GEOCHEMICAL AND GEOPHYSICAL REPORT

on the claims:

STEWARD 1-32 (YC23698 - YC23729)
TIM 1- 8 (YC21932 - YC21939)
SIM 13-24 (YC23744 - YC23755)
Stewart 33-82 (YC30507 - YC30518

COMPRISING THE THISTLE PROPERTY

DAWSON MINING DISTRICT
N.T.S.: 115 O/3

Centred on: 588000 E, 7010000 N, (NAD 83m, Zone 7)

Owned by:
Shawn Ryan
P.O. Box 213
Dawson City, Yukon Territory
Canada, YOB 1GO

Prepared by:
J. Greg Dawson, MSc Pgeo.

Copper Ridge Explorations Inc.
500 – 625 Howe Street
Vancouver, B.C.
V6C 2T6

November , 2005

SUMMARY AND RECOMMENDATIONS

During the periods May 18 to May 22 and June 17 to June 26 , 2005, IP geophysical surveying, geochemical soil sampling and reconnaissance geological mapping were conducted on the STEWARD / STEWART / TIM and SIM claim blocks. The purpose of the program was to further investigate a multi-element soil geochemical anomaly defined by the 2004 program. The total cost of the program was $ 42,660.

The 2005 soil sampling program failed to further define or even confirm the soil anomaly discovered in 2004. Copper values ranged from 15.4 to 264.8 ppm with an average of 51 ppm and a standard deviation of 36 ppm. In contrast, the values from the 2004 work ranged from 13.2 to 381 ppm Cu with an average 90.2 ppm and a standard deviation of 72.6 ppm.

A proposed explanation for the lower results is that the 2005 samples were collected by mattock while the 2004 samples were collected by auger. It is possible therefore that the 2005 samples were collected at a consistently shallower depth than the 2004 samples. While every effort was made during the 2005 program to collect the samples from the lower B horizon, it is possible that the shallower samples were contaminated and diluted by a component of wind emplaced loess material.

Prospecting returned no anomalous rock samples. Rock exposure, however, is very limited.
Areas of moderate to high chargeability were identified on the lines L 1 and L 2, coincident with both the previously defined magnetic and soil geochemical anomalies. On L 1, a 200 m wide zone of weak to moderate chargeability is modelled to occur centred on station 250 W at a depth of about 175 m below surface. Two zones of moderate to high chargeability are modelled occur on line L 2. The first is a 150 m wide zone of moderate chargeability centred at station 300 east at a depth of about 150 m below surface. The second is a zone of strong chargeability centred at 925 E at a depth of about 125 m below surface.

Further work is recommended on the Thistle property to investigate the cause of the discrepancy between the results of the 2004 and 2005 soil sampling and to investigate the source of the IP anomalies defined on lines L 1 and L2. The first phase of this program should consist of auger soil sampling in the area of lines L 1 and L 2. If this work confirms and more clearly defines the Copper Wall soil anomaly, trenching with a light helicopter portable backhoe should be completed over the areas where this anomaly is coincident with IP anomalies.

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1. INTRODUCTION

During the periods May 18 to May 22 and June 17 to June 26 , 2005, IP geophysical surveying, geochemical soil sampling and reconnaissance geological mapping were conducted on the STEWARD / STEWART / TIM and SIM claim blocks. The purpose of the program was to further investigate a multi-element soil geochemical anomaly defined by the 2004 program.

This report describes the work carried out by Copper Ridge Exploration personnel and by Aurora Geosciences. The author refers the reader to previous reports listed in the reference section for additional information.

1.1 Location and Access

The Thistle Property is centred at UTM coordinates 588000 E, 7010000 N, (NAD 83m, Zone 7), approximately 76 km due south of Dawson City on NTS map sheet 115 O/6 (Figure 1).

The 2005 field work on the Thistle property was based out of a camp on Quartz Creek, about 25 km southeast of Dawson City. Good road access is provided to the Quartz Creek camp either via the Bonanza Creek or Bunker Creek roads. From the Quartz creek camp, access to the Thistle property was by helicopter.

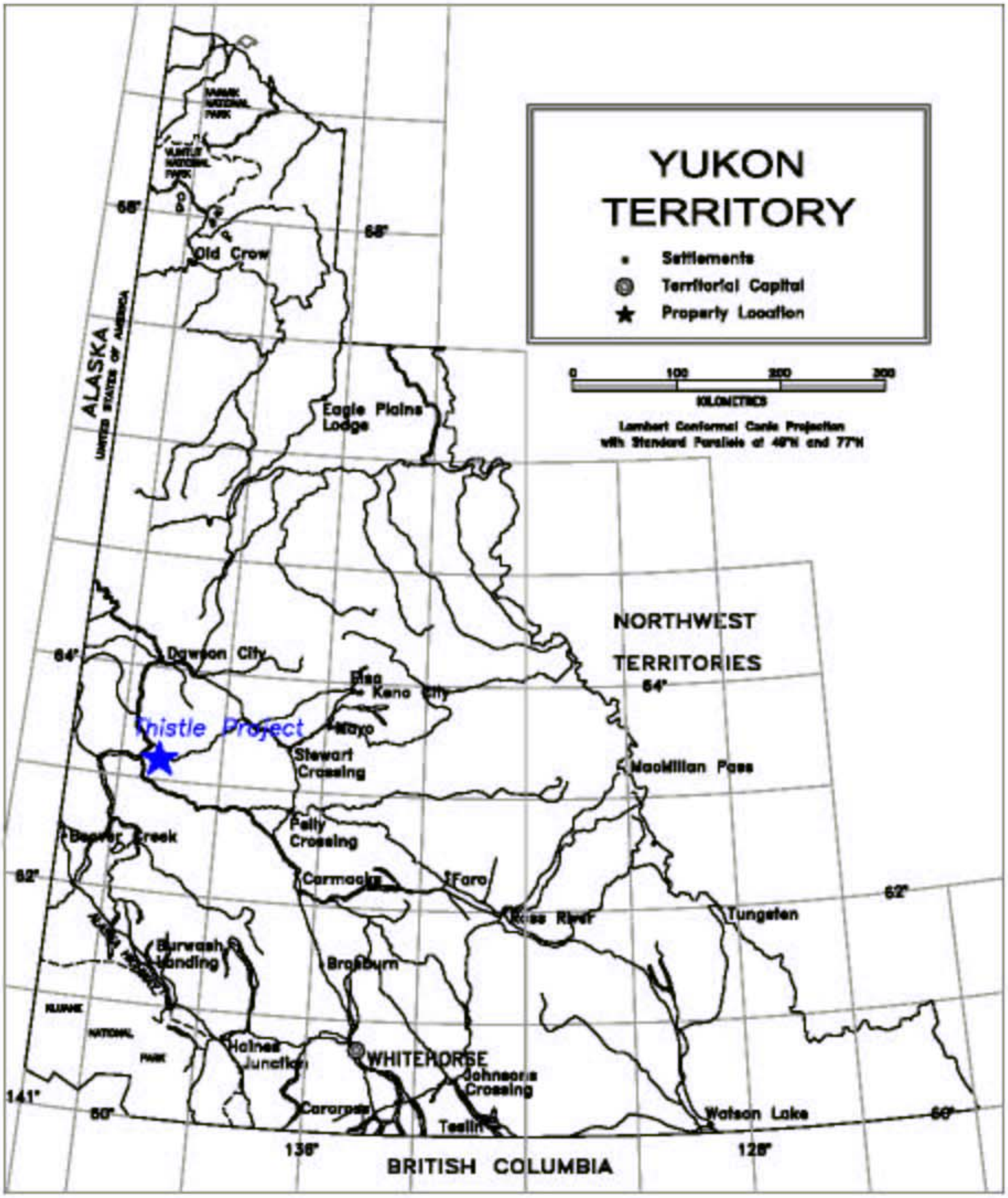
1.2 Claim Status

The property consists of 110 contiguous quartz claims as detailed in Table 1 and shown on Figure 2. The claims were staked in accordance with the Quartz Mining Act, and occur on Quartz Claim Sheet 115 O/3 within the Dawson Mining District. All the claims are 100% owned by Shawn Ryan of Dawson City, Yukon Territory. All of the claims are subject to an option to purchase agreement between the current owner Shawn Ryan and Copper Ridge Explorations Inc.

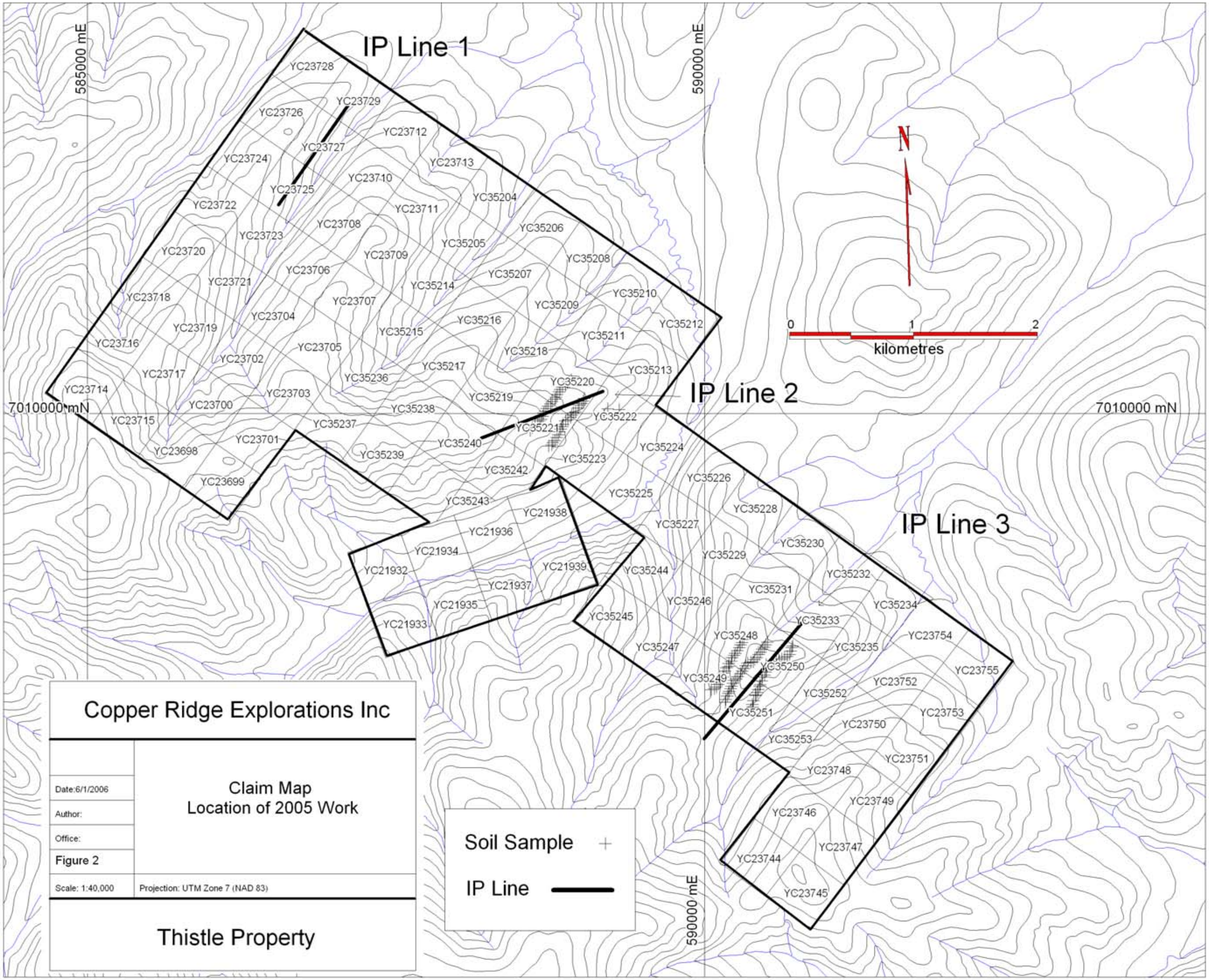
TABLE 1: Thistle Property Claim Status

Claim Name & No.	Grant Number	Date Recorded	Expiry Date*
Steward 1- 6	YC23698 - YC23703	April 14, 2003	April 14, 2010
Steward 7 -16	YC23704 - YC23713	April 14, 2003	April 14 2012
Steward 18 - 26	YC23715 - YC23723	April 14, 2003	April 14, 2010
Steward 27 - 32	YC23724 - YC23729	April 14, 2003	April 14, 2012
Stewart 33 - 60	YC35204 - YC35231	October 6, 2004	October 6, 2009
Stewart 61 - 64	YC35232 - YC35235	October 6, 2004	October 6, 2007
Stewart 65 - 82	YC35236 - YC35253	October 6, 2004	October 6, 2009
Sim 13 - 20	YC23744 - YC23751	October 14, 2003	October 14, 2011
Sim 21 - 24	YC23752 - YC23755	October 14, 2003	October 14, 2009
Tim 1 - 8	YC24932 - YC24939	October 18, 2002	October 18, 2009

* subject to approval of 2005 assessment work and submission of this report.



Copper Ridge Explorations Inc.	THISTLE PROJECT	
PROPERTY LOCATION MAP	MINING DISTRICT: DAWSON	
	SCALE 1: 6,000,000	NTS: N/A
	DATUM: N/A	DRAWN BY: DH
AURORA GEOSCIENCES LTD.	DATE: 17 October 2005	FIGURE: 1



IP Line 1
IP Line 2
IP Line 3
585000 mE
590000 mE
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2
kilometres
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YC35224
YC23698
YC35239
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YC23747
YC23744
YC23745
Soil Sample
IP Line
Copper Ridge Explorations Inc
Date:6/1/2006
Author:
Office:
Figure 2
Claim Map
Location of 2005 Work
Scale: 1:40,000
Projection: UTM Zone 7 (NAD 83)
Thistle Property

1.3 Topography, Vegetation and Climate

The relief on the Thistle property is 565 metres, ranging from 457 metres above sea level in the creek beds draining into Stewart River on the north east edge of the property to 1020 metres on top of the northeast trending ridges in the west corner of the property. Topography comprises un-glaciated terrain with typically moderate slopes with more gentle grades towards the tops of mountains. Local steep terrain is observed along creek cuts. The claim block covers several northeast trending broad ridges with incised creeks in between draining into the Stewart River.

Rock outcrops are rare (approximately 5% of property), often small (averaging less than 5 m) and largely restricted to ridges, local cliffs and creek bottoms. Colluvium veneer is the most common cover on the property, averaging 1-2 m thick while the colluvium blanket material averages less than 3 m thick. Colluvium conforms to bedrock topography and is composed of diamicton, rubble, and organic-rich silt and sand derived from bedrock sources by a variety of erosional processes. A thin veneer of loess material lies on top of the colluvium.

Vegetation in the valley bottoms consists of alder, balsam, fir and white and black spruce. Local poplar groves are occur on some slopes with 'buckbrush' (alder), dwarf willow, alpine plants and moss in higher areas of thin tree cover. Vegetation is generally more abundant on east and south facing slopes. The property is below tree-line which in this area is approximately 1200 m.

Climate is northern interior continental with moderate to low precipitation of some 250 to 300 mm annually. Temperature ranges from 10-25°C in the summers down to -15 to -50°C in the winters. Permafrost is discontinuous and often found on north and steeper east facing slopes.

2. HISTORY

There is no record of previous work done on the claimed area. Previous work done in the vicinity of the Thistle claim block can be summarized as follows (from Zuran 2004):

~1901-1904 The 'Burian' mineral occurrence (115O-009) - probably staked on quartz veins. Claims were staked frequently near the mining recording office at Stewart River, including Great Northern cl (4627) in Jan/1901, 4.8 km up the Stewart River; Victoria cl (4636) in Jan/1901; Alice cl (4805) in Mar/1902, on the southeast side of Henderson Creek; Dauphin by J. Donkin, 2.4 km below Henderson Creek (trenched in 1902); and, Reliance cl (4852) in Mar/1904 near the Great Northern. The mineral occurrence is located 8 km to the northwest of the STEWARD claim block across the Stewart River. Taken from Gordey and Makepeace, 1999 (CD).

1910 The 'Three Sisters' mineral occurrence (115O-007) The area is underlain by Palaeozoic? metasedimentary rocks and gneissic granite. Claims were probably staked on quartz veins. Small outcrops of granodiorite have also been mapped nearby. The mineral occurrence is located approximately 2.5 km to the south of the claim block. Taken from Gordey and Makepeace, 1999 (CD).

1917 The 'Tenderfoot' mineral occurrence (115O-008) - probably staked on quartz veins. The mineral occurrence is located approximately 3 kilometres north-northeast of the claim block on the north side of the Stewart River. Taken from Gordey and Makepeace, 1999 (CD).

1935 H.S. Bostock starting regional 1;250,000 scale geological mapping in 1935 (Bostock, 1942).

1970's Regional exploration related to the discovery of the Burmeister/Lucky Joe mineral occurrence (115O-051) ~36km to the north-northwest for copper-molybdenum mineralization likely occurred in the area of the STEWARD claims.

2002 Geological mapping at 1:100,000 scale as part of a Geological Survey of Canada NATMAP project (Ryan et al, 2002). This is an ongoing project and a final GSC regional geology map is expected to be published in 2004/2005.

2003 Kennecott Canada Exploration Inc. conducted a reconnaissance style multi-element geochemistry soil sampling survey on and adjacent the STEWARD claim block

Shawn Ryan (Yukon prospector) targeted the area utilizing recent low level airborne aeromagnetic survey, conducted jointly by the Geological Survey of Canada and the Yukon Geology Program. Ryan staked 32 claims in April, making up the STEWARD claim block. In October of 2004, 22 more claims comprising the TIM and SIM blocks were staked.

2004 In March of 2004, Copper Ridge Explorations optioned the Thistle Property from Shawn Ryan and funded a property wide soil sampling and prospecting program (see Zuran, 2004). This program defined a strong multi-element soil geochemical anomaly called the “Copper Wall” While the magnitude of the anomaly was not strong, the anomaly was quite consistent and was coincident the margin of a strong regional airborne magnetic anomaly.

3. REGIONAL GEOLOGY

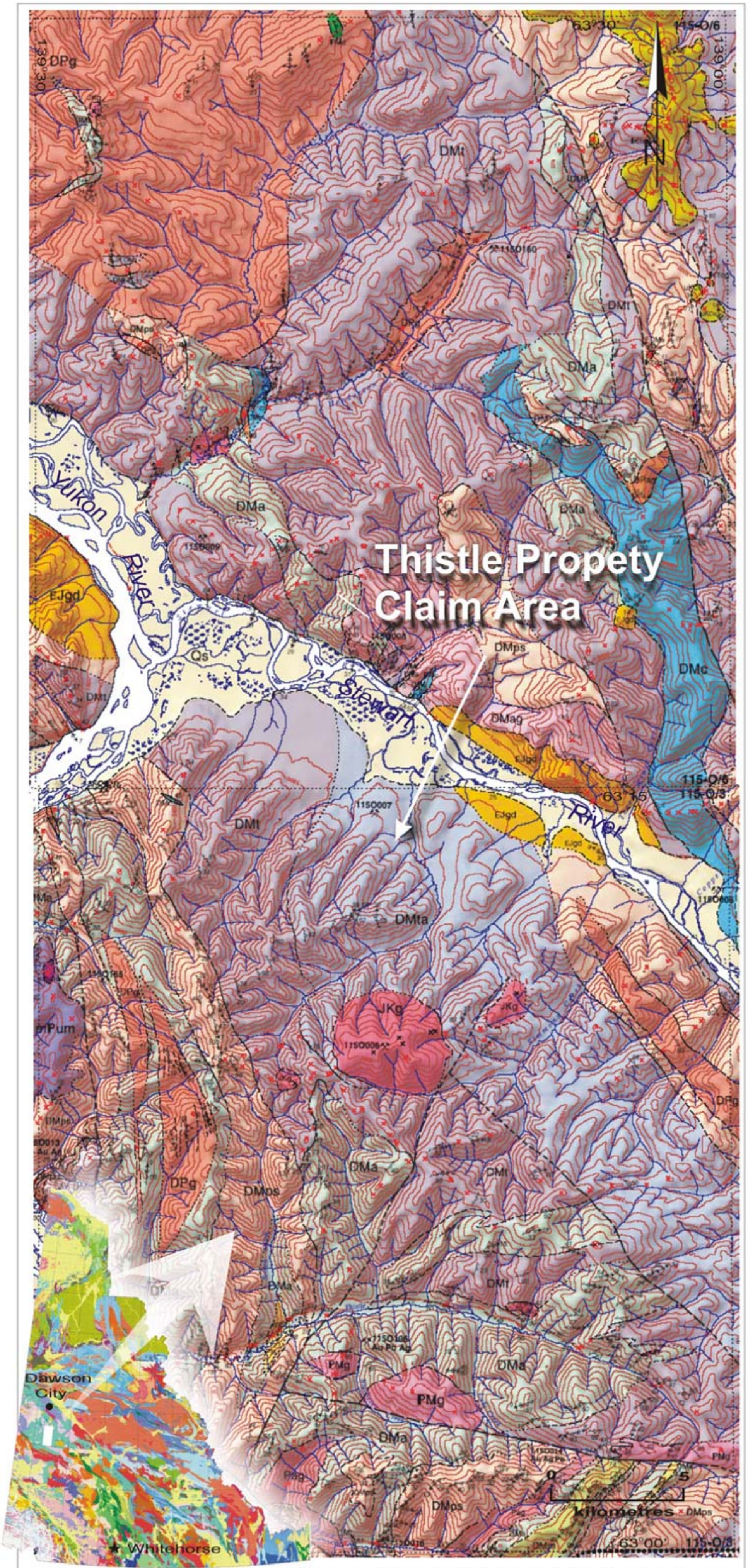
The following summary is taken from OF 4641; the author recommends reading Ryan and Gordey (2001a, 2002a,b) and Ryan et al. (2003) for further details.

The regional geology setting in the Stewart River area (NTS 115 N, O) includes: twice transposed accreted metamorphic rocks of the Yukon Tanana terrane and less abundant contact-related ultramafic rocks of the Slide Mt. terrane (uPum, uPums) - both Palaeozoic in age. These rocks are intruded by volumetrically less abundant younger plutonic rocks (Jurassic, Cretaceous, and Eocene; EJgd, JKg, Er); overlain by Upper Cretaceous volcanic rocks (uKCv); and local young cover of Lower Cretaceous conglomerate (lKTcg) and Quaternary fluvial silt, sand and gravel deposits (Qs) in the larger river systems.

Knowledge of the now called 'Yukon Tanana Terrane' has been revised since the 1970's. The base of this terrane are widespread Palaeozoic metasiliclastic rocks dominated by psammite and quartzite, with lesser pelites and rare conglomerate (DMq, DMcg, DMps). Later extensive meta-plutonic and meta-volcanic rocks represent two periods of activity: 1) an older arc, built upon the siliclastic foundation mentioned above - comprising predominantly Devono-Mississippian amphibolite (DMa) associated with coeval widespread tonalitic orthogneiss (DMt) that formed it's subvolcanic intrusive complex; and 2) a Permian arc built upon the previous, is represented by granitic orthogneiss (Pag) and coeval metavolcanics (PKs and possibly Pv). On going geochronologic data compilation of the region has sorted out former widespread meta-siliclastic and meta-plutonic rocks of Yukon Tanana terrane to be mid-Palaeozoic in age (DMq, DMcg, DMps) - formerly dated as late Proterozoic (e.g. Templeman-Kluit, 1974). Stratigraphically above and interfingering with these rocks are intermediate to mafic composition, intensely tectonized heterogeneneous layering and local vestiges of primary textures in amphibolite denoting parental volcanic rocks associated with local marble horizons (DMc).

Also part of the Yukon Tanana in the west near the Alaskan border, are the Permian low to medium grade muscovite-quartz and chlorite-quartz schist (PKs) - not shown in Figure 2. These rocks were correlated by Templemen-Kluit (1974) with the Klondike Schist (McConnell, 1905).

Regional structural fabric (foliation) primarily trends southeast to south-southeast. Rocks of the Yukon Tanana terrane are complex and poly-deformed with 3 phases described by J.J. Ryan et al (2004).



Yukon geology taken from OF 1999-1 (D), S. Gordey and A.J. Makepeace.
Regional geology taken from OF 4641, Ryan et al.

LEGEND

QUATERNARY

- **Qs** — *Fluvial silt, sand and gravel deposits*

EOCENE

- **Er** — *PORPHYRY: Smokey quartz and K-feldspar phyric rhyolite to rhyodacite stocks and dykes, and possible rare flows*

UPPER CRETACEOUS

- **uKcv** — *CARMACKS GROUP: rhyodacite and dacite, commonly biotite and hornblende phyric, dominated by lesser andesite and basalt; minor rhyolite*

LOWER CRETACEOUS

- **lKTcg** — *TANTALUS(?) FORMATION: clast-supported pebble to cobble conglomerate with clasts of vein quartz and foliated quartzite*

JURASSIC? OR CRETACEOUS

- **JKg** — *GRANITE: pink to grey, locally porphyritic, syenogranite to monzogranite plutons and dykes*

PALEOZOIC AND/OR MESOZOIC

- **PMg** — *FOLIATED GRANITE: deformed (foliated to gneissic), felsic to intermediate monzogranite, granodiorite and quartz monzonite*
- **PMd** — *GABBRO: foliated to unfoliated metagabbro (locally garnet-bearing); diabase, metabasite*

MID(?)- TO LATE PALEOZOIC

- **mPum / mPums** — *ULTRAMAFIC-GABBRO: foliated to unfoliated amphibolite facies metagabbro, metapyroxenite, serpentinite and talc-siderite schist; mPums, dominantly serpentinite*

PERMIAN

- **Pv** — *FOLIATED VOLCANIC: chlorite-altered weakly foliated intermediate to mafic aphanitic volcanic flows and tuffs, locally with clastic textures preserved*
- **PKs** — *KLONDIKE SCHIST: muscovite-chlorite-quartz-feldspar schist, chlorite schist, chlorite phyllonite; local cleaved lapilli tuff with preserved primary texture, probably derived from Pv*
- **Pag** — *AUGEN GNEISS (YOUNGER): K-feldspar augen granite; exhibits various states of strain including porphyroclastic straight gneiss*
- **Pfs** — *FELSIC SCHIST: quartz-sericite schist or metafelsite, possibly derived from felsic volcanic or hypabyssal intrusive rocks, e.g. rhyolite or quartz-feldspar porphyry*

DEVONIAN AND/OR PERMIAN

- **DPag** — *AUGEN GNEISS (UNDIVIDED): K-feldspar augen granite orthogneiss undivided; may include bodies of Devono-Mississippian and Permian age (i.e. DMag or Pag)*
- **DPg** — *FELSIC GNEISS (UNDIVIDED): pink to orange K-feldspar rich felsic orthogneiss; banded to layered; veined and/or segregated; commonly includes, or associated with, K-feldspar augen orthogneiss; may include bodies of Devono-Carboniferous and Permian age*

DEVONIAN TO MISSISSIPPIAN

- **DMNq / DMNl** — *NASINA ASSEMBLAGE: DMNq, fine-grained, dark-grey to black carbonaceous quartzite and metapelite; DMNl, marble*
- **DMag, DMg** — *AUGEN GNEISS (OLDER): mainly K-feldspar augen orthogneiss; DMg includes granite to granodiorite orthogneiss, opposite mouth of Reindeer Creek.*
- **DMta** — *Undivided GREY GNEISS / AMPHIBOLITE (DMt / DMa)*
- **DMt** — *GREY GNEISS: intermediate to mafic orthogneiss; generally grey; banded to layered; commonly veined; derived from intermediate granitoid (tonalite to diorite) sheets; usually interlayered with amphibolite schist and gneiss*
- **DMa** — *AMPHIBOLITE: amphibolite schist and gneiss; metabasite; probably derived from mafic to intermediate volcanic or volcaniclastic rocks; locally associated with psammite or interlayered with orthogneiss*
- **DMm** — *MAFIC SCHIST: biotite-hornblende+/-plagioclase+/-quartz metabasite?; generally associated with amphibolite; main locality on Thistle Mountain*
- **DMc** — *MARBLE: marble (metacarbonate) derived from pure to impure limestone; associated calc-silicate schist derived from calcareous metapelite*
- **DMps** — *QUARTZ-MICA SCHIST: undivided metasedimentary rocks dominated by metapsammite, semipelite and metapelite; commonly quartz-garnet-biotite-muscovite schist possibly derived from siliceous siltstone; commonly finely interlayered with garnet metapelite; commonly contains members of micaceous quartzite; rare conglomerate; grades locally to paragneiss*
- **DMcg** — *METACONGLOMERATE: pebble- to cobble-sized rounded clasts; mainly massive white vein quartz, but including some granitoid clasts (tonalite?); has an arkosic matrix; grades into quartzite; matrix supported*
- **DMq** — *QUARTZITE: banded to massive, grey to white quartzite; apparently clastic in origin, or in part, possibly derived from metachert*

NOTE: Relative ages of many units are unknown; superimposed hillshade may darken colours on map from those shown on legend above

COPPER RIDGE
EXPLORATIONS INC.

REGIONAL GEOLOGY

R. Zuran

Figure: 3

4. WORK COMPLETED FOR THIS REPORT

4.1 Exploration Program

The 2005 exploration program on the Thistle claim group consisted of IP surveying, soil sampling, prospecting and reconnaissance geological mapping. The intent of this work was to more precisely investigate and delineate a multi-element soil geochemical anomalies defined by the 2004 work (see Zuran, 2004). Line cutting work for the IP surveying was done by Ryanwood Exploration Inc, the IP surveying was done by Aurora Geosciences Ltd and helicopter support was provided by Prism Helicopters. Soil sampling and prospecting was done by Peter Cooper, Greg Dawson and Gerry Carlson of Copper Ridge Explorations Inc. Geological consultant Chris Ash spent 2 days on the property with the Copper Ridge personnel.

The line cutting was completed between the dates of May 15 and May 22, 2004, the IP was completed between the dates June 19 to June21 and the soil sampling and prospecting was completed between the dates June 7 and June 26.

The work was supported from a camp on Quartz Creek.

The total cost of the program was $42,660

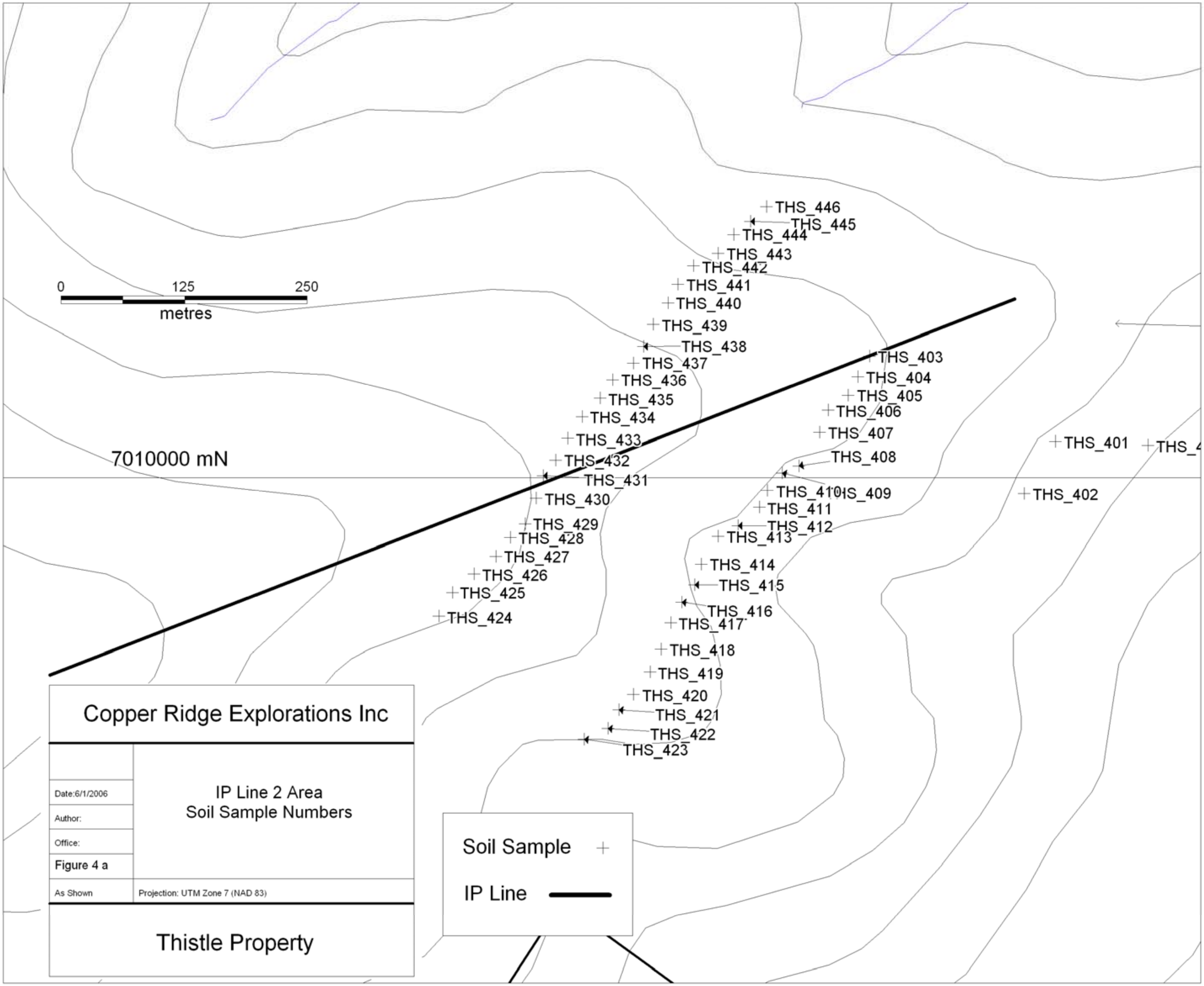
4.2 Geochemistry Survey

A total of 122 soil samples were collected on the Thistle property, focused entirely on the “Copper Wall” multi-element soil anomaly defined by the 2004 work. Samples THS 328 to THS 374 were taken from two lines at the site of IP Line 2 and samples THS 330 to THS 327 and THS 400 to THS 446 were taken from three lines around IP Line 3. Sample numbers and copper values are shown on Figures 4a to 4d. The lines in each area are around 200 m apart and sample spacing along the lines is 25 m.

Due to limitations on helicopter time, crews in 2005 were unable to complete infill sampling on the northwest extent of the copper wall anomaly at IP Line 1. Although this was the strongest copper anomaly defined in 2004, it was also the most consistent. It was felt therefore that a higher priority was to obtain more detail for the soil geochemical anomalies around IP lines L-2 and L-3.

Approximately 300-350 grams of soil size material was sampled from the B-soil horizon at a depth of generally between 15 and 30 centimetres. Samples were taken with a mattock and placed in a labelled Kraft double gusseted paper sample bag, and labelled orange flagging tape was used to mark the location of each sample site. The locations of soil sample sites were recorded in a field note book from a hand held GPS device (Garmin 12 channel receiver) with 15 metre accuracy. The UTM location data and sample number data was later downloaded from the GPS units to a field computer at the base camp.

All samples for geochemical analysis were sent to Acme Analytical Laboratories Ltd., 852 East Hastings Street, Vancouver, BC, V6A 1R6 (604 253 3158). Laboratory analysis procedure for samples collected is included with the analytical results in Appendix I. Soil sample descriptions and location data are given in Appendix I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THS_423
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THS_402
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125
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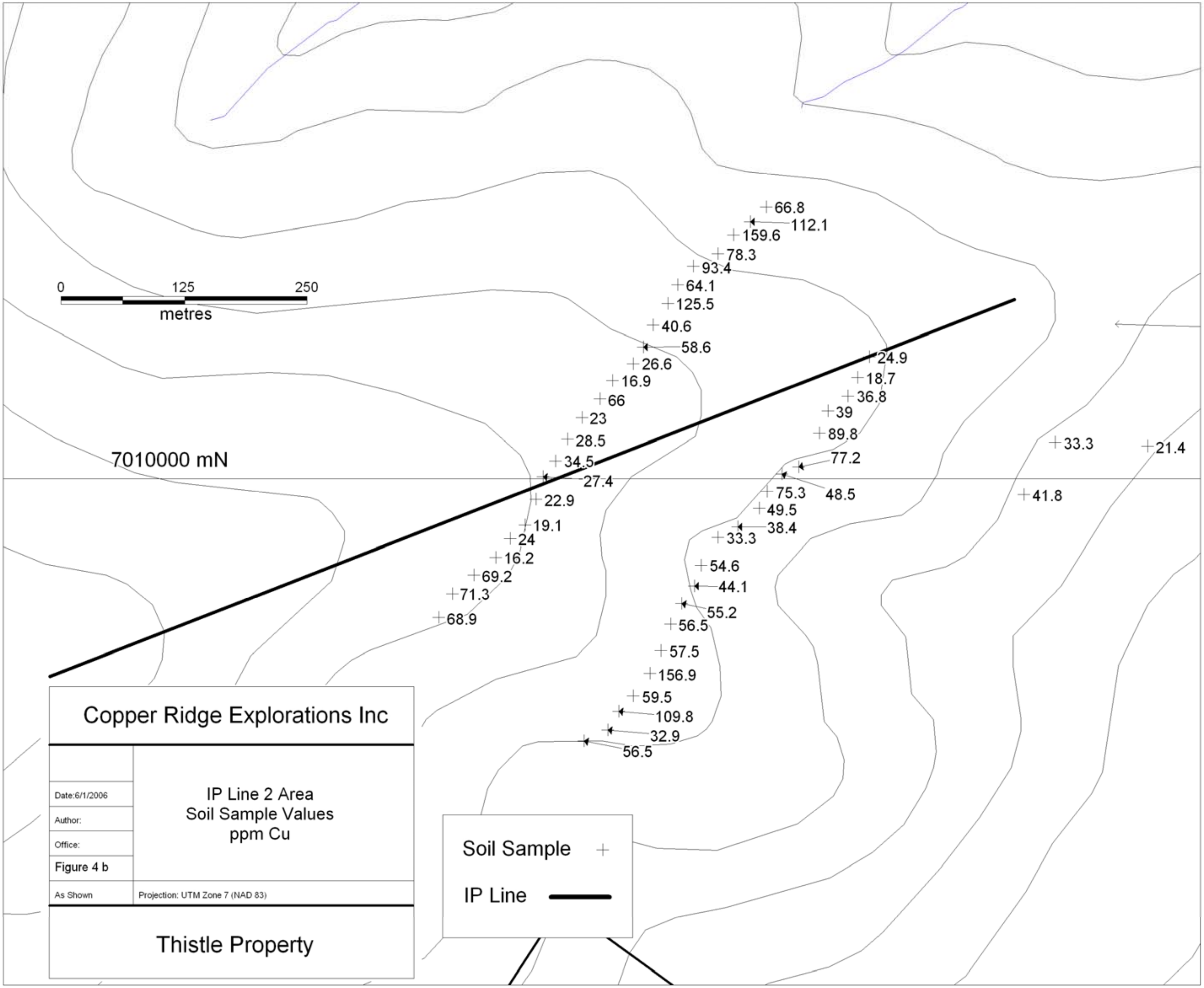
metres
7010000 mN
Copper Ridge Explorations Inc
Date:6/1/2006
Author:
Office:
Figure 4 a
As Shown
IP Line 2 Area
Soil Sample Numbers
Projection: UTM Zone 7 (NAD 83)
Thistle Property
Soil Sample
IP Line



Copper Ridge Explorations Inc

Date:6/1/2006

Author:

Office:

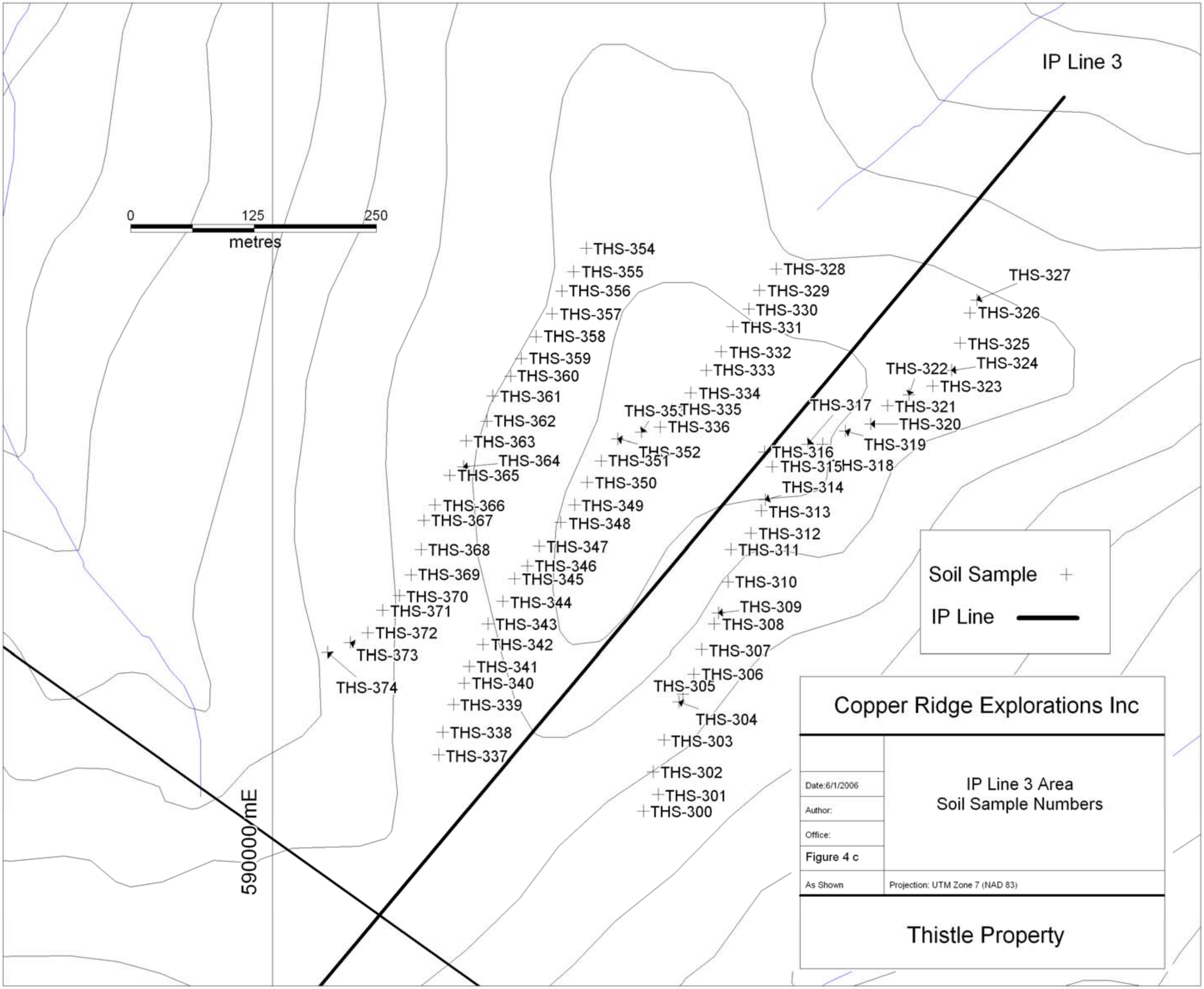
Figure 4 b

IP Line 2 Area
Soil Sample Values
ppm Cu

As Shown

Projection: UTM Zone 7 (NAD 83)

Thistle Property


IP Line 3
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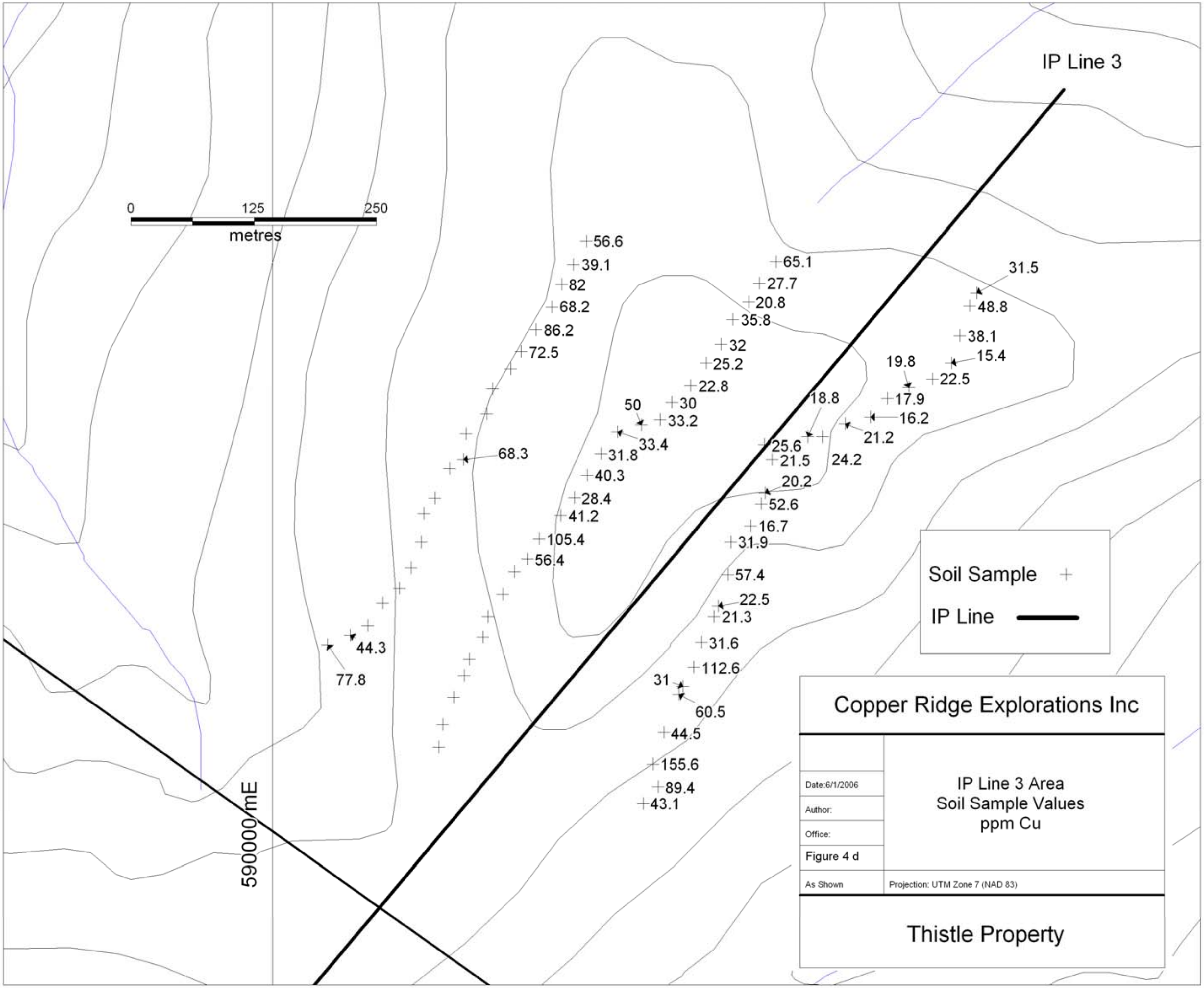
THS-314
THS-313
THS-312
THS-311
THS-310
THS-309
THS-308
THS-307
THS-306
THS-305
THS-304
THS-303
THS-302
THS-301
THS-300
590000 mE
Soil Sample
IP Line
Copper Ridge Explorations Inc
Date:6/1/2006
Author:
Office:
Figure 4 c
As Shown
IP Line 3 Area
Soil Sample Numbers
Projection: UTM Zone 7 (NAD 83)
Thistle Property



IP Line 3
0
125
250
metres
590000 mE
56.6
39.1
82
68.2
86.2
72.5
68.3
44.3
77.8
65.1
27.7
20.8
35.8
32
25.2
22.8
30
50
33.2
33.4
31.8
40.3
28.4
41.2
105.4
56.4
31.5
48.8
38.1
15.4
19.8
22.5
17.9
16.2
18.8
21.2
25.6
21.5
24.2
20.2
52.6
16.7
31.9
57.4
22.5
21.3
31.6
112.6
31
60.5
44.5
155.6
89.4
43.1
Soil Sample
IP Line
Copper Ridge Explorations Inc
Date:6/1/2006
Author:
Office:
Figure 4 d
As Shown
IP Line 3 Area
Soil Sample Values
ppm Cu
Projection: UTM Zone 7 (NAD 83)
Thistle Property

4.3 IP Survey

Three IP lines were completed on the property and are labelled, form the northwest to the southeast, as L I, L 2 and L 3. L 1 measured 1.0 kilometres, L 2 measured 1.1 kilometres and L 3 measured 1.25 kilometres. The IP lines were designed to cross the transition from high magnetic response to low magnetic response in the area of the “Copper Wall” multi-element soil geochemical anomalies. The location of the lines is shown on Figure 2. Survey procedures and parameters are detailed in the field report completed by Aurora Geosciences and included as Appendix III.

4.4 Prospecting and Reconnaissance Mapping.

A total of about 4 man days were spent prospecting and reconnaissance mapping the property. Outcrop is very scarce and only one rock sample was collected.

4.5 Results

<u>Soils</u>

The 2005 soil sampling program failed to further define or even confirm the soil anomaly discovered in 2004. This was true for all elements, but the following discussion will be restricted to the copper results. Copper values ranged from 15.4 to 264.8 ppm with an average of 51 ppm and a standard deviation of 36 ppm. In contrast, the values from the 2004 work ranged from 13.2 to 381 ppm Cu with an average 90.2 ppm and a standard deviation of 72.6 ppm. Figure 5 shows a bubble plot for copper for the combined 2004 and 2005 results.

The reason for the failure of the 2005 sampling program to confirm the consistently anomalous results from 2004 is unclear. The same laboratory and the same analytical technique was used for both years. The area of the 2004 anomaly was burned over completely after the sampling was completed, but it is unknown if this would affect the metal values in the soil.

A likely explanation is that the 2005 samples collected by mattock were collected at a consistently shallower depth than the 2004 samples collected by auger. While every effort was made during the 2005 program to collect the samples from the lower B horizon, it is possible that the shallower samples were contaminated and diluted by a component of wind emplaced loess material.

<u>Prospecting and Reconnaissance Mapping</u>

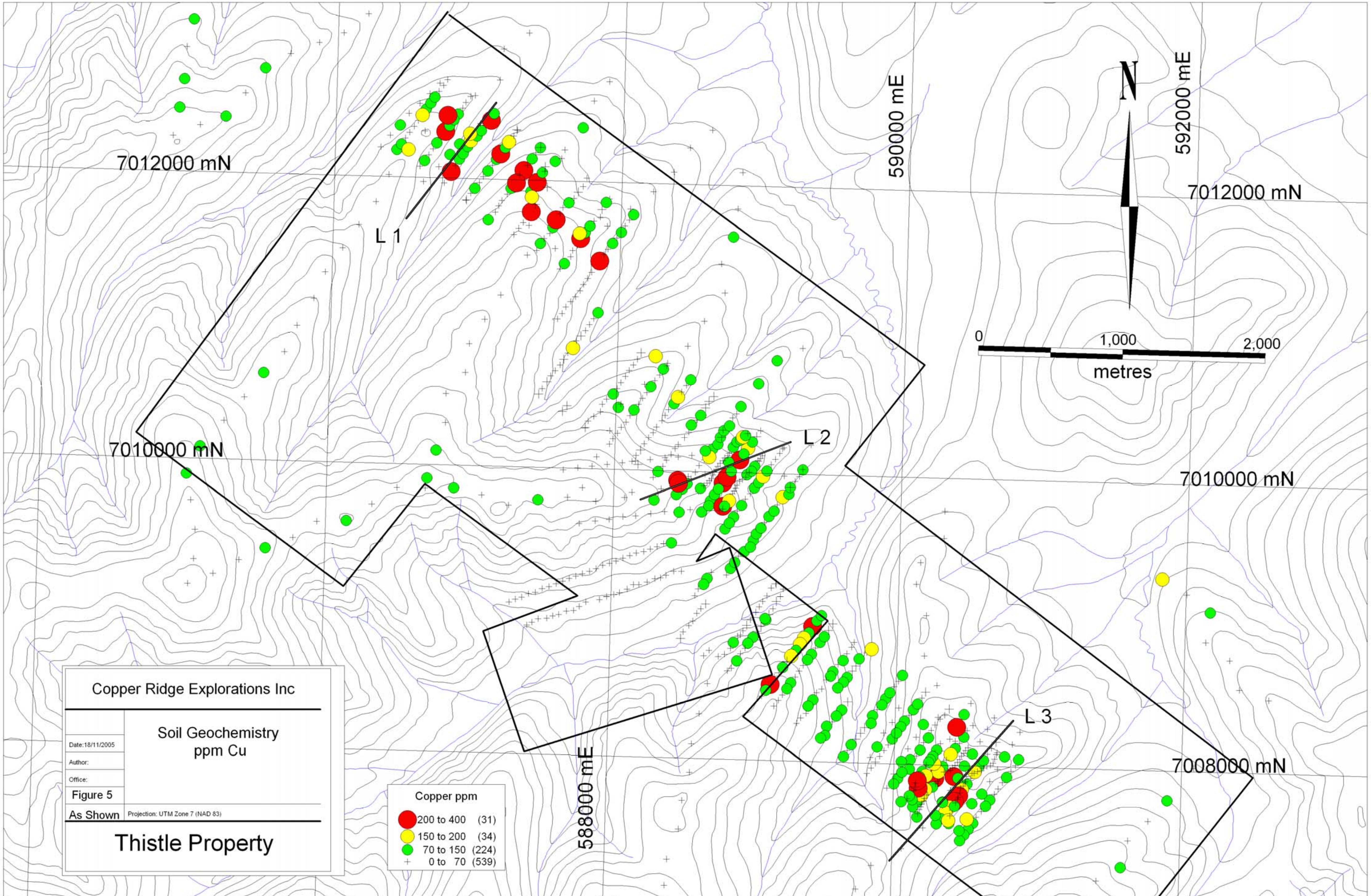
Outcrop on the Thistle property is scarce and is confined mostly to small isolated exposures along ridges. Inspection of what outcrop could be found, of local float boulders and of rock chips from soil sample sites basically confirmed the geology as shown on the regional map. A roughly northwest trending metasedimentary unit consisting dominantly of a fine to medium grained quartz-feldspar +/- biotite schist is bounded to the southeast by a fine to medium grained amphibolite unit. This setting appears to be reflected well in the airborne magnetic survey, which shows a strongly magnetic northwest trending body (the amphibolite) bounded to the northeast by a significantly less magnetic body (the metasediment).

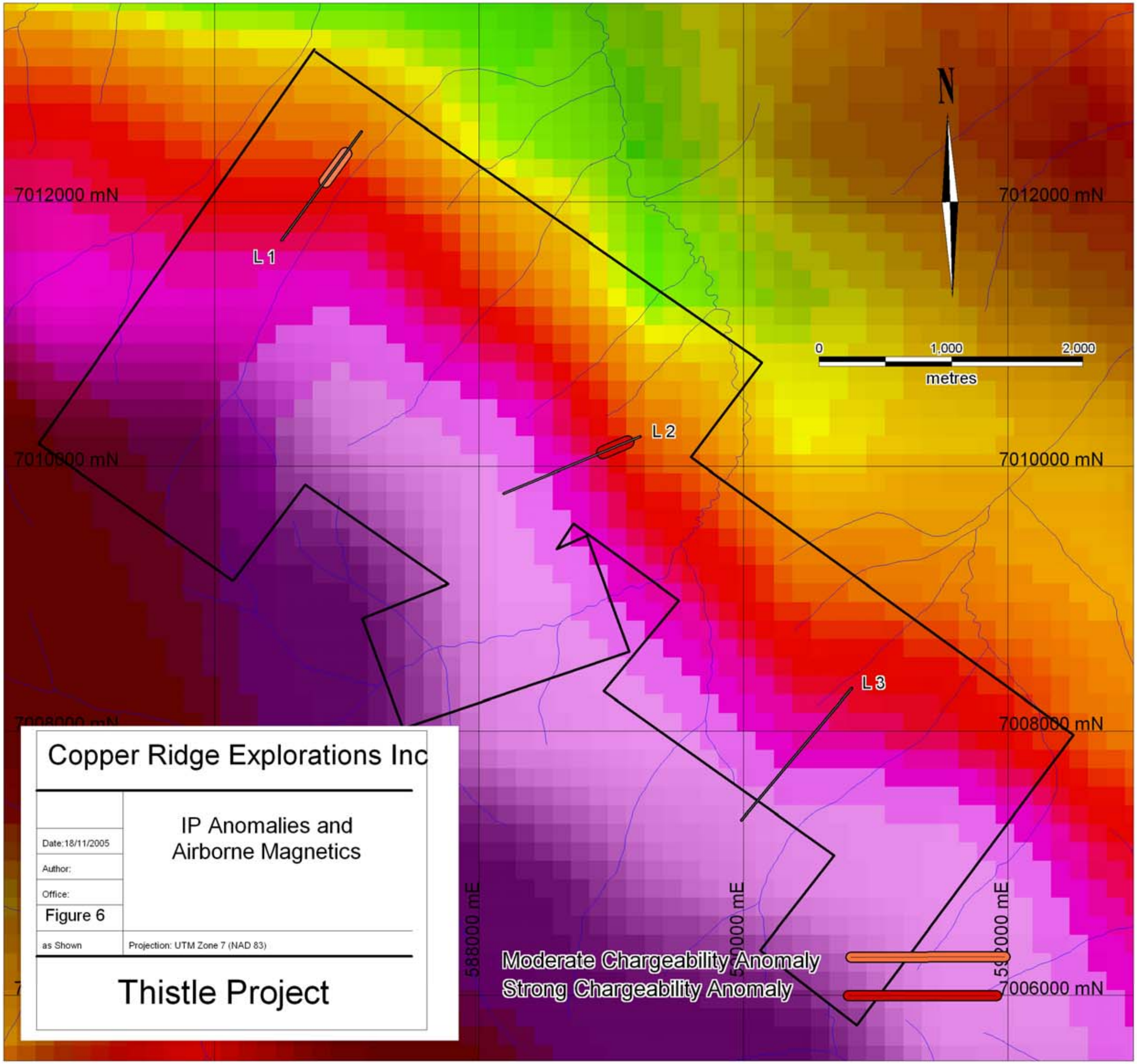
While some minor quartz veining was observed, no significant alteration or mineralization was seen in outcrop or subcrop. One rock sample was collected during the 2005 field program. This sample did not contain any anomalous metal values.

Induced Polarization Survey

Areas of moderate to high chargeability were identified on the lines L 1 and L 2, coincident with both the previously defined magnetic and soil geochemical anomalies (Figure 6). On L 1, a 200 m wide zone of weak to moderate chargeability is modelled to occur centred on station 250 W at a depth of about 175 m below surface. Two zones of moderate to high chargeability are modelled occur on line L 2. The first is a 150 m wide zone of moderate chargeability centred at station 300 east at a depth of about 150 m below surface. The second is a zone of strong chargeability centred at 925 E at a depth of about 125 m below surface.

There were no significant results from the IP survey on line L-3.


7012000 mN
L 1
590000 mE
592000 mE
N
7012000 mN
0
1,000
2,000
metres
L 2
7010000 mN
7010000 mN
L 3
7008000 mN
588000 mE
Copper Ridge Explorations Inc
Soil Geochemistry
ppm Cu
Date:18/11/2005
Author:
Office:
Figure 5
As Shown
Projection: UTM Zone 7 (NAD 83)
Thistle Property
Copper ppm
200 to 400 (31)
150 to 200 (34)
70 to 150 (224)
0 to 70 (539)



N
0
1,000
2,000
metres
7012000 mN
7010000 mN
7008000 mN
7006000 mN
588000 mE
L 1
L 2
L 3
Moderate Chargeability Anomaly
Strong Chargeability Anomaly
Copper Ridge Explorations Inc
IP Anomalies and
Airborne Magnetics
Date:18/11/2005
Author:
Office:
Figure 6
as Shown
Projection: UTM Zone 7 (NAD 83)
Thistle Project

5. CONCLUSIONS AND RECOMMENDATIONS.

Soil Sampling in 2005 over part of the Copper Wall soil anomaly defined in 2004 failed to confirm the existence of this anomaly. The lack of confirmation is thought to be due to the fact that the 2005 samples were collected with a mattock while the 2004 samples were collected with an auger. The 2005 samples therefore could have been contaminated and diluted by wind derived loess material.

Due to limitations on helicopter time, crews were unable in 2005 to follow-up the strongest part of the Copper Wall anomaly in the northwest area of the claim block

The IP survey successfully identified a weak to moderate chargeability anomaly on line L-1 and two moderate to strong chargeability anomalies on line L-2.

Further work is recommended on the Thistle property to investigate the cause of the discrepancy between the results of the 2004 and 2005 soil sampling and to investigate the source of the IP anomalies defined on lines L 1 and L2. The first phase of this program should consist of auger soil sampling in the area of lines L 1 and L 2. If this work confirms and more clearly defines the Copper Wall soil anomaly, trenching with a light helicopter portable backhoe should be completed over the areas where this anomaly is coincident with IP anomalies.

6. STATEMENT OF COSTS

Table 2: Thistle Project2005 Project Costs

Item		Units		Cost/unit	Cost	Total
Aircraft Support						
	Helicopter - Prism	8.6	hours	$ 881	$ 7,577	
	Helicopter - Trans North	8.2	hours	$ 1,125	$ 9,225	
	Fuel - Prism	3.3	drums	$ 300	$ 990	
						$ 17,792
Personnel						
	G Carlson	1.5	days	$ 400	$ 600	
	G Dawson	4	days	$ 400	$ 1,600	
	P. Cooper	5	days	$ 300	$ 1,500	
	C Ash	2	days	$ 550	$ 1,100	
	A. Fage	1	days	$ 300	$ 300	
						$ 5,100
Contract						
	Linecutting (man days)	5	man days	$ 350	$ 1,750	
	IP	3	days	$ 2,050	$ 6,150	
	IP mob / demob	fixed			$ 1,800	
	IP Report	fixed			$ 2,000	
						$ 11,700
Analysis						
	Soils	122	samples	$ 15	$ 1,778	
						$ 1,778
Miscellaneous						
	Room and Board	26.5	man days	$ 75	$ 1,988	
	Misc. supplies				$ 753	
	Truck	3	days	$ 100	$ 300	
	Communications				$ 250	
						$ 3,291
Report						$ 3,000
Grand Total						**$ 42,660**

7. STATEMENT OF QUALIFICATIONS

I, John Gregory Dawson, do hereby declare that;

1. I am currently employed as Vice President Exploration for Copper Ridge Explorations Inc. of 500 - 625 Howe Street Vancouver, British Columbia V3J 3G8.
2. I graduated with a Bachelor Science degree from the University of British Columbia in 1987 and a Masters of Science degree from Queens' University in 1991.
3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, Registration Number 19882.
4. I have worked as a geologist for a total of 19 years since graduation from University, and prior to graduation, as a student and or geotechnician for a period of 11 additional years.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101("NI 43-101") and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am not aware of any material fact or material change with respect to the subject matter of this report, the omission to disclose which makes this report misleading.
7. I am not independent of the issuer applying all tests in Section 1.5 of NI 43-101 in that I am an employee of Copper Ridge Explorations Inc and hold shares and options in the Company.

.
Dated this 10th day of January, 2006

John Gregory Dawson, P. Geo.

8. REFERENCES

BOSTOCK, H.S., 1942. Ogilvie, Yukon Territory; Geological Survey of Canada, Map 711A, scale 1:250,000.

GORDEY, S.P. and MAKEPEACE, A.J., 1999. Yukon Digital Geology (CD). Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1999-1(D).

GORDEY, S.P. and RYAN, J.J. 2003 Geology, Stewart River Area (Parts of 115N/1,2,7,8 and 115O/2-7,12), Yukon Territory; Geological Survey of Canada, Open File 4641, scale 1:100,000.

Yukon Minfile, 2003. Yukon Geology Survey, Yukon, Canada.

ZURAN, R. 2004, Assessment Reports on the SIM 13 - 24, Steward 1 - 32, Thistle 13 - 24 and TIM 1 - 8 Properties.

APPENDIX I

Assay Results
Acme Analytical Laboratories Ltd. Certificates

From ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716 @ CSV TEXT FORMAT
To Copper Ridge Exploration Inc. PROJECT Shamrock/Thistle
Acme file # A503379 Page 1 Received: JUL 11 2005 * 181 samples in this disk file.
Analysis: GROUP 1DX - 15 GM SAMPLE LEACHED WITH 90 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 300 ML, ANALYSED BY ICP-MS.

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
G-1	0.7	2.4	2.4	46	<.1	6.7	4.5	547	2	<.5	2	<.5	4	44	<.1	<.1	0.1	38	0	0	8	82.8	1	223	0	2	1	0	1	0.1	<.01	2.3	0.4	<.05	5	<.5
THS 300	1.4	43.1	6.9	75	0.4	22.9	15.9	1046	3	5.1	0.5	1.2	3	29	0.2	0.4	0.1	80	0	0	10	42.6	1	477	0	2	2	0	0	<.1	0.02	6.2	0.1	<.05	6	0.5
THS 301	2.2	89.4	7.3	62	0.1	20.5	14.8	421	3	8.4	0.5	2.3	5.8	32	0.1	0.5	0.1	69	0	0	14	34.8	1	447	0	3	2	0	0	0.1	<.01	4.1	0.1	<.05	5	<.5
THS 302	4.6	155.6	5.4	83	0.2	20.7	18.6	447	4	3.8	0.8	0.8	7	20	0.2	0.3	0.1	98	0	0	25	47.7	1	407	0	2	2	0	0	0.1	<.01	5.3	0.2	<.05	8	0.6
THS 303	1.4	44.5	8.3	60	0.1	23.8	13.8	395	3	9.4	0.7	1	4.3	23	0.1	0.6	0.2	74	0	0	15	44.6	1	353	0	3	2	0	0	0.1	0.01	5.8	0.1	<.05	5	0.5
THS 304	1.2	60.5	7.4	62	0.1	26.4	13.4	337	3	9.3	0.5	2.4	4.3	29	0.2	0.5	0.1	74	0	0	14	47.7	1	348	0	2	2	0	0	0.1	0.02	4.4	0.1	<.05	6	0.5
THS 305	1	31	7.9	61	0.1	20.5	12.9	409	3	6.6	0.6	4.3	5.5	19	0.1	0.4	0.2	67	0	0	17	36.1	1	348	0	2	2	0	0	0.1	0.01	4.2	0.1	<.05	5	<.5
THS 306	2	112.6	5.5	77	0.1	17.9	15.1	477	4	5.5	1.3	<.5	12	21	0.1	0.3	0.1	97	0	0	32	37.1	1	336	0	1	2	0	1	0.1	<.01	6.1	0.2	<.05	8	<.5
THS 307	1.3	31.6	7	58	0.2	20.4	13.1	535	3	6.5	0.4	1.1	3.2	27	0.1	0.4	0.1	73	0	0	10	36.1	1	356	0	2	2	0	0	0.1	<.01	4	0.1	<.05	6	<.5
THS 308	1.1	21.3	7.8	49	0.2	18.2	13.7	541	3	5.7	0.4	0.8	2.7	28	0.1	0.5	0.2	64	0	0	10	33.3	1	359	0	2	2	0	0	0.1	0.01	3.4	0.1	<.05	5	0.5
THS 309	1.3	22.5	7.2	47	0.2	16.7	11.7	686	3	6.1	0.3	2.7	2.2	24	0.2	0.4	0.1	62	0	0	9	31.2	1	443	0	2	1	0	0	0.1	<.01	3	0.1	<.05	5	<.5
THS 310	2	57.4	6.9	66	0.2	21	15.2	1318	3	5.6	0.5	1.8	2.8	32	0.1	0.5	0.1	83	1	0	12	35.7	1	586	0	3	2	0	0	0.1	0.02	6.4	0.1	<.05	6	0.6
THS 311	1.4	31.9	9.9	90	0.3	14	10	390	3	4.4	0.4	0.9	2.8	50	0.1	0.3	0.1	83	0	0	10	30.8	1	369	0	2	2	0	0	0.1	0.01	5.2	0.1	<.05	7	0.9
THS 312	0.9	16.7	7.1	53	0.2	17.3	10.9	538	3	5.6	0.4	0.5	2.8	23	0.1	0.4	0.1	71	0	0	10	33.9	1	567	0	2	2	0	0	0.1	0.01	4.5	0.1	<.05	5	<.5
THS 313	1.2	52.6	5.2	79	0.3	14.9	17.6	724	4	3.4	0.5	4.3	3.4	24	0.1	0.2	0.1	123	0	0	10	33.9	1	877	0	2	2	0	1	0.1	0.01	9.7	0.1	<.05	9	<.5
THS 314	0.8	20.2	6.1	58	0.1	16.8	14.9	614	3	4.6	0.3	2.6	2.4	24	0.1	0.4	0.1	80	0	0	8	32.9	1	528	0	2	2	0	0	0.1	0.01	4	0.1	<.05	6	<.5
THS 315	0.7	21.5	5.2	93	0.1	15.3	18.3	861	3	3.5	0.3	1.3	1.6	30	0.2	0.3	0.1	86	0	0	6	26.4	1	809	0	2	2	0	0	<.1	<.01	3.1	0.1	<.05	7	<.5
THS 316	1.1	25.6	8.2	81	0.2	15.3	11.2	1100	3	6.9	0.3	0.5	2.1	28	0.2	0.5	0.2	70	1	0	8	30.3	1	470	0	1	2	0	0	0.1	0.01	2.7	0.1	<.05	6	<.5
THS 317	0.9	18.8	7.2	71	0.1	15.8	11.5	729	3	6.1	0.3	<.5	1.9	26	0.1	0.4	0.1	66	0	0	9	30.4	1	420	0	2	2	0	0	0.1	0.01	2.7	0.1	<.05	5	<.5
THS 318	1	24.2	7.7	57	0.2	20.1	14.1	619	3	6.5	0.3	1.7	2.3	20	0.1	0.5	0.1	73	0	0	9	45.1	1	364	0	2	2	0	0	0.1	0.02	3.1	0.1	<.05	6	<.5
THS 319	1	21.2	9	55	0.1	23.6	10.8	284	3	9.4	0.4	1.2	3.4	18	0.1	0.6	0.1	72	0	0	10	43.5	1	259	0	1	2	0	0	0.1	0.01	3.2	0.1	<.05	5	<.5
THS 320	0.8	16.2	7.5	60	0.1	16.7	12.6	573	3	5.9	0.4	1	2.8	26	0.1	0.4	0.1	66	0	0	10	33	1	387	0	1	2	0	0	0.1	0.01	3.8	0.1	<.05	5	<.5
THS 321	1	17.9	9.7	65	0.2	15.9	11.5	473	3	5.5	0.3	2.5	2.3	22	0.1	0.4	0.2	81	0	0	10	32.3	1	390	0	1	2	0	0	0.1	0.01	3	0.1	<.05	6	<.5
THS 322	1	19.8	7.9	63	0.2	17.5	11.8	779	3	6.9	0.3	0.5	2.4	23	0.1	0.4	0.1	71	0	0	9	33.2	1	335	0	1	2	0	0	0.1	0.01	3.2	0.1	<.05	6	<.5
THS 323	1.3	22.5	13.8	70	0.3	17.2	9.7	375	3	9.4	0.4	1.1	2.6	15	0.1	0.6	0.3	82	0	0	9	36.7	1	299	0	1	2	0	0	0.1	0.01	3.3	0.1	<.05	7	<.5
THS 324	1	15.4	8.9	49	0.1	17.5	9.2	362	3	7.4	0.3	1.1	2.5	16	0.1	0.6	0.2	77	0	0	9	34.6	1	351	0	1	2	0	0	0.1	0.01	2.5	0.1	<.05	6	<.5
THS 325	0.6	38.1	5.7	64	0.1	10.6	15.8	465	4	3.7	0.4	0.5	1.2	29	0.1	0.2	0.1	118	0	0	5	26.3	1	287	0	1	3	0	1	<.1	0.01	4.5	0.2	<.05	10	<.5
THS 326	0.5	48.8	4	70	<.1	15.5	19.4	551	4	3.6	0.4	0.7	1.9	62	<.1	0.2	0.1	118	1	0	7	33	2	386	0	1	3	0	1	0.1	0.01	5.1	0.1	<.05	9	<.5
THS 327	0.6	31.5	4.9	50	0.1	14.2	12.6	328	3	4.9	0.4	0.6	1.6	22	<.1	0.2	0.1	95	0	0	7	27.7	1	300	0	1	2	0	0	0.1	0.01	3.4	0.1	<.05	7	<.5
THS 328	0.7	65.1	2.7	101	<.1	12.3	22.5	774	6	2.1	0.3	<.5	0.3	11	0.1	0.1	0.1	166	0	0	3	21.2	2	612	0	1	4	0	2	<.1	0.01	5.8	0.3	<.05	11	<.5
THS 329	0.8	27.7	9.8	58	0.1	19.2	11.2	324	3	8.7	0.7	2.6	3.3	16	0.1	0.5	0.2	73	0	0	13	35.8	1	252	0	2	2	0	0	0.1	0.02	3.6	0.1	<.05	5	<.5
THS 330	0.8	20.8	17.8	78	0.1	8.3	6.3	372	3	4.9	0.6	1.5	1.5	19	0.1	0.2	0.6	103	0	0	13	23.6	1	208	0	1	2	0	0	<.1	0.01	8.5	0.1	<.05	12	<.5

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
THS 331	1	35.8	9	64	0.1	15.2	12.5	410	4	7.9	0.6	4.5	2.3	19	0.1	0.4	0.2	95	0	0	11	33.1	1	280	0	2	2	0	0	0.1	0.01	3.8	0.1	<.05	8	0.5
RE THS 331	0.9	35	8.6	62	0.1	14	12.5	404	3	7.8	0.6	1.3	2.3	18	0.1	0.4	0.1	95	0	0	11	33.6	1	271	0	1	2	0	0	<.1	0.02	3.7	0.1	<.05	7	<.5
THS 332	0.7	32	9	77	0.1	11.1	14.3	497	4	5.1	0.4	0.5	1.6	17	0.1	0.2	0.2	106	0	0	8	26.6	1	320	0	1	2	0	1	0.1	0.01	5.1	0.1	<.05	9	<.5
STANDARD DS6	11.9	129.8	29.9	145	0.3	24.9	11.2	720	3	22.1	6.7	45.1	3.1	37	6.1	3.6	4.8	60	1	0	15	192.9	1	163	0	19	2	0	0	3.5	0.22	3.5	1.7	<.05	6	4.7
THS 333	1.1	25.2	9.6	63	0.1	15	11.6	338	3	6.2	0.5	1.6	2.2	13	0.1	0.4	0.2	84	0	0	9	31.9	1	312	0	1	2	0	0	0.1	0.02	4.8	0.1	<.05	6	<.5
THS 334	1	22.8	9.4	52	0.1	21.2	11.8	304	3	8.9	0.5	1.9	2.6	14	0.1	0.5	0.2	72	0	0	10	36	1	303	0	1	2	0	0	0.1	0.01	3.2	0.1	<.05	6	<.5
THS 335	0.7	30	7	74	0.2	17.2	10.5	956	3	6.4	0.5	2.1	1.9	25	0.1	0.4	0.1	67	0	0	10	29.7	1	344	0	1	2	0	0	0.1	0.02	3.5	0.1	<.05	5	0.6
THS 336	0.7	33.2	7.2	71	0.1	18.8	15.3	454	4	6.9	0.5	1.5	2.6	25	0.1	0.3	0.1	109	0	0	10	32.2	1	365	0	1	2	0	0	0.1	0.02	4.4	0.2	<.05	8	0.5
THS 337	1	116.2	4.2	67	0.2	43	16.8	303	4	4.8	0.4	2	1.3	47	0.1	0.4	0.1	100	1	0	6	87.1	1	174	0	1	2	0	0	<.1	<.01	6.4	<.1	<.05	7	<.5
THS 338	1.3	44.9	5.9	58	0.1	19	11	445	3	6.5	0.3	0.5	1.8	30	0.1	0.3	0.1	86	0	0	7	35.8	1	200	0	1	2	0	0	0.1	0.02	4.3	0.1	<.05	7	<.5
THS 339	1.3	35.6	5.8	60	0.2	15.9	12.2	854	3	5.1	0.3	2	1.7	23	0.2	0.4	0.1	70	0	0	7	26.1	1	230	0	1	1	0	0	0.1	0.01	2.9	0.1	<.05	6	<.5
THS 340	1.3	53.9	6.8	50	0.2	17.6	12.3	407	3	6.2	0.4	1.4	2	19	0.1	0.3	0.1	77	0	0	9	32.3	1	217	0	1	2	0	0	0.1	<.01	3.4	0.1	<.05	6	<.5
THS 341	1	29	6.6	55	0.1	19.5	11.1	578	3	6.2	0.4	1	2.8	22	0.1	0.4	0.1	77	0	0	10	33.4	1	237	0	1	2	0	0	0.1	0.01	2.8	0.1	<.05	6	0.5
THS 342	1	23.7	8.3	54	0.1	20.3	10.5	306	3	8.9	0.4	<.5	2.6	14	0.1	0.5	0.2	77	0	0	9	36.3	1	207	0	2	2	0	0	0.1	0.02	2.9	0.1	<.05	6	<.5
THS 343	1	20.4	7.8	58	0.1	20.9	11.1	364	3	7.1	0.3	3.8	2.3	16	0.1	0.5	0.1	71	0	0	8	35.3	1	275	0	1	2	0	0	0.1	0.02	2.7	0.1	<.05	6	<.5
RE THS 343	0.9	19.9	7.5	57	0.1	19	10.5	361	3	7.2	0.3	2.6	2.3	17	0.1	0.4	0.1	71	0	0	8	35.4	1	268	0	2	2	0	0	0.1	0.01	2.7	0.1	<.05	6	<.5
THS 344	1	19.8	7.6	45	0.1	15.9	9.9	304	3	6.2	0.3	0.6	2.5	19	0.1	0.4	0.1	67	0	0	10	33.3	1	244	0	1	2	0	0	0.1	0.01	3.1	0.1	<.05	6	<.5
THS 345	1.1	26.1	7.1	59	0.2	16.7	10.3	407	3	5.9	0.4	1	2.9	20	0.1	0.3	0.1	81	0	0	10	35.3	1	294	0	1	2	0	0	<.1	0.01	3.5	0.1	<.05	7	0.5
THS 346	1.2	56.4	7	65	0.1	20.8	13.7	351	4	7.1	0.5	1.3	4.1	18	0.1	0.5	0.1	86	0	0	10	37.1	1	338	0	2	2	0	0	0.1	0.01	3.1	0.1	<.05	6	<.5
THS 347	1.5	105.4	6.8	77	0.2	18.6	14.4	596	4	5.7	0.7	<.5	7.4	30	0.2	0.4	0.1	78	0	0	20	36.6	1	521	0	2	2	0	0	0.1	<.01	4.1	0.1	<.05	7	0.6
THS 348	1.1	41.2	8.8	67	0.1	22.8	10.2	344	3	10.2	0.6	1.2	5.4	19	0.1	0.6	0.2	78	0	0	15	41.8	1	267	0	1	2	0	0	0.1	0.01	3.6	0.1	<.05	7	<.5
THS 349	1.1	28.4	8.3	66	0.1	19.9	11.5	385	3	8.4	0.5	1.6	4.8	19	0.1	0.5	0.2	80	0	0	11	38.2	1	309	0	2	2	0	0	0.1	<.01	3.5	0.1	<.05	7	0.5
THS 350	0.8	40.3	6	78	0.2	18.2	19.2	2747	3	3.7	0.4	<.5	3.6	39	0.2	0.3	0.1	81	0	0	10	30.9	1	816	0	1	2	0	0	0.1	0.02	3.9	0.1	<.05	7	<.5
THS 351	1.2	31.8	8.3	54	0.1	17.3	9.5	380	3	9.8	0.3	0.9	2.1	12	0.1	0.5	0.2	71	0	0	8	31.5	1	222	0	1	2	0	0	0.1	0.01	2.7	0.1	<.05	6	<.5
THS 352	1.2	33.4	8.6	52	0.4	15.5	8.4	310	3	7.2	0.3	<.5	2.1	13	0.1	0.5	0.2	71	0	0	9	29.2	0	241	0	1	2	0	0	0.1	0.02	2.6	0.1	<.05	6	<.5
THS 353	1.6	50	8.2	89	0.3	17	10.7	424	3	7.8	0.5	1.3	2.5	24	0.1	0.4	0.2	80	0	0	9	32	1	428	0	2	2	0	0	0.1	0.02	3.3	0.1	<.05	7	0.6
THS 354	0.8	56.6	3.7	101	0.1	14.3	17.6	636	5	2.9	0.4	1.2	1.9	27	0.1	0.2	0.1	125	0	0	7	28.2	2	628	0	1	3	0	1	<.1	0.01	5.9	0.2	<.05	10	0.5
THS 355	0.8	39.1	6.3	63	0.1	16.8	12.6	371	3	5.7	0.7	13.2	3.1	24	0.1	0.3	0.1	87	0	0	13	33.1	1	385	0	1	2	0	0	0.1	0.02	4.1	0.1	<.05	6	0.6
THS 356	1.3	82	3.9	121	0.2	12.8	14.6	1019	4	2.2	0.6	<.5	1.9	36	0.1	0.2	0.1	114	0	0	9	22.5	2	644	0	1	2	0	1	0.1	0.02	4.8	0.2	<.05	10	0.6
THS 357	0.9	68.2	6.6	67	0.2	16.4	9.4	257	3	5.6	0.7	2.6	2.9	20	0.1	0.3	0.1	74	0	0	11	31.4	1	299	0	1	2	0	0	0.1	0.03	3.7	0.1	<.05	6	<.5
THS 358	0.9	86.2	5.8	70	0.1	15.9	11.1	373	3	5.2	0.7	1.8	3.3	23	0.1	0.3	0.1	79	0	0	14	31.2	1	434	0	1	2	0	0	0.1	0.01	4.3	0.1	<.05	6	0.5
THS 359	0.8	72.5	6.4	53	0.1	23.8	13.1	387	3	6.8	1	0.9	7.1	22	0.1	0.4	0.1	75	0	0	33	48	1	418	0	1	2	0	0	0.1	0.02	4.9	0.1	<.05	6	0.6
THS 360	0.7	83.6	4.4	83	0.1	15.2	15.9	666	4	4.2	1.4	1.1	9.7	30	0.1	0.2	0.1	94	1	0	37	30.6	1	637	0	2	2	0	1	0.1	0.02	6.5	0.2	<.05	8	<.5
THS 361	0.8	40.5	6.8	57	0.1	21.2	12.5	386	3	6.9	0.8	2.7	5.9	29	0.1	0.4	0.1	76	0	0	18	39.1	1	393	0	1	2	0	0	0.1	0.03	5	0.1	<.05	6	<.5
THS 362	1	29.8	8.4	59	0.1	22.1	11.3	403	3	8.8	0.4	1	3.7	17	0.1	0.6	0.2	81	0	0	11	38.5	1	347	0	1	2	0	0	0.1	0.02	3.2	0.1	<.05	6	<.5

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
THS 363	0.8	77.4	6.8	49	0.1	21.3	10.9	261	3	7.3	1.6	2	7.1	25	<.1	0.4	0.1	66	0	0	28	38.8	1	438	0	1	2	0	0	0.1	0.02	6.7	0.1	<.05	5	<.5
THS 364	0.6	68.3	3.9	91	0.1	12.1	14.6	427	4	3.8	0.5	5.5	2.4	59	0.1	0.2	0.1	97	1	0	7	22.5	1	514	0	1	3	0	1	0.1	0.02	3.6	0.2	<.05	8	<.5
THS 365	1.1	80.8	5.4	75	0.1	19.8	17.9	531	4	5.7	0.7	0.7	3.8	46	0.1	0.2	0.1	110	0	0	13	59.7	1	494	0	2	2	0	0	0.1	0.01	4.8	0.2	<.05	8	0.5
STANDARD DS6	12.1	126.4	30.2	147	0.3	24.5	11.1	724	3	21.5	6.6	48.4	3.1	38	6.1	3.6	5.2	57	1	0	15	191.7	1	163	0	19	2	0	0	3.5	0.23	3.5	1.7	<.05	6	4.6
THS 366	2.2	264.8	3	75	0.1	22.2	19.3	365	5	3.1	0.6	<.5	2.6	48	0.1	0.2	0.1	120	1	0	12	35.8	1	273	0	<1	2	0	0	<.1	0.01	7.7	0.1	<.05	8	0.8
THS 368	0.8	54.7	6.8	59	0.1	18.2	11	366	3	7.4	0.6	<.5	2.7	22	0.1	0.4	0.1	83	0	0	12	37.3	1	253	0	1	2	0	0	0.1	0.02	5.2	0.1	<.05	6	0.5
THS 369	0.9	63.5	6	51	0.1	17.4	11.4	253	3	6.6	0.4	1.2	2	20	<.1	0.4	0.1	89	0	0	7	34	1	182	0	1	2	0	0	0.1	0.01	4.1	0.1	<.05	6	<.5
THS 370	0.7	36.5	6.4	42	0.1	15.3	8.8	321	3	6.4	0.6	1.4	2.7	22	0.1	0.5	0.1	64	0	0	11	33.7	1	254	0	1	1	0	0	0.1	0.03	4.5	0.1	<.05	4	<.5
THS 371	0.6	84.2	4.4	62	0.1	17.1	15.4	341	4	4.1	0.2	<.5	1.1	53	0.1	0.2	0.1	115	1	0	5	39	1	239	0	<1	3	0	0	0.1	0.02	7.3	0.1	<.05	9	<.5
THS 372	0.9	55.3	7.2	62	<.1	24.3	14.2	303	3	10.3	0.4	2	2.2	26	0.1	0.4	0.1	93	0	0	8	38.7	1	196	0	1	2	0	0	0.1	0.01	4.8	0.1	<.05	6	0.5
THS 373	0.7	44.3	6.1	55	0.1	17.8	12.5	324	3	5.2	0.4	0.8	1.7	29	0.1	0.3	0.1	92	1	0	8	32.3	1	227	0	1	2	0	0	0.1	0.02	5.7	0.1	<.05	7	<.5
THS 374	0.7	77.8	5.3	56	0.1	18.5	12.6	413	3	5.4	0.8	1.4	2.5	41	0.1	0.3	0.1	86	1	0	13	35.3	1	274	0	<1	2	0	0	0.1	0.03	7.3	0.1	<.05	6	<.5
THS 400	1.7	21.4	6.7	68	0.1	22.8	15	563	3	5.1	0.5	<.5	3.3	30	0.1	0.3	0.1	86	0	0	9	42.7	1	364	0	1	2	0	0	<.1	0.02	3.5	0.1	<.05	7	<.5
THS 401	1.7	33.3	5.5	57	0.1	15	9.3	249	3	4.5	0.3	0.7	1.9	35	0.1	0.3	0.1	80	0	0	8	30.8	1	227	0	1	2	0	0	0.1	0.02	4.2	0.1	<.05	6	<.5
THS 402	0.9	41.8	7.8	53	0.1	27.9	11.8	398	3	9.9	0.5	3.1	3.9	26	0.1	0.5	0.1	83	0	0	14	45	1	449	0	2	2	0	0	0.1	0.01	6.8	0.1	<.05	6	<.5
THS 403	0.9	24.9	7.4	77	0.1	14.9	11	425	3	6.4	0.4	1	2.2	51	0.1	0.5	0.1	83	0	0	9	30.9	1	357	0	1	2	0	0	0.1	0.01	3.8	0.1	<.05	6	<.5
THS 404	1.2	18.7	8.3	78	0.1	18.6	11.3	1007	3	7.4	0.4	3.9	2.1	24	0.2	0.5	0.2	73	0	0	9	34	1	417	0	<1	2	0	0	0.1	0.01	3.1	0.1	<.05	6	<.5
THS 405	1	36.8	7.8	74	0.2	18.1	12.1	367	3	6.7	0.4	0.9	2.8	30	0.2	0.5	0.2	89	0	0	11	38.7	1	342	0	<1	2	0	0	0.1	0.01	5.2	0.1	<.05	6	<.5
THS 406	1	39	6.5	68	0.5	16.3	16.1	782	3	4.9	0.3	1.2	2	32	0.1	0.4	0.1	101	0	0	9	27.8	1	456	0	<1	2	0	0	0.1	0.01	4.1	0.1	<.05	6	<.5
RE THS 406	0.9	38.2	6.3	65	0.5	16.1	16.1	739	3	4.6	0.3	0.5	1.9	30	0.1	0.3	0.1	96	0	0	8	25.9	1	425	0	2	2	0	0	0.1	0.01	4	0.1	<.05	6	<.5
THS 407	0.8	89.8	5.8	67	0.3	17	19.4	356	4	4.7	0.4	1.2	2.1	29	0.1	0.3	0.1	120	0	0	9	23.6	1	340	0	<1	2	0	0	<.1	0.01	6.3	0.1	<.05	7	<.5
THS 408	0.7	77.2	6.2	56	0.2	17.6	16	404	3	5	0.4	1.8	2.5	25	0.1	0.3	0.1	81	0	0	9	30.1	1	302	0	2	2	0	0	0.1	0.02	5	0.1	<.05	5	<.5
THS 409	1.1	48.5	9.5	57	0.3	24.8	12.1	328	3	7.1	0.6	1.8	3.3	31	0.1	0.4	0.2	80	0	0	12	45.8	1	201	0	1	2	0	0	0.1	0.02	6.3	0.1	<.05	6	<.5
THS 410	0.7	75.3	14.3	60	0.2	21.1	15.2	447	3	4.3	0.5	0.8	2.7	28	0.1	0.3	0.3	94	0	0	11	33.8	1	283	0	2	2	0	0	0.1	0.02	7.4	0.1	<.05	6	<.5
THS 411	1	49.5	5.2	62	0.2	19.8	19.6	581	4	3.5	0.3	0.5	2	28	0.1	0.3	0.1	92	0	0	9	30.7	1	296	0	1	2	0	0	0.1	0.01	6	0.1	<.05	6	<.5
THS 412	0.7	38.4	6.2	54	0.2	22.2	13.3	384	3	5.9	0.4	2.9	2.9	26	0.1	0.4	0.1	70	0	0	12	35.7	1	233	0	1	2	0	0	0.1	0.01	5	0.1	<.05	5	<.5
THS 413	0.7	33.3	6.2	59	0.1	20.4	13.8	363	3	6.2	0.4	2.1	2.4	27	0.1	0.4	0.1	78	0	0	9	35.6	1	226	0	1	2	0	0	0.1	0.01	5.3	0.1	<.05	5	<.5
THS 414	0.6	54.6	6.4	53	0.1	21	13.9	421	3	6.6	1	1.3	3	32	0.1	0.4	0.1	79	1	0	13	34.2	1	295	0	2	2	0	0	0.1	0.03	6.3	0.1	<.05	5	0.6
THS 415	0.6	44.1	5.8	57	0.1	19	8.8	332	3	6.4	0.7	2.5	3.4	39	0.1	0.4	0.1	65	1	0	15	33.8	1	298	0	2	2	0	0	0.1	0.02	5.9	0.1	<.05	5	<.5
THS 416	0.7	55.2	7.3	66	0.1	24.4	13.1	448	3	7.7	0.7	3.7	3.3	39	0.2	0.5	0.1	68	1	0	16	32.5	1	285	0	2	2	0	0	0.1	0.03	5.3	0.1	<.05	5	0.8
THS 417	0.8	56.5	7	72	0.1	22	14	349	3	6.1	0.9	1.5	3.2	30	0.1	0.5	0.1	82	1	0	14	40	1	273	0	1	2	0	0	0.1	0.02	6.3	0.1	<.05	6	0.6
THS 418	1.1	57.5	7.2	61	0.1	25.2	14.8	347	3	6.3	0.5	0.8	2.7	27	0.1	0.4	0.1	91	0	0	13	42.9	1	237	0	1	2	0	0	0.1	0.01	5.4	0.1	<.05	6	0.5
THS 419	1.6	156.9	7.8	70	0.2	58.4	37.1	442	4	6.7	0.4	1.1	2.1	27	0.2	0.4	0.1	78	1	0	9	58.6	1	248	0	1	2	0	0	0.1	0.01	5.7	0.1	<.05	6	0.6
THS 420	7.2	59.5	5.5	54	0.7	21	18.7	234	5	3.5	0.5	1.1	1.5	57	0.1	0.3	0.1	143	1	1	9	40.8	1	255	0	1	2	0	0	0.1	0.01	6.6	0.1	0	7	1.6
THS 421	1	109.8	6.1	58	0.4	34.9	17.1	438	3	4	0.4	1.1	2.5	30	0.1	0.3	0.1	66	1	0	10	47.2	0	274	0	1	1	0	0	0.1	0.01	6.3	0.1	<.05	5	0.5

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
THS 422	0.6	32.9	5.4	101	0.3	15	16.4	1110	3	2.3	0.2	0.5	1.5	55	0.2	0.1	0.1	83	1	0	6	28.7	1	698	0	2	2	0	0	0.1	<.01	5.8	0.1	<.05	6	<.5
THS 423	0.4	56.5	4.9	88	0.2	13	18.2	741	4	3	0.3	0.7	1.2	47	0.1	0.2	0.1	134	1	0	6	21.2	1	473	0	3	3	0	0	0.1	0.01	8.4	0.1	<.05	8	<.5
THS 424	0.6	68.9	5.7	117	0.2	18.6	16.7	439	3	4	0.4	0.5	2.2	40	0.1	0.2	0.1	80	0	0	9	34.1	1	502	0	1	2	0	0	0.1	0.01	5.3	0.1	<.05	7	<.5
STANDARD DS6	12	124.6	30	148	0.3	24	10.4	721	3	21.7	6.8	45.2	3	37	6.2	3.5	5	57	1	0	15	193.7	1	163	0	17	2	0	0	3.6	0.22	3.5	1.7	<.05	6	4.5
THS 425	0.5	71.3	5.5	50	0.1	39.2	16.6	255	2	4.4	0.3	<.5	2.2	14	<.1	0.3	0.1	54	0	0	8	61.3	1	283	0	2	1	0	0	0.1	0.01	3.1	0.1	<.05	4	<.5
THS 426	0.8	69.2	7.2	63	0.2	33.7	15.1	293	3	6.5	0.4	1.7	2.4	15	0.1	0.4	0.1	67	0	0	9	81.5	1	250	0	1	2	0	0	0.1	0.02	3.3	0.1	<.05	6	<.5
THS 427	0.7	16.2	6.9	85	0.1	15.6	13.8	681	3	4.3	0.3	0.7	2.3	24	0.1	0.3	0.1	67	0	0	8	31.4	1	534	0	1	2	0	0	<.1	0.01	3.2	0.1	<.05	6	<.5
THS 428	0.9	24	8.9	69	0.1	23.8	9.4	304	3	11.2	0.7	1.9	4.6	19	0.1	0.6	0.2	69	0	0	13	45.5	1	320	0	1	2	0	0	0.1	0.01	4.6	0.1	<.05	6	<.5
THS 429	0.7	19.1	7.5	71	0.2	16.9	10.9	688	3	5.8	0.4	1.7	2.5	33	0.2	0.3	0.2	62	0	0	9	29.8	1	511	0	2	2	0	0	0.1	<.01	3.5	0.1	<.05	6	<.5
THS 430	0.7	22.9	8.3	63	0.1	18	14.8	698	3	6.3	0.4	1.3	2.4	20	0.1	0.5	0.2	69	0	0	10	35.5	1	421	0	<1	2	0	0	0.1	0.01	3.3	0.1	<.05	6	<.5
THS 431	0.7	27.4	8.2	63	0.1	18.9	15.4	566	3	7.1	0.4	0.6	2.7	21	0.1	0.4	0.2	72	0	0	9	36.8	1	408	0	1	2	0	0	0.1	0.01	3.3	0.1	<.05	6	<.5
THS 432	0.7	34.5	6.8	66	0.1	17.4	14.7	485	3	5.8	0.3	<.5	1.8	23	0.1	0.3	0.1	81	0	0	7	41	1	334	0	1	2	0	0	0.1	0.01	2.9	0.1	<.05	7	<.5
THS 433	1.1	28.5	8.4	70	0.1	16	12.1	589	3	6.4	0.4	<.5	2.8	29	0.2	0.3	0.2	83	0	0	9	35.6	1	296	0	1	2	0	0	0.1	0.01	3.7	0.1	<.05	8	<.5
THS 434	0.8	23	5.9	85	0.1	13.5	13.6	679	3	4.1	0.3	1	1.7	26	0.2	0.3	0.1	86	0	0	6	31.1	1	339	0	<1	2	0	0	0.1	0.01	2.7	0.1	<.05	8	<.5
THS 435	1.2	66	5.6	57	0.1	16.8	9.1	261	4	6.3	0.5	2.1	2.6	33	<.1	0.4	0.1	88	0	0	9	36.8	1	390	0	1	2	0	0	<.1	0.01	6.2	0.1	0	7	0.7
THS 436	1.6	16.9	9.9	48	0.2	11.1	7.7	315	3	8	0.3	2.8	2.3	13	0.1	0.4	0.2	76	0	0	9	28.7	0	143	0	<1	1	0	0	0.1	0.01	2.2	0.1	<.05	7	<.5
THS 437	1.4	26.6	10.8	53	0.2	20	12	268	4	10.8	0.5	1.6	3.2	19	0.1	0.6	0.2	80	0	0	11	41.2	1	256	0	<1	2	0	0	0.1	0.02	3.7	0.1	<.05	7	<.5
THS 438	1	58.6	7.6	61	0.1	17.2	14.1	258	3	7.4	0.3	<.5	2.1	14	0.1	0.3	0.1	95	0	0	8	38.3	1	187	0	<1	2	0	0	0.1	0.01	4.6	0.1	<.05	7	<.5
THS 439	0.9	40.6	8.8	40	0.2	13.2	6.3	161	3	6.6	0.4	3.2	1.6	14	0.1	0.3	0.2	72	0	0	10	28.7	0	156	0	2	2	0	0	0.1	0.02	3.1	0.1	<.05	6	<.5
THS 440	0.6	125.5	2.1	137	<.1	13.7	21.8	717	7	1.1	0.3	0.6	0.8	46	0.2	0.1	<.1	202	1	0	4	32.5	3	435	0	<1	4	0	1	<.1	0.01	9.3	0.2	<.05	13	<.5
THS 441	0.8	64.1	4.8	69	0.1	13.3	12.7	293	4	3.9	0.4	0.5	1.7	21	0.1	0.2	0.1	115	0	0	7	29.5	1	205	0	1	2	0	0	<.1	0.01	6.2	0.1	<.05	8	<.5
THS 442	4.8	93.4	5.7	96	0.1	24.4	18	457	4	3.2	1	1	2.1	54	0.1	0.2	0.1	139	0	0	12	55	1	263	0	1	3	0	0	<.1	0.01	7.6	0.1	0	9	2.2
THS 443	2.7	78.3	6.3	69	0.2	25	12.7	235	4	4.2	1.1	1.9	1.9	48	0.1	0.2	0.1	101	1	0	12	46.8	1	201	0	1	2	0	0	<.1	0.03	7.9	0.1	<.05	7	1.1
THS 444	3.4	159.6	2.8	126	0.2	41.8	55.2	626	6	2.2	0.6	0.5	1.7	72	0.4	0.1	<.1	175	1	0	9	21.7	1	374	0	<1	3	0	1	<.1	0.01	10.6	0.1	<.05	9	1.1
THS 445	3.1	112.1	4.5	67	0.2	27.8	19.9	317	4	3.6	0.8	0.9	1.5	52	0.1	0.2	0.1	106	1	0	10	37	1	284	0	1	2	0	0	<.1	0.02	7.4	0.1	<.05	8	0.9
THS 446	1.9	66.8	19.1	94	0.2	23.1	19.4	443	4	3.8	0.6	<.5	1.7	79	0.2	0.1	0.3	114	1	0	9	32	1	428	0	1	3	0	0	<.1	0.02	8.2	0.1	<.05	11	0.5
SA 500	1.8	21.7	9.1	72	0.1	10.9	9.7	306	3	5.2	0.3	0.6	1.5	14	0.3	0.2	0.1	89	0	0	7	21.7	1	130	0	1	1	0	0	0.1	0.01	3.1	0.1	<.05	7	<.5
SA 501	2.5	143.4	11.2	96	0.2	70	10.2	295	3	10	1	2.7	4.1	18	0.2	0.4	0.3	80	0	0	19	46.6	1	169	0	1	2	0	0	0.1	0.03	4	0.1	<.05	7	0.7
RE SA 501	2.5	141.9	10.6	96	0.2	67.1	9.8	274	3	9.7	1	2.4	4	17	0.2	0.4	0.3	79	0	0	18	43.5	1	165	0	2	2	0	0	0.1	0.02	4	0.1	<.05	6	0.7
SA 502	0.9	19.1	8.3	42	0.1	20.7	9	215	2	8.1	0.5	1.6	1.6	14	0.1	0.4	0.1	58	0	0	11	31.3	0	173	0	1	2	0	0	0.1	0.01	2.7	0.1	<.05	5	<.5
SA 503	0.8	38.9	7.6	44	0.1	17.3	7.8	220	3	6.2	0.5	1.2	2.6	17	<.1	0.3	0.1	60	0	0	11	29.7	0	155	0	1	2	0	0	0.1	0.01	2.6	0.1	<.05	5	<.5
SA 504	0.7	50.7	5.2	51	0.1	10	9.1	449	3	4.9	0.5	1.9	2.3	21	0.1	0.2	0.1	65	0	0	8	19.6	1	119	0	1	2	0	0	0.1	0.01	2.1	0.2	<.05	6	<.5
SA 505	0.6	41	6.1	63	0.1	10.8	6.9	390	2	3.8	0.5	<.5	1.9	24	0.1	0.2	0.1	61	0	0	8	18.6	1	95	0	1	1	0	0	0.1	0.02	2.9	0.1	<.05	6	<.5
SA 506	1.1	18	9.1	44	0.1	18.8	7.2	221	3	8.4	0.4	1.1	2.2	18	0.1	0.4	0.2	64	0	0	9	33	0	175	0	2	2	0	0	0.1	0.02	2.5	0.1	<.05	6	<.5
SA 507	0.8	13.5	8.8	35	0.1	12.5	4.7	142	2	6.8	0.3	1.5	0.9	13	0.1	0.3	0.2	58	0	0	9	22.5	0	137	0	1	1	0	0	0.1	0.01	2	0.1	<.05	6	<.5

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
SA 508	0.8	13	8.9	36	0.1	14.4	5.9	165	2	8.7	0.3	1.3	2.1	15	0.1	0.3	0.1	64	0	0	10	29.4	0	145	0	1	2	0	0	0.1	0.01	2.4	0.1	<.05	6	<.5
SA 509	1	23.7	8.3	44	0.1	12	6.8	232	3	6.7	0.4	0.9	2.6	22	0.1	0.3	0.2	63	0	0	9	25.1	0	134	0	1	2	0	0	0.1	0.01	2.1	0.1	<.05	7	<.5
SA 510	0.8	15.8	7.5	41	0.1	18.4	9.9	224	3	9.9	0.4	1.5	2.5	11	0.1	0.4	0.2	58	0	0	9	31	0	137	0	1	2	0	0	0.1	0.02	2.2	0.1	<.05	5	<.5
STANDARD DS6	11.9	121.7	30	146	0.3	26	10.4	725	3	21.6	6.5	47.8	3	38	6.2	3.5	5	58	1	0	16	192.1	1	161	0	17	2	0	0	3.4	0.23	3.5	1.6	<.05	6	4.5
SA 511	1	18.7	8	47	0.1	18.2	9.2	267	3	9.9	0.4	1	2.7	16	0.1	0.5	0.2	65	0	0	10	32.5	0	194	0	1	2	0	0	0.1	0.01	2.4	0.1	<.05	5	<.5
SA 512	1.1	16.8	9.6	41	0.1	18	7.5	199	3	7.9	0.7	2.1	3	16	<.1	0.4	0.2	66	0	0	14	34.6	0	191	0	1	2	0	0	0.1	0.01	3.6	0.1	<.05	6	<.5
SA 513	0.8	14.7	8.1	41	0.1	7.3	4.4	190	2	5.8	0.4	3	1.5	15	0.1	0.3	0.2	63	0	0	10	19.7	0	91	0	<1	1	0	0	0.1	0.01	2	0.1	<.05	7	<.5
RE SA 513	0.8	14.5	8.4	42	0.1	6.8	4.1	197	2	5.9	0.4	<.5	1.5	15	0.1	0.2	0.2	61	0	0	10	19.5	0	92	0	1	1	0	0	0.1	0.01	1.8	0.1	<.05	7	<.5
SA 514	1.4	270	7.7	77	0.1	18	10.7	341	4	6.4	0.5	1.4	2.8	19	0.1	0.4	0.1	76	0	0	11	29.1	1	209	0	1	2	0	0	0.1	0.01	3.5	0.2	<.05	7	<.5
SA 515	1.9	209.2	11.7	55	0.2	24.9	9.7	224	3	8.5	1.5	5.4	3.6	24	0.1	0.4	0.5	85	0	0	18	41.4	1	162	0	1	2	0	0	0.1	0.03	3.9	0.1	<.05	5	0.9
SA 516	3.5	462.9	21	79	1	39	16.6	623	4	20.2	3.4	12.5	4.2	32	0.5	0.4	1.1	112	0	0	26	46.3	1	301	0	1	3	0	0	0.1	0.12	7.4	0.2	<.05	8	0.7
SA 517	1.1	125.8	16	67	0.3	19.4	8.3	404	2	6.5	1.6	9	3.5	23	0.3	0.3	0.4	54	0	0	18	28.2	1	160	0	2	2	0	0	0.1	0.06	4.3	0.1	<.05	5	0.5
SA 518	1.1	31.5	9.3	70	0.1	18.5	13.3	1118	3	8.4	0.5	2.5	2.5	35	0.2	0.4	0.2	79	0	0	11	30.1	1	373	0	2	2	0	0	0.1	0.02	4.8	0.1	<.05	6	<.5
SA 519	0.5	32.1	12.4	61	0.1	21.8	7.7	323	2	6.8	0.8	2.2	2.7	21	0.1	0.3	0.2	49	0	0	12	27.3	1	227	0	1	1	0	0	0.2	0.02	3.4	0.1	<.05	5	0.5
SA 520	1.4	43.8	9.3	44	0.4	15.3	7.4	205	3	8.8	0.5	2.8	1.8	14	0.1	0.4	0.2	64	0	0	9	30.7	0	159	0	<1	2	0	0	0.1	0.01	2.4	0.1	<.05	6	<.5
SA 521	0.6	21.5	9.1	41	0.1	18.3	7.3	176	3	7.2	0.6	3.2	2.8	16	<.1	0.4	0.2	56	0	0	13	33.5	0	180	0	<1	2	0	0	0.1	0.01	3.7	0.1	<.05	5	<.5
SA 522	1.1	80.6	9.5	36	0.5	9.1	5.1	199	2	6.1	0.4	0.9	1.8	17	0.1	0.3	0.2	60	0	0	10	24.1	0	127	0	<1	2	0	0	0.1	0.01	2.1	0.1	<.05	6	<.5
SA 523	0.9	26.5	9.1	46	0.2	17.4	7.5	192	3	8.3	0.6	3.2	2.9	20	0.1	0.4	0.2	63	0	0	14	33.5	0	206	0	<1	2	0	0	0.1	0.03	4.1	0.1	<.05	6	<.5
SA 524	1.2	19.6	9.5	45	0.1	17.4	7.1	220	3	8.8	0.8	5.4	2.9	17	<.1	0.4	0.2	63	0	0	14	33.9	0	174	0	1	2	0	0	0.1	0.02	4	0.1	<.05	6	<.5
SA 525	1	19.5	6.8	54	0.1	11.5	8	386	3	8.3	0.5	<.5	2.1	21	0.1	0.4	0.2	79	0	0	8	22.8	1	109	0	1	2	0	0	0.2	0.01	2.4	0.1	<.05	7	<.5
SA 526	1	17.5	9.5	47	0.1	16.4	7.6	508	3	8.4	0.4	1.4	2.5	16	0.1	0.4	0.2	66	0	0	10	32.8	0	206	0	1	2	0	0	0.1	0.01	2.5	0.1	<.05	6	<.5
SA 550	0.9	29.7	6.4	66	0.1	17.5	9.7	261	3	7.4	0.4	3	2.3	17	0.1	0.4	0.1	79	0	0	8	27.4	1	137	0	<1	2	0	0	0.1	<.01	4	0.1	<.05	7	<.5
SA 551	1	14.7	7.3	61	0.1	13.6	5.9	317	2	5.7	0.4	2.2	2.2	18	0.1	0.3	0.2	57	0	0	11	22.6	1	176	0	1	1	0	0	0.2	0.01	2.5	0.1	<.05	6	<.5
SA 552	1.5	30.6	8	83	0.2	23.5	9.9	469	3	7.6	0.3	1	1.8	16	0.1	0.3	0.2	69	0	0	8	46.8	1	198	0	1	2	0	0	0.1	0.01	4.5	0.1	0	6	0.5
SA 553	1.3	14.5	8	58	0.1	14.4	7.5	343	2	9	0.3	5.5	2	13	0.2	0.4	0.1	60	0	0	9	28.9	0	194	0	1	1	0	0	0.1	<.01	2.8	0.1	<.05	5	<.5
SA 554	1.7	701.6	16.2	230	0.6	117.1	9.9	849	3	10.3	1.2	14.2	4.2	30	0.8	0.3	0.6	76	4	0	24	38.8	3	211	0	1	2	0	0	0.1	0.09	7	0.2	<.05	8	0.7
SA 555	1.2	27	9.3	49	0.2	26.1	10.7	280	3	10.6	0.6	2	3	15	<.1	0.6	0.2	64	0	0	11	37.3	1	197	0	<1	2	0	0	0.1	<.01	3.2	0.1	<.05	5	0.5
SA 556	1.7	74.4	10.8	57	0.2	24.6	9.9	226	3	8.8	0.9	4.3	5.6	19	0.1	0.6	0.2	73	0	0	14	44.8	1	221	0	<1	2	0	0	0.1	0.02	4.5	0.1	<.05	6	<.5
SA 557	1.2	76.4	9.4	51	0.2	20.3	8.7	245	3	8.8	0.5	2.5	3.5	15	<.1	0.4	0.1	65	0	0	11	35	1	176	0	1	2	0	0	0.1	0.01	3.1	0.1	<.05	6	<.5
SA 558	1	47.3	9.6	41	0.2	13.6	6.2	162	2	7.7	0.7	2.6	2.3	19	0.1	0.3	0.2	60	0	0	12	27	0	190	0	1	2	0	0	0.1	0.02	3	0.1	<.05	6	0.5
SA 559	1	82.6	9.1	56	0.1	16.1	7.4	229	3	8.3	0.6	3.3	3.3	20	<.1	0.4	0.2	65	0	0	13	30.9	1	155	0	1	2	0	0	0.1	0.01	3.5	0.1	<.05	7	<.5
SA 560	0.8	76.2	7.4	53	0.2	14.7	7	217	2	6.1	0.6	1.7	2.9	21	0.1	0.4	0.1	57	0	0	13	24.7	1	131	0	<1	2	0	0	0.1	0.01	2.7	0.1	<.05	5	<.5
SA 562	1.3	61.7	9.6	35	0.5	12.3	5.6	178	3	10	0.3	2.2	2.1	11	0.1	0.4	0.2	66	0	0	8	25.3	0	118	0	1	2	0	0	0.1	0.01	1.9	0.1	<.05	6	<.5
SA 561	1.8	116.1	10.1	50	0.2	19.6	9.6	211	4	8.9	0.4	1.9	2.7	19	0.1	0.4	0.1	76	0	0	8	32.2	1	205	0	<1	2	0	0	0.1	0.02	3.1	0.1	<.05	6	1
SA 563	1.3	250.9	15.2	55	0.3	31.7	15	261	3	12.8	1	4	3.3	13	0.1	0.5	0.3	82	0	0	10	54.4	1	127	0	1	3	0	0	0.1	0.02	4	0.1	<.05	7	0.7

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
SA 564	0.8	31.9	12.5	66	0.2	26.9	13.7	385	4	5.9	0.4	1.6	2	17	0.1	0.3	0.2	98	0	0	7	47.3	2	230	0	1	3	0	0	0.1	<.01	5.1	0.1	<.05	8	<.5
SA 565	0.9	13.4	8.8	73	0.1	17.1	10.2	669	3	6.6	0.3	2.8	1.9	19	0.1	0.3	0.2	63	0	0	9	31	0	237	0	1	2	0	0	0.1	<.01	2.6	0.1	<.05	6	<.5
SA 566	0.7	18.3	7.2	40	0.1	16.9	8.2	500	2	5.5	0.4	0.9	2.4	18	<.1	0.3	0.1	49	0	0	9	26.7	0	223	0	<1	1	0	0	0.1	<.01	3	<.1	<.05	4	<.5
STANDARD DS6	12	124.9	29.1	146	0.3	26	11.1	700	3	21.9	6.6	47.4	3	38	5.9	3.7	4.8	58	1	0	16	185.3	1	161	0	14	2	0	0	3.3	0.22	3.5	1.7	<.05	6	4.6
SA 566A	0.8	18.8	13.2	48	0.2	12.5	6.3	232	2	7.2	0.4	0.5	2	19	0.1	0.3	0.2	62	0	0	9	24.7	0	223	0	1	1	0	0	0.1	0.01	3.3	0.1	<.05	5	<.5
SA 567	1	15	11.9	61	0.1	15.1	9.9	677	3	8.8	0.3	2.1	2	17	0.1	0.5	0.2	72	0	0	8	31.5	0	247	0	1	2	0	0	0.1	<.01	3	0.1	<.05	6	<.5
SA 568	1.5	38.9	33.5	87	0.2	23.4	13.9	968	3	5.4	0.8	1	2.9	20	0.1	0.3	0.3	70	0	0	12	35.3	1	287	0	1	2	0	0	0.1	0.02	5.6	0.1	<.05	7	<.5
SA 569	1	34	9.3	52	0.1	21.9	10.4	250	3	7.9	0.7	1.6	3.4	14	0.1	0.5	0.2	65	0	0	13	39.2	0	240	0	1	2	0	0	0.1	0.02	3.3	0.1	<.05	5	<.5
SA 570	1	26.4	10.2	54	0.1	19.8	10.8	286	3	9.1	0.8	6.1	4.2	15	<.1	0.6	0.2	70	0	0	13	38	1	221	0	1	2	0	0	0.2	0.02	3.6	0.1	<.05	6	<.5
SA 571	0.8	47.3	5.9	59	<.1	10.1	8.3	297	3	5.5	0.5	<.5	2.4	35	0.1	0.2	0.1	73	0	0	6	19.9	1	112	0	1	2	0	0	0.1	0.01	2	0.2	<.05	7	<.5
SA 572	1.3	34.7	7.5	54	0.1	12.7	7.8	339	4	13.3	0.7	1	3.7	21	0.1	0.5	0.2	104	0	0	9	27.7	1	100	0	1	2	0	0	0.1	0.01	2.7	0.1	<.05	7	<.5
SA 573	1	43.1	5.8	53	0.1	15.3	10.2	379	3	6.4	0.6	2.1	4.5	24	0.1	0.4	0.1	81	0	0	13	29.4	1	116	0	1	2	0	0	0.1	0.02	3.1	0.1	<.05	6	0.5
SA 574	0.8	27.2	5.4	49	0.1	11	7.8	292	2	4.1	0.4	1.4	2.2	22	0.1	0.2	0.1	67	0	0	8	20.5	1	89	0	<1	2	0	0	0.1	0.02	2.1	0.1	<.05	6	<.5
STANDARD DS6	12	125.9	31.3	146	0.3	25.6	10.8	722	3	22.1	6.9	48.9	3.1	37	6.3	3.8	5.2	58	1	0	15	197.6	1	165	0	18	2	0	0	3.5	0.24	3.5	1.8	<.05	6	4.6

APPENDIX II

Soil Sample Descriptions and Location Data

Sample Number	Easting	Northing	Elevation	Depth (cm)	Colour	Texture	Slope <	Slope Dir	
THS-300	590377	7007576	737 m	20	BR	FN	20	SE	NO FRAGMENTS
THS-301	590392	7007593	754 m	30	BR	FN-SD	20	SE	QZ-FS-BI ROCK FRAGS
THS-302	590387	7007616	749 m	30	BR	FN	20	SE	QZ-FS-BI ROCK FRAGS
THS-303	590398	7007648	764 m	25	BR	FN-SD	20	SE	QZ-FS-BI ROCK FRAGS
THS-304	590413	7007687	764 m	25	LT BR	FN	20	SE	PEGMATITE FRAGS?
THS-305	590417	7007695	762 m	25	BR	FN	25	SE	NO FRAGMENTS
THS-306	590428	7007715	766 m	20	BR	FN	25	SE	NO FRAGMENTS
THS-307	590436	7007740	754 m	20	BR	FN	25	SE	NO FRAGMENTS
THS-308	590449	7007766	763 m	25	BR	FN	20	SE	NO FRAGMENTS
THS-309	590453	7007777	771 m	20	BR	FN	20	SE	NO FRAGMENTS
THS-310	590463	7007809	769 m	25	LT BR	FN	15	SE	NO FRAGMENTS
THS-311	590466	7007842	771 m	15	LT BR	FN	15	S	NO FRAGMENTS
THS-312	590486	7007858	777 m	15	LT BR	FN	20	S	Fragments of coars grained qz
THS-313	590497	7007881	786 m	20	LT BR	FN	20	S	NO FRAGMENTS
THS-314	590501	7007892	795 m	15	LT BR	FN-SD	20	S	NO FRAGMENTS
THS-315	590508	7007926	796 m	10	BR	FN	20	S	NO FRAGMENTS
THS-316	590500	7007941	804 m	15	BR	FN	3	NE	NO FRAGMENTS
THS-317	590544	7007949	793 m	15	BR	FN	10	NE	NO FRAGMENTS
THS-318	590559	7007949	792 m	15	BR	FN	20	E	NO FRAGMENTS
THS-319	590582	7007962	788 m	15	BR	FN	20	E	NO FRAGMENTS
THS-320	590608	7007969	787 m	20	LT BR	FN	15	E	NO FRAGMENTS
THS-321	590625	7007988	785 m	15	LT BR	FN	10	E	NO FRAGMENTS
THS-322	590647	7007999	781 m	15	BR	FN	10	E	NO FRAGMENTS
THS-323	590671	7008008	776 m	15	BR	FN	10	E	NO FRAGMENTS
THS-324	590690	7008024	772 m	10	BR	FN	10	N	NO FRAGMENTS
THS-325	590699	7008052	771 m	10	BR	FN + R	10	N	QZ-FS-BI ROCK FRAGS
THS-326	590709	7008082	762 m	20	BR	SD + R	10	N	abund frags of qzite and bio qz
THS-327	590716	7008095	765 m	20	BR	SD + R	10	N	Minor frags of qz-fs-bi schist
THS-328	590512	7008127	775 m	15	BR	FN-SD	10	N	NO FRAGMENTS
THS-329	590495	7008105	779 m	20	BR	FN-SD	5	N	NO FRAGMENTS
THS-330	590484	7008086	781 m	20	BR	FN-SD	5	N	NO FRAGMENTS
THS-331	590468	7008068	790 m	30	BR	FN-SD	5	N	NO FRAGMENTS
THS-332	590456	7008043	789 m	30	BR	FN-SD	5	N	NO FRAGMENTS
THS-333	590441	7008024	793 m	30	BR	FN-SD	10	N	NO FRAGMENTS
THS-334	590425	7008001	792 m	30	BR	FN-SD	5	N	NO FRAGMENTS
THS-335	590406	7007984	793 m	20	BR	FN-SD	2	N	Sugary qz rock frags
THS-336	590394	7007966	797 m	20	BR	FN-SD	2	N	Sugary qz rock frags
THS-337	590169	7007633	743 m	20	BR	FN-SD	10	NW	Fragments of amphibolite
THS-338	590173	7007656	748 m	20	BR	FN-SD	10	NW	Fragments of amphibolite
THS-339	590184	7007684	753 m	30	BR	FN-SD	10	NW	Fragments of amphibolite
THS-340	590195	7007706	747 m	25	BR	FN-SD	10	NW	Fragments of bio-qz schist + q
THS-341	590200	7007723	751 m	25	LT BR	FN	5	NW	qz-bio schist
THS-342	590214	7007745	758 m	25	BR	FN	10	NW	quartzite fragemts?
THS-343	590219	7007766	756 m	25	LT BR	FN	10	NW	none
THS-344	590234	7007789	754 m	25	BR	FN	10	NW	abund frags of qz-amph-bio sc
THS-345	590246	7007812	759 m	25	BR	FN	10	NW	none
THS-346	590259	7007825	766 m	30	LT BR	FN-SD	10	NW	none
THS-347	590271	7007845	770 m	20	BR	FN	10	NW	qz-felds crystalline rock
THS-348	590293	7007869	775 m	20	BR	FN	10	NW	NO FRAGMENTS
THS-349	590307	7007887	786 m	20	BR	FN	10	NW	NO FRAGMENTS

Sample Number	Easting	Northing	Elevation	Depth (cm)	Colour	Texture	Slope <	Slope Dir	
THS-350	590320	7007910	785 m	20	BR	FN	10	NW	NO FRAGMENTS
THS-351	590334	7007932	789 m	20	BR	FN	10	NW	qz-fs- bio schist with bands of
THS-352	590351	7007954	789 m	20	BR	FN	10	N	NO FRAGMENTS
THS-353	590375	7007961	791 m	25	BR	FN	10	N	fragments of crystalline qz with
THS-354	590319	7008148	756 m	20	BR	SD + G	5	NW	wet gravely
THS-355	590306	7008124	754 m	20	LT BR	FN-SD	10	NW	wet, seep
THS-356	590294	7008104	752 m	15	BR	FN-SD	10	NW	dry, blks of qz-fs-bi schist
THS-357	590284	7008081	759 m	20	BR	FN	5	NW	n
THS-358	590268	7008058	751 m	20	LT BR	FN-SD	5	NW	blks of qz-bi gneiss
THS-359	590253	7008036	759 m	30	BR	FN	5	NW	n
THS-360	590242	7008018	750 m	25	BR	FN-SD	10	NW	qz-fs < bi aplite dyke?
THS-361	590224	7007998	752 m	25	BR	FN	10	NW	n
THS-362	590218	7007972	757 m	25	BR	FN	10	NW	n
THS-363	590197	7007952	763 m	25	BR	FN	10	W	n
THS-364	590194	7007926	750 m	25	BR	FN-SD	10	W	qz-fs-bio schist frags
THS-365	590180	7007917	751 m	20	DK BR	FN + R	10	W	qzite with bands of amph.
THS-366	590165	7007887	737 m	20	BR	FN	10	W	amphibolite frags
THS-367	590154	7007871	750 m	20	LT BR	FN	10	W	n
THS-368	590151	7007842	734 m	25	BR	FN	10	W	n
THS-369	590141	7007816	724 m	15	LT BR	FN + R	10	W	n
THS-370	590129	7007795	728 m	20	BR	FN	10	W	n
THS-371	590112	7007780	720 m	20	LT BR	FN+SD+R	10	W	coarse grained qz and amph fr
THS-372	590097	7007757	712 m	25	LT BR	FN	5	W	n
THS-373	590079	7007747	715 m	20	LT BR	FN	10	W	n
THS-374	590056	7007737	706 m	25	BR	FN	10	W	
THS_400	589310	7010033		15	br	FN-SD	5	se	
THS_401	589216	7010037		15	br	FN	15	se	
THS_402	589184	7009984		20	LT BR	fn	15	se	amphibolite frags
THS_403	589027	7010124	711 m	25	BR	FN	5	ne	n
THS_404	589015	7010103	712 m	20	LT BR	fn	5	ne	n
THS_405	589005	7010084	713 m	20	BR	fn	5	ne	none
THS_406	588985	7010069	713 m	20	LT BR	fn	5	ne	qz-bio schist
THS_407	588976	7010046	712 m	25	BR	FN	10	s-se	n
THS_408	588955	7010012	713 m	20	LT BR	fn	10	s-se	n
THS_409	588938	7010005	705 m	20	BR	fn	10	s-se	n
THS_410	588923	7009987	700 m	20	BR	fn	10	s-se	n
THS_411	588915	7009970	709 m	15	BR	fn	10	s-se	n
THS_412	588893	7009951	705 m	20	BR	fn	10	s-se	qz-bi + amph
THS_413	588873	7009940	701 m	20	BR	fn	10	se	n
THS_414	588856	7009912	706 m	30	BR	fn	10	e-se	n
THS_415	588849	7009891	705 m	20	BR	fn	10	e-se	n
THS_416	588836	7009873	709 m	20	BR	fn	10	e-se	n
THS_417	588825	7009852	718 m	20	LT BR	fn	5	e	s/c qz-kspar pegmatite
THS_418	588815	7009825	715 m	20	BR	fn	5	e	n
THS_419	588804	7009802	718 m	25	BR	fn	10	e	as 417
THS_420	588787	7009779	716 m	20	BR	fn	5	e	qz-fs peg and amphib frags
THS_421	588772	7009763	714 m	20	BR	fn	10	s	n
THS_422	588761	7009744	713 m	15	LT BR	fn	10	s	n
THS_423	588737	7009733	705 m	20	BR	fn	15	s	n
THS_424	588589	7009859	754 m	20	BR	fn	15	s	n

Sample Number	Easting	Northing	Elevation	Depth (cm)	Colour	Texture	Slope <	Slope Dir	
THS_425	588603	7009883	765 m	15	LT BR	fn	15	s	n
THS_426	588625	7009902	774 m	?					
THS_427	588647	7009920	771 m	?					
THS_428	588662	7009939	770 m	?					
THS_429	588677	7009953	763 m	15	LT BR	fn	15	e	n
THS_430	588688	7009979	764 m	20	BR	fn	20	e	n
THS_431	588695	7010002	765 m	20	BR	fn	20	e	n
THS_432	588708	7010018	756 m	15	BR	fn	10	e	amphibolite frags
THS_433	588720	7010040	757 m	20	BR	fn	3	e	amphibolite frags
THS_434	588735	7010062	754 m	20	BR	fn	5	ne	amphibolite frags
THS_435	588753	7010081	747 m	25	BR	fn	5	ne	n
THS_436	588766	7010100	742 m	20	BR	fn	5	ne	n
THS_437	588787	7010117	739 m	20	BR	fn	10	ne	wet sample
THS_438	588797	7010134	734 m	25	BR	fn	10	ne	n
THS_439	588807	7010156	727 m	20	BR	fn	10	ne	n
THS_440	588822	7010178	716 m	15	LT BR	sd	10	ne	amphibolite frags
THS_441	588832	7010197	712 m	15	LT BR	fn	10	ne	abund frags amph and cg qz-fs
THS_442	588848	7010216	706 m	15	LT BR	FN-SD	10	ne	amph + ox qz and qz-fs-bi frag
THS_443	588873	7010229	699 m	15	LT BR	FN-SD	10	ne	wet sample
THS_444	588889	7010248	689 m	15	BR	sd	15	ne	wet, amph, felsic dyke frags, o
THS_445	588906	7010261	687 m	15	BR	s + r	15	n	small rock fragments
THS_446	588922	7010276	679 m	20	LT BR	FN-SD	15	ne	wet sample

Appendix III

Induced Polarization / Resistivity Survey on the Thistle Project, Yukon Territory

INDUCED POLARIZATION / RESISTIVITY SURVEY ON THE THISTLE PROJECT, YUKON TERRITORY

for: **COPPER RIDGE EXPLORATIONS INC.**
Suite 500 - 625 Howe Street,
Vancouver, B.C.
Canada V1C 2P1

by: Dave Hildes, Ph. D., P. Geo.
Aurora Geosciences Ltd.
108 Gold Road
Whitehorse, Yukon, Y1A 2W3

Work Performed: June 18 – June 22, 2005
Location: 63° 12' 30'' N 139° 14' 15'' W
NTS: 115O / 03
Mining District: Dawson
Date: 19 Oct 2005

SUMMARY

An induced polarization / resistivity survey was conducted on the Thistle Project for Copper Ridge Explorations Inc. to determine the potential of the property to host a gold-copper system. Three lines, each of 1 – 1.25 km were surveyed using a pole-dipole array with 50 m dipoles between June 18 and June 22, 2005. The survey identified two strong chargeability anomalies, one coincident with a conductive zone on L2 and a moderate chargeability anomaly coincident with a conductive zone on L3. Aurora Geosciences Ltd. was not retained to provide an interpretation of the data.

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Figure 2. GRID AND CLAIMS MAP... following page 1

1.0 INTRODUCTION

Aurora Geosciences Ltd. was retained by Copper Ridge Exploration Inc. to perform an induced polarization / resistivity (IP) survey on the Thistle Project to assess the potential of the property to host a gold-copper system. Three lines of lengths 1.0 to 1.25 km were surveyed with 50 m dipoles to investigate soil geochemical anomalies and identify sulphide-rich horizons.

2.0 LOCATION AND ACCESS

The Thistle Project is located in the Dawson Mining District, approximately 95 km south of the town of Dawson, on NTS map sheet 115 O/03 (Figure 1). The IP survey was performed on the Stewart and Steward claims centered at 589000E, 7010000N (all coordinates in UTM Zone 7N projection using the NAD83 datum) (Figure 2) in an area recently burnt. The property was accessed daily by helicopter (Prism Helicopters' Hughes 500D) from the Lucky Joe camp 60 km north of the property near the end of the Quartz Creek road (592769E, 7071693N).

3.0 GRID

The survey lines, trending 35 / 215 (line 1), 68 / 248 (line 2) and 40 / 220 (line 3), all were on gentle to moderate topography and are shown in Figure 2. Grid installation was performed by Copper Ridge prior to the IP survey. All station coordinates were determined from position measurements taken with a non-differential GPS receiver. Station spacing was 50 metres, straight chained to accommodate the fixed length potential cables. Station to station slopes were measured using a Suunto clinometer.

L1 was labelled with station numbers increasing towards the west, L2 and L3 were labelled with station numbers increasing towards the east. For this report, consistent plots were made and stations were labelled "W" on the plots for L1 and "E" for L2 and L3 so that all plots have east on the right side of the page. This does not however reflect the station labelling on the ground.

4.0 PERSONNEL AND EQUIPMENT

The survey was conducted by the following personnel:

Georges Belcourt.	Crew chief / geophysicist	June 18-22, 2005
Anna Crawford	Technician	June 18-22, 2005

Travis Evans	Helper	June 18-22, 2005
Jean Francois Page	Helper	June 18-22, 2005

The crew was equipped with the following instruments and general equipment:

IP Receiver	1	IRIS Elrec 6 (s/n 120)
IP Transmitters	1	GDD Tx II - 3.6 kW (s/n Tx242)
	1	Honda 5kVA gas generator
Other:	1	Pentium 4 lap top computer
	1	Repair tools (electrical / light mechanical)
	1	IP repair tools
	1	Globalstar satellite phone
	2	Geo-reel winders
	14	50 m 6 conductor cables
	23	Stainless steel electrodes
	2	Speedy winders and spools
	6 km	18 gauge wire
	5	VHF radios
Software:		Geosoft Oasis 6.2 with IP package

5.0 SURVEY SPECIFICATIONS

The survey was conducted according to the following specifications:

Station locations:	Station spacing was 50 m. Every station was surveyed with non-differential GPS.
IP Array:	Modified pole-dipole array. Current electrode southwest of the potential electrodes
Dipole spacing:	50 m
Separations:	Six dipoles read from n=1,2 …, 6.

Tx:	Time domain with a 50% duty cycle, reversing polarity, 0.125 Hz.
Signal sampling:	10 windows, semi-logarithmic sampling over 2 s.
Parameters read:	M - total chargeability Mi - 10 semi-logarithmically spaced time slice channels V_p - primary voltage Sp - self-potential (voltage) I - current Rs - electrode resistance Err - standard deviation of stacked reading
Stacks, repeats:	At least 15 stacks were taken at each station. Stations that were noisy (error > 5 mV/V) had extra readings taken to ensure data repeatability.

6.0 SURVEY NOTES

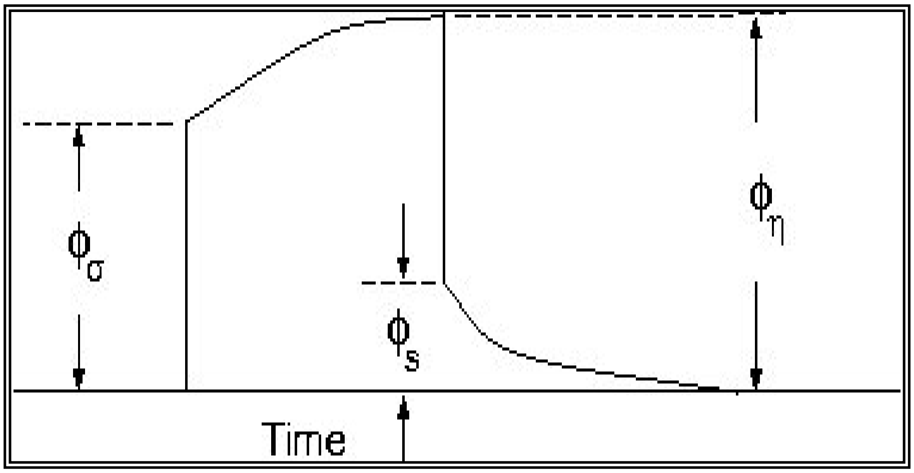
The survey log in Appendix B describes detailed survey operations including production. The crew drove into the Lucky Joe camp on June 18th, 2005 and began to survey on June 19th. One line was read for each of the 3 survey days with the helicopter slinging the gear to the next line before taking the crew back at the end of the day. The crew drove back to Whitehorse on June 22nd.

7.0 IP INVERSION METHOD

The data were inverted using the DCIP2D package developed by the University of British Columbia Geophysical Inversion Facility. The inversion algorithm is described in detail by Oldenburg and Li (1994). A brief description of key features of the algorithm follows.

The IP effect can be described in macroscopic terms. If a time domain signal is put into the ground, as soon as the current is turned on, the voltage immediately rises to a level (ϕ_σ) and thereafter continues to rise to a higher level (ϕ_η). At current shutoff, the voltage immediately falls to a level (ϕ_s) and then slowly decays to zero along a curve similar to that between ϕ_σ and ϕ_η . Apparent chargeability is defined as the "extra"voltage observed:

$$\eta_a = \frac{\phi_\eta - \phi_\sigma}{\phi_\eta} = \frac{\phi_s}{\phi_\eta}$$



The observed DC potentials ϕ_σ are defined by the vector form of Ohms Law:

$$\nabla \cdot (\sigma \nabla \phi_s) = -I\delta(r - r_s)$$

where **r-r_s** is the vector to the measurement point, **I** is the current and σ is the conductivity structure of the earth - the unknown quantity in the geophysical problem. The chargeability can be modeled by replacing the conductivity by an equivalent apparent conductivity controlled by the chargeability:

$$\sigma_\eta = \sigma(1 - \eta)$$

Modeling the IP effect then involves running two conductivity models - one with σ and one with σ_η .

The unknown quantity is the distribution of conductivities in the earth. The software models the earth conductivity structure as a series of rectangular cells of varying size and aspect ratio. The grid is finest (most detailed) near the measurement points and much coarser at locations beside or at depth beneath the measurement points. The padding cells are necessary to avoid having edge effects appear in the model. The size and dimensions of the models in no way compensates for the basic limitations on depth of penetration and resolution inherent in the IP/resistivity survey. Thus the effective depth of penetration (0.5 to 1.0 times the maximum dipole separation) is the limit to which the models should be relied upon to accurately reflect true earth conductivities and chargeabilities.

The program calculates the potential across the finite element network using a starting model. Appropriate boundary conditions are applied when calculating the potentials across the network. These include the condition that all current flow is normal to the cell boundaries and voltages are continuous across the boundaries. The sensitivity of the model to changing the parameters in any cell is calculated as is the misfit between the model results and the actual observed potentials / chargeabilities. The model is then adjusted using the calculated sensitivities of the response to changes in the conductivity of individual cells.

There is no unique solution or model which fits any set of IP / resistivity data. A best-fit model is one which (1) fits the data within the error of the survey and (2) invokes the minimum required degree of complexity to fit the data. For a set of **N** measurements, a global misfit can be defined as:

$$\Psi_d = \sum_{i=1}^{N} \left(W_i \left(r_i - r_i^{obs}\right)\right)^2$$

where W_i is the weighting factor for the i^{th} measurement (r^{obs}) and r_i is the model response for this measurement. The weighting factor is usually the inverse of the error so that a measurement with high error has a low weighting and vice versa. In a system with random noise, the target misfit is **N**. The algorithm reduces Ψ_d by repeatedly adjusting the conductivities to improve the fit until the global misfit equals the target misfit. At this point, the model fits the data to within the error of the survey.

The second requirement of a successful solution is that the complexity of the final model be minimized. IP measurements are inherent averages, deriving resistivity and chargeabilities from large volumes of the subsurface. It is possible to over-fit data, deriving solutions which over-minimize misfit but which invoke models with detail beyond the resolving power of the measuring arrays. The problem is ill-posed and inherently ambiguous in that an infinite number of models may satisfy the global misfit equals target misfit criterion. If both a simple and complex solution can adequately replicate the field data within the bounds of measurement error, the simple solution is to be preferred.

Starting with a reference model m_0 and weighting functions for x and z (w_x, w_z), define the complexity of the model as Ψ_m where:

$$\psi_m(m, m_0) = \alpha_s \int\int w_s(x,z)(m - m_0)^2 \, dx \, dz + \int\int \left\{ \alpha_x w_x(x,z) \left(\frac{\partial(m - m_0)}{\partial x} \right)^2 + \alpha_z w_z(x,z) \left(\frac{\partial(m - m_0)}{\partial z} \right)^2 \right\} dx \, dz$$

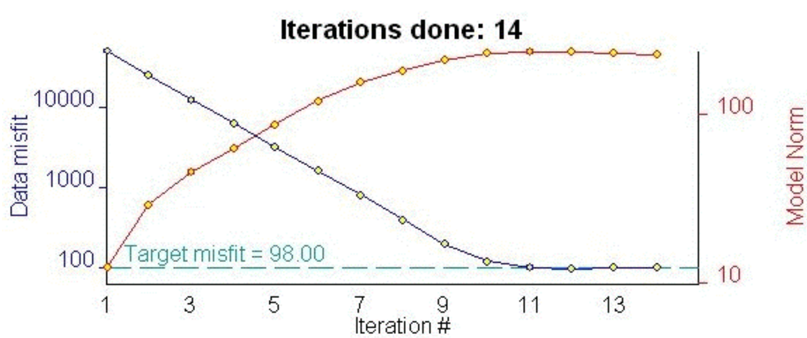
where α_x , α_z and α_s define the relative weight of the model in x, z and fineness. Increasing any of these values increases the importance of that dimension in the final solution. For example, to weight the final solutions towards vertical structures, α_z would be weighted several times more than α_x. To force the model to generate fewer small scale structures, α_s is increased.

The final criteria for a successful solution can then be expressed as:

1. Minimize Ψ_m

2. Subject to the constraint that Ψ_d = N (or very close to it).

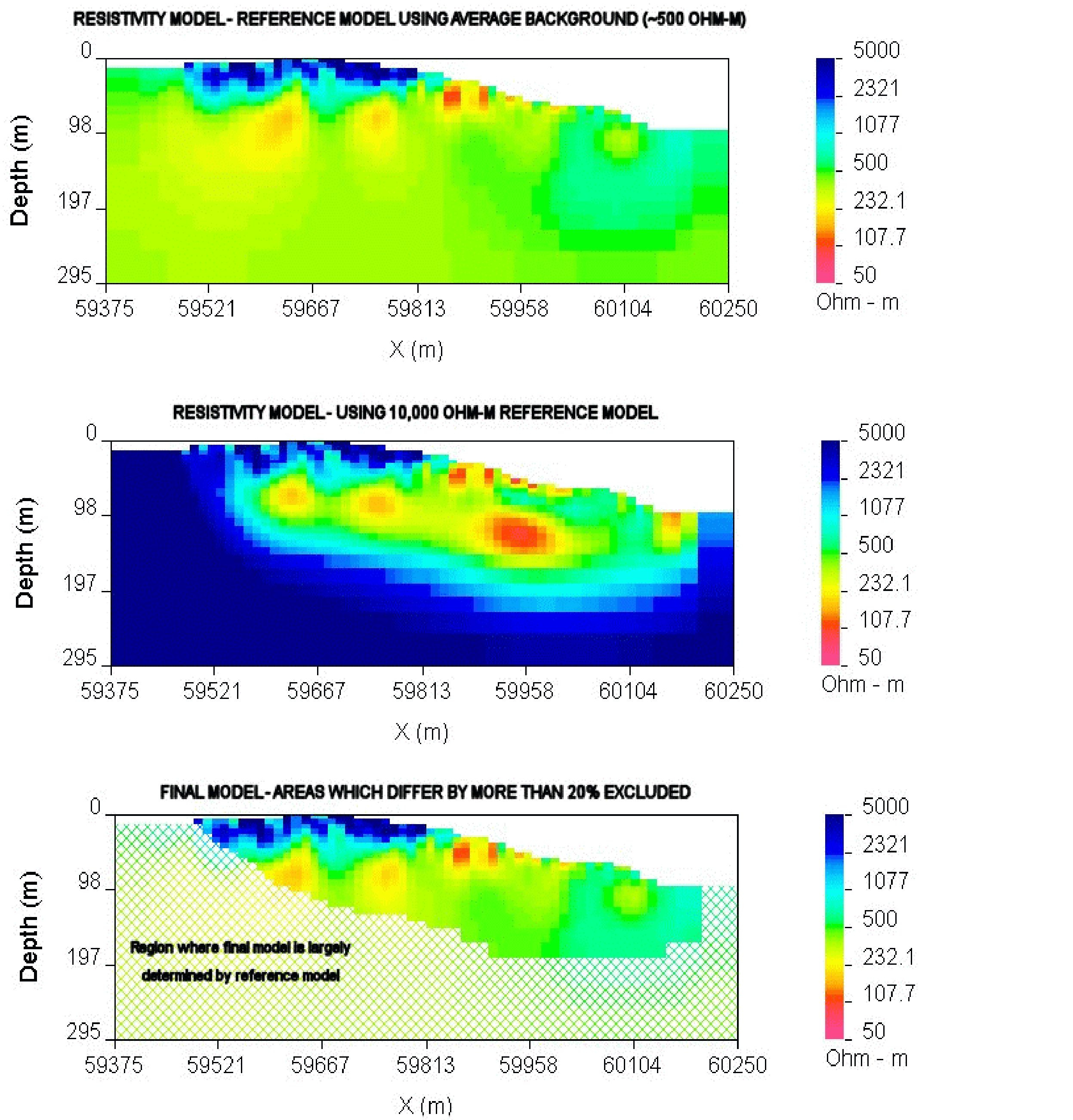
To evaluate a solution, the reader should examine not only the final values but the path the program followed to reach these values. An example of typical convergence curves is shown below:



The black line traces the value of Ψ_d with each iteration and in a good inversion, this will converge to the target misfit (N). The orange curve traces the convergence behavior of Ψ_m . This curve normally starts at a very small value because the reference model is usually set to the initial model and the initial and reference models are very simple. As the inversion proceeds, the solution model becomes increasingly complex as it is adjusted to meet the target misfit. After reaching target misfit, minor adjustments are made to reduce the complexity of the model and the Ψ_m curve stabilizes at some high value.

The field observations may have significant poorly quantified errors or the 2-D assumption may not be valid so that it can be impossible to reduce Ψ_d to N. Instead, Ψ_d can be scaled proportionately by a "chi-factor" ranging up or down from 1.0 (no scaling). Setting a large chi-factor loosens the control that goodness-of-fit exerts on the solution and generally directs the program to use simpler models, which smoothes anomalies and does not accurately fit the fine details in the resistivity or chargeability data. Setting a chi-factor too low may prevent convergence to an acceptable solution. Generally, chi is left at 1.0.

A final feature of note in the inversion is the use of initial and reference conductivity and chargeability models in the inversion process. As noted above, the relation for Ψ_m requires a reference model (m_0) against which solutions are compared. This can be an actual 2D model constructed from known geology or a estimate of half space conductivity or chargeability. In addition, the modeling process will start from an initial model which has the same general form. In general, an average half space conductivity and chargeability based on the field values is the best model to start from and this is the default model for both inversions if none other is specified. This will ensure that Ψ_m converges to a value which is not too large. The initial and reference models can be used to estimate the depth of investigation. If two inversions are performed with very different reference models, there will be regions in the final models which will be the same in both inversion and peripheral regions where the final models will resemble the reference models. An example is shown below:


RESISTIVITY MODEL - REFERENCE MODEL USING AVERAGE BACKGROUND (~500 OHM-M)
Depth (m)
0
98
197
295
59375
59521
59667
59813
59958
60104
60250
X (m)
5000
2321
1077
500
232.1
107.7
50
Ohm - m
RESISTIVITY MODEL - USING 10,000 OHM-M REFERENCE MODEL
FINAL MODEL - AREAS WHICH DIFFER BY MORE THAN 20% EXCLUDED
Region where final model is largely
determined by reference model

8.0 DATA PROCESSING

The following procedures were used to prepare and invert the induced polarization and resistivity data:

1. Data review. All data were dumped daily and imported into Geosoft Oasis Montaj IP package. Apparent resistivity calculations were made using actual current electrode locations, not using an infinite electrode assumption (electrode configuration was a modified pole-dipole, not a true pole-dipole). Quality analysis consisted of examinations of each decay curve and comparison of repeat readings. Readings with standard deviations greater than 5 mV/V, irregular decay curves and those which did not repeat to within 10 % were flagged such that they would not be used in the pseudosections or the inversions.

L1 was labelled with station numbers increasing towards the west, L2 and L3 were labelled with station numbers increasing towards the east. A multiplier of -1 was applied to the station numbers on L1 so that consistent plots could be made and the stations were labelled “W” on the plots for L1 and “E” for L2 and L3. This does not however reflect the station labelling on the ground.

2. Data formatting. The apparent chargeability, resistivity (in normalized voltage over current) and topographic data were formatted for entry into the UBC inversion program.

3. Resistivity modelling. For each line, errors in the apparent conductance were assigned to the data. There is no means of directly quantifying these errors because neither the transmitter nor receiver record the error in the current or voltage. Errors were assumed to be 0.0005 + 5% S/m. Following error assignment, the data were inverted. Default initial and reference models (915, 937 and 1717 Ohm-m for L1, L2 and L3 respectively) were used, based on an average of the apparent resistivity. After the default run, the data were inverted a second time using initial and reference models of 50,000 Ohm-m (a much higher value than the average in the survey area). The purpose of this second run was to generate a model with a background resistivity greatly different than the average values used in the default run. After the second run, the two models were compared and regions in the default model which showed more than 10% discrepancy were replaced by a hatching pattern on the default run. In these hatched regions, the final model is not sensitive to the field data and the subsurface information is not reliable.

4. Chargeability modelling. For each datum, the observed standard deviation of chargeability was used as a measure of error for apparent chargeability. To avoid zero errors, 0.2 mV/V was added to each error measurement. The IP data were first inverted using default values (initial and reference model of a 0 mV/V half-space), with the same mesh as the resistivity modelling, using the default recovered resistivity model. After the first run, the data were inverted a second time using initial and reference models which incorporated background chargeabilities of 100 mV/V (a much higher value than the average in the survey area). The two models were then compared and regions in the default model which showed more than 10% discrepancy were replaced by a hatched pattern in the final models. In these hatched regions, the final model is not sensitive to the field data and the subsurface information is not reliable.

A chi-factor of 4 was used for the IP inversion on L2 to achieve convergence.

5. Image generation. After the modelling was complete, final images were generated with the inversion software and converted to JPEGs which appear in Appendix D.

6. Image extraction and figure generation. Images of the final inversion models were plotted with a common colour scale of 400 – 7500 Ohm-m (logarithmic) for the recovered resistivity model and 0 – 40 mV/V (linear) for the recovered chargeability model. These images were cropped, extracted and plotted to scale with the pseudosection plots. Pseudosections of the apparent resistivity, chargeability and error in chargeability were prepared from the final edited data using the Geosoft Oasis Montaj IP package with scales 700 – 3500 (logarithmic) Ohm-m for apparent resistivity, 0 – 25 (linear) mV/V for apparent chargeability and 0 – 1 mV/V for error in apparent chargeability. These plots are in Appendix E, found in the back pocket of this report.

7. Digital archive. The final IP data, digital copies of the pseudosections and recovered model plots were written to CD-ROM.

9.0 DATA PRODUCTS

The following data files are appended to the digital version of this report

IP0619GB.DMP IP0620GB.DMP IP0621GB.DMP	Raw IRIS Elrec 6 daily dump files.
ThistleIP.xyz ThistleIP.gdb	Final, averaged data in Geosoft XYZ (ASCII) format and in Oasis Montaj IP database format.
Thistle UTM coordiantes.txt	Tab delimited ASCII file with non-differential GPS locations of every electrode and elevations calculated from station to station slopes
Figure 1 – Location Plot .pdf Figure 2 – Grid & Claims Map.pdf	Figures 1 and 2 in pdf format.
Figure E1 – L1.pdf Figure E2 – L2.pdf Figure E3 – L3.pdf	Pseudosections of apparent resistivity, apparent chargeability and error in apparent chargeability and recovered models of resistivity and chargeability (scale = 1:5000) in pdf format.
Thistle 2005 IP Report.pdf	A pdf version of this report.

11.0 RESULTS

Plots of all pseudosections and recovered models are found in Appendix E (back pocket of this report). Appendix D contains inversion results with convergence curves, modelled and observed data.

L1 - A conductive surface layer extends the length of L1 with recovered resistivities of 500 Ohm-m. The eastern half of the line has weakly elevated chargeabilities (2 X background on pseudosection).

L2 - L2 becomes more conductive towards the east with recovered resistivities of 500 Ohm-m between 700E and 1000E. Two chargeable zones are recovered, a 35-40 mV/V anomaly centred at 320E and a > 40 mV/V zone starting at 820E, open to the east and at depth. The eastern chargeable zone is coincident with the conductive zone.

L3 - There is a moderately conductive zone (1000 Ohm-m) coincident with a moderately chargeable area (20 mV/V) centred at 320E on L3.

The hatching is designed to indicate a depth of investigation. Models with initial and reference half-spaces of high resistivity (50 000 Ohm m) and high chargeability (100) were run and then the regions where the recovered models from these runs differed by more than 10% from the default runs are hatched out. This is done because the recovered models in those areas are significantly affected by the initial conditions rather than the data itself.

The surficial conductive layer on L1 channels the current, resulting in a shallow depth of investigation, which is observed. For L2, the depth of investigation decreases in the more conductive part of the section. This does not imply that the eastern chargeability anomaly on L2 is not a real, robust feature but that the survey did not conclusively image the bottom of it.

The depth of investigation on L3 decreased in the east part of the line despite the ground being more resistive. This is likely because a very resistive (50 kOhm-m) model was used for the depth of investigation calculation and the data appear to not be sensitive to changes in the resistive portion of the model. When a low-resistivity initial and reference model was used for the depth of investigation calculation, the un-hatched model extends significantly deeper.

Aurora Geosciences Ltd. was not retained to provide an interpretation of the data.

Respectfully submitted,
AURORA GEOSCIENCES LTD.

Dave Hildes Ph. D., P. Geo.
Geophysicist

REFERENCES

Oldenburg, D.W. and Y. Li (1994) Inversion of induced polarization data. Geophysics Vol. 59. No. 9. pp. 1327-1341.

Sumner, J.S. (1976) Principles of Induced Polarization for Geophysical Exploration. New York: Elsevier.

Telford, W.M., L.P. Geldart and R.E. Sheriff (1990) Applied Geophysics (2nd Edition) New York: Cambridge University Pres

APPENDIX A - CERTIFICATE

I, David Henry Degast Hildes Ph. D., P. Geo., with residence address in Whitehorse, Yukon Territory do hereby certify that:

1. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, license number 29887.

2. I am a graduate of the Queens University of Ontario with a B.Sc. (Honours) degree in Chemical Physics obtained in 1991 and a graduate of the University of British Columbia with a Ph. D. in Geophysics obtained in 2001.

3. I have been actively involved in mineral exploration in the Yukon since 2003 and am now employed as a geophysicist with Aurora Geosciences Ltd.

4. I have no interest, direct or indirect, nor do I hope to receive any interest, direct or indirect, in Copper Ridge Explorations Inc. or any of their properties.

Dated this 21st of October, 2005 in Whitehorse, Yukon.

Respectfully Submitted,

Dave H. D. Hildes Ph. D., P. Geo.

APPENDIX B – SURVEY LOG

AURORA GEOSCIENCES LTD.

THISTLE IP
JOB KRX-05-01-YT
COPPER RIDGE RESOURCES

Period: June 18th - June 22nd, 2005

Personnel:	Georges Belcourt	Crew Chief
	Anna Crawford	Helper
	Travis Evans	Helper
	JF Page	Helper

Sat Jun 18/05 — Mobe Day
Drive into Dawson, pick up Travis Evans and then drive to Lucky Joe camp on the Quartz Creek road. Setup tent and get some sleep.
Wx: Sunny and hot. +25C.

Sun Jun 19/05 — Survey Day
Fly out to first line, wait for sling load and rest of personnel. Get set up and read 1km line with 50m dipoles. Pack up and ready for sling load to next line by 4pm. Back into camp by 5:30pm.
Wx: Sunny and warm , light winds. +15C.

Mon Jun 20/05 — Survey Day
Out to second line in last years burn. Setup and read 1.1km line with 50m dipoles. Pack up and ready for sling load to next line by 4pm. Back into camp by 5pm.
Wx: Overcast and drizzle, low ceiling. +8C.

Tue Jun 21/05 — Survey Day
Out to line #3 in last years burn. A foggy start to the day, clears off by lunchtime. Setup and read 1.3 km line with 50m dipoles. Pack up and ready for slingload back to camp at 5pm.
Wx: Fog burning off to a sunny and hot day. +19C.

Wed Jun 22/05 — Demobe Day
Truck and driver arrives from Whitehorse at 11:30am to load our crew/gear. We delivered 7 bags of samples to Kluane Freight Lines in Dawson, and then drove back to Whitehorse.
Wx: Sunny and clear. +20C.

APPENDIX C – INSTRUMENT SPECIFICATIONS

I. OVERVIEW

I.1. GENERALITIES

The ELREC Pro unit is a receiver designed for high productivity mineral exploration
It allows to measure primary voltage and decay voltage curve values, giving thus resistivity and chargeability (IP) data.
This unit is designed to be used with an *IRIS instruments* external transmitter, called VIP.

The main technical characteristics of this receiver are the following ones:
- 10 reception dipoles available to carry out some measurements with high productivity in the field
- 20 partial chargeability windows available to measure the discharge phenomena with an high accuracy.
- a 1 µV resolution on the primary voltage allowing to obtain very accurate measurements.
- a large graphic LCD display for user-friendly operating allowing to show the data in real time numerically and graphically.

The ELREC Pro unit can be also used in automatic switching mode (in that case, some additional external *Switch Plus* boxes have to be used) for intensive measurements.

I.2. DESCRIPTION

I.2.1. Front panel

All controls are located on the front panel. This one features:
- Graphic LCD (128x140 dots) made of 16 lines by 40 characters
- Eleven plugs for connecting the potential electrodes
- Plugs "+" and "-" for the external battery connection
- Three pins plug (RS232 standard port) for the serial link cable connection
- Four pins plug for internal battery charger connection
- Keyboard with 16 keys

ANNEX 3: IP PARAMETERS AND CHARGEABILITY

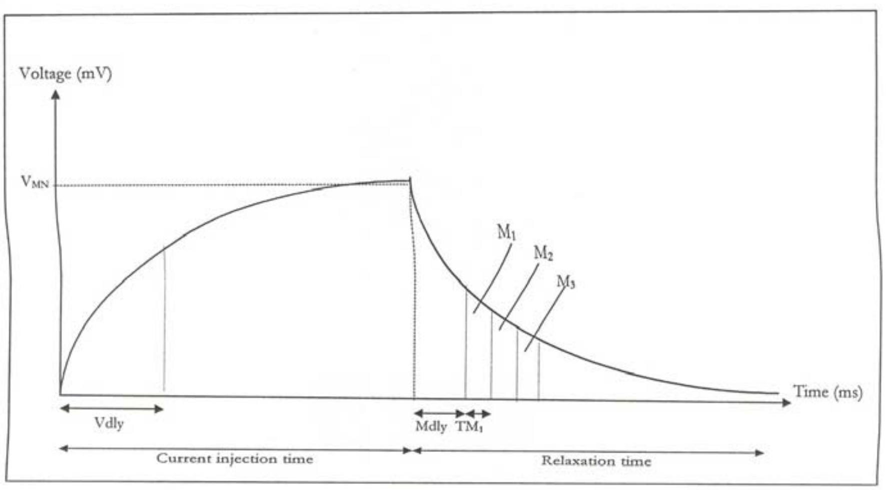
The partial chargeabilities measurements (M_i) and the average global one deduced (M_g) give some information regarding the ability of the soil to charge itself due to a current flow.
The partial chargeability of the window "i" is measured thanks to the following formula:

$$M_i = \int_{TM_i} V dt \; / \; TM_i . V_{MN}$$

And the global chargeability is computed thanks to the following formula:

$$M_g = \sum_{i=1}^{n} (M_i . TM_i) \; / \; \sum_{i=1}^{n} TM_i \qquad \text{(n: number of IP windows)}$$

The discharge phenomena observed during the relaxation time can be described according to the following curve:



With the ELREC Pro, up to 20 IP windows can be used to define the decay curve.

The number of IP windows available for the measurement depends on the type of IP mode and on the current injection time:

⇒ **Current injection times** available (cf. II.1.5): 500 ms - 1 s - 2 s - 4 s - 8 s

⇒ Types of **IP mode** available (cf. II.1.5): Arithmetic – Semi logarithmic – Logarithmic Cole-Cole - Programmable

For a given current injection time and IP mode, the program will choose automatically the IP parameters (Mdly, Vdly, TM_i) that will be used for the measurement.

Note:

The programmable mode is a mode where 20 fully programmable windows are available. The operator has to select the delay time (Mdly) with a minimum of 20 ms and the width of each partial window (TM_i) with a minimum of 10 ms. Vdly is automatically determined by the injection time chosen.

In the following tables, the preset TM_i values are given for each IP mode (1 means TM_1 ...):

- **Time = 500 ms**

Mode	Vdly	Mdly	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arith.	280	60	40	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Semi	280	40	40	80	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Log.	280	160	80	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cole	280	160	80	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- **Time = 1000 ms**

Mode	Vdly	Mdly	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arith.	580	120	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Semi	580	40	20	20	20	20	20	20	20	20	40	40	40	40	40	40	80	80	80	80	80	80
Log.	580	160	120	220	420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cole	580	20	10	20	20	20	20	20	30	30	30	40	40	40	50	50	50	60	60	70	80	90

- **Time = 2000 ms**

Mode	Vdly	Mdly	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arith.	1260	240	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Semi	1260	40	40	40	40	40	40	40	80	80	80	80	80	80	80	160	160	160	160	160	160	160
Log.	1260	160	120	220	420	820	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cole	1260	20	20	30	30	30	40	40	50	60	70	80	90	100	110	120	130	140	150	160	180	200

- **Time = 4000 ms**

Mode	Vdly	Mdly	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arith.	2620	480	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
Semi	2620	160	80	80	80	80	80	80	80	80	160	160	160	160	160	160	320	320	320	320	320	320
Log.	2620	160	120	220	420	820	1620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cole	2620	20	40	50	60	70	80	90	100	110	120	140	160	180	200	220	250	280	320	380	450	530

- **Time = 8000 ms**

Mode	Vdly	Mdly	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arith.	5340	960	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
Semi	5340	320	160	160	160	160	160	160	160	160	320	320	320	320	320	320	640	640	640	640	640	640
Log.	5340	160	120	220	420	820	1620	3220	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cole	5340	20	40	60	80	100	120	150	180	220	250	280	320	360	400	450	500	580	700	850	1010	1180

About the **IP values type,** note that the changing "raw (R) ⇔ normalised (N)" can be realised after the acquisition.

The normalization allows to homogenize the data that have been obtained with various injection and integration times. This is made with respect to a standard decay curve, which is the one obtained with the following parameters:

Mode: Logarithmic
Injection time: 2000 ms
Vdly: 1260 ms
Mdly: 160 ms
TM_1: 120 ms
TM_2: 220 ms
TM_3: 420 ms
TM_4: 820 ms

The coefficients to multiply, allowing to go from a type to the other one, are indicated in the following tables:

ANNEX 7: SPECIFICATIONS

Technical:

- Input impedance: 10 Mohm
- Input overvoltage protection up to 1000V
- Automatic SP bucking with linear drift correction
- Internal calibration generator for a true calibration on request of the operator
- Internal memory: 3200 dipoles reading
- Automatic synchronization and re-synchronization process on primary voltages signals whenever needed
- Proprietary intelligent stacking process rejecting strong non-linear SP drifts
- Common mode rejection: more than 100 dB (for Rs = 0)
- Self potential (Sp) : range: -15V - +15V
  : resolution: 0.1 mV
- Ground resistance measurement range: 0.1 - 100 kohms
- Primary voltage : range: 10µV - 15V
  : resolution: 1µV
  : accuracy: typ. 0.3%
- Chargeability : resolution: 10µV/V
  : accuracy: typ. 0.6%

General:

- Dimensions: 31x21x25 cm
- Weight (with the internal battery): 9 kg
- Operating temperature range: -30°C - 70°C
- Case in fiber-glass for resisting to field shocks and vibrations

Instrumentation GDD

The Induced Polarization Transmitter

TxII-1800 and TxII-3600 Models

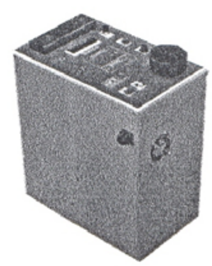
For Fast, High-Quality Induced Polarization Surveys in All Field Conditions

Flyers high / low resolution TxII/1 **(63 KB) /** TxII/2 **(1 MB)**

At Last, a High-Quality Affordable IP Transmitter

CONTENTS

TxII-1800/TxII-3600 IP transmitter
Specifications
Purchase - Rental



TxII-1800 Model, 1800 watts

Its high power, up to 10 amperes, combined with its light weight and a 21 kg/2000W Honda generator makes it particularly suitable for dipole-dipole Induced Polarization surveys.

Features

- **Protection against short circuits even at zero (0) ohms**
- **Output voltage range: 150 V to 2400 V / 14 steps**
- **Power source: 120 V, Optional: 220 V / 50/60 Hz**
- **Operates from a light backpackable standard 120 V generator**
- **Up to three years warranty**

This backpackable 1800 watts induced polarization (I.P.) transmitter works from a standard 120 V source and is well adapted to rocky environments where a high output voltage of up to 2400 V is needed. Moreover, in highly conductive overburden, at 150 V, the highly efficient TxII-1800 watts transmitter is able to send a current of up to 10 amperes. By using this I.P. transmitter, you obtain fast and high-quality I.P. readings even in the most difficult conditions.

TxII-3600 Model, 3600 watts

Its high power, up to 10 amperes, combined with a Honda generator makes it particularly suitable for pole-dipole Induced Polarization surveys.

Features

- **Protection against short circuits even at zero (0) ohms**
- **Output voltage range: 150 V to 2400 V / 14 steps**
- **Power source: 220 V, 50/60 Hz**
- **Operates from a standard 220 V generator**
- **Up to three years warranty**

This 3600 watts induced polarization (I.P.) transmitter works from a standard 220 V source and is well adapted to rocky environments where a high output voltage of up to 2400 V is needed. Moreover, in highly conductive overburden, at 150 V, the highly efficient TxII-3600 watts transmitter is able to send a current of up to 10 amperes. By using this I.P. transmitter, you obtain fast and high-quality I.P. readings even in the most difficult conditions.

Specifications

General	
Size TxII-1800	21 x 34 x 39 cm
Size TxII-3600	21 x 34 x 50 cm
Weight TxII-1800	approx. 20 kg
Weight TxII-3600	approx. 35 kg

Operating temperature	-40°C to 65°C
Electrical	
Used for time-domain IP	2 sec. ON 2 sec. OFF
Time Base	1-2-4-8 sec.
Output current range	0.005 to 10 A
Output voltage range	150 to 2400 V
Power source TxII-1800	Recommended motor/generator set: Standard 120 V / 60 Hz backpackable Honda generator Suggested Models: EU1000iC, 1000 W, 13.5 kg. or EU2000iC, 2000 W, 21.0 kg.
Power Source TxII-3600	Recommended motor/generator set: Standard 220 V, 50/60 Hz Honda generator Suggested Models: EM3500XK1C, 3500 W, 62 kg or EM5000XK1C, 5000 W, 77 kg
Controls	
Power	ON/OFF
Output voltage range switch	150 V, 180 V, 350 V, 420 V, 500 V, 600 V, 700 V, 840 V, 1000 V, 1200 V, 1400 V, 1680 V, 2000 V, 2400 V
Displays	
Output current LCD	reads to ±0,001 A
Very cold weather	standard LCD heater on readout
Protection	Total protection against short circuits even at zero (0) ohms
Indicator lamps **(in case of overload)**	- High voltage ON-OFF - Output overcurrent - Generator over or undervoltage - Overheating - Logic failure - Open loop protection

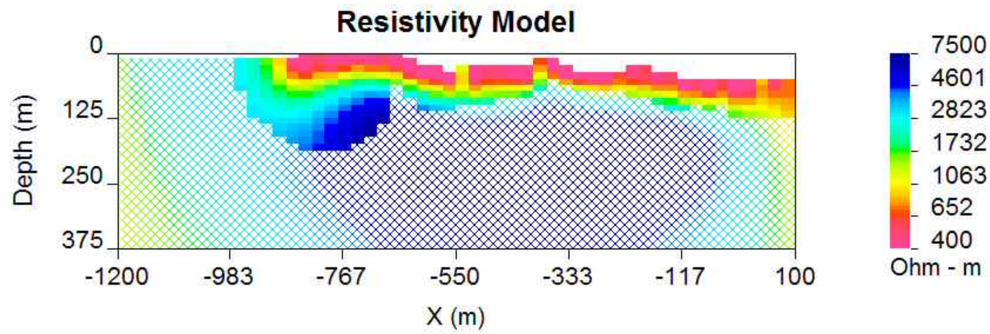
Purchase and Rental Info

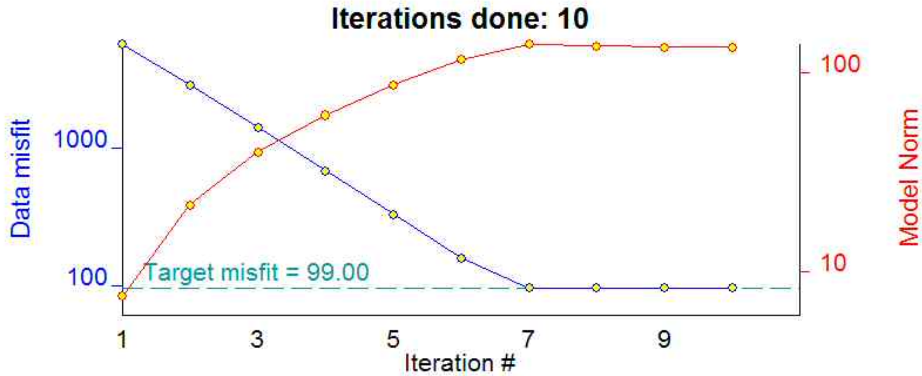
Interested by the TxII-1800 W IP or the TxII-3600 W IP transmitter?

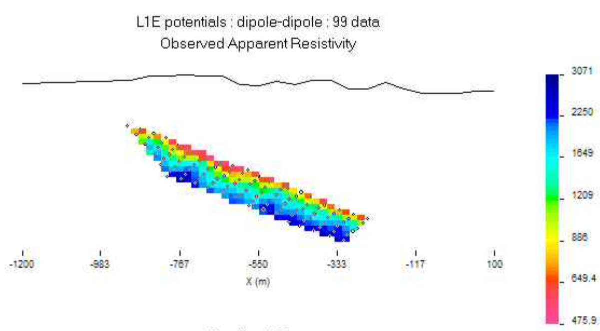
It is simple. You can rent it or purchase it. The choice is yours. Here is some information you

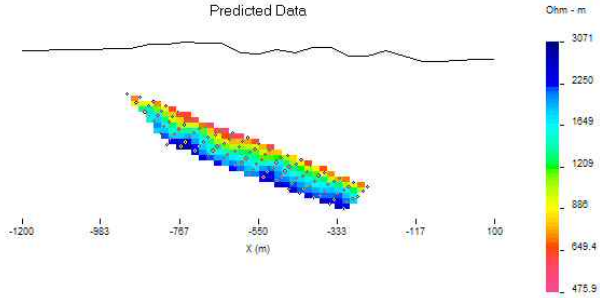
APPENDIX D – INVERSION RESULTS

L1 Resistivity

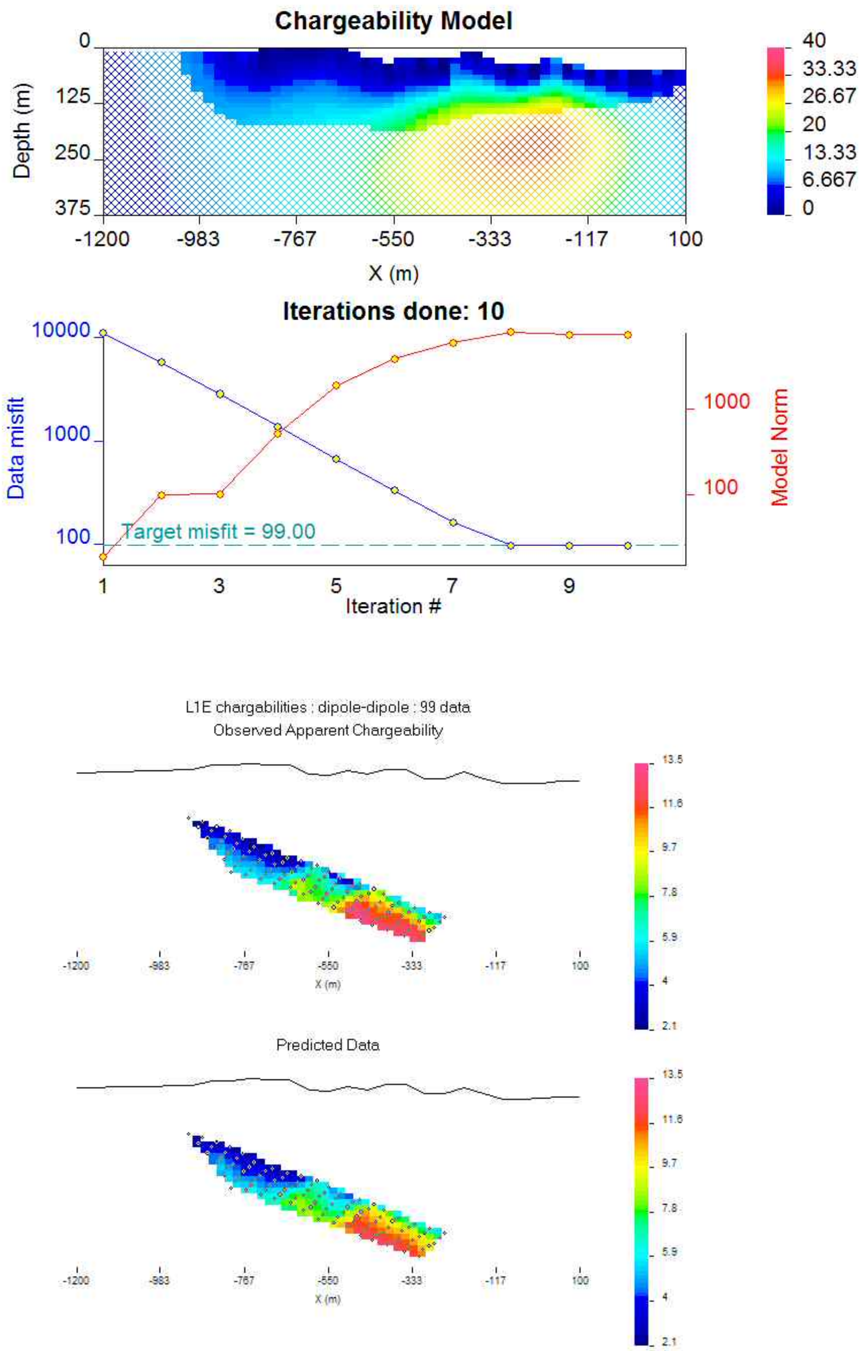




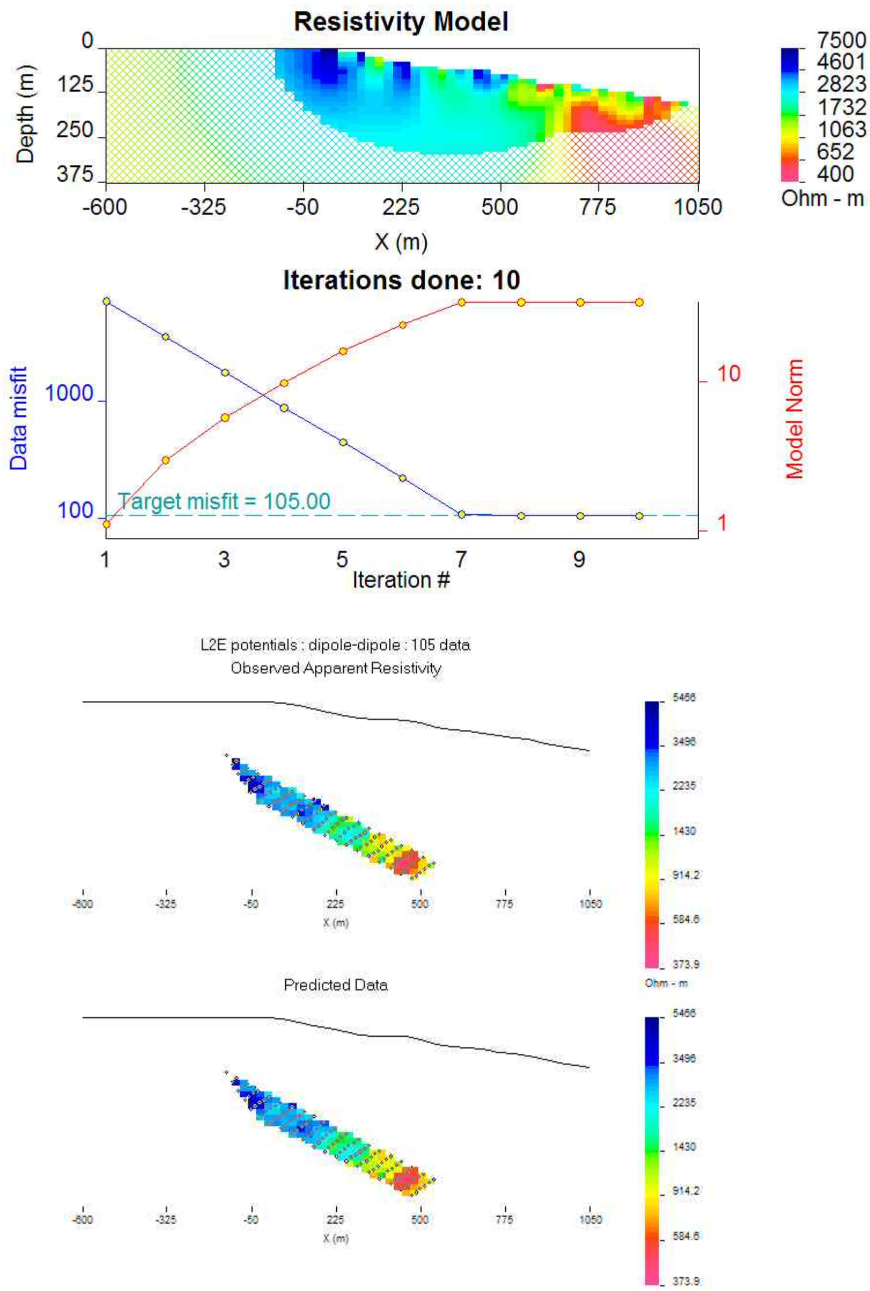




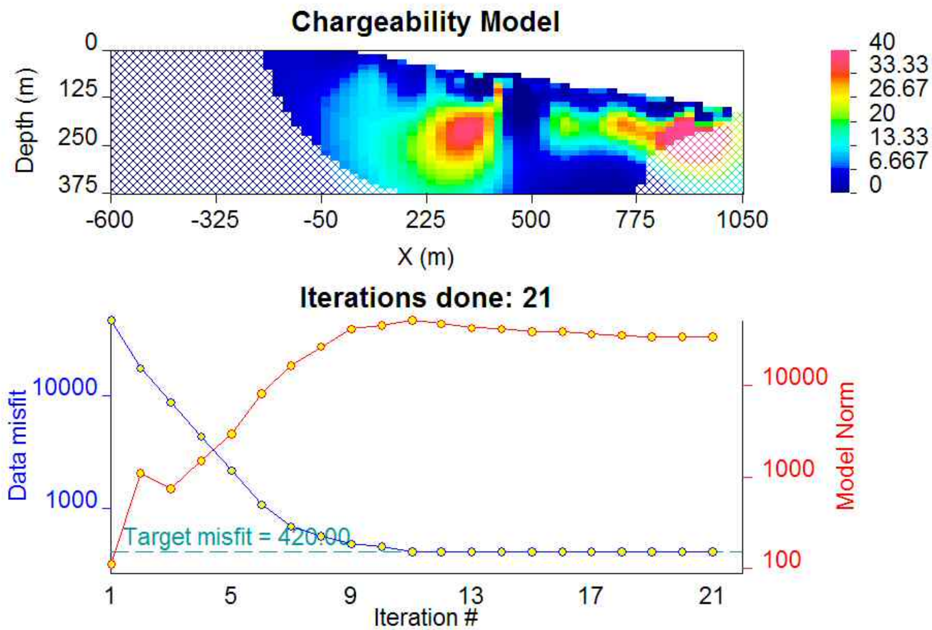
L1 Chargeability

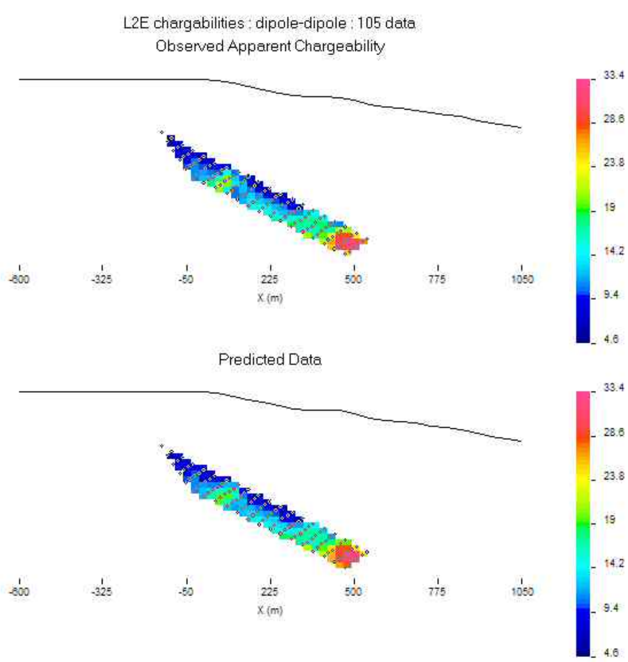


L2 Resistivity

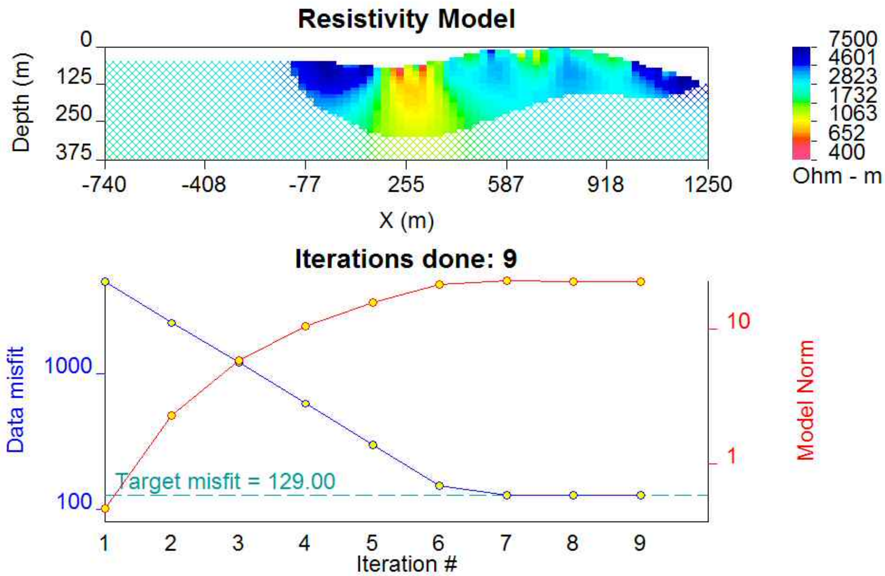


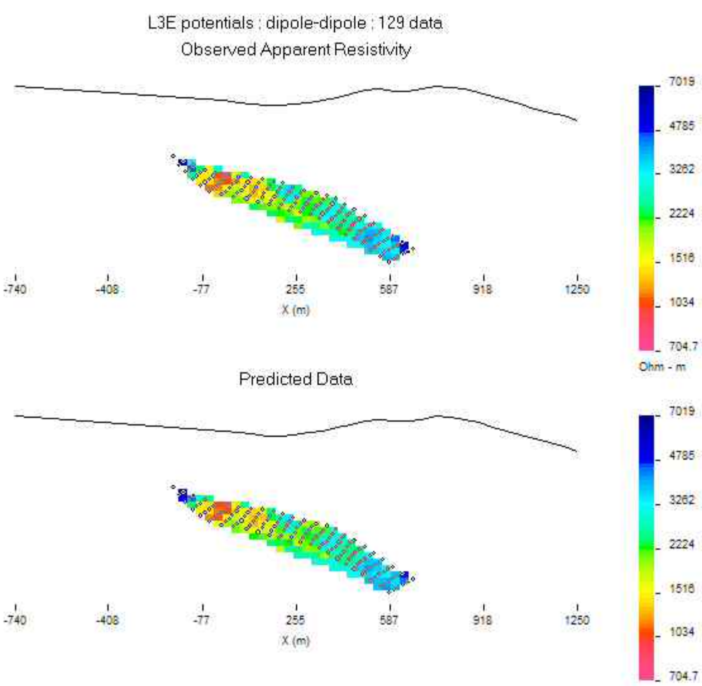
L2 Chargeability





L3 Resistivity





L3 Chargeability