1,65	71,17	13,13	4,02	1,48	0,93	0,82	3,76	0,257	0,047	0,06	<0.002	<20	5	4,1	99,82	31213,59	1540,71	205,21
98111	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453136,80	5368586,73	Dark massive felsic microgrenu	Rock	1,18	72,88	11,74	4,95	1,33	0,64	3,64	1,45	0,192	0,023	0,08	<0.002	<20	4	2,9	99,82	12037,15	1151,04	100,42
98112	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452930,37	5368466,17	Dark massive felsic microgrenu	Rock	1,65	72,53	11,89	3,95	1,05	1,01	3,76	2,04	0,19	0,027	0,11	<0.002	<20	3	3,2	99,78	16935,03	1139,05	117,89
98113	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452841,10	5368399,44	Dark microgrenu qtz, fldsp	Rock	1,39	72,18	12,92	4,4	0,82	0,53	4,1	2,42	0,223	0,028	0,05	<0.002	<20	4	2,1	99,79	20089,60	1336,88	122,25
98114	2e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452800,65	5367945,46	Felsic seritised	Rock	1,63	74,43	14,21	1,48	0,92	0,05	4,26	2,45	0,088	0,008	<0.01	<0.002	<20	<1	1,9	99,84	20338,64	527,56	34,93
98115	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453367,64	5368090,60	Dark aphanitic no qtz eyes	Rock	1,35	65,72	13,28	5,44	2,32	1,9	0,86	4,16	0,588	0,111	0,17	<0.002	<20	10	5,2	99,77	34534,18	3525,06	484,65
98116	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453142,04	5367952,07	Autobreccia and massive Rhyolite with lobes	Rock	1,06	71,84	12,1	5,67	1,41	0,43	3,56	1,97	0,212	0,026	0,05	<0.002	<20	4	2,5	99,8	16353,93	1270,94	113,52
98117	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453158,44	5367968,83	Felsic Rhyolite qtz eyes	Rock	0,95	74,97	11,69	4,36	0,63	0,46	3,91	1,56	0,2	0,022	0,05	<0.002	<20	4	2	99,86	12950,32	1199,00	96,06
98118	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453355,17	5367627,49	Felsic Rhyolite qtz eyes	Rock	1,21	71,11	12,73	3,98	1,05	2,34	2,04	2,54	0,22	0,035	0,05	<0.002	<20	4	3,8	99,84	21085,77	1318,90	152,82
98119	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453056,90	5367919,98	Felsic Rhyolite qtz eyes	Rock	1,03	74,39	12,02	3,92	0,73	0,3	4,81	1,37	0,215	0,038	0,04	<0.002	<20	4	2	99,83	11373,04	1288,92	165,92
98120	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455195,81	5366794,37	Dark massive mafic chloritised	Rock	1,36	69,22	13,22	4,51	0,89	1,29	2,77	2,97	0,433	0,06	0,1	<0.002	<20	7	4,3	99,8	24655,41	2595,83	261,97
98121	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455402,95	5367425,57	granophyric texture	Rock	1,35	66,67	13,8	4,34	1,81	2,54	1,34	3,98	0,269	0,039	0,05	<0.002	<20	7	4,9	99,77	33039,92	1612,65	170,28
98122	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455574,03	5367734,59	dark grenu granophyre	Rock	1,24	75,6	10,76	3,9	1,02	0,37	3,24	2,21	0,262	0,019	0,04	<0.002	<20	3	2,4	99,77	18346,28	1570,69	82,96
98123	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455650,85	5367763,44	Felsic qtz eyes aphanitic to grenu	Rock	1,67	78,04	10,91	2,99	0,27	0,11	4,63	1,25	0,215	0,018	0,05	<0.002	<20	2	1,4	99,83	10376,86	1288,92	78,59
98124	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455458,35	5367897,80	Felsic qtz eyes aphanitic to grenu	Rock	1,43	76,75	11,21	2,94	0,43	0,43	3,76	2,75	0,164	0,005	0,03	<0.002	<20	2	1,3	99,79	22829,09	983,18	21,83
98125	3f	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455374,44	5367896,90	Felsic qtz eyes aphanitic to grenu	Rock	0,92	73,65	11,88	3,76	1,05	0,65	4,34	1,54	0,21	0,024	0,06	<0.002	<20	4	2,7	99,81	12784,29	1258,95	104,79
98126	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455361,62	5367865,65	Lapilli tuff	Rock	1,27	69,3	12,81	5	1,56	1,84	4,23	1,49	0,239	0,038	0,06	<0.002	<20	5	3,3	99,82	12369,21	1432,80	165,92
98127	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455335,99	5367850,40	Lapilli tuff	Rock	1,05	69,82	13,59	4,58	1,33	1,41	4,29	1,96	0,237	0,037	0,05	<0.002	<20	5	2,5	99,78	16270,91	1420,81	161,55
98128	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454419,65	5366605,36	Very altered rock mineralised	Rock	0,97	61,47	13,4	6,3	1,63	4,91	5,43	0,2	0,905	0,171	0,05	<0.002	26	16	5,4	99,89	1660,30	5425,47	746,62
98129	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453675,02	5366780,37	Rhyolite silicified seritised and potassic alteration	Rock	1,39	76,58	11,61	2,62	0,41	0,13	1,86	5,21	0,105	0,014	0,02	<0.002	<20	2	1,3	99,84	43250,74	629,47	61,13
98130	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455520,80	5366642,62	Felsic rock no qtz eyes	Rock	1,63	61,05	13,63	7,41	1,48	3,36	2,68	3,16	0,76	0,153	0,1	<0.002	<20	14	6	99,81	26232,70	4556,20	668,03
98131	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454565,45	5366741,25	Dark felsic rock qtz eyes	Rock	1,65	52,92	10,27	15,71	3,88	4,98	0,59	0,8	2,35	0,355	0,14	0,004	37	38	7,8	99,78	6641,19	14088,24	1550,00

Sample	Class	Reclassification	Batch_ID	Lab_ID	Date_Lab_Reception	Date_Lab_Ship	Zone	UTM83E	UTM83N	Rock	Sample_Type	TOT/C %	TOT/S %	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	As ppm	Cd ppm	Sb ppm	Bi ppm	Ag ppm	Au ppb	Hg ppm	Tl ppm	Se ppm
98100	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454567,43	5366720,67	Dark felsic rock qtz eyes	Rock	0,76	<0.02	0,2	1,4	2,2	48	30,2	<0.5	<0.1	<0.1	<0.1	<0.1	0,7	<0.01	<0.1	<0.5
98101	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454686,21	5366907,70	Dark felsic rock qtz eyes	Rock	0,27	<0.02	3,3	0,8	3,7	22	8	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98102	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454516,48	5366618,92	Dark felsic rock qtz eyes	Rock	1,32	<0.02	<0.1	9,8	1,2	76	144,4	<0.5	<0.1	<0.1	0,1	<0.1	<0.5	<0.01	<0.1	<0.5
98103	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454095,28	5366710,14	Felsic Rhyolite Silicified	Rock	0,19	0,62	1	2,8	5,8	14	1,3	2,7	<0.1	0,1	0,1	0,2	3,6	<0.01	<0.1	<0.5
98104	1e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454258,52	5366688,26	Felsic Rhyolite	Rock	0,2	0,07	0,6	1,4	1,6	48	2,3	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98105	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454127,09	5368408,43	Sulfured rock mafic aphanitic and more feldspath grenu	Rock	0,28	<0.02	0,3	0,6	0,4	106	33,3	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98106	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453496,71	5368710,27	Beeched rock apanitic no qtz eyes	Rock	0,39	0,02	<0.1	68,8	0,5	32	3,5	0,7	<0.1	<0.1	<0.1	0,7	<0.5	<0.01	<0.1	<0.5
98107	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453739,89	5369558,11	sulfide bolder no qtz eyes	Rock	0,09	16,85	4,1	63,3	5,7	120	74,6	108,2	0,2	0,2	<0.1	0,2	1,6	0,27	0,9	1,9
98108	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453810,41	5369541,52	Toleitic diorite	Rock	0,41	<0.02	0,7	2,4	0,7	73	11,2	0,6	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98109	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454007,56	5369445,76	Toleitic diorite	Rock	0,55	<0.02	0,2	2,9	1,6	63	5,8	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98110	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453377,66	5369145,34	Felsic aphanitic qtz eyes	Rock	0,32	<0.02	0,8	3,2	2,1	108	1,3	<0.5	0,1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98111	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453136,80	5368586,73	Dark massive felsic microgrenu	Rock	0,25	<0.02	<0.1	0,6	1,9	32	1	<0.5	<0.1	<0.1	<0.1	<0.1	1,7	<0.01	<0.1	<0.5
98112	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452930,37	5368466,17	Dark massive felsic microgrenu	Rock	0,4	<0.02	0,3	4,3	1,8	111	1,2	<0.5	<0.1	<0.1	<0.1	<0.1	0,8	<0.01	<0.1	<0.5
98113	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452841,10	5368399,44	Dark microgrenu qtz, fldsp	Rock	0,15	<0.02	1,3	0,6	2	39	1	<0.5	<0.1	<0.1	<0.1	<0.1	0,9	<0.01	<0.1	<0.5
98114	2e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452800,65	5367945,46	Felsic seritised	Rock	0,03	<0.02	<0.1	0,3	1,7	6	0,5	<0.5	<0.1	<0.1	0,1	<0.1	<0.5	<0.01	<0.1	0,6
98115	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453367,64	5368090,60	Dark aphanitic no qtz eyes	Rock	0,67	0,12	0,5	20,4	1,3	97	8,9	3,6	0,2	<0.1	0,4	<0.1	<0.5	<0.01	<0.1	<0.5
98116	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453142,04	5367952,07	Autobreccia and massive Rhyolite with lobes	Rock	0,2	<0.02	<0.1	0,4	1,7	33	1,1	<0.5	<0.1	<0.1	<0.1	<0.1	1,9	<0.01	<0.1	<0.5
98117	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453158,44	5367968,83	Felsic Rhyolite qtz eyes	Rock	0,13	<0.02	<0.1	0,4	1,2	17	1,3	<0.5	<0.1	<0.1	0,1	<0.1	<0.5	<0.01	<0.1	<0.5
98118	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453355,17	5367627,49	Felsic Rhyolite qtz eyes	Rock	0,58	<0.02	<0.1	0,5	2,1	16	0,8	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98119	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453056,90	5367919,98	Felsic Rhyolite qtz eyes	Rock	0,18	<0.02	<0.1	0,5	1	30	1,3	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98120	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455195,81	5366794,37	Dark massive mafic chloritised	Rock	0,61	0,02	1	87,3	3	104	4,1	<0.5	0,4	<0.1	<0.1	0,4	<0.5	<0.01	<0.1	<0.5
98121	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455402,95	5367425,57	granophyric texture	Rock	0,55	<0.02	0,5	7,9	3,2	24	10,1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98122	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455574,03	5367734,59	dark grenu granophyre	Rock	0,28	<0.02	0,6	0,8	1	81	1,1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	0,5
98123	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455650,85	5367763,44	Felsic qtz eyes aphanitic to grenu	Rock	0,09	<0.02	0,2	0,7	1,4	21	1,3	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	0,6
98124	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455458,35	5367897,80	Felsic qtz eyes aphanitic to grenu	Rock	0,16	<0.02	0,4	1,2	1,8	52	0,6	<0.5	<0.1	0,3	<0.1	<0.1	<0.5	<0.01	<0.1	0,6
98125	3f	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455374,44	5367896,90	Felsic qtz eyes aphanitic to grenu	Rock	0,3	<0.02	0,2	7	1,3	35	0,6	<0.5	<0.1	<0.1	0,2	<0.1	2,2	<0.01	<0.1	<0.5
98126	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455361,62	5367865,65	Lapilli tuff	Rock	0,43	<0.02	0,2	1,2	1,9	39	1,5	<0.5	<0.1	<0.1	<0.1	<0.1	4,1	<0.01	<0.1	<0.5
98127	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455335,99	5367850,40	Lapilli tuff	Rock	0,27	<0.02	1,8	150,5	2,2	31	1,3	<0.5	<0.1	<0.1	<0.1	0,1	0,6	<0.01	<0.1	<0.5
98128	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454419,65	5366605,36	Very altered rock mineralised	Rock	1,05	0,04	0,9	1,6	0,5	59	20,4	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98129	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453675,02	5366780,37	Rhyolite silicified seritised and potassic alteration	Rock	0,09	<0.02	0,5	4,1	3,9	27	1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98130	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455520,80	5366642,62	Felsic rock no qtz eyes	Rock	1,37	0,04	0,7	9,3	1,7	40	9,2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.01	<0.1	<0.5
98131	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454565,45	5366741,25	Dark felsic rock qtz eyes	Rock	1,28	2,29	0,7	31,6	9,8	133	32,1	16	0,2	<0.1	0,4	<0.1	4,9	<0.01	<0.1	2,1

Appendix 3: Samples Whole Rock (Gold Crossing 2014) (Suite)

Sample	Class	Reclassification	Batch_ID	Lab_ID	Date_Lab_Reception	Date_Lab_Ship	Zone	UTM83E	UTM83N	Rock	Sample_Type	Ba ppm	Be ppm	Co ppm	Cs ppm	Ga ppm	Hf ppm	Nb ppm	Rb ppm	Sn ppm	Sr ppm	Ta ppm	Th ppm	U ppm	V ppm	W ppm
98100	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454567,4343	5366720,672	Dark felsic rock qtz eyes	Rock	271	1	23,8	0,1	16,2	5,4	7,9	13	<1	154,5	0,70	2,70	0,50	140,00	0,80
98101	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454686,2052	5366907,698	Dark felsic rock qtz eyes	Rock	146	<1	10,4	0,2	16	7	14,1	21,1	6	116,7	1,30	8,30	1,80	49,00	0,60
98102	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454516,4806	5366618,925	Dark felsic rock qtz eyes	Rock	34	1	52	<0.1	15	1,5	2,5	1,3	<1	95,6	0,10	<0.2	<0.1	239,00	<0.5
98103	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454095,2787	5366710,141	Felsic Rhyolite Silicified	Rock	891	<1	0,5	0,4	15,1	6,9	27	106,1	6	20,1	2,00	8,60	1,80	<8	1,90
98104	1e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454258,5207	5366688,256	Felsic Rhyolite	Rock	88	1	2,1	<0.1	14,2	11	20,1	16,7	4	46,9	1,50	6,90	1,60	13,00	0,80
98105	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454127,0899	5368408,433	Sulfured rock mafic aphanitic and more feldspath grenu	Rock	284	2	26,2	0,2	21,8	6,3	9,1	17,7	1	75	0,70	2,80	0,70	166,00	1,00
98106	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453496,7057	5368710,266	Beeched rock apanitic no qtz eyes	Rock	710	2	4,7	0,8	17,7	3,4	3,4	80,7	<1	50,5	0,30	1,20	0,30	27,00	1,00
98107	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453739,8906	5369558,109	sulfide bolder no qtz eyes	Rock	36	2	51,1	0,2	12,7	1,8	3,3	1,9	1	181,1	0,20	0,60	0,20	152,00	<0.5
98108	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453810,4089	5369541,525	Toleitic diorite	Rock	196	<1	20,2	<0.1	17,8	7,2	12,4	16,3	3	149,6	0,90	3,30	0,70	56,00	0,90
98109	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454007,5603	5369445,756	Toleitic diorite	Rock	364	<1	8,8	0,2	15,4	10,2	14,4	32,9	3	117,6	1,00	4,90	1,10	34,00	1,70
98110	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453377,6559	5369145,337	Felsic aphanitic qtz eyes	Rock	356	3	2,5	0,8	23,4	12	26,1	87,9	5	25,7	1,70	6,30	1,60	8,00	1,00
98111	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453136,796	5368586,733	Dark massive felsic microgrenu	Rock	444	2	1,8	0,2	19,2	11,1	26,7	32,7	4	42,4	1,80	6,30	1,30	<8	1,20
98112	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452930,3686	5368466,173	Dark massive felsic microgrenu	Rock	701	3	1	0,3	20,7	11,4	28,8	39,9	7	78,2	2,00	6,70	1,40	<8	1,20
98113	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452841,1013	5368399,439	Dark microgrenu qtz, fldsp	Rock	695	3	1,1	0,4	25,6	12,3	29,9	57,8	6	64,1	1,90	7,30	1,60	12,00	0,80
98114	2e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452800,651	5367945,457	Felsic seritised	Rock	415	5	1,8	0,3	30	10,1	36,9	56,6	5	46,2	2,70	10,00	1,50	11,00	0,50
98115	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453367,6366	5368090,599	Dark aphanitic no qtz eyes	Rock	991	1	9,2	0,5	16,8	6,4	10,8	101,5	2	39,2	0,90	4,90	1,20	59,00	1,30
98116	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453142,0423	5367952,067	Autobreccia and massive Rhyolite with lobes	Rock	657	<1	3,7	0,3	21,1	11,9	29	44,4	4	35,1	2,00	7,00	1,50	<8	1,00
98117	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453158,4414	5367968,833	Felsic Rhyolite qtz eyes	Rock	366	<1	3	0,3	20,8	10,9	27,5	33,1	4	38,2	1,80	5,90	1,30	<8	0,90
98118	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453355,1688	5367627,494	Felsic Rhyolite qtz eyes	Rock	320	4	4,9	0,3	24,3	12,1	30,5	62	6	44,6	2,00	7,10	1,90	<8	0,90
98119	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453056,8991	5367919,985	Felsic Rhyolite qtz eyes	Rock	517	2	3,6	0,2	19,3	11,5	28,1	25,9	4	61,1	1,90	6,30	1,40	<8	1,10
98120	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455195,8131	5366794,367	Dark massive mafic chloritised	Rock	713	<1	6,7	0,4	16,4	7,4	12,9	70,2	3	61,2	1,30	8,60	2,00	50,00	6,30
98121	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455402,9524	5367425,569	granophyric texture	Rock	920	2	8,9	1	19,6	12	23,8	96,3	3	42,3	1,60	5,80	1,30	39,00	1,30
98122	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455574,031	5367734,586	dark grenu granophyre	Rock	603	2	0,7	0,9	19	17	25,1	57,9	3	48	1,60	6,70	1,80	12,00	2,50
98123	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455650,8513	5367763,445	Felsic qtz eyes aphanitic to grenu	Rock	366	1	0,7	0,3	17,9	14,7	26,1	29,6	9	88,7	2,10	8,40	1,70	<8	1,60
98124	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455458,3548	5367897,795	Felsic qtz eyes aphanitic to grenu	Rock	725	2	0,5	0,5	19,5	12,4	24,2	52,4	4	39,8	1,80	9,10	2,10	<8	0,70
98125	3f	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455374,4374	5367896,9	Felsic qtz eyes aphanitic to grenu	Rock	529	2	1,5	0,7	19,9	11,2	29,2	35,7	6	67,7	2,20	6,90	1,40	11,00	0,60
98126	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455361,6176	5367865,648	Lapilli tuff	Rock	373	3	2,3	0,7	23,9	12	26,4	39,2	4	83,7	1,80	6,10	1,20	<8	0,50
98127	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455335,9913	5367850,402	Lapilli tuff	Rock	542	<1	5,9	0,7	23,9	11,9	26,9	52,2	6	79,2	1,80	6,40	1,50	9,00	0,80
98128	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454419,6488	5366605,364	Very altered rock mineralised	Rock	41	<1	13	<0.1	16,1	6,6	9,2	5,9	2	53,4	0,70	3,00	0,70	117,00	1,50
98129	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453675,0212	5366780,371	Rhyolite silicified seritised and potassic alteration	Rock	727	1	0,6	0,7	20,3	7,6	27,2	119,3	6	19,8	2,10	8,70	2,00	<8	1,10
98130	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455520,7951	5366642,623	Felsic rock no qtz eyes	Rock	706	2	13,6	0,8	16,7	6,5	12,4	81,2	3	71,2	1,10	5,90	1,30	72,00	3,10
98131	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454565,455	5366741,251	Dark felsic rock qtz eyes	Rock	209	<1	55,5	0,1	18,5	5,4	8,3	19,1	2	85,3	0,50	1,30	0,30	346,00	3,60

Sample	Class	Reclassification	Batch_ID	Lab_ID	Date_Lab_Reception	Date_Lab_Ship	Zone	UTM83E	UTM83N	Rock	Sample_Type	Zr ppm	Y ppm	La ppm	Ce ppm	Pr ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm	Lu ppm
98100	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454567,4343	5366720,672	Dark felsic rock qtz eyes	Rock	202,30	33,80	18,20	40,70	5,39	21,70	5,19	1,25	5,60	0,96	5,83	1,17	3,47	0,55	3,41	0,55
98101	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454686,2052	5366907,698	Dark felsic rock qtz eyes	Rock	234,60	45,00	34,50	76,80	9,33	36,20	7,65	1,17	7,84	1,28	7,70	1,58	4,46	0,70	4,47	0,70
98102	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454516,4806	5366618,925	Dark felsic rock qtz eyes	Rock	52,50	15,30	3,20	6,50	1,10	6,20	1,85	0,71	2,43	0,45	2,74	0,57	1,59	0,25	1,60	0,25
98103	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454095,2787	5366710,141	Felsic Rhyolite Silicified	Rock	167,30	72,80	53,00	117,80	15,31	60,30	13,08	1,24	12,96	2,14	12,84	2,61	7,63	1,18	7,48	1,18
98104	1e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454258,5207	5366688,256	Felsic Rhyolite	Rock	366,10	67,30	47,40	102,10	12,80	51,90	11,08	1,71	11,09	1,93	11,54	2,42	6,93	1,09	6,67	1,05
98105	3c	3c	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454127,0899	5368408,433	Sulfured rock mafic aphanitic and more feldspath grenu	Rock	233,50	39,80	16,30	39,00	5,28	22,90	5,60	1,47	6,60	1,13	6,79	1,49	4,17	0,64	4,11	0,64
98106	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453496,7057	5368710,266	Beeched rock apanitic no qtz eyes	Rock	132,50	4,60	12,30	24,80	2,80	10,80	1,77	0,54	1,40	0,18	0,84	0,16	0,44	0,06	0,43	0,07
98107	3b	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453739,8906	5369558,109	sulfide bolder no qtz eyes	Rock	70,10	14,00	8,20	17,90	2,40	10,00	2,30	0,89	2,43	0,40	2,37	0,49	1,43	0,22	1,34	0,22
98108	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453810,4089	5369541,525	Toleitic diorite	Rock	281,20	41,70	24,80	57,30	7,37	30,90	7,06	1,64	7,40	1,23	7,40	1,51	4,33	0,66	4,12	0,65
98109	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454007,5603	5369445,756	Toleitic diorite	Rock	383,50	56,80	34,80	78,90	9,66	38,40	8,70	1,78	9,02	1,57	9,55	2,01	5,84	0,87	5,51	0,91
98110	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453377,6559	5369145,337	Felsic aphanitic qtz eyes	Rock	416,30	68,60	53,00	121,80	15,23	62,50	13,18	2,79	12,83	2,10	12,26	2,50	6,80	1,02	6,49	1,02
98111	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453136,796	5368586,733	Dark massive felsic microgrenu	Rock	378,20	72,30	57,00	128,70	16,16	65,80	13,87	2,63	13,43	2,20	13,06	2,60	7,34	1,11	6,59	1,06
98112	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452930,3686	5368466,173	Dark massive felsic microgrenu	Rock	379,90	66,40	54,10	123,50	15,85	65,70	13,49	2,67	13,10	2,13	12,36	2,38	6,64	1,02	6,27	1,03
98113	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452841,1013	5368399,439	Dark microgrenu qtz, fldsp	Rock	417,00	75,80	54,30	119,60	15,47	62,30	13,20	2,64	13,51	2,22	13,49	2,68	7,56	1,16	6,97	1,14
98114	2e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	452800,651	5367945,457	Felsic seritised	Rock	240,00	80,50	61,90	148,40	19,81	79,80	18,33	2,87	16,85	2,75	15,87	3,01	8,62	1,31	8,12	1,23
98115	1e	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453367,6366	5368090,599	Dark aphanitic no qtz eyes	Rock	228,50	35,50	28,90	62,40	7,46	30,00	6,24	1,19	6,22	1,03	6,23	1,20	3,46	0,55	3,43	0,54
98116	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453142,0423	5367952,067	Autobreccia and massive Rhyolite with lobes	Rock	390,00	64,10	56,80	128,20	16,41	67,00	14,27	2,53	13,55	2,16	12,18	2,31	6,58	0,97	6,22	1,00
98117	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453158,4414	5367968,833	Felsic Rhyolite qtz eyes	Rock	363,20	65,70	47,30	106,30	13,29	54,60	11,59	2,28	11,76	1,96	11,81	2,29	6,63	0,98	5,98	0,96
98118	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453355,1688	5367627,494	Felsic Rhyolite qtz eyes	Rock	406,70	78,50	54,90	126,30	15,97	65,50	13,79	2,86	14,29	2,45	14,66	2,90	7,95	1,19	7,36	1,16
98119	1e	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453056,8991	5367919,985	Felsic Rhyolite qtz eyes	Rock	378,50	72,20	40,90	91,00	11,81	47,50	10,52	2,24	12,19	2,09	12,73	2,55	7,12	1,08	6,77	1,06
98120	3d	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455195,8131	5366794,367	Dark massive mafic chloritised	Rock	246,20	40,60	37,00	80,40	9,54	36,60	7,15	1,02	7,00	1,17	6,72	1,46	4,06	0,63	3,93	0,66
98121	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455402,9524	5367425,569	granophyric texture	Rock	415,40	49,70	45,90	103,90	13,27	53,10	11,54	2,41	10,82	1,71	9,95	1,88	5,32	0,83	5,10	0,84
98122	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455574,031	5367734,586	dark grenu granophyre	Rock	551,10	116,00	45,60	110,40	14,70	65,30	16,23	3,95	18,82	3,30	20,56	4,34	12,46	1,91	12,05	1,98
98123	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455650,8513	5367763,445	Felsic qtz eyes aphanitic to grenu	Rock	453,00	117,10	41,70	100,30	13,96	63,90	16,56	3,48	19,79	3,48	21,73	4,49	12,61	1,97	12,11	2,04
98124	3f	3f	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455458,3548	5367897,795	Felsic qtz eyes aphanitic to grenu	Rock	343,10	134,80	56,00	128,90	17,19	75,10	18,36	3,00	21,47	3,81	23,95	5,04	14,36	2,24	13,83	2,19
98125	3f	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455374,4374	5367896,9	Felsic qtz eyes aphanitic to grenu	Rock	366,30	79,50	54,30	122,20	15,40	62,80	13,63	2,64	13,55	2,25	13,63	2,63	7,31	1,11	6,66	1,04
98126	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455361,6176	5367865,648	Lapilli tuff	Rock	415,60	62,70	50,90	113,70	14,18	58,50	12,12	2,63	12,06	1,98	11,57	2,32	6,45	1,00	6,37	1,01
98127	3e2	1e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455335,9913	5367850,402	Lapilli tuff	Rock	407,60	70,30	52,00	116,30	14,89	61,60	12,75	3,68	13,19	2,13	12,88	2,53	6,81	1,06	6,61	1,06
98128	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454419,6488	5366605,364	Very altered rock mineralised	Rock	243,80	30,30	25,50	56,10	7,27	30,50	6,49	1,62	6,23	0,94	5,40	1,12	3,08	0,50	3,19	0,55
98129	2e	2e	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	453675,0212	5366780,371	Rhyolite silicified seritised and potassic alteration	Rock	184,30	84,10	46,40	106,40	13,21	53,70	11,59	1,27	12,74	2,34	14,51	2,98	8,34	1,28	7,85	1,23
98130	3c	3cd	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	455520,7951	5366642,623	Felsic rock no qtz eyes	Rock	227,70	41,80	30,50	65,70	8,12	33,40	7,04	1,39	7,32	1,18	7,08	1,41	4,26	0,63	3,98	0,66
98131	3c	3bc	GO2014-02	VAN14002802	28-Aug-2014	02-oct-14	17	454565,455	5366741,251	Dark felsic rock qtz eyes	Rock	210,60	48,40	11,80	29,30	4,22	20,00	5,43	1,70	7,16	1,28	8,36	1,77	5,13	0,78	5,05	0,83

Appendix 4: Preparation and lithogeochemical analysis AcmeLabs® *

For the analyses, Gold Crossing use AcmeLabs® recognized as one of the leading geochemical and assaying laboratories to geologists and stock exchanges world wide.

The analyses are composed of two stages: the preparation of the analyses and the lithogeochemical analyses.

Preparation of the samples: (Code R200–1000) Crush 1 kg to 80% passing 10 mesh, split 1000g and pulverize to 85% passing 200 mesh

Lithogeochemical analyses: Whole rock Major and Minor Elements by ICP-ES (Group 4A)/ ICP-MS (Group 4B)

Group 4A: Basic suite (21 parameters)

A classical whole rock analysis for 11 major oxides and several minor elements by ICP-emission spectrometry following a lithium borate fusion and dilute acid digestion of a 0.2g sample pulp.

Package includes loss on ignition (LOI) by sintering at 1000°C and Leco analysis for total carbon and sulphur.

Basic	Group 4A	
Suite	Detection	Limit
SiO2	0,01	%
Al2O3	0,01	%
Fe2O3	0,04	%
CaO	0,01	%
MgO	0,01	%
Na2O	0,01	%
K2O	0,01	%
MnO	0,01	%
TiO2	0,01	%
P2O5	0,01	%
Cr2O3	0,002	%
Ba	5	ppm
Sc	1	ppm
LOI	0,01	%
C	0,02	%
S	0,02	%

Note: Highlighted elements by Aqua Regia

Trace elements by ICP-MS

Group 4B: Basic Suite (45 elements)

Two separate ICP-MS analyses to optimize determination of a 45-element suite of trace elements.

Rare earth elements and refractory elements report from lithium borate decomposition (same as that used in group Whole rock Major and Minor Elements) to give total abundances.

Precious metals, base metals and their associated pathfinder elements (highlighted in adjacent element table) are generated from an aqua regia digestion.
Requires a 5g sample pulp.

Basic Suite	Group 4B Detection	Limit	Basic Suite	Group 4B Detection	Limit
Au	0,5	ppm	**Ta**	0,1	ppm
Ag	0,1	ppm	**Th**	0,2	ppm
As	0,5	ppm	**Tl**	0,1	ppm
Ba	1	ppm	**U**	0,1	ppm
Be	1	ppm	**V**	8	ppm
Bi	0,1	ppm	**W**	0,5	ppm
Cd	0,1	ppm	**Y**	0,1	ppm
Co	0,2	ppm	**Zn**	1	ppm
Cs	0,1	ppm	**Zr**	0,1	ppm
Cu	0,1	ppm	**La**	0,1	ppm
Ga	0,5	ppm	**Ce**	0,1	ppm
Hf	0,1	ppm	**Pr**	0,02	ppm
Hg	0,01	ppm	**Nd**	0,3	ppm
Mo	0,1	ppm	**Sm**	0,05	ppm
Nb	0,1	ppm	**Eu**	0,02	ppm
Ni	0,1	ppm	**Gd**	0,05	ppm
Pb	0,1	ppm	**Tb**	0,01	ppm
Rb	0,1	ppm	**Dy**	0,05	ppm
Sb	0,1	ppm	**Ho**	0,02	ppm
Se	0,5	ppm	**Er**	0,03	ppm
Sn	2	ppm	**Tm**	0,01	ppm
Sr	0,5	ppm	**Yb**	0,05	ppm
			Lu	0,01	ppm

Note: Highlighted elements by Aqua Regia

Type	STD SO-18	Certified Value	Acceptability	STD SO-18	Certified Value	Acceptability	STD GS311-1	Certified Value	Acceptability	STD GS910-4	Certified Value	Acceptability	STD DS10	Certified Value	Acceptability
Elements															
SiO2 pct	58,17	58,47	Acceptable	58,08	58,47	Acceptable									
Al2O3 pct	14,1	14,23	Acceptable	14,18	14,23	Acceptable									
Fe2O3 pct	7,57	7,67	Acceptable	7,57	7,67	Acceptable									
MgO pct	3,4	3,35	Acceptable	3,4	3,35	Acceptable									
CaO pct	6,33	6,42	Acceptable	6,32	6,42	Acceptable									
Na2O pct	3,66	3,71	Acceptable	3,69	3,71	Acceptable									
K2O pct	2,14	2,17	Acceptable	2,14	2,17	Acceptable									
TiO2 pct	0,697	0,69	Acceptable	0,692	0,69	Acceptable									
P2O5 pct	0,783	0,83	Refuse	0,791	0,83	Acceptable									
MnO pct	0,4	0,39	Acceptable	0,4	0,39	Acceptable									
Cr2O3 pct	0,554	0,55	Acceptable	0,553	0,55	Acceptable									
Ni ppm	48	44	Refuse	44	44	Refuse									
Sc ppm	24	25	Acceptable	24	25	Acceptable									
LOI pct	1,9	1,9	Acceptable	1,9	1,9	Acceptable									
Ba ppm	520	515	Acceptable	512	515	Acceptable									
Be ppm	<1	1	Not applicable	2	1	Refuse									
Co ppm	26,3	26	Acceptable	26,9	26	Acceptable									
Cs ppm	6,9	7,1	Acceptable	6,9	7,1	Acceptable									
Ga ppm	16,7	17,6	Acceptable	15,9	17,6	Refuse									
Hf ppm	9,7	9,8	Acceptable	9,6	9,8	Acceptable									
Nb ppm	20,4	20,9	Acceptable	20,2	20,9	Acceptable									
Rb ppm	28,1	28,7	Acceptable	27,4	28,7	Acceptable									
Sn ppm	15	15	Acceptable	15	15	Acceptable									
Sr ppm	413,8	407,4	Acceptable	413,6	407,4	Acceptable									
Ta ppm	7,3	7,4	Acceptable	7	7,4	Acceptable									
Th ppm	10,6	9,9	Acceptable	9,8	9,9	Acceptable									
U ppm	15,9	16,4	Acceptable	15,4	16,4	Acceptable									
V ppm	206	200	Acceptable	202	200	Acceptable									
W ppm	13,7	15,1	Refuse	14,9	15,1	Acceptable									
Zr ppm	302,6	280	Acceptable	300,8	280	Acceptable									
Y ppm	32,6	33	Acceptable	31,7	33	Acceptable									
La ppm	13,6	12,3	Acceptable	12,9	12,3	Acceptable									
Ce ppm	27,6	27,1	Acceptable	28,1	27,1	Acceptable									
Pr ppm	3,46	3,45	Acceptable	3,4	3,45	Acceptable									
Nd ppm	13,9	15,4	Refuse	13,8	15,4	Refuse									
Sm ppm	2,9	3,4	Refuse	2,94	3,4	Refuse									
Eu ppm	0,9	0,89	Acceptable	0,87	0,89	Acceptable									
Gd ppm	2,97	2,93	Acceptable	2,97	2,93	Acceptable									
Tb ppm	0,48	0,53	Refuse	0,49	0,53	Acceptable									
Dy ppm	3,03	3	Acceptable	3,04	3	Acceptable									
Ho ppm	0,64	0,62	Acceptable	0,61	0,62	Acceptable									
Er ppm	1,76	1,84	Acceptable	1,78	1,84	Acceptable									
Tm ppm	0,27	0,29	Acceptable	0,27	0,29	Acceptable									
Yb ppm	1,65	1,79	Acceptable	1,71	1,79	Acceptable									
Lu ppm	0,28	0,27	Acceptable	0,28	0,27	Acceptable									
Elements															
TOT/C pct							[illegible]	1,02	Acceptable	2,59	2,65	Acceptable			
TOT/S pct							[illegible]	2,35	Acceptable	8,25	8,27	Acceptable			
Elements															
Mo ppm													13,7	14,69	Acceptable
Cu ppm													148,4	154,61	Acceptable
Pb ppm													153,2	150,55	Acceptable
Zn ppm													353	370	Acceptable
Ni ppm													75,8	74,6	Acceptable
As ppm													46,6	43,7	Acceptable
Cd ppm													2,7	2,49	Acceptable
Sb ppm													8,5	8,23	Acceptable
Bi ppm													11,7	11,65	Acceptable
Ag ppm													1,7	2,02	Refuse
Au ppb													62,5		Not applicable
Hg ppm													0,27	0,3	Refuse
Tl ppm													5,1	5,1	Acceptable
Se ppm													2,2	2,3	Acceptable

STD = Standard

Quality Control of analysis by AcmeLabs®

Resume

This internship was an immersion as an exploration geologist at Gold Crossing Ltd. This internship has permitted the realization of an exploration project near Timmins - Ontario. A study of mineralization and structures found in the « Southwestern part of the Abitibi Greenstone Belt » (SAGB) was performed. The research has been used to define rock assemblages and structures favorable for the discovery of a deposit.
This study is linked to previous work on old VMS and gold orogenic type of deposits found in the SAGB. This way, there is a more precise idea of the potential of the Turnbull area and it was used to further expand to achieve target findings. Subsequently, the previous analyses were compiled and a geographical verification and studies of the data was done. Once the verification was complete, a preliminary geological map was created, followed by field observations and new analysis, which confirmed the presence of a favorable VMS deposit environment.

Résumé

Ce stage s'est traduit par une immersion en tant que géologue d'exploration, dans l'entreprise Gold Crossing et sur un site à proximité de Timmins - Ontario. Une étude de la minéralisation et des structures rencontrées dans le « Southwestern part of the Abitibi Greenstone Belt » (SAGB) a été réalisée. Les recherches effectuées ont été utilisées afin de définir les assemblages, roches et structures favorables à la découverte d'un gisement.
Cette étude est liée à une bibliographie poussée sur d'anciens gisements rencontrés dans le SAGB de type VMS et or orogénique. Par la suite, la vérification et l'étude d'anciens travaux ont été effectuées dans la zone d'étude appelée Turnbull. Une carte préliminaire fut produite grâce à ces analyses, puis une confirmation par des observations de terrains et de nouvelles analyses ont confirmé la présence d'un environnement favorable pour un gisement de type VMS.