



## ASSESSMENT REPORT TITLE PAGE AND SUMMARY

**TITLE: 3D INDUCED POLARIZATION AND MAGNETIC GEOPHYSICAL SURVEY ON THE SILVERBOSS PROPERTY**

TOTAL COST: \$ 123,850

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NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): MX-4-477 Approval # 12-1620658-0424

STATEMENT OF WORK EVENT NUMBER(S)/DATE(S) : 5423498, 2012

PROPERTY NAME: Silverboss

CLAIM NAMES (on which work was done): 526510, 556513,408035

COMMODITIES SOUGHT: copper, molybdenum, gold, silver

MINFILE NUMBERS: 093A019

MINING DIVISION: Cariboo

NTS / BCGS: 093A006/093A016

LATITUDE: 120° 16' 11.85" W, LONGITUDE: 52° 06' 02.57" N (at centre of work)

UTM: East: 644,000; North: 5,774,000; Zone 10

OWNER(S): Happy Creek Minerals Ltd. (FMC 203169)

MAILING ADDRESS: #460 – 789 West Pender St.; Vancouver, B.C.; V6C 1H2

OPERATOR(S) [who paid for the work]: Same as above

MAILING ADDRESS: Same as above

REPORT KEYWORDS: Triassic to Lower Jurassic Takomkane batholith cut by middle Cretaceous quartz monzonite. Rhyolite, basalt-andesite dikes. Chalcopyrite, molybdenite, pyrite contain copper, molybdenum, gold and silver values occur in quartz veins and breccia around the Boss Mountain molybdenum mine. Three dimensional induced polarization (3D IP) and magnetic geophysical surveys.

PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 30830

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
<b>GEOPHYSICAL SURVEY</b>			
3D IP	16.125 km	526510, 556513,408035,	\$100,000
Magnetometer	18 km	526510, 556513,408035,	\$23,850.90
Total Cost			<b>\$ 123,850.90</b>

**ASSESSMENT REPORT ON A  
THREE DIMENSIONAL INDUCED POLARIZATION AND MAGNETIC  
GEOPHYSICAL SURVEY**

**of the  
SILVERBOSS PROPERTY**

**BC Geological Survey  
Assessment Report  
33672**

**Event Number: 5423498**

CARIBOO MINING DIVISION, BRITISH COLUMBIA

**BCGS MAPSHEETS: 093A.006 & 093A.016**

**52°06'02.57" N**

**120°16'11.85" W**

For:

**Happy Creek Minerals Ltd.**

#460-789 Pender Street

Vancouver, BC, Canada

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By:

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February 5, 2013

## SUMMARY

The Silverboss property is located 85 kilometres northeast of 100 Mile House in the south-central Cariboo region of British Columbia. The property is comprised of 58 contiguous mineral tenures that total 15,555 hectares in area (BCGS map sheets 093A.006 and 093A.016). The claim group surrounds the former Boss Mountain molybdenum mine on Big Timothy Mountain. Access to the property is from 100 Mile House, B.C. and through Forest Grove and Eagle Creek via paved and well-maintained gravel roads. Trails provide access to higher elevation areas above the mine site.

The Silverboss property is underlain primarily by composite granodiorite of the Early Jurassic Takomkane batholith. Intrusive rocks range from medium to coarse grained granodiorite to diorite in composition. Porphyritic quartz monzonite of the Boss Mountain stock and middle Cretaceous in age, cuts the batholith in proximity to the molybdenum deposits on the south side of the 10 Mile Creek area of the Silverboss property. Molybdenum deposits of the former Boss Mountain molybdenum mine are located at the western periphery of the Boss Mountain stock. Molybdenum mineralization at the mine is thought to be related to rhyolite porphyry, rhyolite and basaltic-andesite dykes, quartz veining and breccia. Molybdenum mineralization is mainly contained within quartz veins and lesser breccia bodies within the granodiorite phase of the batholith and tungsten (scheelite) occurs in proximity to the molybdenum deposits.

Between 2005 and 2011, Happy Creek Minerals performed systematic soil and rock geochemical surveys that identified several positive, large scale copper, molybdenum, tungsten, gold and silver zones that occur well beyond the known molybdenum deposits. These include the Horse Trail zone, extending westward from the mine's molybdenum deposits and the East Breccia and Silverboss Shaft located northwest of the mine.

During the period July 1<sup>st</sup> to August 5<sup>th</sup>, 2012 the company completed line cutting grids and a three dimensional induced polarization (3D IP) and magnetometer geophysical survey in the Horse Trail and Silverboss shaft areas located adjacent, and west and northwest of the Boss Mountain molybdenum mine, respectively. These areas contain positive values in soil and outcrops of quartz veins contain positive copper, molybdenum, gold and silver values. On both grids, the IP survey returned moderate to strong chargeability values located beneath the positive surface samples.

Geophysical survey results from the Horse Trail and Silverboss shaft areas correlate well with the known surface zones, and extend to depths of greater than 150 to over 350 metres below surface. The IP results from the Horse Trail zone indicates very strong anomalies occur and extend from the boss mountain mine property westward, beneath surface showings of copper, molybdenum, gold and silver.

These positive geophysical patterns may be associated with mineralization at the Boss Mountain mine or similar to the Woodjam-Southeast prospects to the north, currently being advanced by Gold Fields.

Results of this work define targets requiring approximately 1,500 metres of diamond drilling in four or five holes to test for bulk tonnage style copper, molybdenum, gold and silver mineralization. Additional IP geophysical surveys are also recommended to cover extensions of the Silverboss Shaft zone and the copper in soil anomaly at the Gus prospect.

## Table of Contents

1. INTRODUCTION .....	7
2. LOCATION AND PROPERTY DESCRIPTION.....	7
3. ACCESS, TOPOGRAPHY, VEGETATION AND CLIMATE.....	7
4. HISTORY .....	8
5. GEOLOGICAL SETTING.....	9
5.1 Regional Geology .....	9
5.2 Local and Property Geology.....	10
5.3 Mineralization and Alteration.....	11
6. 2012 EXPLORATION PROGRAM .....	13
7. RESULTS AND DISCUSSION.....	13
7.1 North Grid – East Breccia and Shaft Zone.....	13
7.2 South Grid – Horse Trail Zone.....	14
8. CONCLUSIONS AND RECOMMENDATIONS .....	15
9. REFERENCES .....	16
10. STATEMENT OF COSTS – 2012 .....	17
11. STATEMENT OF QUALIFICATIONS .....	18

## Tables

- 1 Mineral Tenures
- 2 Summary of Previous Work

## Figures

- 1 Silverboss Property Location
- 2 Silverboss Mineral Tenures
- 3 Regional Geology
- 4 Property Geology
- 5 Location of IP and Magnetic Survey
- 6a Location of IP Grid (Chargeability)
- 6b Location of IP Grid (Resistivity)
- 6c Location of Total Magnetic Intensity Survey

## Appendices

- 1 Logistic Report, Three Dimensional Induced Polarization and Magnetometer Survey

## **1. INTRODUCTION**

The following report was prepared by Happy Creek Minerals Ltd. to document the results of the 2012 geophysics exploration program carried out on the Silverboss property in the Cariboo Mining District of British Columbia (Figure 1). This report has been prepared in order to satisfy assessment work requirements and discusses a Three Dimensional Induced Polarization and Magnetometer Survey carried out on the property during July and August, 2012.

## **2. LOCATION AND PROPERTY DESCRIPTION**

The Silverboss property is a group of mineral claims that surrounds the former Boss Mountain molybdenum mine on Big Timothy Mountain. The property is located by road, 85 kilometres northeast of 100 Mile House; in the south central Cariboo region of British Columbia (Figure 1). The property boundary on the east side of Timothy Mountain lies within 350 meters of the Boss Mountain open-pit.

The Silverboss property consists of 58 contiguous mineral tenures (Table 1) that cover 15,555 hectares of land on BCGS map sheets 093A.006 and 093A.016 in the Cariboo Mining Division (Figure 2). The Silverboss property is located between latitudes 52°09'00" and 51° 59' 00" North and longitudes 120° 57' 00" and 120° 38' 00" West. The centre of the claim block is located at latitude 52°06'02.57" North and longitude 120°16'11.85" West. All of the individual tenures are 100%-owned by Happy Creek Minerals Ltd.

## **3. ACCESS, TOPOGRAPHY, VEGETATION AND CLIMATE**

Access to the property is by well-maintained paved and gravel roads. To access the centre of the property, travel 2 km north of 100 Mile House on Highway 97 and turn right onto the Canim-Hendrix road. Travel this road to Forest Grove and turn right at the 3 way stop. Continue on the Canim-Hendrix road for a total of 50 km from Highway 97 to Eagle Creek Bridge. Cross the bridge to the start of the Hendrix Lake (6000) road. Travel northerly along the 6000 road for 33 km to the junction with the Boss Mountain mine road, just south of the Hendrix Lake town site. The mine road is followed westerly for 7 kilometres to a gate. Access beyond the gate is either by foot or ATV via several trails that access various parts of Big Timothy Mountain around the mine property. An alternate route exists and accesses the southern area of the property: via 6000 main road, turn at 6015 km marker onto the 620 or Boss Creek forestry road. ATV access along rough cat trails is possible to higher elevations from the historical Molybdenite Creek road. Helicopter access to the property is favourable and charter companies are readily available in Williams Lake or 100 Mile House. These are the nearest major towns, are both situated on Highway 97 and can provide most required services and amenities to support mineral exploration. These are resource-based communities and each has a district population in excess of 10,000 persons. Hydro power is accessible 7.0 kilometres to the east at the Hendrix Lake town site.

The Silverboss property is located within the Interior Wet Belt biogeoclimatic zone of the Quesnel Highlands physiographic region. There is a significant variation in topographic features from west to east across the property. The western claims are centred on and around Big Timothy or

Takaomkane Mountain and are adjacent to the Boss Mountain mine pits. The eastern claims straddle the Hendrix Creek drainage, with Hendrix Lake standing out as a prominent feature in the centre of the eastern claim group. The northern section of the claim group is transitional from gentle slopes to plateau-like mountaintops.

Elevations on the property range from 1080 metres above sea level near Hendrix Lake in the east to greater than 2140 metres above sea level at the peak of Big Timothy Mtn.

Many of the lower slopes have been logged. Remaining forested areas are covered by a mixture of mature and juvenile stands of spruce, lodgepole pine, balsam, Douglas fir, paper birch and aspen. Areas on the property locally consist of western red cedar and white spruce. The ground cover is dominated by alder and willow saplings as well as wild rose, thimbleberry shrubs and fireweed. The upper slopes are vegetated in isolated clumps with sub-alpine fir and a variety of alpine plants. There are several prominent creeks on the property, including Moffat, Molybdenite, Boss and Hendrix. The property also encompasses numerous small creeks, wetlands and lakes.

The climate is typical of the northern interior of British Columbia. Summer temperatures average a daytime high in the 20°C range with occasional temperatures reaching the low 30°C range. October through April sees average sub-zero temperatures with extreme lows reaching -30°C. The annual precipitation is an average of 50 cm including winter snowfall.

#### **4. HISTORY**

The Silverboss property has been explored by Happy Creek Minerals Ltd. since 2005. A summary of previous work is listed in Table 2.

Exploration in the area has been dominated by discovery of molybdenum mineralization and subsequent development of the former Boss Mountain molybdenum mine (Robinson, 2009; MINFILE 093A 001). The earliest recorded exploration dates back to 1915 when copper and peridotite mineralization was discovered by Ryan and Foster at the Silverboss showing (Bailey, 1989; MINFILE 093A 019) on Takomkane Mountain (Big Timothy Mountain). Although active development and mining proceeded on the molybdenum deposits, limited exploration of surrounding areas was performed or documented. In 1976, two drill holes were located well west of existing known deposits and approximately 500 metres east of the Headwall/Horse Trail zone. The drill holes intersected values of up to 0.510% and 0.480% molybdenum from 1.5 metre samples in DDH 76-3 and 76-13, respectively.

Between 1990 and 2004, sporadic prospecting by private individuals and Pioneer Metals Inc. consisted of rock, silt and soil sampling. In early 2005, several peripheral claims of the Boss Mtn. mine property lapsed and were staked by prospectors and subsequently acquired by Happy Creek Minerals Ltd.

Between 2005 and 2009, Happy Creek Minerals Ltd. completed widespread mapping and prospecting work on the property, collecting rock and silt samples as well as completing three soil



geochemical surveys resulting in identification of coincident molybdenum/tungsten/copper/gold and silver anomalies.

Between August and October 2011, exploration on the Silverboss property consisted of extending previous soil geochemical surveys to the west of the Horse Trail zone, northwest of the Gus zone, and south of the mine property. The 2011 soil geochemical survey was successful in extending to the northwest the Gus soil geochemical anomaly, where it appears to be closing off in that direction. It remains open in extent to the southeast. The Gus is a northwest trending, dominantly copper in soil anomaly that is approximately 2.5 kilometres by 1.0 kilometre in dimension, and underlain by glacial till and a strongly positive airborne magnetic anomaly. Positive tungsten and molybdenum values in soil were returned from the western end of the Horse Trail zone and it remains open in extent. Several rock samples collected on the north side of the mine site in 10 Mile Creek contain positive tungsten and trace molybdenum values. This area is underlain by a circular airborne magnetic low that is similar to that associated with the Boss Mtn. stock and adjacent molybdenum deposits. The magnetic low may represent a deeper porphyry system that is similar to the adjacent mine. As with previous sampling in this area, 2011 rock samples support potential for additional molybdenum zones to occur in the 10 Mile Creek area.

## **5. GEOLOGICAL SETTING**

### **5.1 Regional Geology**

The regional geology of the area (Figure 3) is comprised of rock assemblages unique to three distinct tectonic terranes identified from east to west as the Kootenay, Slide Mountain and Quesnel terranes. The predominantly fine-grained basin-fill rocks of the Quesnel Terrane structurally overlie a thin, tectonically emplaced oceanic crustal slice known as the Crooked amphibolite, part of the Slide Mountain Terrane. It defines the terrane boundary with the older metamorphic rocks of the Barkerville Subterrane (a subdivision of Kootenay Terrane) to the east. The boundary is defined by the low-angle Eureka thrust (Schiarizza and Boulton, 2006).

The Quesnel Terrane is interpreted to be a Late Triassic to Early Jurassic magmatic arc complex that formed along or near the western continental margin of Mesozoic North America. Subsequent northeast movement of Quesnellia during the Lower Jurassic ended with the accretion of the volcanic arc and associated sedimentary facies, along with underlying oceanic crust (Crooked Amphibolite of the Slide Mountain Terrane), onto the Kootenay Terrane to the east.

The Quesnel Terrane in this region is dominated by the Early Jurassic Takomkane batholith which is a multiphase pluton comprised of three main phases: a syenodiorite phase, a granodiorite phase and a porphyritic biotite granodiorite phase. The batholith intrudes Middle to Upper Triassic volcanic and sedimentary rocks of the Nicola Group characterized by an assemblage of basal black phyllite, carbonate, augite-feldspar pyritic flows, agglomerate, volcanic conglomerate, monolithic to heterolithic breccia and tuff of predominantly basalt to andesite composition. Late Triassic to Early

Jurassic porphyritic stocks, dykes and sills of syenite, monzonite to granodiorite composition are present and probably coeval with the Nicola Group assemblage.

There are locally small stocks, Late Triassic to Cretaceous in age, and irregular-shaped plugs and dykes of monzogranite to granodiorite composition that appear to cut most older units, including the Takomkane Batholith. The Boss Mountain stock, Cretaceous in age is comprised of porphyritic quartz monzonite and intrudes the batholith about 450 metres east of the Boss Mountain molybdenum deposits. Related to this intrusion is a complex sequence of rhyolite porphyry and rhyolite dike emplacement, breccia development and molybdenum mineralization (Soregaroli and Nelson, 1976). These felsic dikes are noted on the Silverboss property several kilometres away from the mine.

Younger rocks commonly occur to the west and include Eocene alkaline and calcalkaline volcanic rocks and Eocene sediments of the Kamloops Group. Alkaline volcanic rocks of the Miocene to Pleistocene Chilcotin Group also occur to the west. A variable thickness of glacial till, glaciofluvial deposits and lacustrine deposits covers the area, restricting outcrop exposure, particularly at lower elevations or shallower slopes. The youngest rocks in the region are Holocene olivine-bearing alkali basalt of the Takomkane Volcano and may be syn to postglacial in age (Campbell, 1978).

Structural features in the region involve two phases of coaxial folding and later overprinting by northeast trending fractures. The first phase of deformation was accompanied by thrust faults and detachment surfaces that developed principally along stratigraphic contacts due to contrasting lithologies. Early Jurassic east-directed thrust faults formed during the latter stages of magmatism and juxtapose Quesnel Terrane above adjacent Kootenay Terrane miogeoclinal rocks. The second phase of deformation consists of west to south-west verging folds, in part of early Middle Jurassic age, that deformed the east-directed thrust faults and tectonic boundaries, and established the regional map pattern. Younger structures include prominent systems of Eocene dextral strike-slip and extensional faults. Regional metamorphism is evidenced by amphibolite facies in the Kootenay Terrane and Slide Mountain terrane, and greenschist facies in the Quesnel Terrane.

## **5.2 Local and Property Geology**

The Silverboss property is mainly underlain by composite granodiorite of the Upper Triassic to Lower Jurassic Takomkane Batholith (Figure 4). Intrusive rocks vary from medium to coarse grained granodiorite, quartz monzodiorite, monzodiorite, quartz diorite and diorite in composition. The nature, distribution and timing of Takomkane batholith-related intrusive rocks on the Silverboss property remain unclear.

The porphyritic quartz monzonite Boss Mountain Stock, Cretaceous in age cuts the batholith in proximity to the molybdenum deposits of the former Boss Mountain molybdenum mine, and the 10 Mile Creek zone on the Silverboss property. Molybdenum deposits at the mine are located on the western periphery of the Boss Mountain stock and are related to a complex sequence of rhyolite porphyry and rhyolite, basaltic-andesite dykes, quartz veining and breccia development. Molybdenum

mineralization is mainly contained within quartz veins and breccia bodies within the granodiorite phase of the batholith.

The rocks underlying the Silverboss property are medium to coarse grained diorite and quartz diorite although compositional variation exists. Xenoliths of diorite occur in granodiorite and tend to form coarse breccia textures in proximity with intrusive contacts. Blann (2007) reports dark, angular magnetic diorite fragments in heterolithic intrusion breccia near the Silverboss shaft, and granite/monzonite fragments within biotite-hornblende diorite south of 10 Mile Creek near the inferred contact of the Boss Mountain stock. Diorite is noted in the southern portion of the claim area, and southwest of the Boss Mountain mine (Blann, 2007). All of these rock types are cut by dominantly northwest and northeast trending, steeply dipping basalt-andesite mafic dikes that range from 0.5-3.0 metres in width, and locally, porphyritic quartz latite or rhyolite dykes occur.

Mineralogical variation is noted amongst rock types, with 2 - 15% biotite, 1 - 10% quartz, 10 - 50% hornblende and 2 - 3% fine-grained disseminated magnetite and feldspar. Xenoliths commonly contain up to 70% coarse-grained crystalline hornblende. A possible second diorite unit has been noted, and described as fine to medium grained, and contains from 10 - 20% dark biotite. This biotite-rich unit has been delineated from southwest to northwest of Silverboss Lake however attempts to map this unit have been unsuccessful due to its variability in texture and outcrop exposure. Exposures of this unit measure from a few metres to approximately 20 metres in extent. Diorite has been cut by abundant, relatively flat-lying quartz feldspar +/- hornblende +/- tourmaline pegmatite dykes or veins. These units range from several millimetres to several metres in thickness, but are usually less than 20 cm thick. Several coarse-grained aplitic dykes and dyke swarms, up to a few metres in width, are noted and may be related to this same phase.

The Takomkane Volcano, a cinder cone which forms the highest part of the claim group, occurs four kilometres northwest of the Boss Mountain mine open pits. It is comprised of vesicular, amygdaloidal and fine-grained lavas, flow breccias, ash to lapilli tuffs and agglomerate of peridotite-bearing basalt or more mafic in composition. Genetically associated basaltic dykes, feeders to the subaerial volcanic rocks listed above, cut the batholith (Blann, 2006). Portions of the volcanic material thinly cover areas of the property thought to be prospective for older underlying porphyry style copper-molybdenum-gold-silver mineralization.

### **5.3 Mineralization and Alteration**

The Silverboss property covers seven known zones of mineralization including numerous areas of anomalous float occurrences. The zones are located around the Boss Mountain molybdenum deposit cluster. The information presented below is largely summarized from Blann (2008).

The Silverboss structure is one of the principal mineralized features on the property. It is a northeast-trending, steeply dipping shear and fault zone containing quartz veinlets, veins, breccia and stockwork that can be traced for approximately 350 m along strike and is open in extent (Ridley, 1994). The mineralized trend consists of 2 – 20 cm wide quartz veins within a centralized 0.5 to 2 metre wide

shear zone comprised of chlorite, epidote, sericite and clay-altered granodiorite and intrusion breccia (Blann and Ridley, 2006). Sub-parallel to locally cross cutting mineralized fractures also occur that affect a larger area and a feldspar porphyry andesite dyke occurs near the main shaft (Blann, 2008). Mineralization consists of comb and dogtooth quartz, fine-grained pyrite, limonite and chalcopyrite with subordinate arsenopyrite, pyrrhotite, galena and sphalerite (Allen, 1970). Anomalous values of manganese, lead, arsenic and antimony are associated with variable gold and silver values (Blann and Ridley, 2005). Sampling of trenches in the vicinity of the underground workings yielded values as high as 4.26 g/t Au, 64.6 g/t Ag across 0.5 m in Trench 4, and 215 ppb Au, 390.4 g/t Ag and 3.18% Cu across 0.25 m in Trench 8 (Ridley, 1994). Several rock samples taken in 2010 returned indium values of around 3 to 6 ppm that are the first documented occurrence of this element on the property (Blann, 2010, unpublished report).

The East Breccia zone is located approximately 300 m east of the Silverboss shaft. It is characterized by strongly epidote-altered hornblende diorite breccia and is cut by quartz-chalcopyrite-pyrite-specularite veins trending 146°. A selected grab sample from the vein graded 1241 ppb Au, 1.21 oz/t Ag and 2.48% Cu. A chip sample across 2 m of altered wallrock averaged 218 ppb Au (Ridley, 1995).

The South Ridge Headwall, Horse Trail and Dogtooth zones consist of mineralized quartz veins hosted by fractured and propylitic altered monzodiorite. The South Ridge zone is situated along the southern crest of Big Timothy Mountain where 1 - 3 cm fractures are filled with quartz, minor chalcopyrite and magnetite, and locally traces of molybdenite. Grab samples of this material have returned values up to 7.26 g/t Au and 140 g/t Ag (Blann and Ridley, 2006).

The Headwall zone occurs in a large depression southwest of the Boss Mountain open pits. Float, similar in character to the Silverboss veins, has been traced for approximately 1500 m along strike and grab samples have returned values up to 723 ppb Au, 226 ppm Bi and 230 ppm W (Blann and Ridley, 2005).

The Horse Trail zone consists of a series of variably-oriented, 20 to 30 cm wide fractures and shear zones that cut monzodiorite due west of the Boss Mountain open pits. The structure appears to be over 1.5 kilometres in length and contains dogtooth quartz intergrown with pyrite-chalcopyrite as well as narrow, sulphide poor, pale grey to white quartz stringers (Blann and Ridley, 2005). A chip sample across a 20 cm vein returned 5642 ppm Cu, 43 ppm Ag and 791 ppb Au (Blann, Ridley 2006). Other veins contain positive copper, molybdenum, gold and silver values.

The Dogtooth zone, situated between the East Breccia and Horse Trail zones, is comprised of a northeast-trending quartz vein and northwest-trending shear zone that have been traced for 150 m along strike. Bedrock and float grab samples of silicified quartz monzodiorite cut by narrow quartz stringers, have graded up to 53.01 g/t Au and 343.0 g/t Ag and a 1 m chip sample across a northeast-trending vein averaged 10.06 g/t Au and 26 g/t Ag (Blann, Ridley 2006).

The 10 Mile Creek zone is located at the base of a steep east-facing slope on the north side of the Boss Mountain molybdenum mine property. In this area, fractures filled with quartz, chlorite,

epidote, pyroxene, sericite, trace to massive pyrite, and trace scheelite cut moderately to intensely fractured and locally sheared biotite hornblende quartz monzodiorite. A 4.0 metre chip sample across the zone averaged 9.8 ppm Mo, 0.015% W and 0.21 g/t Au, and a 25 metre long grab sample returned 0.05% W (Blann, Ridley 2006).

## **6. 2012 EXPLORATION PROGRAM**

Between July 6 to August 15, 2012 line cutting followed by geophysical surveys were performed by SJ Geophysical Consultants Ltd., of Vancouver, B.C. The surveys totaled 18.15 km of magnetometer and 16.125 km of 3D Induced Polarization (3DIP) in two separate grids (South Grid and North Grid) that are located to the west and northwest of the Boss Mountain open pits, respectively. The locations of the surveys are presented in Figure 5.

The north grid consists of 7 E-W lines, spaced at 75 m, with a total length of 4.225 km for IP and 5.625 km for the magnetic survey. The South Grid consists of 9 E-W lines, spaced at 100 m, totaling 11.9 km length for the IP and 12.525 km length for the magnetic survey. A description of methods and technical procedures is detailed in the SJ Geophysics Logistics Report (Appendix 1).

## **7. RESULTS AND DISCUSSION**

In both the North Grid (covering the East Breccia and Shaft Zone) and the South Grid (covering the Horse Trail Zone), the IP survey suggests that moderate to strong chargeability values lie below the area of positive surface sampling results (Figures 6a,b, and c).

### **7.1 North Grid – East Breccia and Shaft Zone**

The Silverboss shaft and adit vein consists of a north-northeast trending, steeply dipping vuggy quartz vein, breccia and stock work associated with fine grained pyrite, limonite and chalcopyrite. Sample results are described above under Section 5.3 “Mineralization”.

The East Breccia zone is located approximately 300 m east of the Silverboss shaft. It is characterized by diorite breccia and is cut by quartz-chalcopyrite-pyrite-specularite veins trending 146°. Sample results are described above under Section 5.3 “Mineralization”.

Chargeability values range from less than 1 to greater than 15 milliseconds. Moderate to strong chargeability values at surface occur at the Silverboss shaft zone and extend northward, southwest and to the southeast near the East Breccia zone. On the eastern portion of the northern most line (5750N), moderate to strong chargeability values occur along almost 500 metres of the line and the anomaly remains open in extent to the east and north. This area contains a number of positive gold in soil anomalies. At 150 metres below surface, the Silverboss shaft anomaly remains strong, and an overall larger and more widespread chargeability anomaly occurs beneath the grid area that remains open in extent. Resistivity values range from less than 250 to greater than 12,500 ohm-metres. At surface, dominantly strong northwest and northeast trending structures of lower resistivity likely reflects faulting or geological contacts. At depth, the resistivity values decrease mainly to the west and northeast of the Silverboss shaft, and in part appear associated with increasing chargeability values and together may

reflect hydrothermal alteration and associated sulphide mineralization. The magnetic survey indicates a dominantly west-northwest trending higher magnetic zone occurs near the south side and another area occurs near the east side of the survey area, respectively. The Silverboss shaft zone occurs on the edge of higher magnetic response.

In summary, the North Grid IP results include positive chargeability values up to more than 15 milliseconds, with a background of around 3 milliseconds. The high chargeability, and lower resistivity area extends from near surface to over 150 metres in depth. At depth, a much larger scale anomaly is detected that expands to the north, west, east and south, and remains open in extent.

## **7.2 South Grid – Horse Trail Zone**

The South Grid - Horse Trail zone is located to the west of the Boss Mountain mine and at surface consists of a series of variably-oriented, mineralized fractures and shear zones that cut monzodiorite. The overall structure appears to be over 1.5 kilometres in length and contains fractures filled with dogtooth quartz intergrown with pyrite-chalcopyrite and locally molybdenite. This area is also clearly within a strong west to northwest trending structure that extends upwards and beyond the Boss Mtn. mine open pits.

The chargeability values range from less than 1 to greater than 40 milliseconds. Moderate to strong chargeability values occur in the eastern side of the survey area that is closest to the Boss Mtn. mine property. Although low to moderate values occur near surface, a large a strong anomaly occurs at 250 metres below surface with dimensions of approximately 650 metres by 500 metres that is open in extent. Chargeability values decrease further west and south. Resistivity values range from less than 250 to greater than 20,000 ohm-metres. Resistivity values near surface display linear features or structures consistent with large scale faulting or contacts between different rock types. Dominant structural trends are east-west, northeast and northwest. At depth, resistivity values decrease with a corresponding increase in chargeability that together may reflect hydrothermal alteration and associated mineralization. The magnetic survey displays a generally east-west to east-northeast trend of lower magnetic response that corresponds to lower resistivity and may reflect magnetite destruction due to quartz-sericite alteration.

In summary, the IP survey in South Grid – Horse Trail zone resulted in the delineation of strong chargeability anomaly (>40 ms) in the eastern side of the grid, which continues westward while decreasing in intensity. This anomaly lies beneath surface showings of copper molybdenum, gold and silver.

The geophysical survey results coincide well with the orientation of the main structural and mineral trends mapped at surface. Overall, the results suggest potential for the Horse Trail and Silverboss Shaft zones to be sourced at depth in sizeable mineralized zones as indicated by the geophysical survey.

## 8. CONCLUSIONS AND RECOMMENDATIONS

Exploration between 2004 and 2011 indicate several areas of the property are underlain by copper, molybdenum, gold and silver bearing quartz veins, fractures, stockwork and breccia. The mineralized structures trend northwest, northeast and east, have variable dips and are hosted by chlorite, epidote, k-feldspar, sericite, tourmaline and/or clay altered phases of the Early Jurassic Takomkane batholith. Dikes of felsic to basaltic-andesite in composition and locally porphyritic in texture occur well beyond the past-producing molybdenum deposits, and occur in spatial proximity to mineralization in several areas of the Silverboss property.

The Horse Trail Zone, East Breccia and Silverboss Shaft areas are structurally controlled mineralized zones and are associated with moderate to high chargeability, lower resistivity, moderate to low magnetic signatures. The chargeability anomalies may represent materials such as sulphides in rock below surface. At the Horse Trail zone, the geophysical results and surface mineralized zones indicate a continuation of sulphide mineralization from the mine westward. At the Silverboss shaft area, the geophysical results correlate well with the known mineralized zone and indicate good potential for that mineralized zone to extend to depth, where there appears to be a much larger scale target developing.

Recommendations for follow-up include:

- Bedrock mapping and prospecting in areas surrounding the Boss Mtn. mine, with attention to the Horse Trail zone and East Breccia, Silverboss Shaft areas.
- Diamond drilling of 1500 metres in 4 or 5 holes to test the geophysical targets in the Horse Trail, East Breccia and Silverboss Shaft areas for copper-molybdenum +/- gold and silver mineralization.
- Additional IP and magnetic geophysical surveys covering the 10 Mile Creek area, and extensions to the 2012 Silverboss Shaft survey area. Reconnaissance IP is also recommended to cover the Gus copper in soil anomaly.



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**10. STATEMENT OF COSTS – 2012**

<b>Company</b>	<b>Description / Name</b>	<b># of People</b>	<b>Days</b>	<b>Rate</b>	<b>Total</b>
<b>Geological and Consulting</b>					
Sassan Liaghat, PhD Geology	Geology, GIS, mapping	1	3.0	\$ 550.00	\$ 1,650.00
Std. Metals Expl., David Blann, P.Eng., QP	Geology, Design/Supervision	1	7.5	\$ 500.00	\$ 3,750.00
Hendex Exploration Services- Linecutting	1 crew of 3-4	3	10.0	\$ 740.00	\$ 7,400.00
Hendex Exploration Services- Line cutting	Labour	1	2.0	\$ 325.00	\$ 650.00
					\$ 13,450.00
<b>Helicopter</b>					
Far west Helicopter	Helicopter		13hrs	\$ 1,500.00	\$ 19,500.00
Far west Helicopter	Field support				\$ 213.25
<b>Mapping/Geophysics</b>					
SJ Geophysics	IP and magnetic Geophysics	5	10		\$ 72,312.40
SJV Consultants	3DIP, Modelling, Mapping				\$ 5,230.00
<b>Room/Board- first aid and support</b>					
	35+ 50 man-days		85	\$ 90.00	\$ 7,650.00
	Crew Misc. field accomodation		20	\$ 65.00	\$ 1,300.00
<b>Field Supplies</b>					
	First Aid and supplies				\$ 265.00
<b>Communications</b>					
Telus	Communications				\$ 142.37
satelight phone	Galaxy and Glentel				\$ 600.00
<b>Travel</b>					
Hendex	Travel and fuel				\$ 687.88
<b>Report Preparation, Drafting</b>					
					\$ 2,500.00
				<b>Total</b>	<b>\$ 123,850.90</b>

## 11. STATEMENT OF QUALIFICATIONS

**Sassan Liaghat**, M Sc, PhD Coquitlam, British Columbia, do hereby certify that:

- I am a geologist, graduated from the Universities of McGill and Ecole Polytechnique of Montreal in Master and Ph.D degrees in 1990 and 1994, respectively.
- That I have been actively engaged in the mineral exploration research and industry since 1990.
- I am the author or co-author of several scientific papers and reports, published in international and local journals.
- Since 2006, I have been involved in mineral exploration for base and precious metals in BC.

Dated in Vancouver, B.C., Jan 2013

*"Sassan liaghat"* (Signed)

Sassan Liaghat Ph.D

I, **David E. Blann**, P.Eng., of Squamish, British Columbia, do hereby certify:

- That I am a Professional Engineer registered in the Province of British Columbia since 1990.
- That I am a B.Sc. graduate in Geological Engineering from the Montana College of Mineral Science and Technology, Butte, Montana, 1987.
- That I am a graduate with a Diploma in Mining Engineering Technology from the B.C. Institute of Technology, 1984.
- That I have been actively engaged in the mining and mineral exploration industry since 1984.

Dated in Vancouver, B.C., Jan 2013

*"David Blann"* (Signed)

David E Blann, P.Eng.

# Tables

Table 1: List of Mineral Tenures and Status (2012)

Tenure Number	Claim Name	Issue Date	Good To Date	Area (ha)
408035	SB4	2004/feb/01	2018/dec/31	500
505103	SB5	2005/jan/28	2017/dec/31	436.805
505116	SB6	2005/jan/28	2017/dec/31	496.709
517036	BOSS 1	2005/jul/12	2018/dec/31	19.868
517058	BOSS 2	2005/jul/12	2018/dec/31	19.868
517552	SB5	2005/jul/12	2018/dec/31	238.312
526510	SB	2006/jan/27	2018/dec/31	1052.213
526513	SB	2006/jan/27	2015/dec/31	595.863
531516	BOSS 3	2006/apr/07	2018/dec/31	19.868
531517	BOSS 4	2006/apr/07	2014/dec/31	19.866
537013	BOSS 3	2006/jul/13	2016/dec/31	357.07
537023	BOSS 4	2006/jul/13	2016/dec/32	79.393
537030	BOSS 5	2006/jul/13	2016/dec/33	178.578
537134	COPPER STRIKE 3	2006/jul/13	2015/dec/31	357.171
537164	BOSS 5	2006/jul/13	2014/dec/31	19.866
539414	GUS 2	2006/aug/15	2017/dec/31	297.5714
539415	BUSTER	2006/aug/15	2014/dec/31	356.9336
539433	SB FRACTION	2006/aug/16	2014/dec/31	39.7346
547671	RB83	2006/dec/19	2017/dec/31	397.3559
547673	RB86	2006/dec/19	2014/dec/31	476.9823
547676	ROSS2	2006/dec/19	2015/dec/31	496.6928
547682	RB90	2006/dec/19	2014/dec/31	417.1639
548357	BOSK 4	2007/jan/01	2014/dec/31	79.4891
552075	BOSS 7	2007/feb/15	2018/dec/31	19.868
552100	B PIT	2007/feb/15	2014/dec/31	19.8639
552149	BOSS 8	2007/feb/16	2018/dec/31	19.8646
552151	BOSS 9	2007/feb/16	2018/dec/31	19.8645
552474	GUS	2007/feb/21	2017/dec/31	257.987
552560	SB8	2007/feb/23	2014/dec/31	456.489
552561	SB10	2007/feb/23	2015/dec/31	477.0117
552562	SB11	2007/feb/23	2014/dec/31	457.3183
552563	SB 12	2007/feb/23	2013/dec/31	456.717
552564	SB 13	2007/feb/23	2014/dec/31	496.6531
552565	SB 14	2007/feb/23	2014/dec/31	457.0363
552566	SB 15	2007/feb/23	2013/dec/31	497.0232
552567	SB 16	2007/feb/23	2013/dec/31	477.1127
552568	SB 17	2007/feb/23	2014/dec/31	417.2569
552569	SB 18	2007/feb/23	2013/dec/31	496.4883
552570	SB 19	2007/feb/23	2013/dec/31	357.2804
552571	SB 20	2007/feb/23	2013/dec/31	476.737
552572	SB 21	2007/feb/23	2014/dec/31	238.4662
553516	GUS 3	2007/mar/04	2016/dec/31	357.237
554084	SB SW	2007/mar/12	2016/dec/31	158.9433
554324	SV1	2007/mar/15	2014/dec/31	416.9472

554325	SV2	2007/mar/15	2014/dec/31	238.267
572221		2007/dec/20	2018/dec/31	19.8648
572222		2007/dec/20	2018/dec/31	19.8643
579115		2008/mar/25	2014/dec/31	19.8604
579878	SB 22	2008/mar/30	2014/dec/31	99.3365
589368	SB FRAC 2	2008/aug/01	2015/dec/31	39.7319
596342	SB 23	2008/dec/19	2014/dec/31	477.1136
614623	BOSS	2009/aug/03	2014/dec/31	39.7292
614764	BOSS 2	2009/aug/04	2014/dec/31	19.8623
688006	SB 24	2009/dec/21	2014/dec/31	496.5925
688423	SB 25	2009/dec/22	2014/dec/31	19.8687
705489	BOSS	2010/feb/04	2014/dec/31	19.8635
802142	BOSS	2010/jun/28	2013/dec/31	19.8654
831128	BOSS	2010/aug/05	2013/dec/31	39.7235
			Total	15555.083

**Table 2: Summary of Previous Work**

<b>Year</b>	<b>Exploration Activities</b>
1915 - 1917	Ryan and Foster discovered the Silverboss vein system and developed trenches, pits, open cuts, sunk a shaft and drove an adit. They recovered peridotite and attempted but failed to market the material as gem quality emerald.
1969 - 1972	Exeter Mines Limited claim staked the Silverboss vein system and surrounding ground adjacent to the Boss Mountain mine. Exeter conducted at least 1 program of mapping, VLF-EM geophysical survey and a limited soil geochemical survey. Remnant drill core, a few abandoned drill collars (SW end of Silverboss vein system), and evidence of shallow trenching has been discovered around the Silverboss showing and likely dates to the early 1970's; although there are incomplete records of the work or the results.
1969 - 1970	Virgo Explorations Ltd. staked a large claim group adjacent to Exeter and Boss Mountain mine property, on the northern and eastern slopes of Big Timothy Mountain. Exploration work included detailed stream sediment and focused soil geochemical surveys and ground magnetometer surveys. Positive molybdenum anomalies were returned from soil and silt samples at the east end of 10 Mile Creek.
1972	Rio Tinto claimed the Monty ground at the head of Boss Creek, approximately 2.5 km southwest of the Boss Mountain mine property. A soil sampling program was conducted for which no records have survived or were never submitted for claim maintenance.
1972	Exploration work was conducted by Neilson and Gutrath on the Trooper claims located approximately 4.8 km northwest of the Boss Mountain mine. Work consisted of line-cutting, 8.3 km of IP geophysical survey, and blast trenching. Apparently no encouraging results were obtained.
1985	Dave Javorsky conducted a limited excavator trenching program on a large claim grouping at the east end of the mine property. The claims were allowed to lapse soon after.
1993 - 1995	Ridley staked the open ground covering the Silverboss vein system, and together with Pioneer Metals Corporation conducted a limited program of mapping and prospecting and managed to trace the surface expression of the vein system over a strike length of 350m. They also identified several new showings, including the East Breccia zone.
2004	Ridley and David Blann conducted a limited program of mapping, prospecting, rock and silt sampling and identified several new zones, including the Horse Trail and Headwall zones. Rock samples from quartz veins returned anomalous Cu, Au and Ag values.
2005	Noranda (now Xstrata) dropped a number of claims surrounding the main Boss Mountain mine holding and the ground was subsequently staked by Ridley and optioned to Happy Creek Minerals. Happy Creek conducted a limited program of exploration on the east slopes of Big Timothy Mountain. Work included mapping, prospecting, and collection of 47 rock and 8 silt samples. Gold and silver values were returned from quartz veins, as well as anomalous arsenic, bismuth, tungsten and molybdenum values. Samples from the Dogtooth zone returned up to 53.0 g/t Au and 343 g/t Ag. The gold-silver bearing quartz vein system was postulated by Blann to be part of a regional mineral zonation pattern genetically related and proximal to the high-level molybdenum porphyry system hosting the Boss Mountain deposit.
2006	Happy Creek conducted mapping, prospecting, 33.7 line-km of grid development, and collected 36 rock, 8 silt and 965 soil samples in the Horse Trail, Dogtooth, and 10 Mile Creek areas. Soil geochemistry outlined a molybdenum-tungsten-copper anomaly that measured roughly 500 m wide by 3.0 km in length. Gold-in-soil anomalies were identified proximal to the Horse Tail, Dogtooth and East Breccia zones. One rock sample collected at the South Ridge zone returned 7.26 g/t Au and 140 g/t Ag.
2007	Happy Creek carried out mapping, prospecting and collected 17 rock samples, 62 silt samples and 966 soil samples over 48.3 line-km of grid.
2008	Happy Creek carried out prospecting (20 rock samples), a geochemical soils grid of 598 samples, and sampled 43 streams. Large coincident Mo / W anomalies were identified.
2009	During 2009 Happy Creek Minerals collected numerous geochemical samples including 125 soil samples, 26 stream samples and 3 rock samples. The soils were taken from the Gus extension zone north of the Mine site. The stream and rock samples were taken in the areas directly north and south of the Silverboss Mine.
2011	Between August and October 2011, exploration on the Silverboss property consisted of extending previous soil geochemical surveys to the west of the Horse Trail zone, northwest of the Gus zone, and south of the mine property. The stream sediment and rock samples were taken in the areas directly north and south of the Silverboss Mine, respectively. In total 527 soil, 29 stream sediment and 7 rock samples were collected.

# Figures



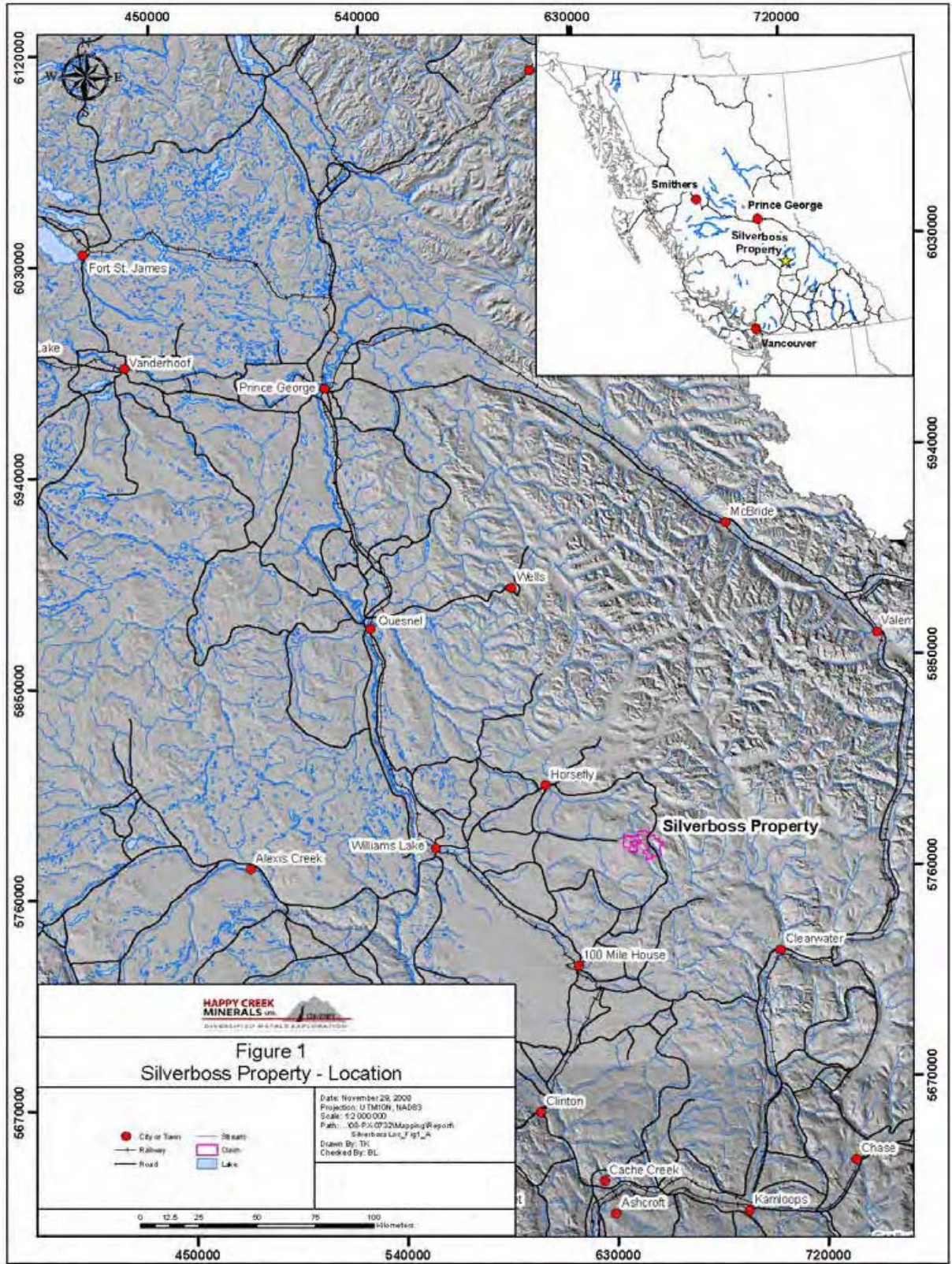


Figure 1: Silverboss Property Location.



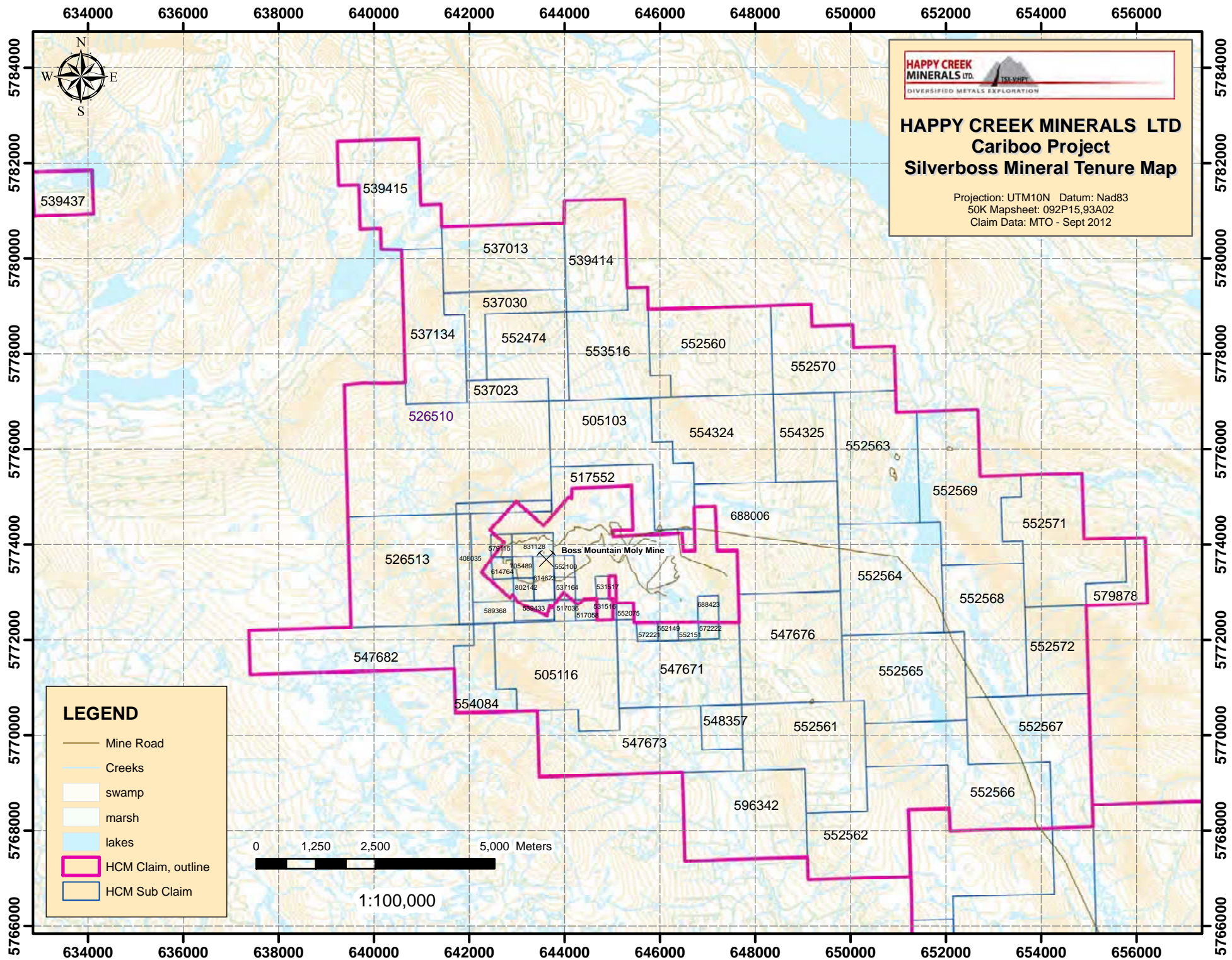


Fig.2



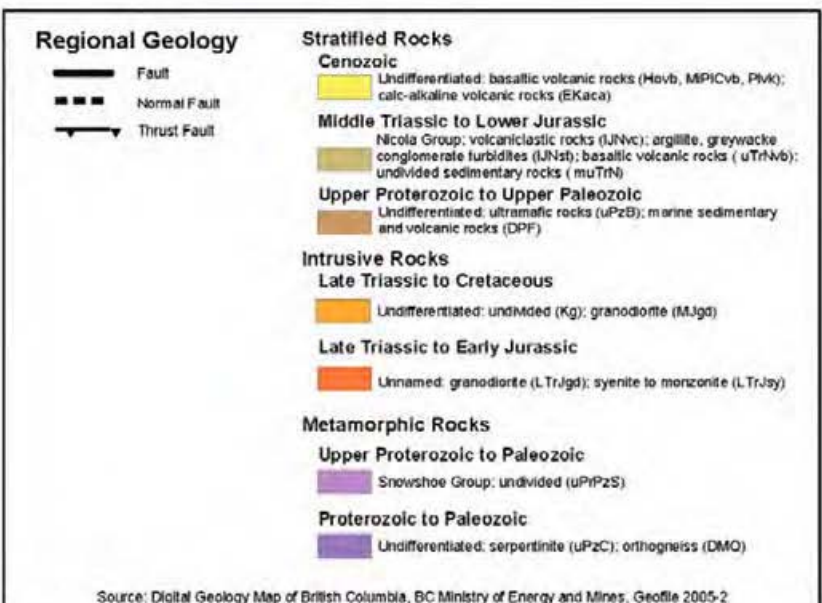
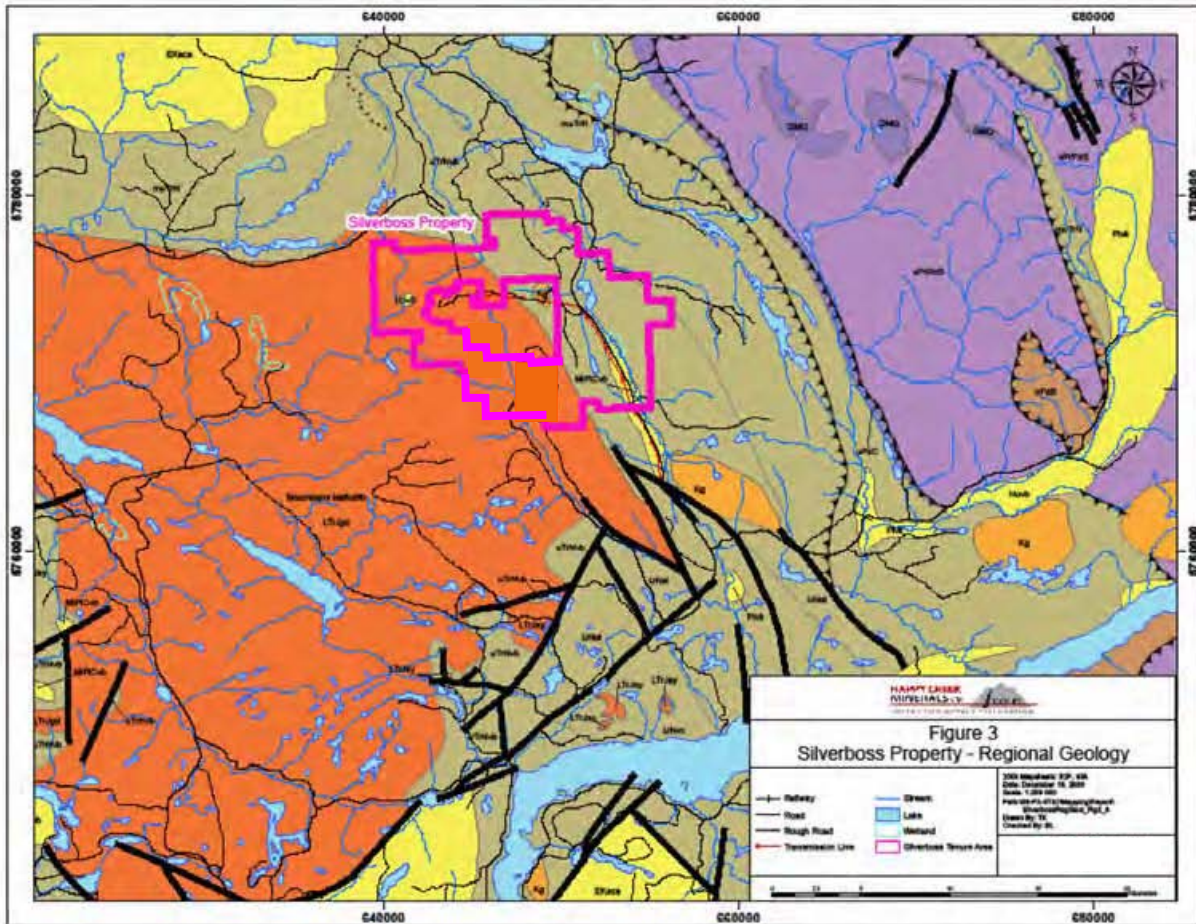


Figure 3: Regional Geology.

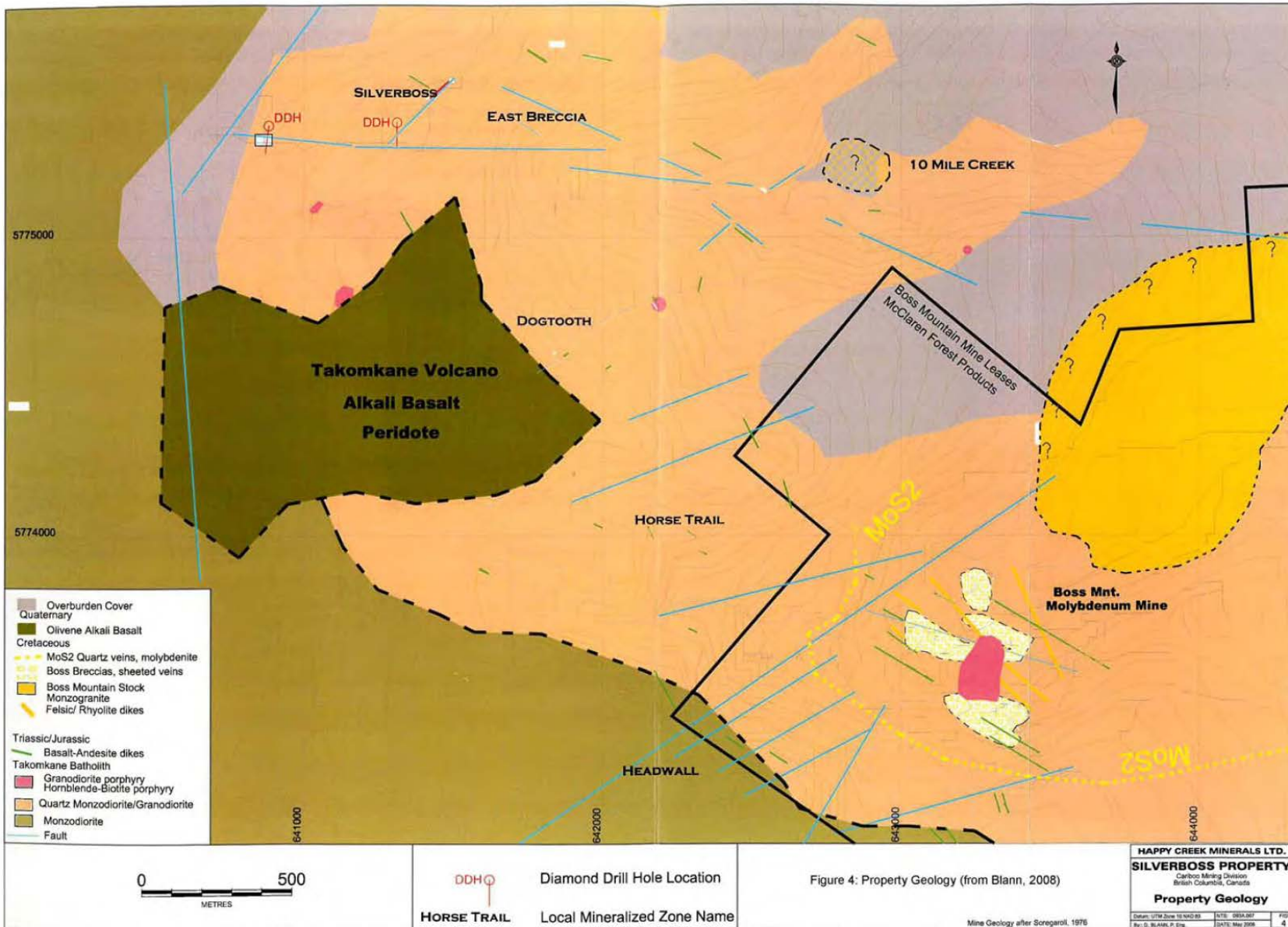


Figure 4. Property Geology



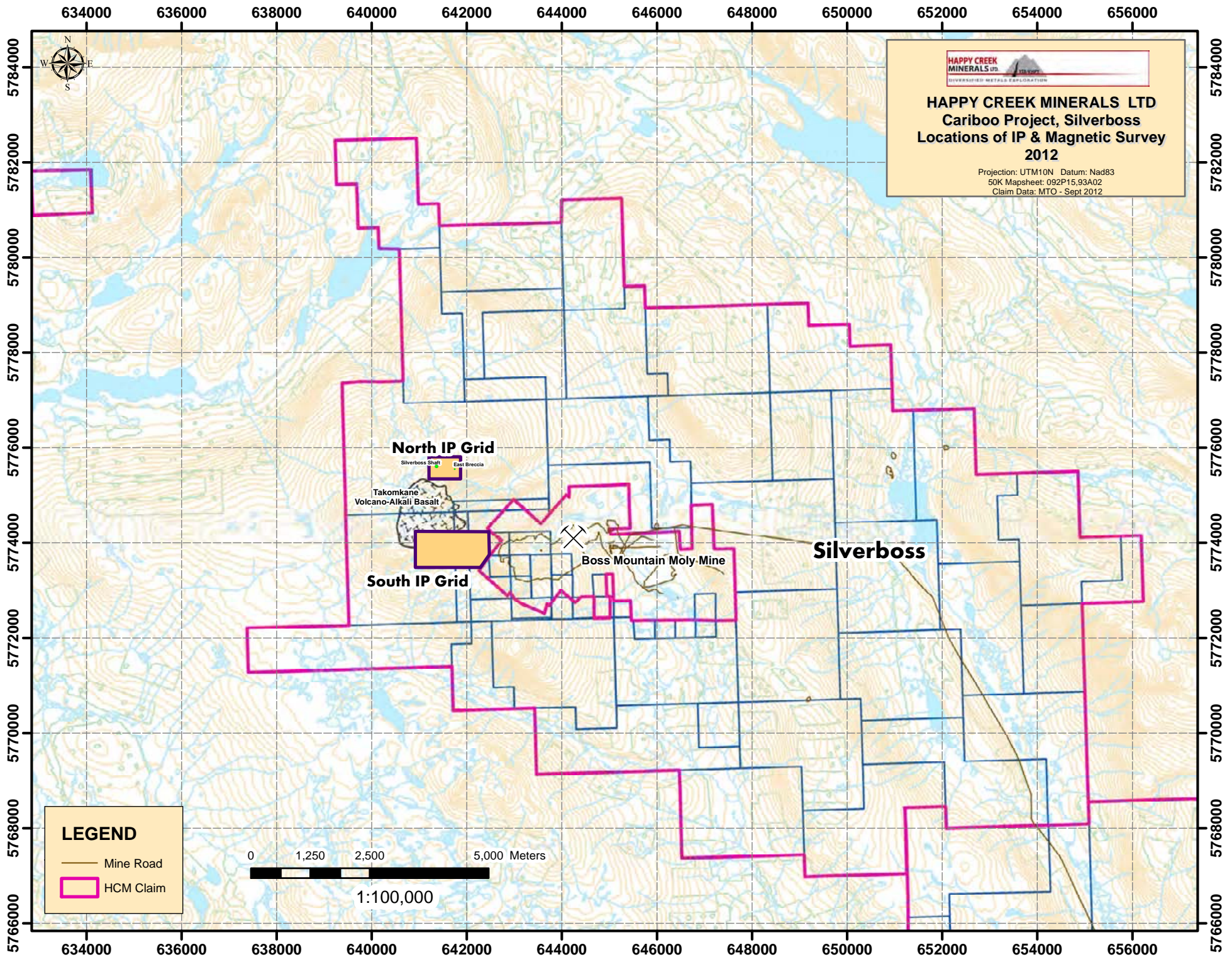
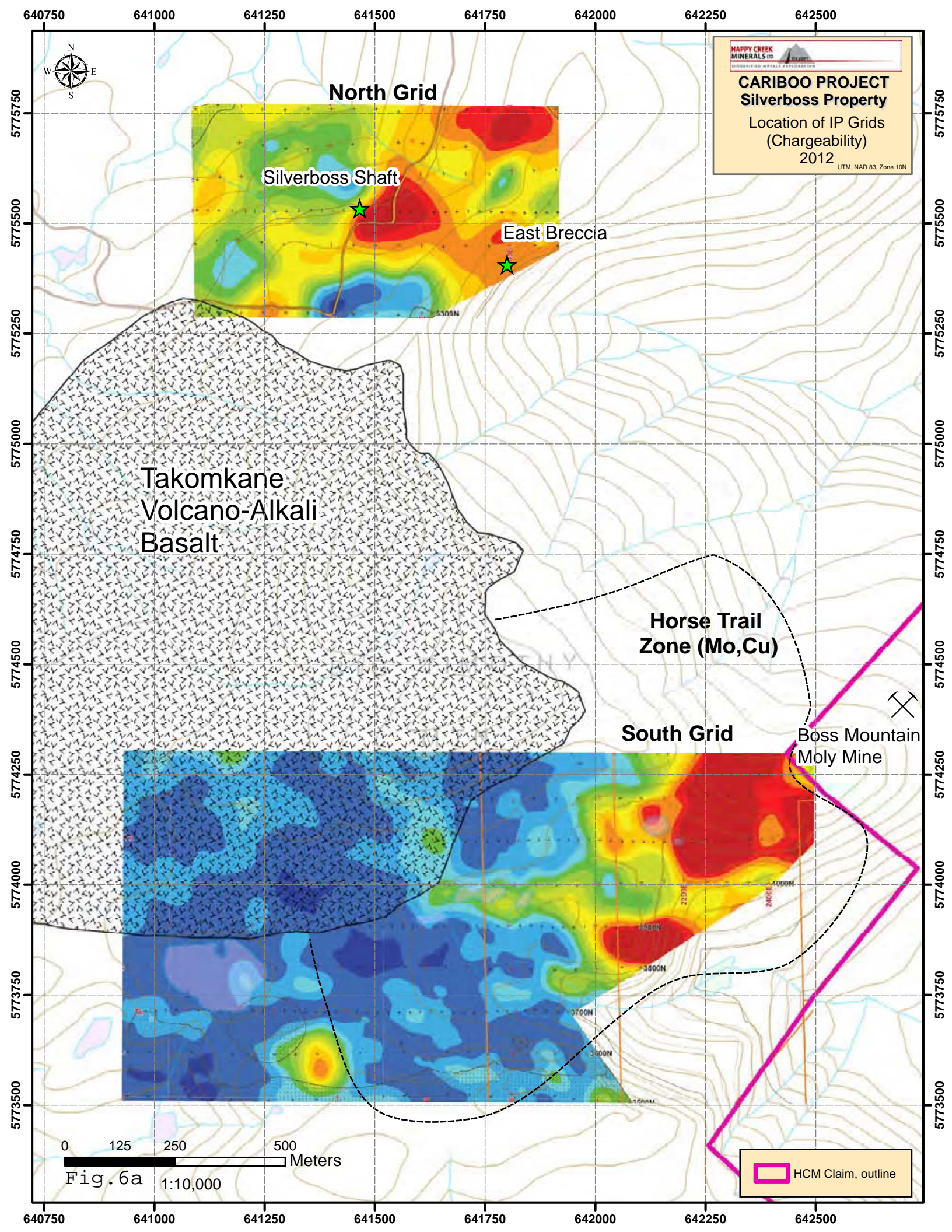
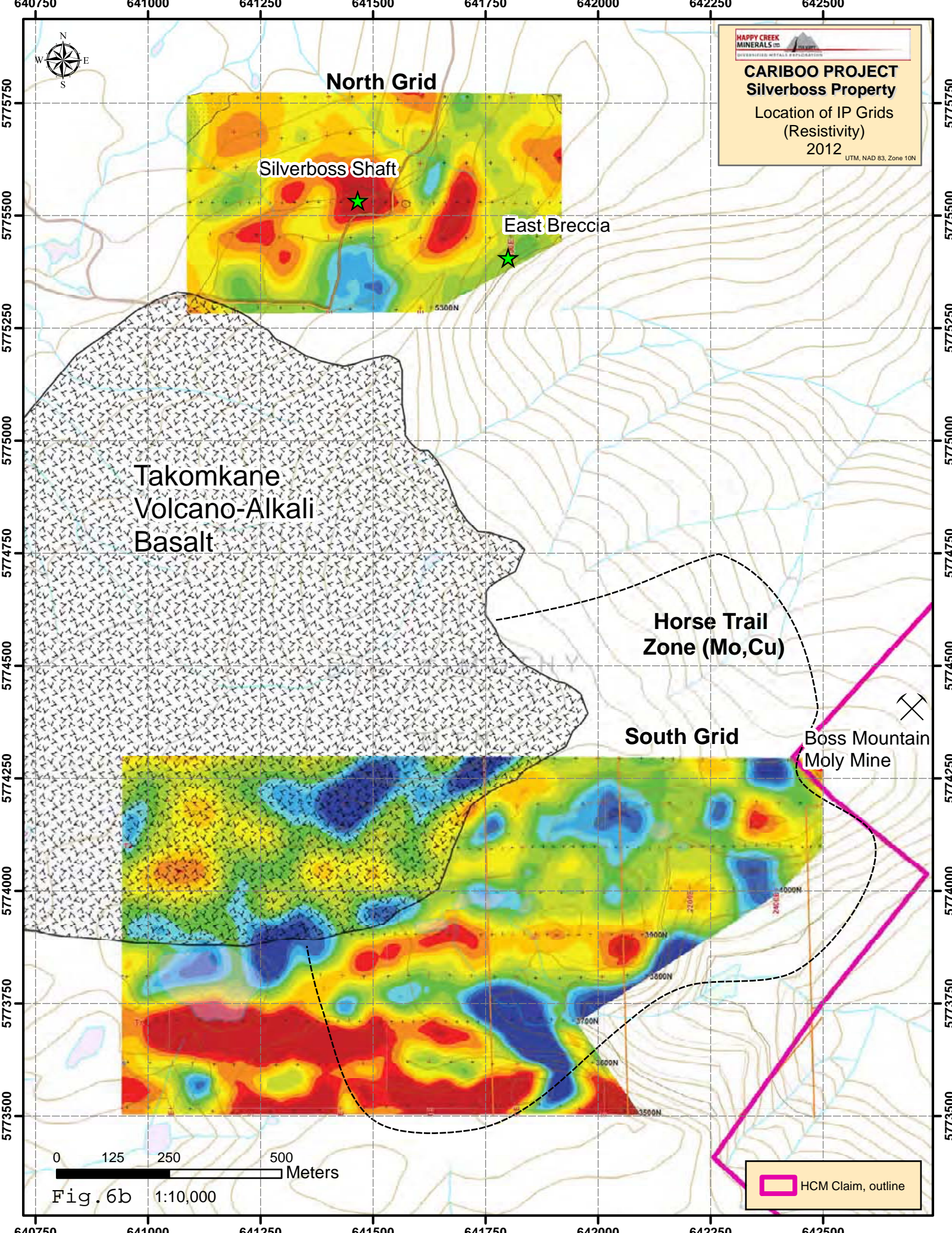


Fig. 5

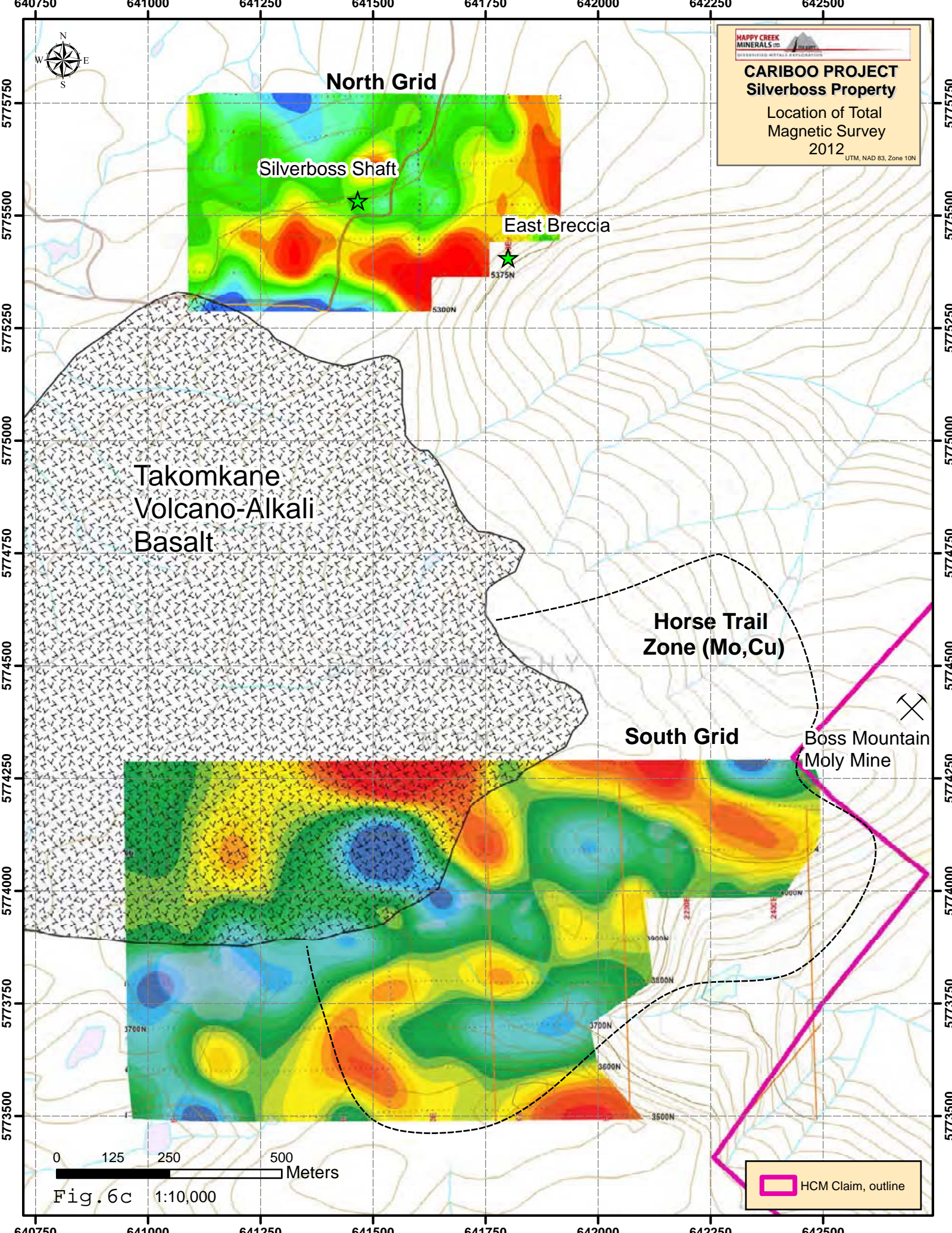












**HAPPY CREEK MINERALS INC.**  
DIVISION OF METALS CORPORATION

**CARIBOO PROJECT**  
**Silverboss Property**

Location of Total  
Magnetic Survey  
2012

UTM, NAD 83, Zone 10N

**North Grid**

Silverboss Shaft

East Breccia

Takomkane  
Volcano-Alkali  
Basalt

Horse Trail  
Zone (Mo,Cu)

**South Grid**

Boss Mountain  
Moly Mine

0 125 250 500 Meters

Fig. 6c 1:10,000

HCM Claim, outline



# **Appendix**

Logistic Report, Three Dimensional Induced  
Polarization and Magnetometer Survey

**LOGISTICS REPORT PREPARED**  
**FOR**  
**HAPPY CREEK MINERALS LTD.**

**THREE DIMENSIONAL INDUCED POLARIZATION AND**  
**MAGNETOMETER SURVEY**  
**ON THE**  
**SILVERBOSS PROJECT**

100 MILE HOUSE, BRITISH COLUMBIA, CANADA  
LATITUDE: N52° 6' LONGITUDE: W120° 56'

BCGS SHEET: 093A006 & 093A016

NTS SHEET: 093A02

MINING DIVISION: Cariboo

SURVEY CONDUCTED BY SJ GEOPHYSICS LTD.  
JULY-AUGUST 2012

REPORT PREPARED BY  
MATVEI KOOTCHIN  
AUGUST 2012

## TABLE OF CONTENTS

1. Survey Summary.....	1
2. Location and Access.....	2
3. Grid Information.....	4
4. Field Work and Instrumentation.....	6
4.1. Field Logistics.....	6
4.2. Survey Parameters and Instrumentation.....	9
5. Geophysical Techniques.....	11
5.1 IP Method.....	11
5.2 3DIP Method.....	11
5.3 Magnetic Survey Method.....	12
6. Quality Assurance.....	13
6.1. Locations.....	13
6.2. Magnetometer Data.....	13
6.3. IP Data.....	14
Appendix A: Survey Details.....	17
Silverboss South Grid - 3DIP Survey.....	17
Silverboss South Grid - Mag Survey.....	17
Silverboss North Grid - 3DIP Survey.....	18
Silverboss North Grid - Mag Survey.....	18
Appendix B: Instrument Specifications.....	19
SJ-24 Full Waveform Digital IP Receiver.....	19
GDD Tx II IP Transmitter.....	19
GEM 19 Overhauser Magnetometer.....	20

## **INDEX OF FIGURES**

Figure 1: Overview map of the Silverboss Property in B.C., Canada.....	2
Figure 2: Location map for the Silverboss Property showing road access and base camp.....	3
Figure 3: Grid Map showing the survey area for the South and North grids.....	5
Figure 4 Decay curves from Line 4100N injection station 1350E on the South Grid.....	15
Figure 5 Decay curves from Line 4100N injection station 1700E on the South Grid.....	15
Figure 6 Decay curves from Line 5525N injection station 1400E on the North Grid.....	16
Figure 7 Decay curves from Line 5525N injection station 1175E on the North Grid.....	16

## **INDEX OF TABLES**

Table 1: Survey Summary.....	1
Table 2: South Grid parameters.....	4
Table 3: North Grid parameters.....	5
Table 4: Details of the SJ Geophysics crew on site.....	7
Table 5: 3DIP Instrumentation parameters.....	9
Table 6: Magnetometer Parameters.....	10
Table 7: GPS Parameters.....	10
Table 8: Locations of 3DIP remote sites.....	10
Table 9: Locations of magnetic base station and magnetic calibration point.....	11

## 1. SURVEY SUMMARY

SJ Geophysics Ltd. was contracted by Happy Creek Minerals Ltd. to acquire geophysical data on their Silverboss Property. The following table provides a brief summary of the project.

<b>Client</b>	Happy Creek Minerals Ltd.
<b>Project Name</b>	Silverboss
<b>Location</b> (approx. centre of grid)	South Grid: Latitude: 52° 6' N Longitude: 120° 56' W 641700N 5773900E; NAD83 Zone 10  North Grid: Latitude: 52° 7' N Longitude: 120° 56' W 641500N 5775600E; NAD83 Zone 10
<b>Survey Type</b>	3D Induced Polarization (3DIP), Magnetometer
<b>Total Line Kilometres</b>	South Grid: 3DIP: 11.9 km, Magnetics: 12.525 km North Grid: 3DIP: 4.225 km, Magnetics: 5.625 km
<b>Production Dates</b>	July 24 <sup>th</sup> – August 3 <sup>rd</sup> , 2012
<b>Objective</b>	The target for the Silverboss 2012 3DIP and magnetic program extend on the slopes of the Big Timothy Mountain, west of the Boss Mountain Molybdenum Mine. The features of interest are expected to be shallow and could be a porphyritic or a 25-30m wide quartz silica veining system, both extensions of the already mined features.  The purpose of the 3DIP survey was to identify possible resistivity and chargeability response associated with the features of interest, while the magnetic survey was carried out to help determine structural changes within each grid.

Table 1: Survey Summary

This logistics report summarizes the operational aspects and methodologies of the geophysical survey. This report does not discuss or interpret the survey results.

## 2. LOCATION AND ACCESS

The Silverboss Property is located in the British Columbia, Canada (Figure 1).



Figure 1: Overview map of the Silverboss Property in B.C., Canada.

The closest town to the survey area is 100 Mile House, situated approximately 55 km southwest of the grid. The Silverboss Project is accessed by helicopter from the Fox Base Camp. It is approximately a 30 km flight southwest of camp and is located on Big Timothy Mountain (Figure 2).



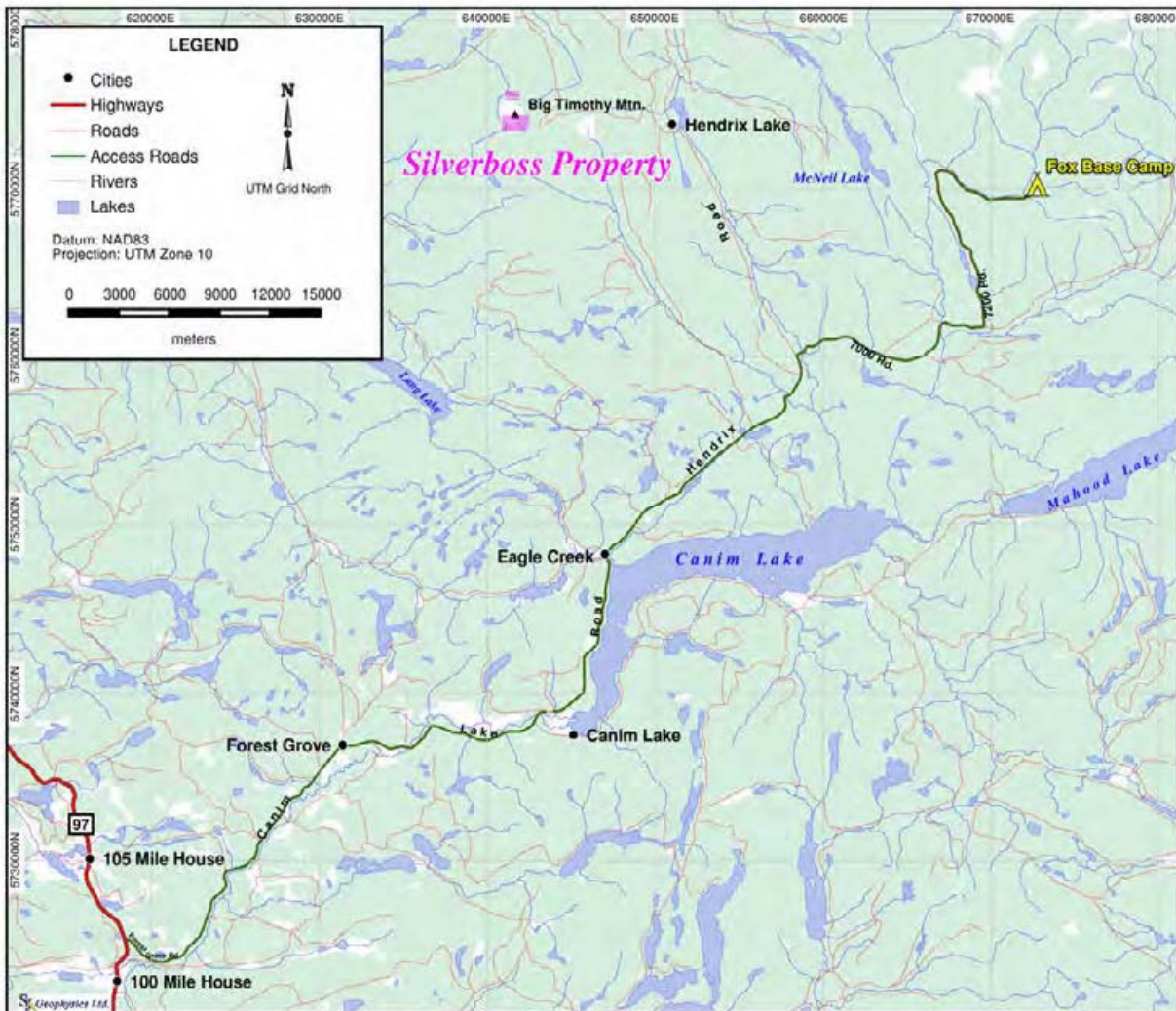


Figure 2: Location map for the Silverboss Property showing road access and base camp.

The Fox Base Camp where the crew was accommodated can be accessed from 100 Mile House by the following directions:

- Head north of 100 Mile House along Highway 97.
- At the next main intersection, approximately 2.5 km north, turn right onto Forest Grove Road.
- Forest Grove Road turns into Camin Lake Road after approximately 4 km
- At the Eagle Creek bridge, the pavement ends and the Camin Lake Road turns into

the Hendrix Lake gravel road (also called 6000 Road). Continue in a northeasterly direction for 17.5 km until the junction with the 7000 Road.

- Turn right onto 7000 Road and follow the road for 15 km
- Turn left onto the 7200 Road.
- The Fox Base Camp is located approximately 17 km after this intersection.

The Silverboss Project was located on a plateau on Big Timothy mountain. The terrain is covered in moss with sparse patches of alpine trees. Birds, gophers and other small rodents were the only animals seen during the survey.

### 3. GRID INFORMATION

The survey on the Silverboss property consisted of two grids, called South and North grids.

The South grid consisted of nine survey lines, spaced at 100 m with stations flagged and marked every 25 m (Figure 3). One baseline was also cut along line 1500E.

<b>Grid</b>	South
<b>Number of Survey Lines</b>	9 cross lines and 1 base line
<b>Survey Line Azimuth</b>	90°
<b>Line Spacing</b>	100 m
<b>Station Spacing</b>	25 m
<b>Elevation range</b>	1870 – 2120 m

Table 2: South Grid parameters

The North grid consisted of seven survey lines, spaced at 75 m with stations flagged and marked every 25 m (Figure 3). One baseline was also cut along line 1600E.



<b>Grid</b>	North
<b>Number of Survey Lines</b>	7 cross lines and 1 base line
<b>Survey Line Azimuth</b>	90°
<b>Line Spacing</b>	75 m
<b>Station Spacing</b>	25 m
<b>Elevation range</b>	1910 – 2060 m

Table 3: North Grid parameters

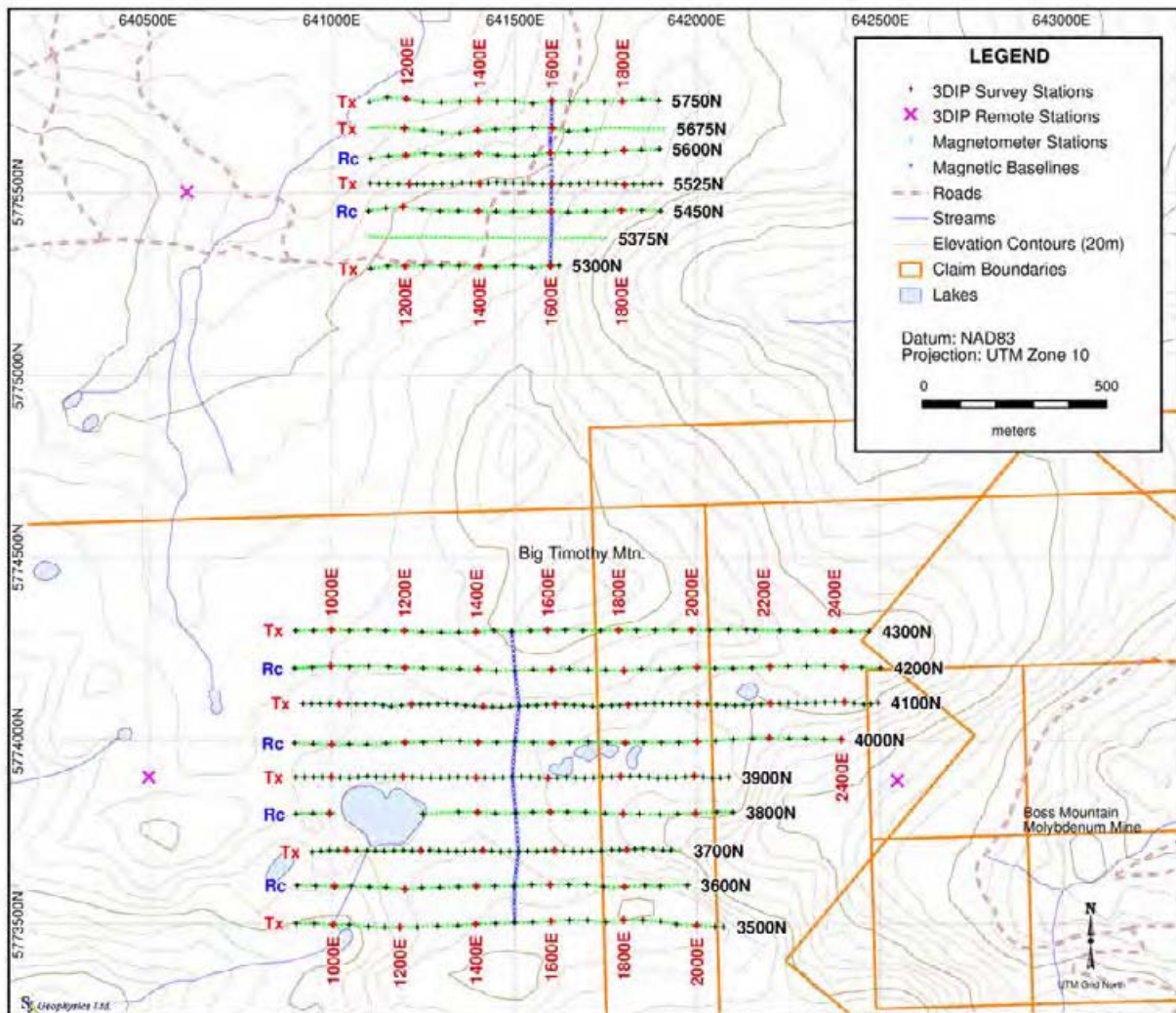


Figure 3: Grid Map showing the survey area for the South and North grids.

For each grid, line and station labels for the grid were based on the UTM coordinates, with the line labels being represented by the last four digits in the UTM northing and the station labels represented by the last four digits in the UTM easting. Please refer to Appendix A for a detailed breakdown of the survey lines.

All of the survey location information was recorded by the SJ Geophysics crew, including GPS control points and slope/clinometric data. Control points were recorded with a Garmin GPSMAP 62S handheld GPS in the UTM projection and NAD83 datum Zone 10. Slope data were recorded with a Suunto handheld clinometer.

The South grid was located in an ancient caldera. It was generally flat in the centre but rose steeply on the north and south ends. Most of the ground was covered in a thick layer of moss, but there were many rocky outcrops and rock slides as well.

The North grid had similar terrain to the South grid. It sloped downwards from the Northeast corner to the Southwest. There were numerous outcrops and rocky sections throughout the survey area, but most of the grid was covered in a layer of moss.

Temperature at the Silverboss project ranged from around 5 °C at night up to 20 °C during the day. Precipitation was moderate at this time of year so the conditions were moist.

## ***4. FIELD WORK AND INSTRUMENTATION***

### ***4.1. Field Logistics***

An SJ Geophysics field crew typically consists of at least two field geophysicists or technicians and four helpers to assist in the day-to-day operation of the survey. The field geophysicists and technicians oversee all operational aspects including field logistics, data acquisition and initial field data quality control. Table 4 lists the SJ Geophysics crew members on this project.

The SJ Geophysics crew's first day on site at the Silverboss Project was July 24<sup>th</sup> and they remained on site through to August 3<sup>rd</sup>.

<b><i>Crew Member Name</i></b>	<b><i>Role</i></b>	<b><i>Dates on Site</i></b>
Matvei Kootchin	Field Geophysicist	July 24 <sup>th</sup> – August 3 <sup>rd</sup>
Kieran Kootchin	Field Technician	July 24 <sup>th</sup> - August 3 <sup>rd</sup>
Ryan Rolick	Helper	July 24 <sup>th</sup> - August 3 <sup>rd</sup>
George Jordan	Helper	July 24 <sup>th</sup> - August 3 <sup>rd</sup>
Vernon Prince	Helper	July 24 <sup>th</sup> - August 3 <sup>rd</sup>
Everett Van Horne	Helper	July 24 <sup>th</sup> - August 3 <sup>rd</sup>

Table 4: Details of the SJ Geophysics crew on site

The SJ Geophysics crew was accommodated by the client at the Fox Base Camp. Living quarters consisted of 4-bed cabins with diesel heaters and were powered by a diesel generator. The client provided all amenities such as food, hot water, satellite Internet and a satellite phone. Communications for this project were conducted mainly through email via satellite Internet.

The Silverboss geophysical program started on July 24<sup>th</sup> with the South grid. Unfortunately that day, the helicopter used to access the grid and sling the equipment had only limited access to the survey area because of the dense fog. This delayed the setup of the 3DIP survey. George Jordan took advantage of this down time to start acquiring magnetometer data. Eventually later that day the fog dissipated enough to make the slinging possible and setup the grid. The foggy episode only occurred another time during the survey, on July 28<sup>th</sup>.

3DIP acquisition of the South grid progressed smoothly from the northern-most line down to the south. Apart for the first receiver set, one receiver set was surveyed per day. Lines 3500N to 3700N were shortened to the east due to a series of cliffs that were not safe to traverse.

The 3DIP configuration used for the South grid consisted of SJ Geophysics' standard setup (as described in section 5.2) and two in-line receiver array were recorded at once. The magnetometer survey was carried out at a 12.5 m sampling rate along the same lines as the 3DIP as well as along a base line running along station 1500E.

On each day between July 25<sup>th</sup> and July 27<sup>th</sup> the crew encountered lightning storms in the afternoon. In addition to creating unsafe work conditions, these storms added noise in the signal and necessitated the survey to be halted. The crew took advantage of this downtime to setup equipment and acquire location data.

The 3DIP survey of the South grid completed on July 31<sup>st</sup> and the following day was spent moving the gear to the North grid while George and Mat acquired magnetometer data, both on the South and North grids. All seven cross lines and the base line (along line 1600E) of the North grid were surveyed with the magnetometer that day. Line 5375N was only surveyed with the magnetometer upon SJ Geophysics request in order to later allow proper surfacing of the data.

The 3DIP survey of the North grid started on August 2<sup>nd</sup> and was completed in two days only. The Northern 3DIP grid consisted of two receiver lines and four transmitter lines (all lines to the exception of line 5375N). Although it was generally easy to get around the North grid, the two southern-most lines were cut short in the east due to steep terrain.

The 3DIP configuration for the north grid slightly changed from the one used for the South grid as its purpose was to acquire a bit more near surface resolution data. The grid counted two receiver lines, lines 5450N and 5600E, acquiring data at the same time. The remaining four lines were used as transmitter.

The crew finished the surveying of the North grid, including cleaning up and slinging of the equipment, on August 3<sup>rd</sup> while George re-surveyed some of the mag stations and surveyed the base line on the South grid.

In the western half of the South grid, ground contact was good on the mossy plateau, but the quality of the contact relatively degraded when the survey reached the rocky sections of the eastern slopes. Current injected into areas with poor contact was generally low and provided data of relatively lower quality at the level of distant dipoles. This issue was alleviated by having the helpers use 3 current electrodes instead of 2, dumping saline solution on the rods to increase the current injected at those stations, and increasing the length of the readings. The increased reading length provided more stackable data and reduce data uncertainty.

Ground contact was generally good throughout the North Grid but in problem areas the same mitigative steps described above were used to acquire good quality data.

## 4.2. Survey Parameters and Instrumentation

The geophysical instrumentation used to acquire the 3DIP data consisted of a SJ-24 full waveform receiver and a GDD Tx II transmitter. To acquire the magnetic survey data up to three GEM GSM-19 Overhauser magnetometers were used. The locational data were acquired using a GPS. The specifications of these instruments are listed in Appendix B and the equipment parameters are summarized in Tables 5, 6 and 7.

<b>Array Type</b>	3DIP – Offset Pole-Dipole
<b>Number of Dipoles</b>	South Grid: Up to 32 in-line North Grid: Up to 16 in-line, Up to 32 active
<b>Dipole Length</b>	50 m
<b>Array Length</b>	South Grid: Up to 1600 m North Grid: Up to 800 m
<b>Current Interval</b>	50 m
<b>IP Transmitter</b>	GDD TxII (Serial #246, 247)
Duty Cycle	50%
Waveform	Square
Cycle and Period	2 sec on / 2 sec off; 8 second
<b>IP Receiver</b>	SJ-24 Full Waveform Digital Receiver
Reading Length	Minimum 93 seconds
Vp Delay, Vp Integration	1200 ms, 600 ms
Mx Delay, # of Windows Width (Mx Intergration)	200 ms, 20 36, 39, 42, 45, 48, 52, 56, 60, 65, 70, 75, 81, 87, 94, 101, 109, 118, 128, 140, 154 (200 ms – 1800 ms)
Properties Calculated	Vp, Mx, Sp, Apparent Res

Table 5: 3DIP Instrumentation parameters.

<b>Magnetometer</b>	GEM GSM-19 Overhauser Magnetometer
Station Spacing	12.5 m
Base Unit Reading Interval	3 seconds
Measured Property	Total magnetic field

Table 6: Magnetometer Parameters.

<b>GPS</b>	Garmin GPSMAP 62S
Average Accuracy	3 m
Projection / Datum	UTM Projection, Nad 83, Zone 10

Table 7: GPS Parameters.

The IP arrays for this survey were connected using special 8-conductor cables with 50 m takeouts for the receiver electrodes. For the potential line, the electrodes consisted of stainless steel pins, 50 cm long and 10 mm in diameter, which were hammered into the ground. At each current station (50 m intervals), current was injected using two or three long (75 cm) stainless steel electrodes hammered into the ground. The remote current locations consisted of four 1 m stainless steel rods, 15 mm in diameter. At current sites with poor contact the ground was soaked with a saline water solution to improve contact. Table 8 shows the UTM locations of the remote sites.

Name	Label	UTM Northing NAD83	UTM Easting NAD83
South Grid: West Remote	3902N 500E	5773902	640500
South Grid: East Remote	3901N 2550E	5773892	642547
North Grid: West Remote	5526N 600E	5775501	640604

Table 8: Locations of 3DIP remote sites

For the Magnetometer survey, a stationary base unit was used to record the diurnal variation in the total magnetic field at three second intervals. The mobile units, known as rovers, recorded the total magnetic field every 12.5 m along the grid survey lines. Calibration measurements were taken by the rover units at the start and end of each day to detect any abnormal variation on the operator part. Table 9 shows the UTM locations of the magnetic base station and calibration point.

<b>Name</b>	<b>UTM Northing / NAD83</b>	<b>UTM Easting / NAD83</b>
Magnetic Base Station	5770065	672440
Magnetic Calibration Point	5770072	672452

*Table 9: Locations of magnetic base station and magnetic calibration point*

## **5. GEOPHYSICAL TECHNIQUES**

### **5.1 IP Method**

The time domain IP technique energizes the ground by injecting square wave current pulses via a pair of current electrodes. During current injection, the apparent (bulk) resistivity of the ground is calculated from the measured primary voltage and the input current. Following current injection, a time decaying voltage is also measured at the receiver electrodes. This IP effect measures the amount of polarizable (or “chargeable”) particles in the subsurface rock.

Under ideal circumstances, high chargeability corresponds to disseminated metallic sulfides. Unfortunately, IP responses are rarely uniquely interpretable as other rock materials are also chargeable, such as some graphitic rocks, clays and some metamorphic rocks (e.g., serpentinite). Therefore, it is prudent from a geological perspective to incorporate other data sets to assist in interpretation.

IP and resistivity measurements are generally considered repeatable to within about five percent. However, changing field conditions, such as variable water content or electrode contact, reduce the overall repeatability. These measurements are influenced to a large degree by the rock materials near the surface or, more precisely, near the measurement electrodes. In the past, interpretation of a traditional IP pseudosection was often uncertain because strong responses located near the surface could mask a weaker one at depth. We attempt to overcome this uncertainty by employing geophysical inversion to better interpret the data.

### **5.2 3DIP Method**

Three dimensional IP surveys have been designed to take advantage of recent advances in 3D inversion techniques. Unlike conventional 2DIP, the electrode arrays are not restricted to an in-line geometry. In the standard 3DIP configuration, a receiver array is established along one



survey line while current lines are located on two adjacent lines lying on either side of the receiver line. Current injections are performed sequentially at fixed increments (25, 50, 100 or 200 m) along the current lines. Meanwhile, geophysical data are collected along a receiver array which consists of 12 to 16 dipoles laid out along the receiver line. Spacing between current and receiver lines is often the same; however, line spacing is sometimes modified to compensate for local conditions, such as inaccessible sites and water bodies, or the overall conductivity of the ground. Whenever required, two receivers can be used to speed up production and increase depth penetration. In most cases, one receiver records a full 16 dipole array while the second receiver records additional dipoles. By injecting current at multiple locations along current lines adjacent to receiver arrays, data acquisition rates are significantly improved over conventional surveys.

### ***5.3 Magnetic Survey Method***

Magnetic intensity measurements are conducted along survey lines (normally on a regular grid) and are used to identify metallic mineralization related to magnetic materials in the ground (e.g., magnetite and/or pyrrhotite). Magnetic data are also used as a mapping tool to distinguish rock types and to identify faults, bedding, structure and alteration zones. Line and station spacing are usually determined by the size and depth of the exploration targets.

The most common technique used in mineral exploration is to measure the amplitude of the magnetic field using an Overhauser magnetometer. The instrument digitally records the survey line, station, total magnetic field and time of day at each station. After each day of surveying, data are downloaded to a computer for archiving and further processing.

The earth's magnetic field is continually changing (diurnal variations) so field measurements are calibrated to these variations. The most accurate technique is to establish a stationary base station magnetometer to continually monitor and record the magnetic field over the course of a day. The base station and field magnetometers are synchronized on the basis of time and computer software is used to correct the field data for the diurnal variations.



## **6. QUALITY ASSURANCE**

### **6.1. Locations**

Good quality survey location data is crucial to successful analysis and interpretation of the collected geophysical data.

The quality of the location data for this survey is generally high thanks to good satellite reception and open terrain. GPS measurements (control points) were obtained every 50 m and slopes were acquired every 25 m. The UTM location of the 3DIP survey stations were later interpolated based on the GPS measurements, slopes and ideal distance between the survey stations. For the magnetometer survey, locations were interpolated every 12.5 m based on the previously interpolated 3DIP stations UTM coordinates and the idealized distance between stations.

### **6.2. Magnetometer Data**

All magnetometer data are run through an in-house quality control sequence to ensure the cleanest magnetic data possible. Space weather is monitored to recognize non-terrestrial influences on the data. Magnetic calibration points are measured at the beginning and the end of each survey day. A diurnal correction is also applied to all the survey data. Field crew members make note of metal cultural features (e.g. fences, pipelines) encountered during the survey that could cause spikes in the data. Prior to gridding, a stacked profile of the measured magnetic intensity is plotted. Non-natural large-magnitude spikes in the magnetic data are then either removed by hand or filtered. Following these quality control steps, magnetic data is prepared for gridding and mapping.

The magnetic data on the Silverboss property were of good quality. On the South grid the amplitude of the data was around 10000 nT and the variations were often abrupt, likely due to the presence of magnetite in the near surface. This caused some issues with the magnetometer sensor which didn't handle the sudden variations properly and allocated a low quality factor to the zones of high magnetic gradient. To overcome the issue, the magnetometer staff was held higher than usual over the high gradient zones. This issue didn't occur on the North grid as the amplitude was only around 5000 nT.

### **6.3. IP Data**

The IP geophysical data go through a series of quality assurance processes. Prior to acquisition, it is SJ Geophysics' best practice to acquire a noise reading to determine the background noise levels and to detect possible bad channels (i.e. poor ground contacts). This allows the operator to troubleshoot problem areas in the array prior to acquisition, then once the operator is satisfied surveying can begin. Immediately after each full waveform reading is completed the data are analyzed in the field to provide the operator a set of electric potential and chargeability values ( $V_p$ ,  $S_p$ ,  $M_x$ ) as well as a chart of the chargeability decay curves for each dipole in the array. This gives the operator valuable information to verify the quality of data in real time. Also available to the operator are visualization tools for full waveform signals and a spectral analysis program to assist in troubleshooting possible bad stations and unwanted noise.

Each evening, the analyzed data are imported into JavIP: a proprietary IP database management system developed by S.J.V. Consultants Ltd. (SJV). This package integrates the locational information with each reading, thus allowing the calculation of the apparent resistivity and apparent chargeability. The package's interactive quality control tools include: plots of decay curves, tables of calculated parameters and a dot plot (a graphical display of data of the various parameters). These enable the field geophysicist to validate each data point. After the field geophysicist removes known bad points from field observations and other obvious outliers, the database is delivered to SJV for a more stringent second review. In this second review, the data are scrutinized to ensure erroneous data points are not passed along to the final stage of processing: the inversion.

The data collected on the Silverboss project were of good quality. The voltage potentials ( $V_p$ ), for the most part, were strong and the signals and resulting decay curves were mostly clean. Most of the data flagged for removal were due to non-coupling. This phenomena is typical in IP surveys and is related to the survey configuration. Non-coupling occurs when the receiver dipole is sub-parallel to the equipotential lines which can result in a significant decrease in signal strength and lead to untrustworthy data. Some poor quality data were flagged for removal due to low quality signals caused by poor contact in rocky sections. This issue was encountered on the eastern slopes of the South grid and the western side of the North grid. An estimated 5% of the data was deleted on the Silverboss project.

Figure 4 shows clean data from the central portion of the South grid, and Figure 5 shows relatively noisier data from the east side of the South grid.

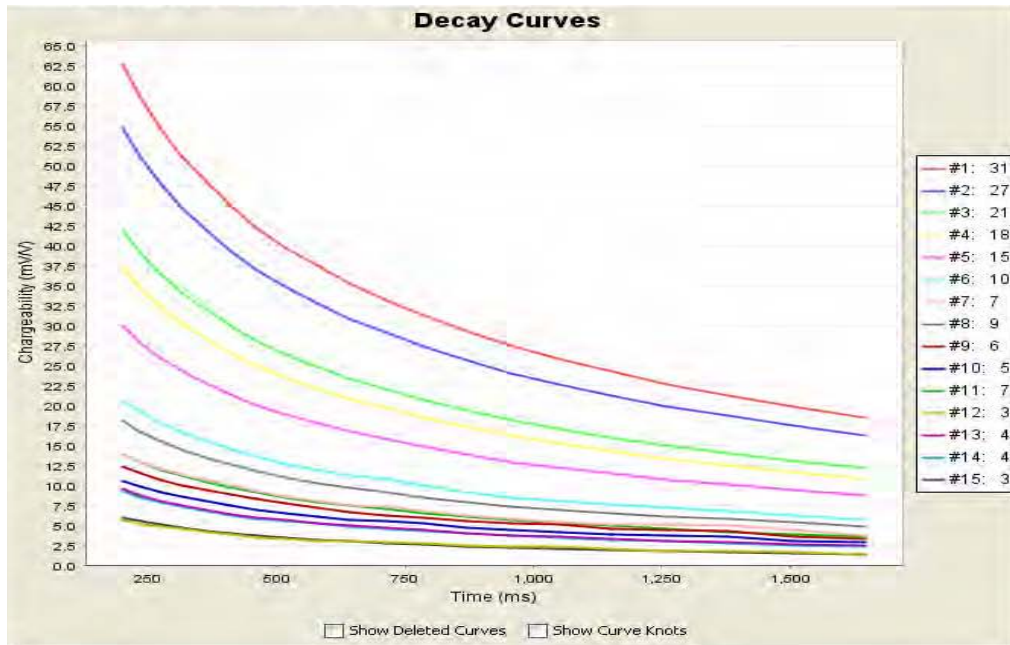


Figure 4 Decay curves from Line 4100N injection station 1350E on the South Grid.

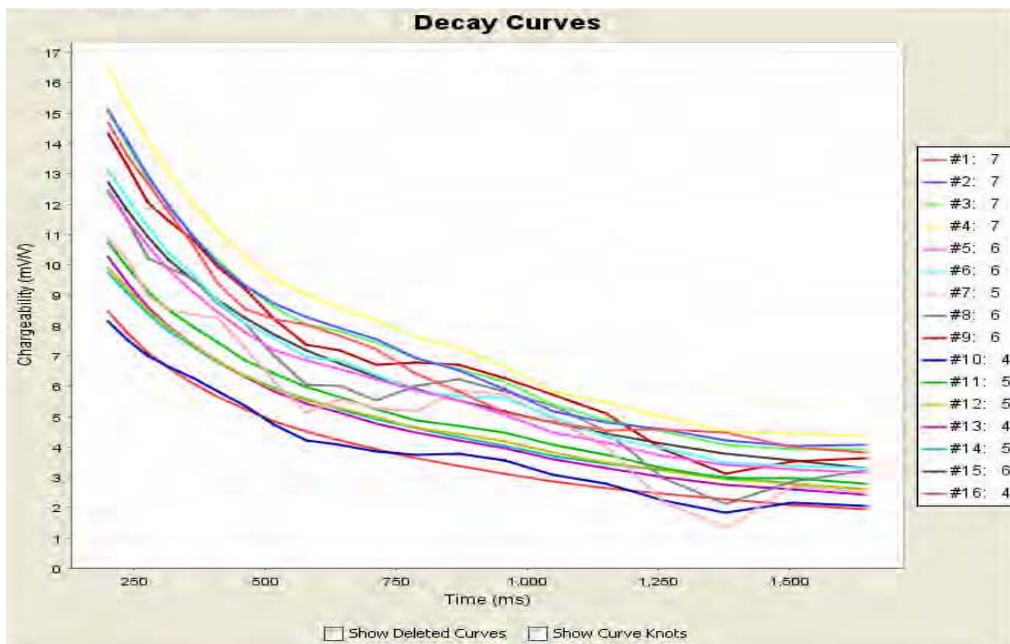


Figure 5 Decay curves from Line 4100N injection station 1700E on the South Grid.

Figure 6 shows clean data from the central part of the North grid, and Figure 7 shows relatively noisier data from the western side of the North grid.

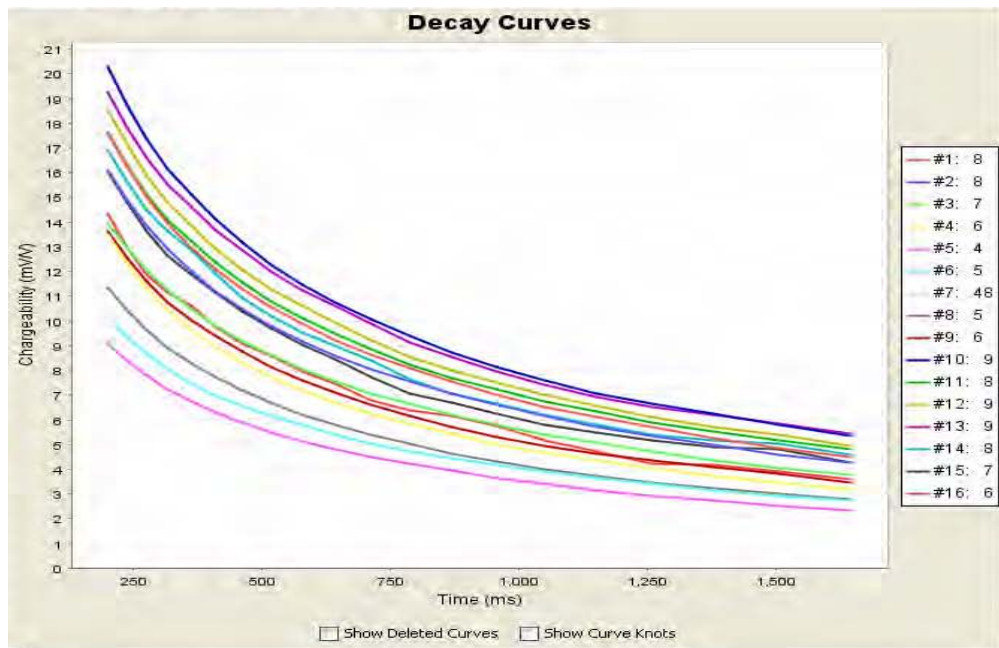


Figure 6 Decay curves from Line 5525N injection station 1400E on the North Grid.

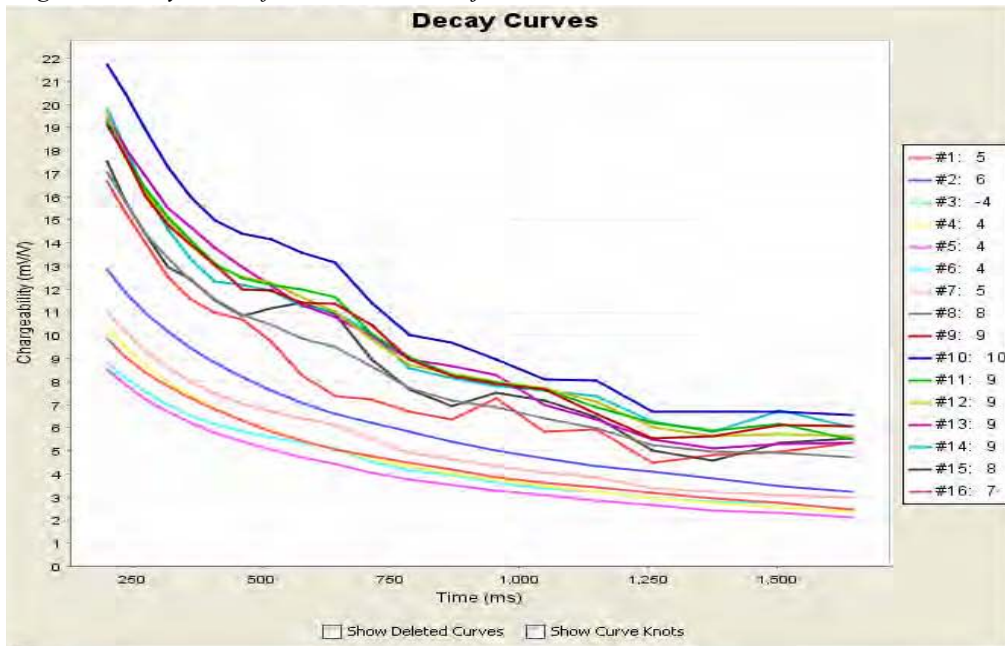


Figure 7 Decay curves from Line 5525N injection station 1175E on the North Grid.

Respectfully submitted per SJ Geophysics Ltd.

Matvei Kootchin

**APPENDIX A: SURVEY DETAILS****Silverboss South Grid - 3DIP Survey**

<i>Line</i>	<i>Series</i>	<i>Type</i>	<i>Start Station</i>	<i>End Station</i>	<i>Survey Length (m)</i>
3500	N	Tx	900	2075	1175
3600	N	Rc	900	1975	1075
3700	N	Tx	900	1925	1025
3800	N	Rc	900	1000	100
3800	N	Rc	1250	2100	850
3900	N	Tx	900	2100	1200
4000	N	Rc	900	2400	1500
4100	N	Tx	900	2500	1600
4200	N	Rc	900	2500	1600
4300	N	Tx	900	2500	1600

*Rc = Receiver Line, Tx = Transmitter Line**3DIP Total Linear Metres = 11900***Silverboss South Grid - Mag Survey**

<i>Line</i>	<i>Series</i>	<i>Type</i>	<i>Start Station</i>	<i>End Station</i>	<i>Survey Length (m)</i>
3500	N	Mag	912.5	2075	1162.5
3600	N	Mag	900	1975	1075
3700	N	Mag	900	1950	1050
3800	N	Mag	900	1012.5	112.5
3800	N	Mag	1250	2100	850
3900	N	Mag	900	2100	1200
4000	N	Mag	900	2400	1500
4100	N	Mag	900	2475	1575
4200	N	Mag	900	2500	1600
4300	N	Mag	900	2500	1600
1500	E	Mag	3500	4300	800

*Mag = Magnetic Survey Line**Mag Total Linear Metres = 12525*

**Silverboss North Grid - 3DIP Survey**

<b>Line</b>	<b>Series</b>	<b>Type</b>	<b>Start Station</b>	<b>End Station</b>	<b>Survey Length (m)</b>
5300	N	Tx	1100	1625	525
5450	N	Rc	1100	1900	800
5525	N	Tx	1100	1900	800
5600	N	Rc	1100	1900	800
5675	N	Tx	1200	1700	500
5750	N	Tx	1100	1900	800

Rc = Receiver Line, Tx = Transmitter Line

3DIP Total Linear Metres = 4225

**Silverboss North Grid - Mag Survey**

<b>Line</b>	<b>Series</b>	<b>Type</b>	<b>Start Station</b>	<b>End Station</b>	<b>Survey Length (m)</b>
5300	N	Mag	1100	1625	525
5375	N	Mag	1100	1750	650
5450	N	Mag	1100	1900	800
5525	N	Mag	1100	1900	800
5600	N	Mag	1100	1900	800
5675	N	Mag	1100	1900	800
5750	N	Mag	1100	1900	800
1600	E	Mag	5300	5750	450

Mag = Magnetic Survey Line

Mag Total Linear Metres = 5625

## ***APPENDIX B: INSTRUMENT SPECIFICATIONS***

### ***SJ-24 Full Waveform Digital IP Receiver***

#### **Technical:**

Input impedance:	10 $\Omega$
Input overvoltage protection:	up to 1000V
External memory:	Unlimited readings
Number of dipoles:	4 to 16 +, expandable
Synchronization:	Software signal post-processing user selectable
Common mode rejection:	More than 100 dB (for Rs=0)
Self potential (Sp):	Range: -5V to +5V Resolution: 0.1mV Proprietary intelligent stacking process rejecting strong non-linear SP drifts
Primary voltage:	Range: 1 $\mu$ V – 10V (24bit) Resolution: 1 $\mu$ V Accuracy: typ. <1.0%
Chargeability:	Resolution: 1 $\mu$ V/V Accuracy: typ. <1.0%

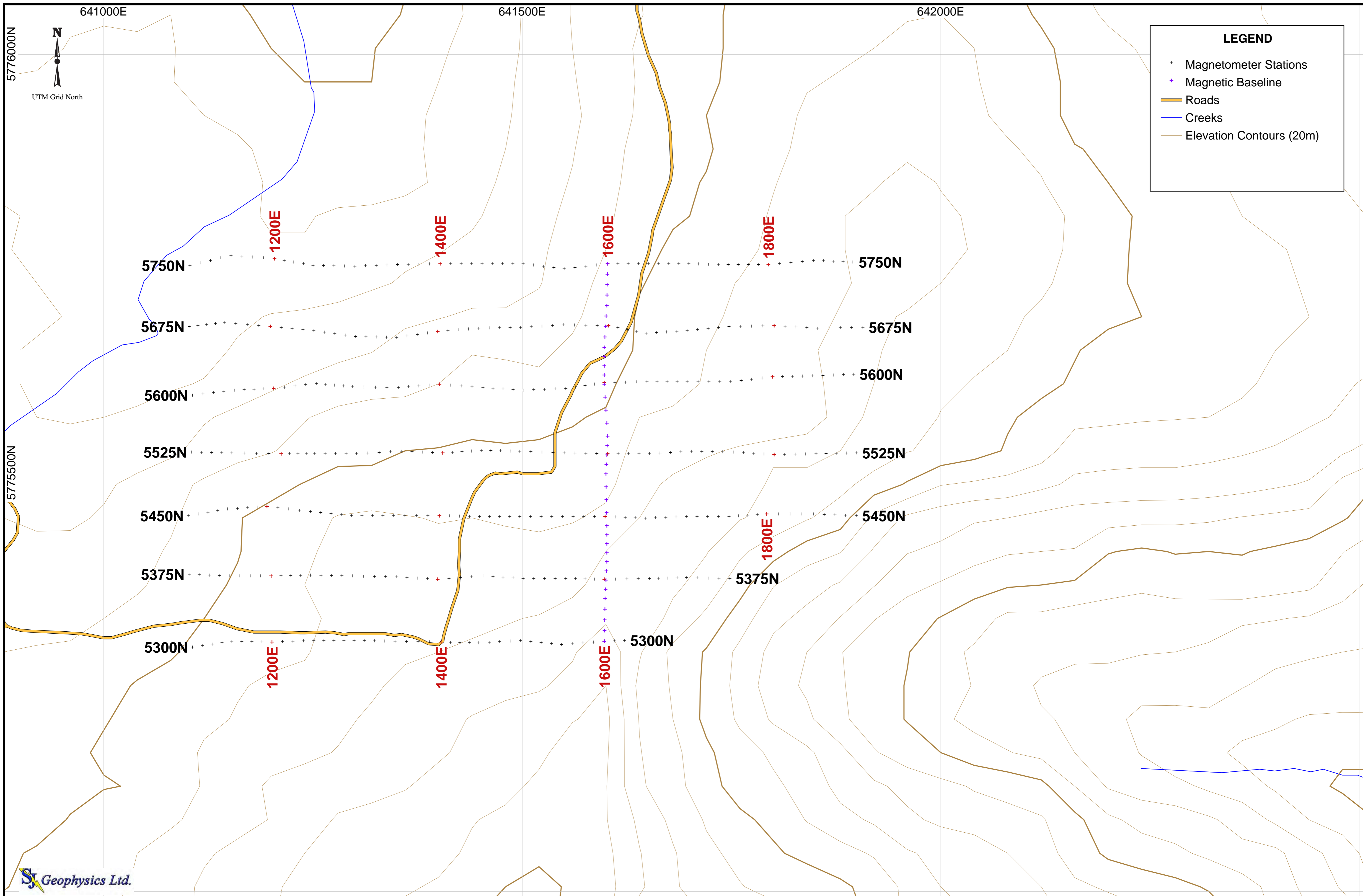
#### **General (4 dipole unit):**

Dimensions:	18 x 16 x 9 cm
Weight:	1.1kg
Battery:	12V external
Operating temperature range:	-20 °C to 40 °C

### ***GDD Tx II IP Transmitter***

Input voltage:	120V / 60 Hz or 240V / 50Hz (optional)
Output power:	3.6 kW maximum
Output voltage:	150 to 2200 V
Output current:	5 mA to 10 A
Time domain:	1, 2, 4, 8 second on/off cycle
Operating temp. range:	-40 °C to +65 °C
Display:	Digital LCD read to 0.001 A
Dimensions:	34 x 21 x 39 cm
Weight:	20 kg





Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

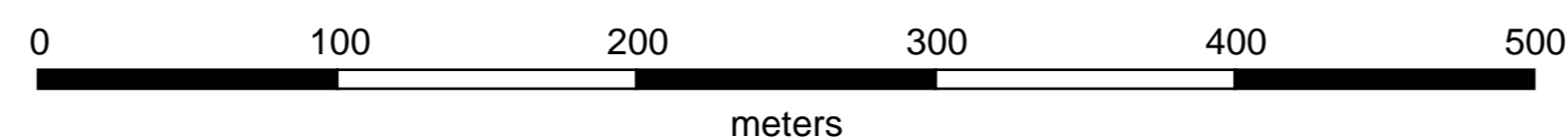
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 Magnetometer: GEM–Systems GSM–19 Overhauser Magnetometer

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 Mapping Date: 21–Aug–2012

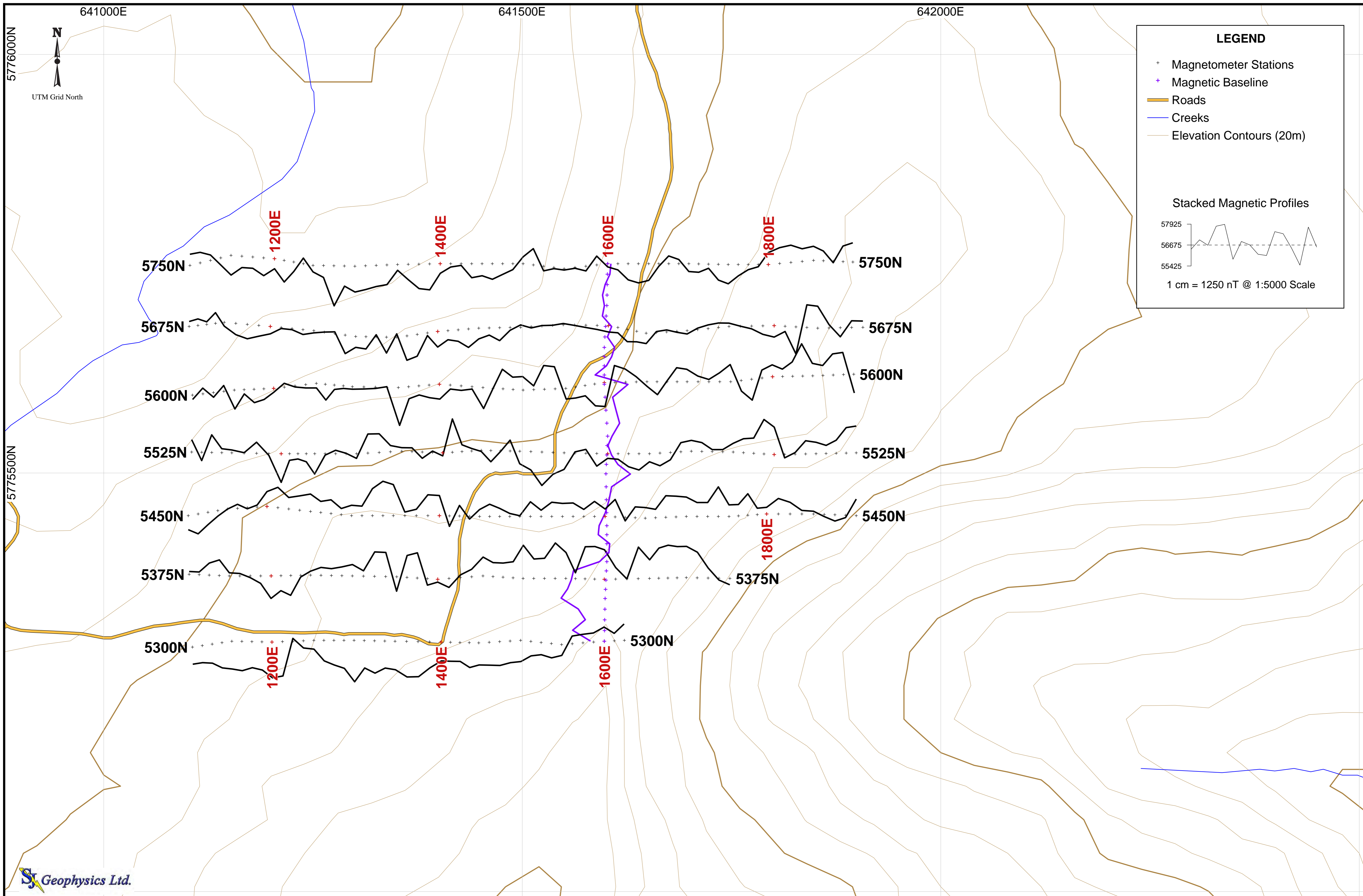
## Ground Magnetic Survey Grid Map

**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
 North Grid

**100 Mile House, B.C., Canada**







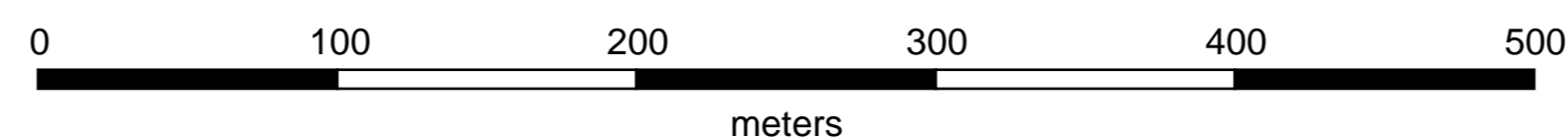
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 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Magnetometer: GEM–Systems GSM–19 Overhauser Magnetometer

Mapping Information:  
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 Projection: UTM Zone 10  
 Colour Classification: Not Applicable  
 Mapping Date: 21–Aug–2012

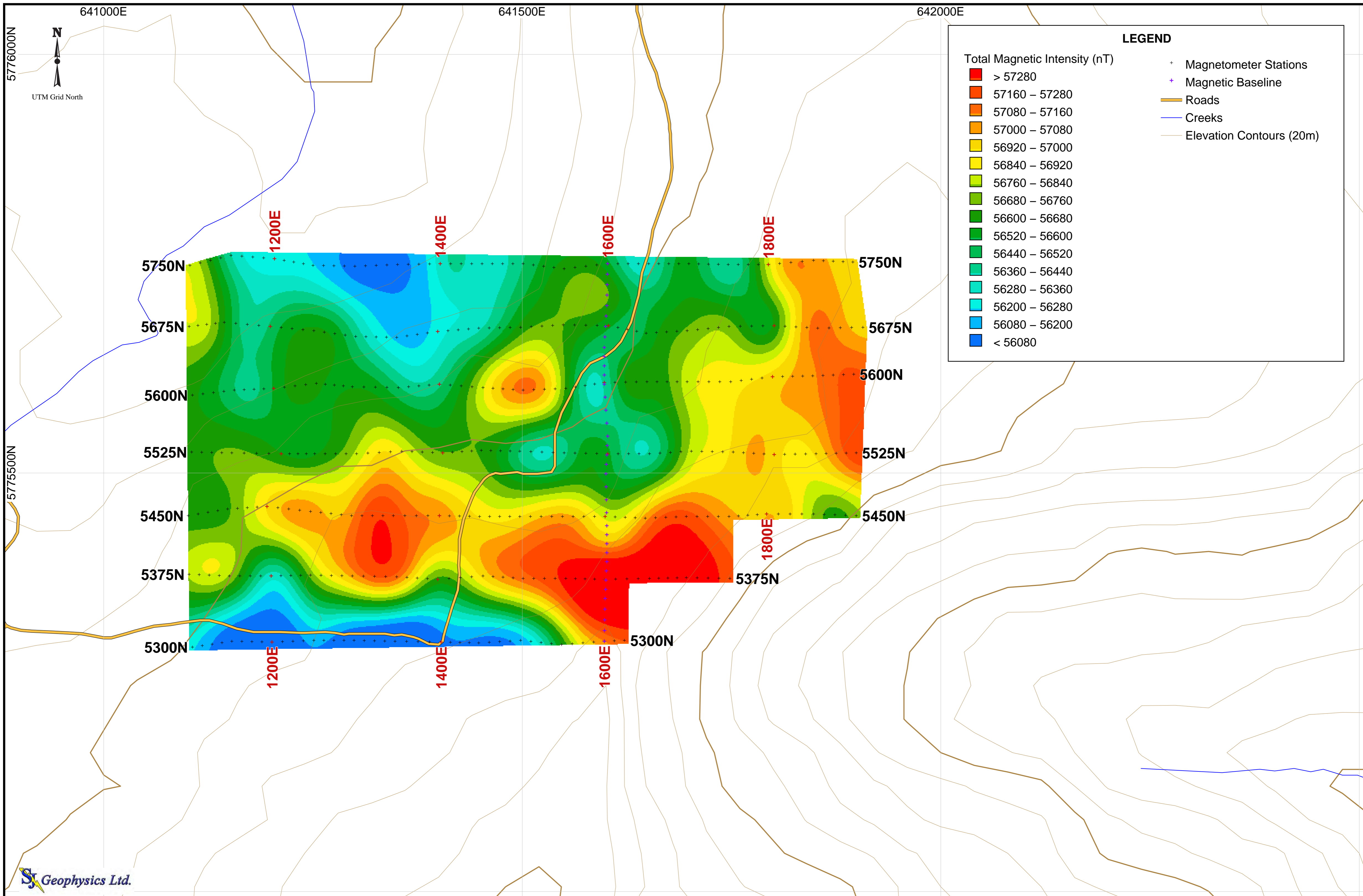
## Ground Magnetic Survey

### Stacked Total Magnetic Intensity Profiles Map



**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
 North Grid

**100 Mile House, B.C., Canada**



Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

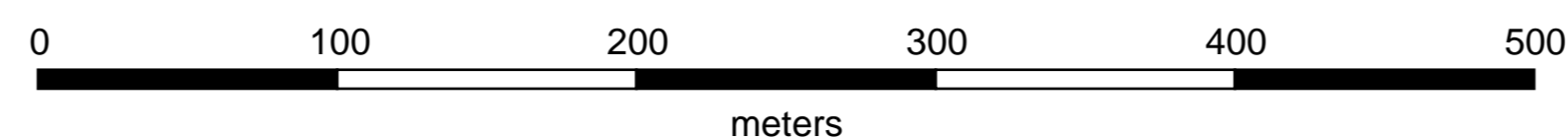
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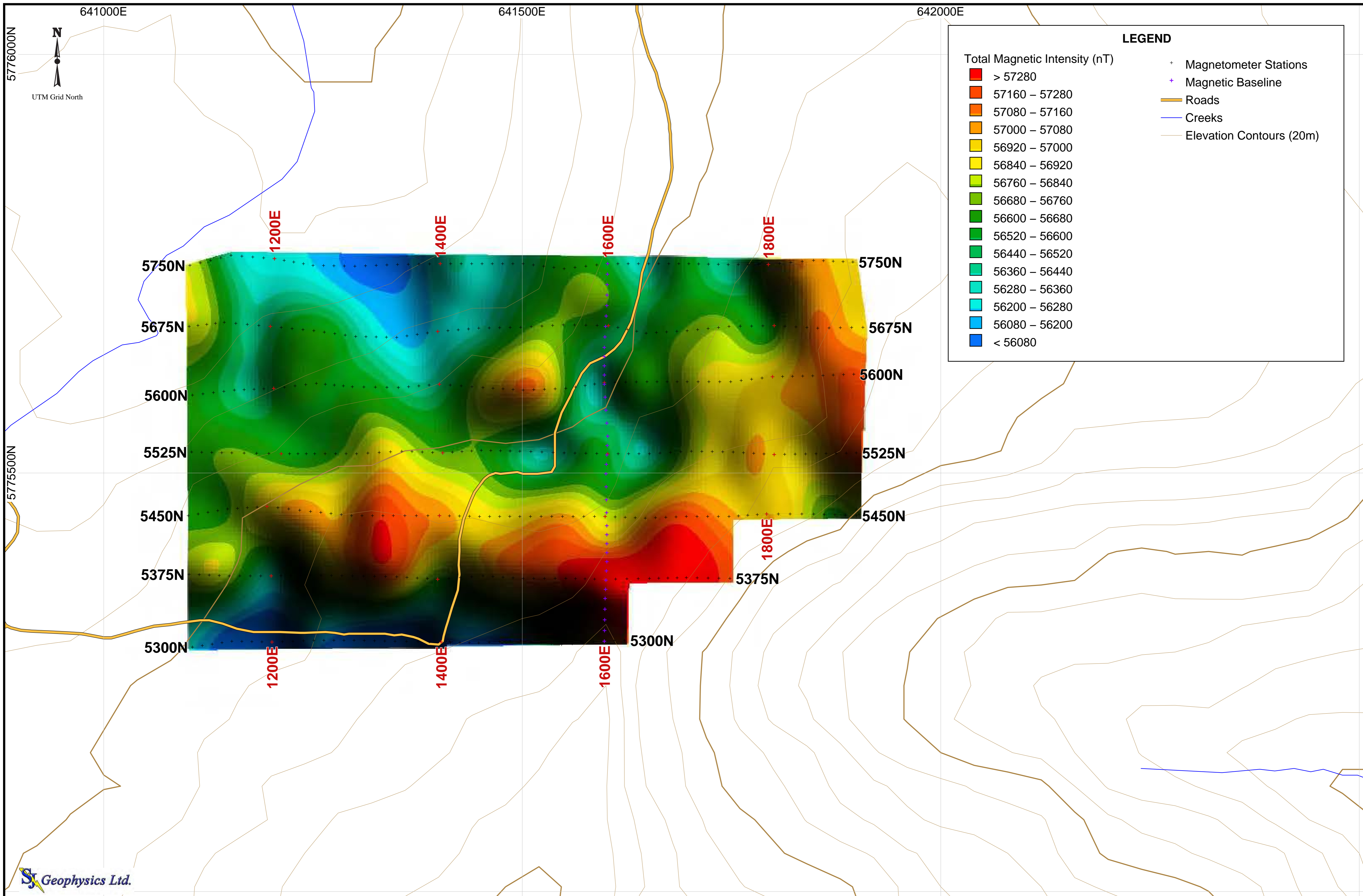
## Ground Magnetic Survey Total Magnetic Intensity Map

**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
 North Grid

**100 Mile House, B.C., Canada**







Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

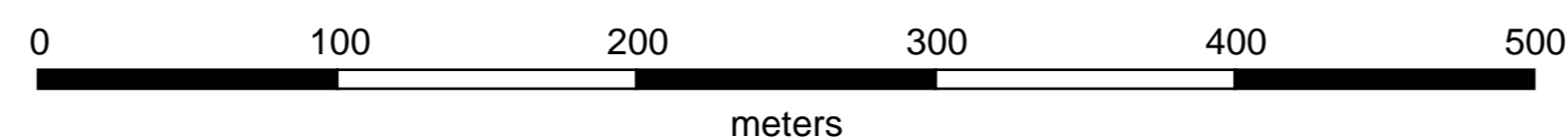
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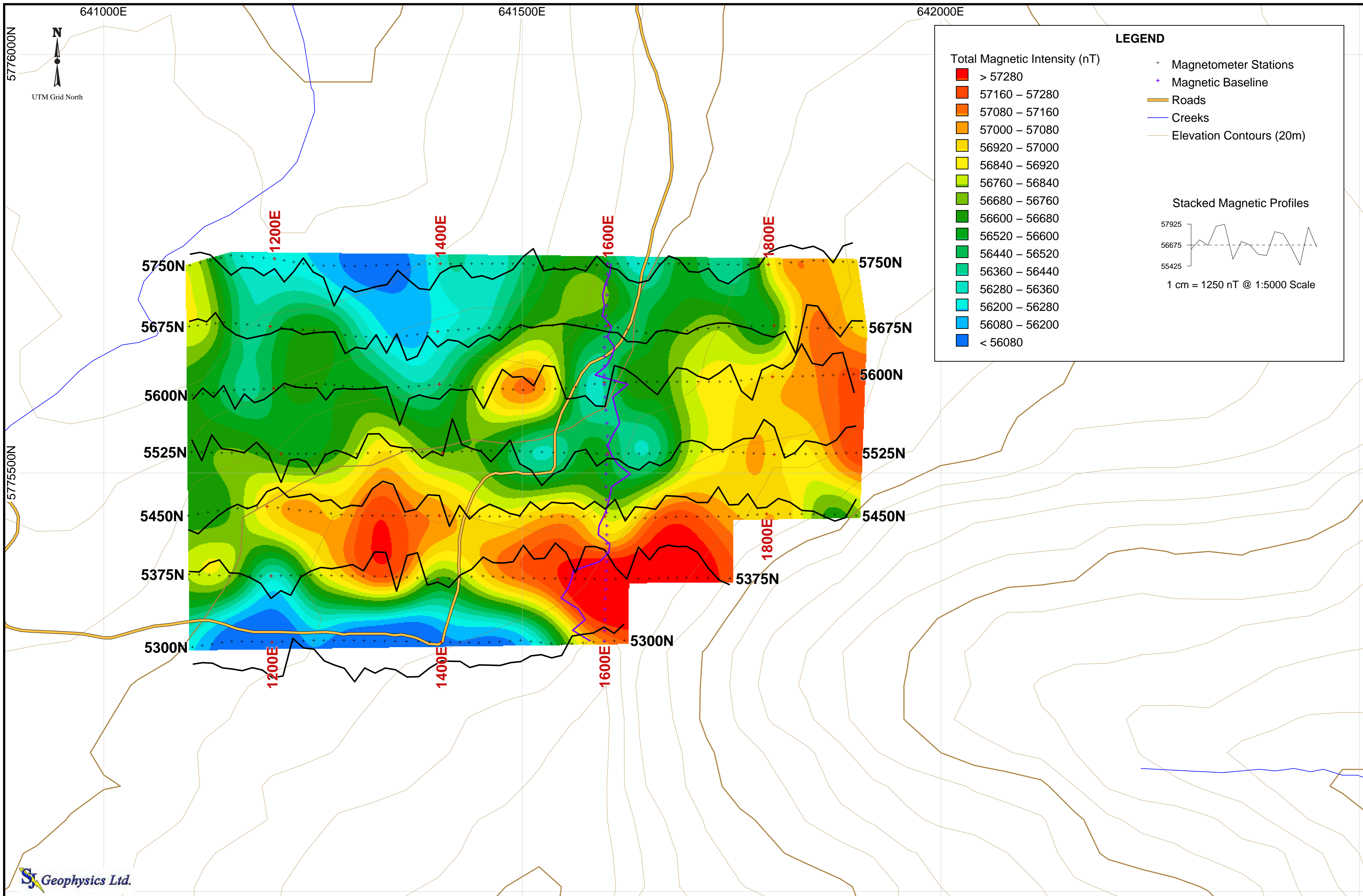
**Ground Magnetic Survey**  
**Total Magnetic Intensity Map: Shadow Enhanced**

**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
**North Grid**

**100 Mile House, B.C., Canada**







Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Magnetometer: GEM–Systems GSM–19 Overhauser Magnetometer

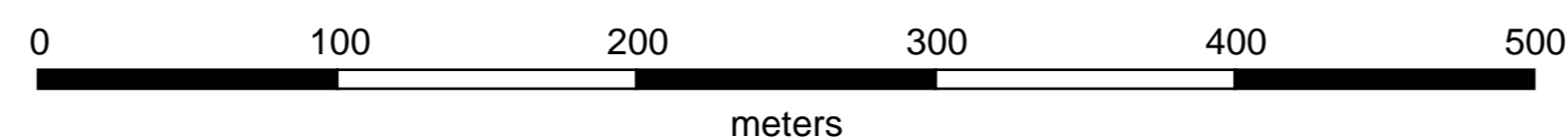
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## Ground Magnetic Survey

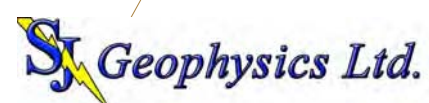
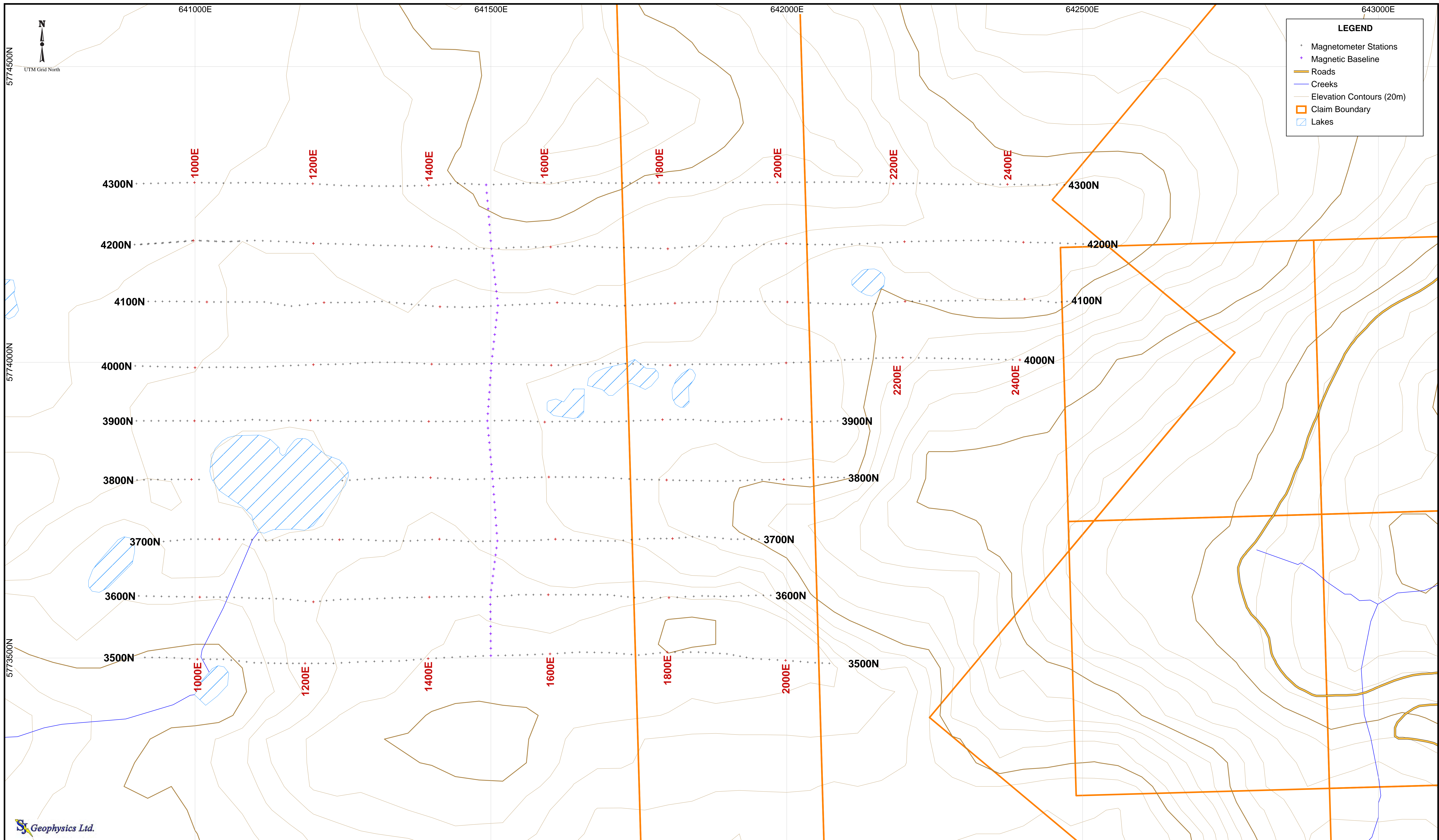
### Total Magnetic Intensity Map with Stacked Profiles

**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
 North Grid

**100 Mile House, B.C., Canada**





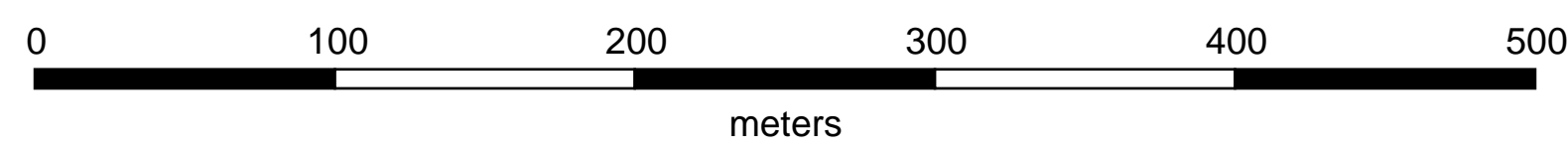


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 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Magnetometer: GEM–Systems GSM–19 Overhauser Magnetometer

Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 Colour Classification: Not Applicable  
 Mapping Date: 21–Aug–2012

### Ground Magnetic Survey Grid Map



**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
 South Grid  
 100 Mile House, B.C., Canada





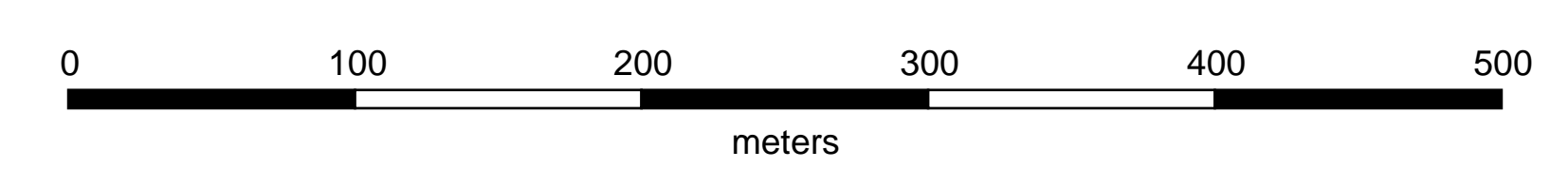
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Instrumentation:  
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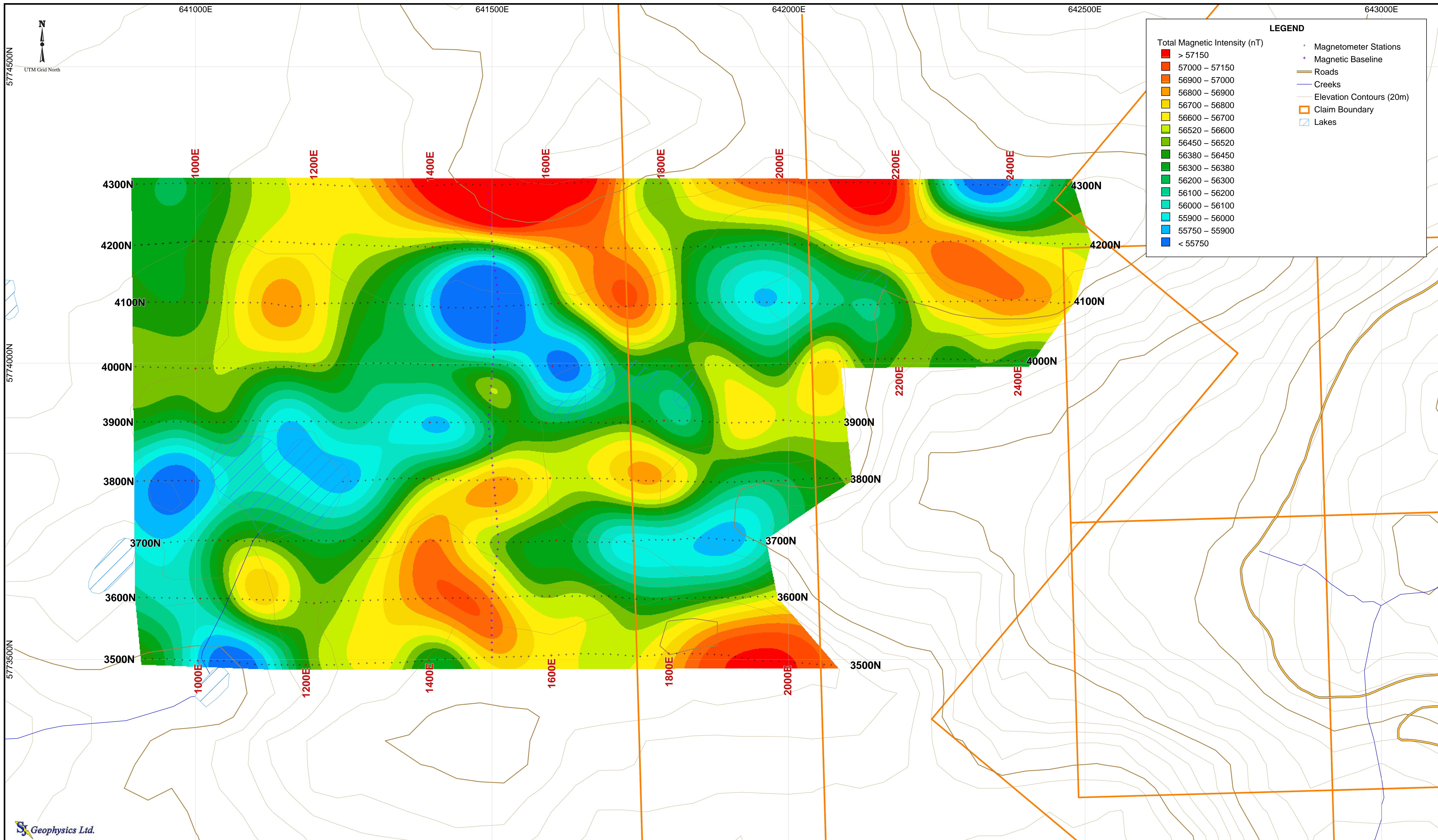
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 Projection: UTM Zone 10  
 Colour Classification: Not Applicable  
 Mapping Date: 21–Aug–2012

**Ground Magnetic Survey**  
**Stacked Total Magnetic Intensity Profiles Map**

**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
 South Grid  
 100 Mile House, B.C., Canada







**SJ Geophysics Ltd.**

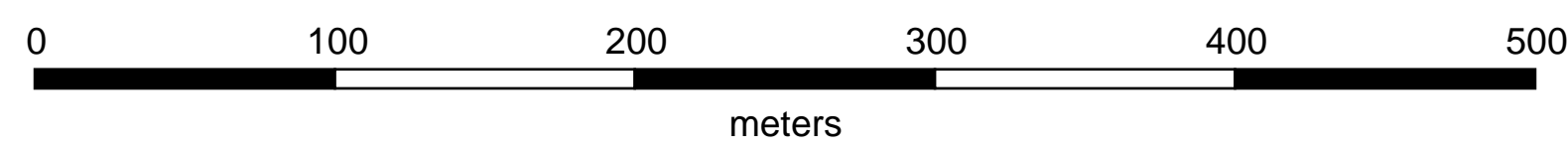
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July-August 2012

Instrumentation:  
 Magnetometer: GEM-Systems GSM-19 Overhauser Magnetometer

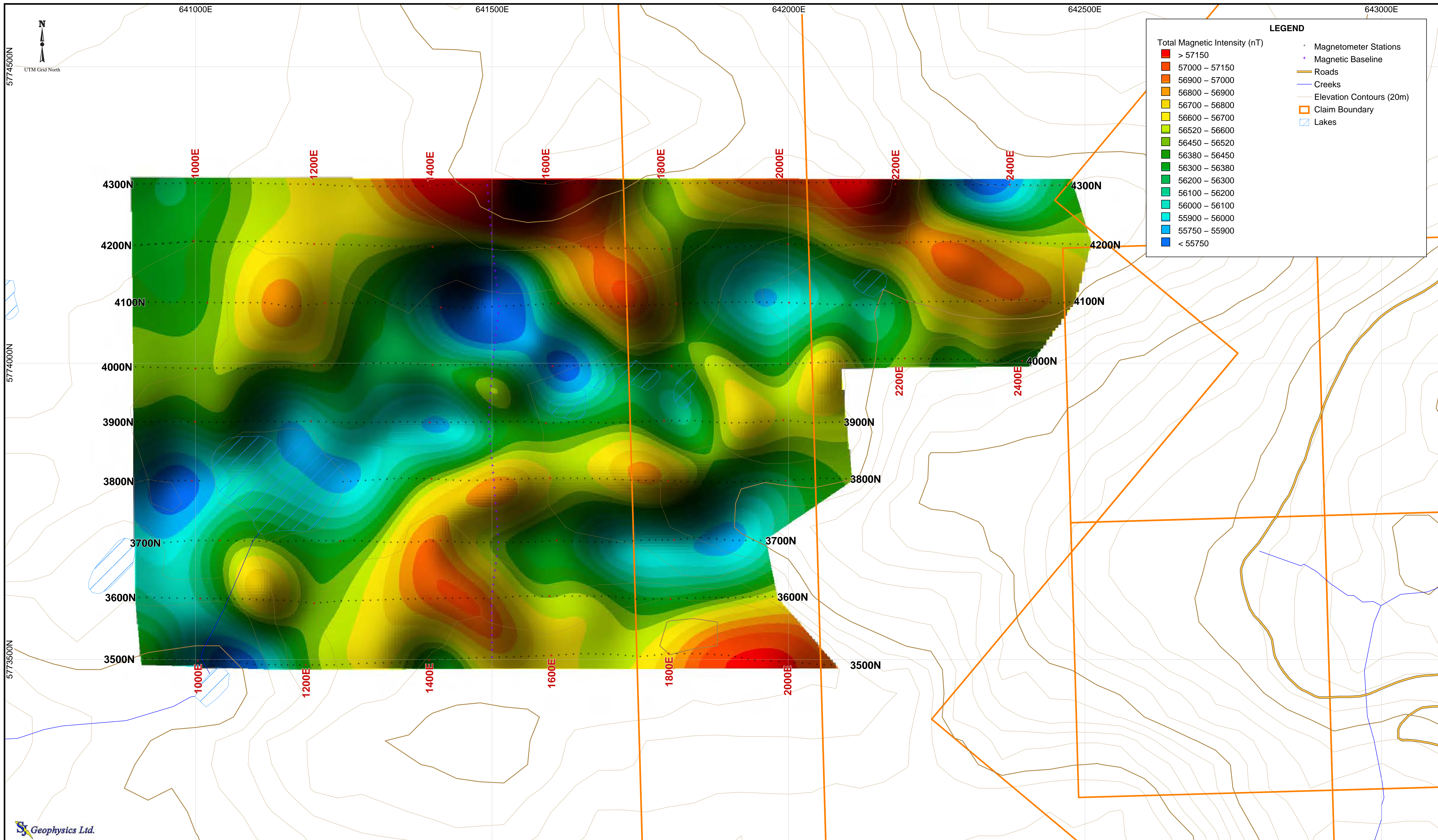
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 Colour Classification: Modified Equal Area  
 Mapping Date: 21-Aug-2012

**Ground Magnetic Survey**  
**Total Magnetic Intensity Map**

**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







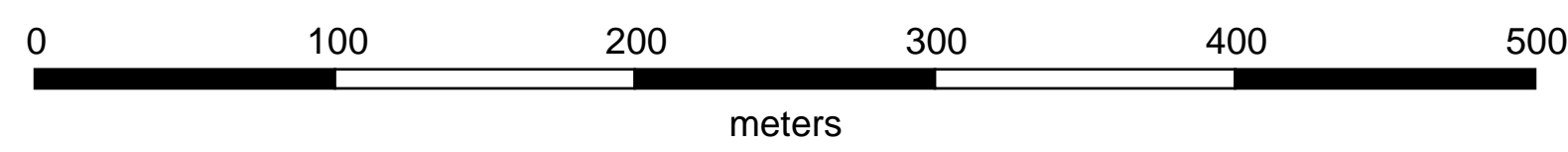
**SJ Geophysics Ltd.**

Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Magnetometer: GEM–Systems GSM–19 Overhauser Magnetometer

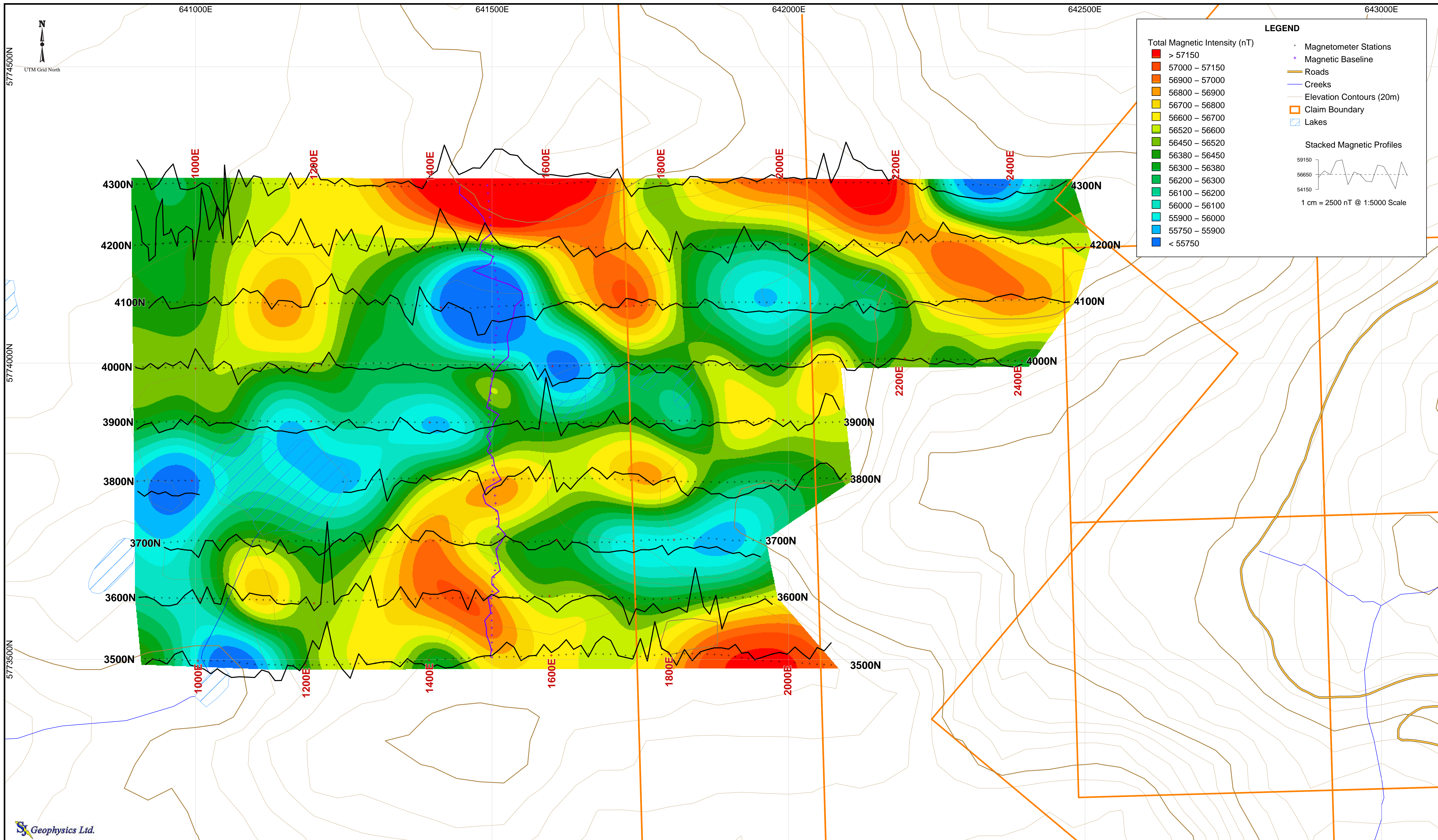
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 Datum: NAD83  
 Projection: UTM Zone 10  
 Colour Classification: Modified Equal Area  
 Mapping Date: 21–Aug–2012

**Ground Magnetic Survey**  
**Total Magnetic Intensity Map: Shadow Enhanced**



**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**



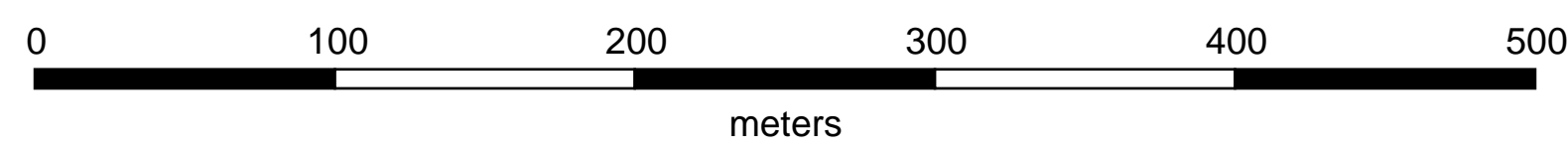


Project Information:  
 Survey by: SJ Geophysics Ltd.  
 Processing by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Magnetometer: GEM–Systems GSM–19 Overhauser Magnetometer

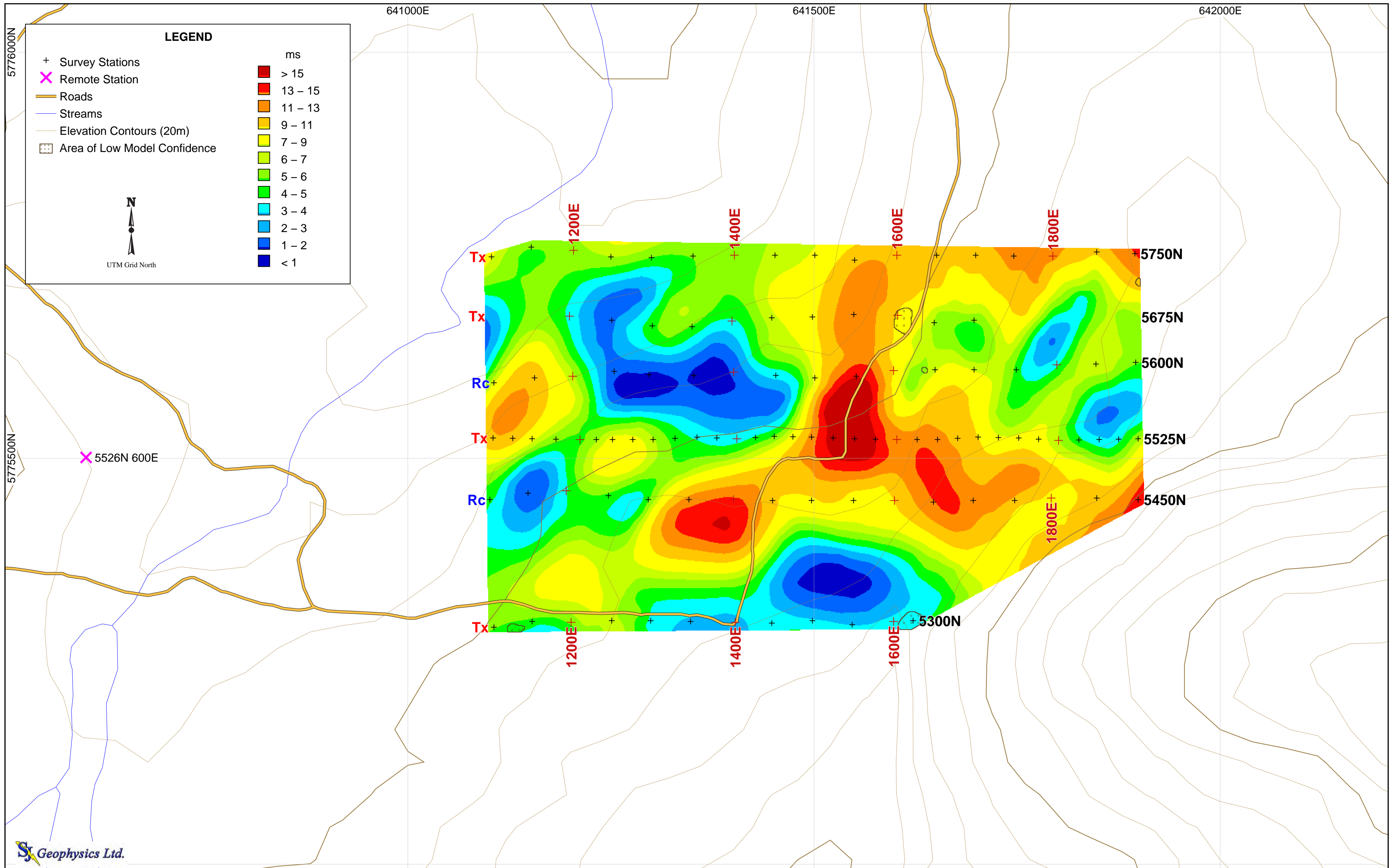
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 Projection: UTM Zone 10  
 Colour Classification: Modified Equal Area  
 Mapping Date: 21–Aug–2012

**Ground Magnetic Survey**  
**Total Magnetic Intensity Map with Stacked Profiles**



**Happy Creek Minerals Ltd.**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**





**SJ Geophysics Ltd.**

**Project Information:**  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ–24 Full–Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

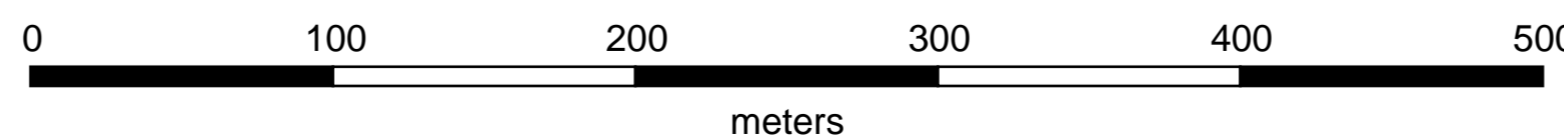
**Planmap**  
**3D Inversion Model**  
**Depth: 50m Below Topography**

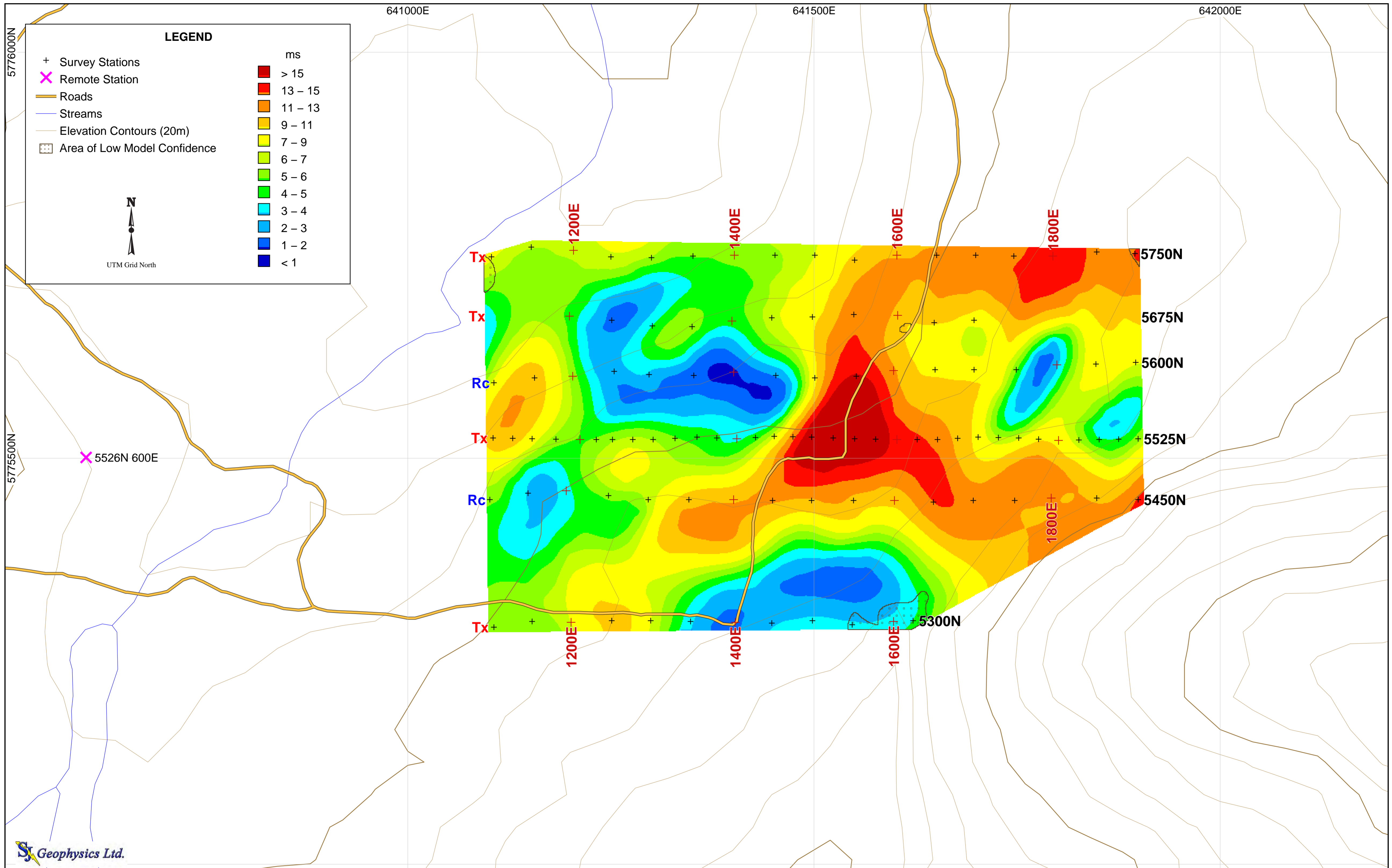
**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**

**Silverboss Property**

**North Grid**

**100 Mile House, B.C., Canada**



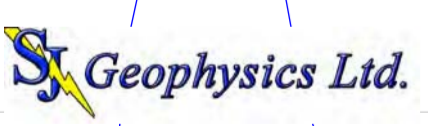


**LEGEND**

- + Survey Stations
- X Remote Station
- Roads
- Streams
- Elevation Contours (20m)
- ▤ Area of Low Model Confidence

ms
> 15
13 – 15
11 – 13
9 – 11
7 – 9
6 – 7
5 – 6
4 – 5
3 – 4
2 – 3
1 – 2
< 1

N  
UTM Grid North

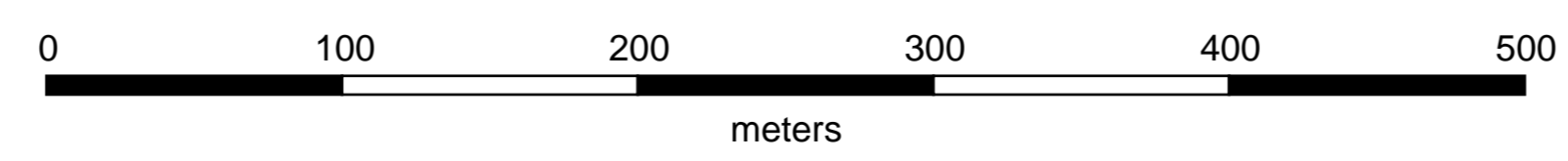


**Project Information:**  
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ–24 Full–Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

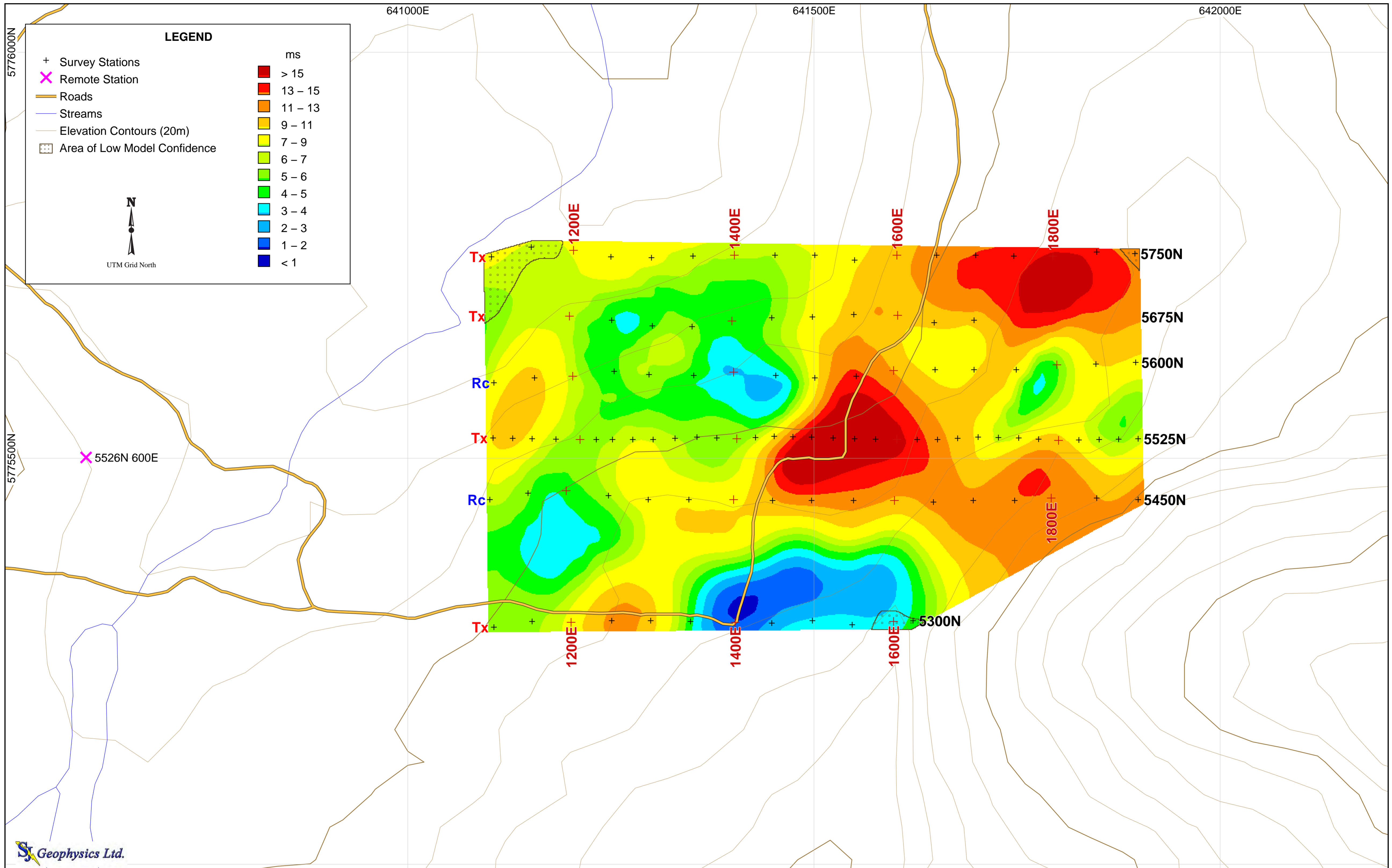
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 75m Below Topography**



**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**





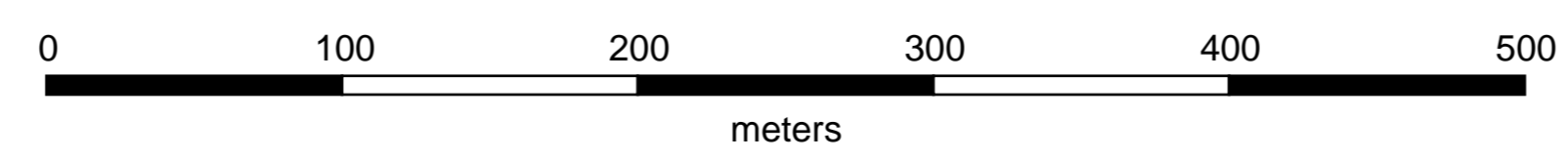
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 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ–24 Full–Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

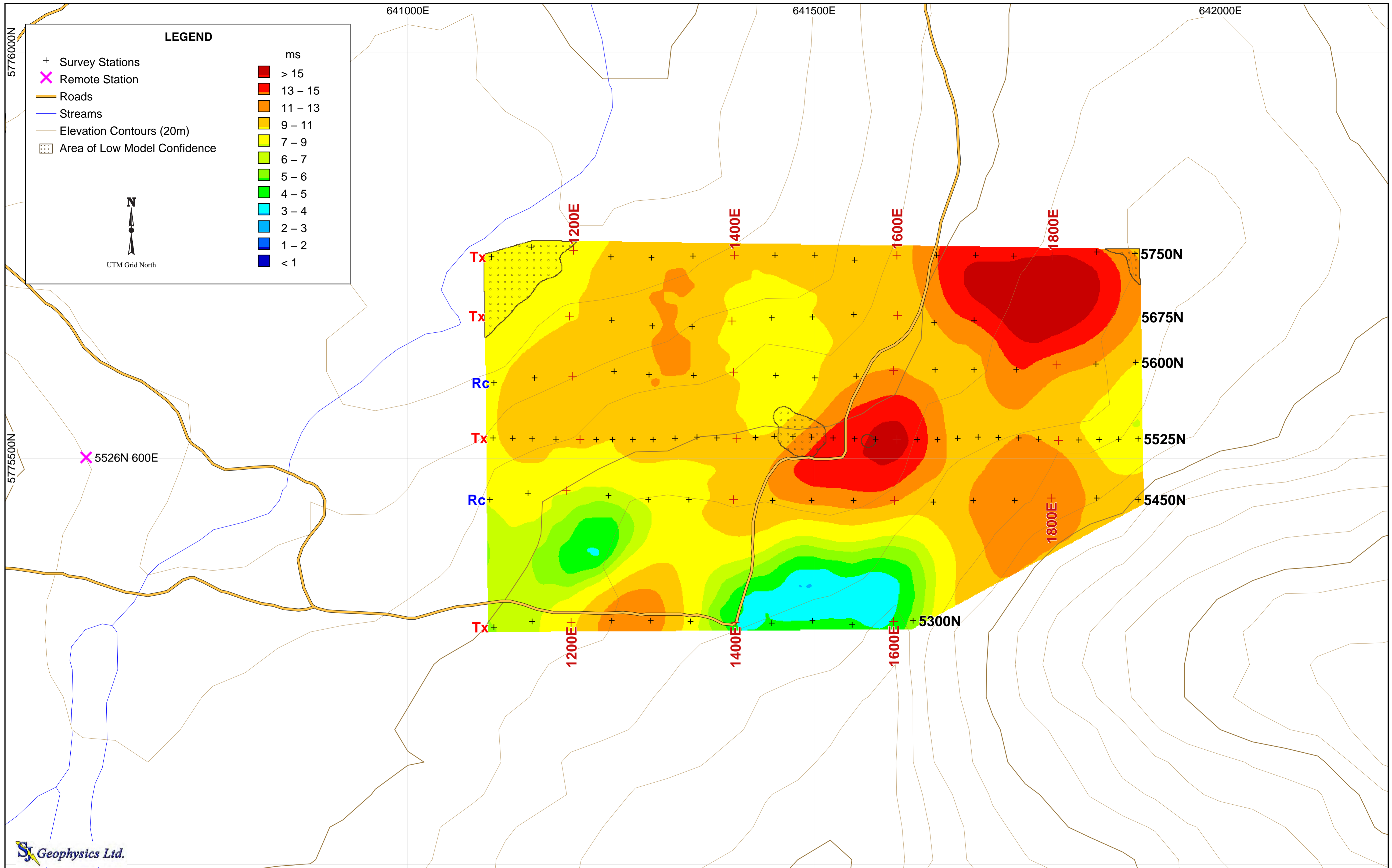
Mapping Information:  
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 100m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**





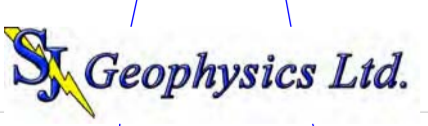


**LEGEND**

- + Survey Stations
- ✕ Remote Station
- Roads
- Streams
- Elevation Contours (20m)
- ▨ Area of Low Model Confidence

ms
> 15
13 – 15
11 – 13
9 – 11
7 – 9
6 – 7
5 – 6
4 – 5
3 – 4
2 – 3
1 – 2
< 1

N  
UTM Grid North

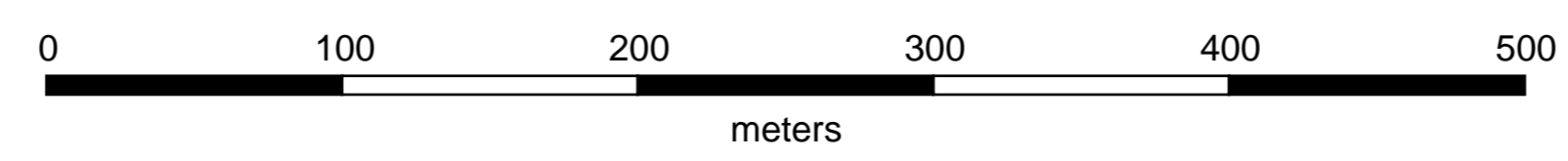


**Project Information:**  
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

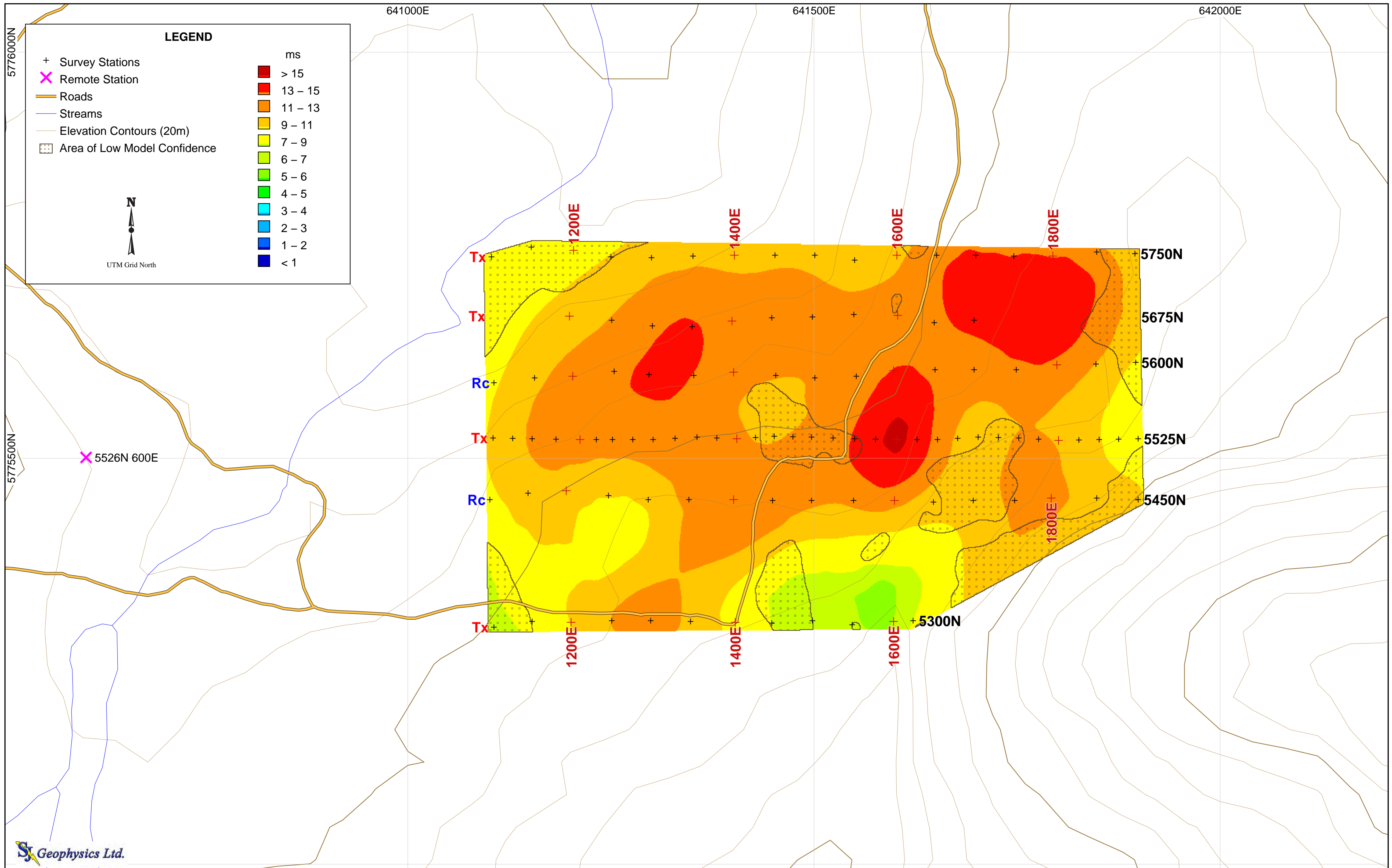
**Instrumentation:**  
 Receiver: SJ–24 Full–Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
 Depth: 150m Below Topography



**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
 North Grid  
 100 Mile House, B.C., Canada



**LEGEND**

- + Survey Stations
- X Remote Station
- Roads
- Streams
- Elevation Contours (20m)
- ▨ Area of Low Model Confidence

ms
> 15
13 – 15
11 – 13
9 – 11
7 – 9
6 – 7
5 – 6
4 – 5
3 – 4
2 – 3
1 – 2
< 1

N  
UTM Grid North



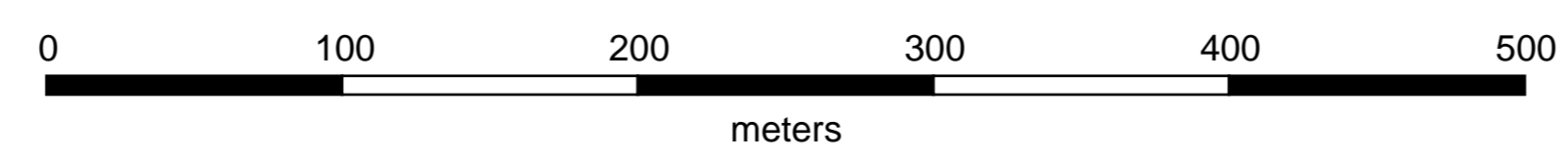
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ–24 Full–Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

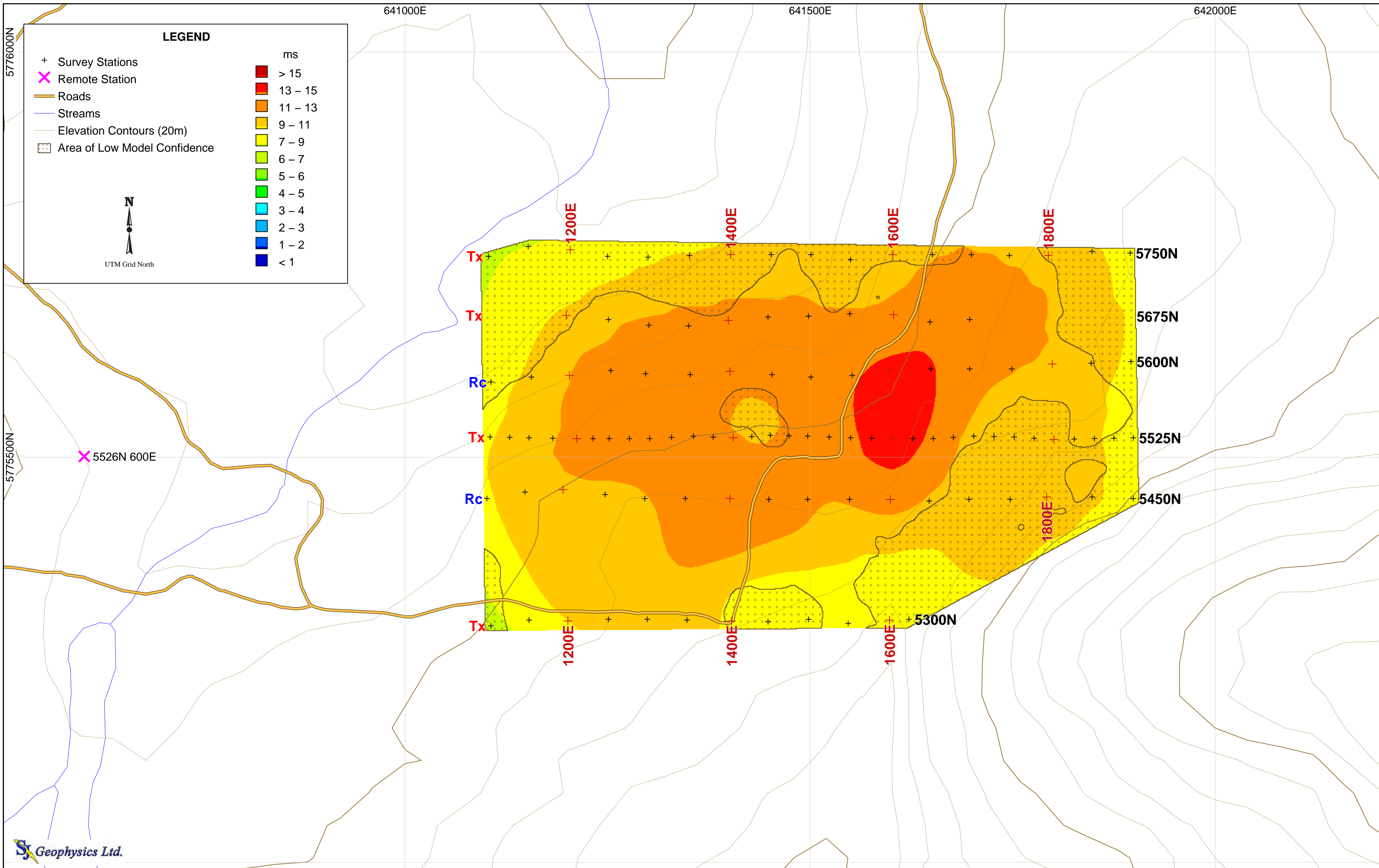
**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 200m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**







Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

Mapping Information:  
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 Projection: UTM Zone 10  
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 Mapping Date: 29–Aug–2012

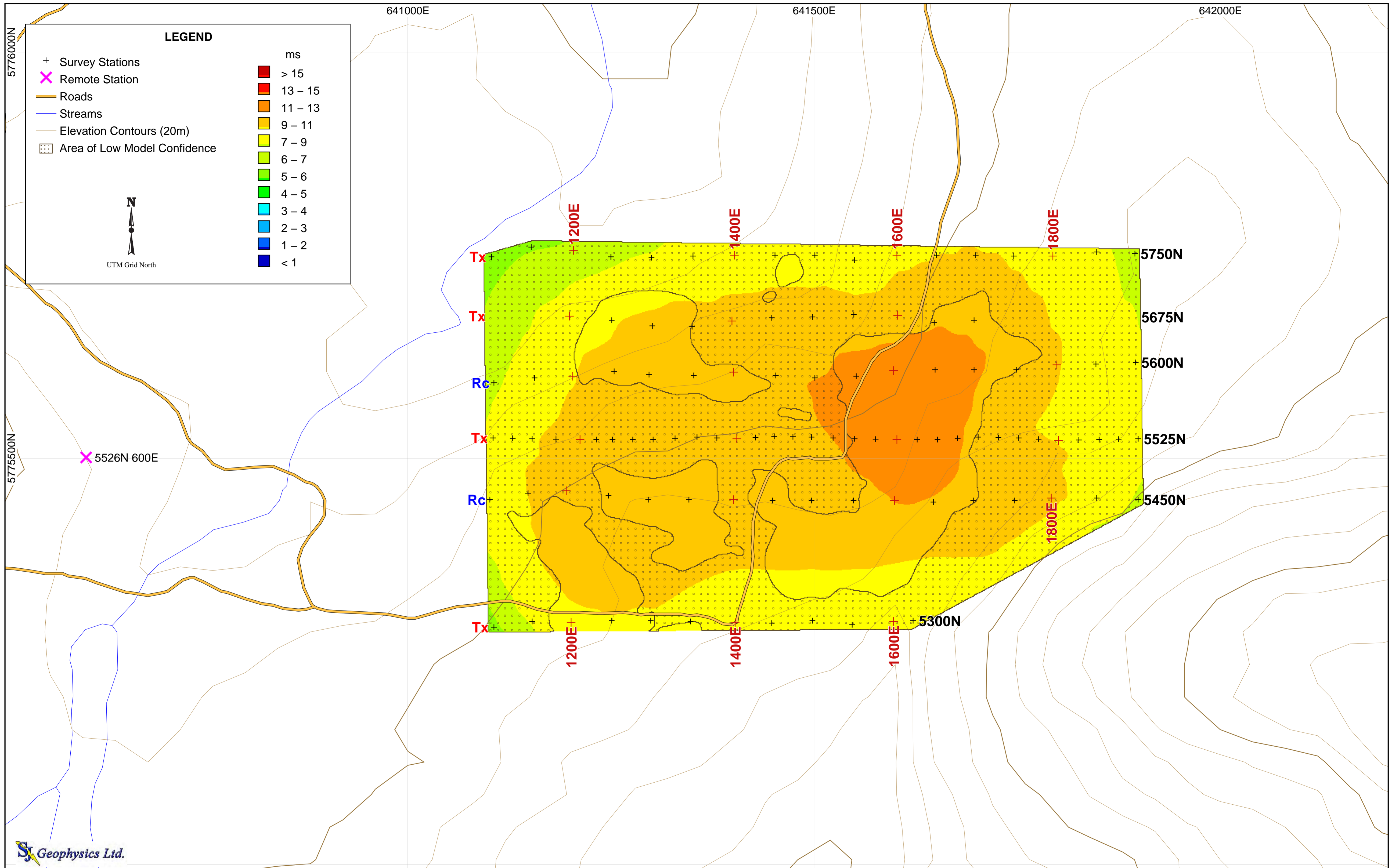
**Planmap**  
**3D Inversion Model**  
**Depth: 250m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**

**Silverboss Property**

**North Grid**

**100 Mile House, B.C., Canada**



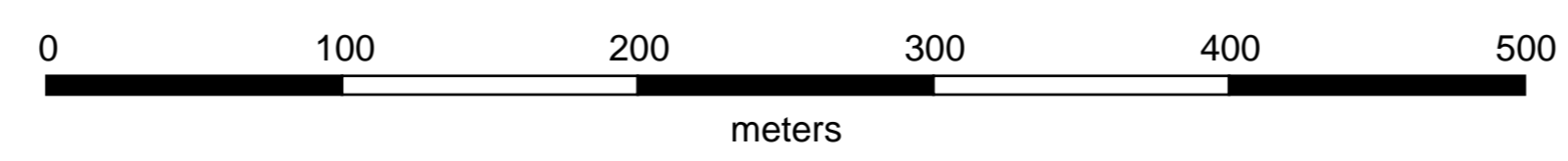
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 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
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 Transmitter: GDD TX II  
 Array Type: 3D

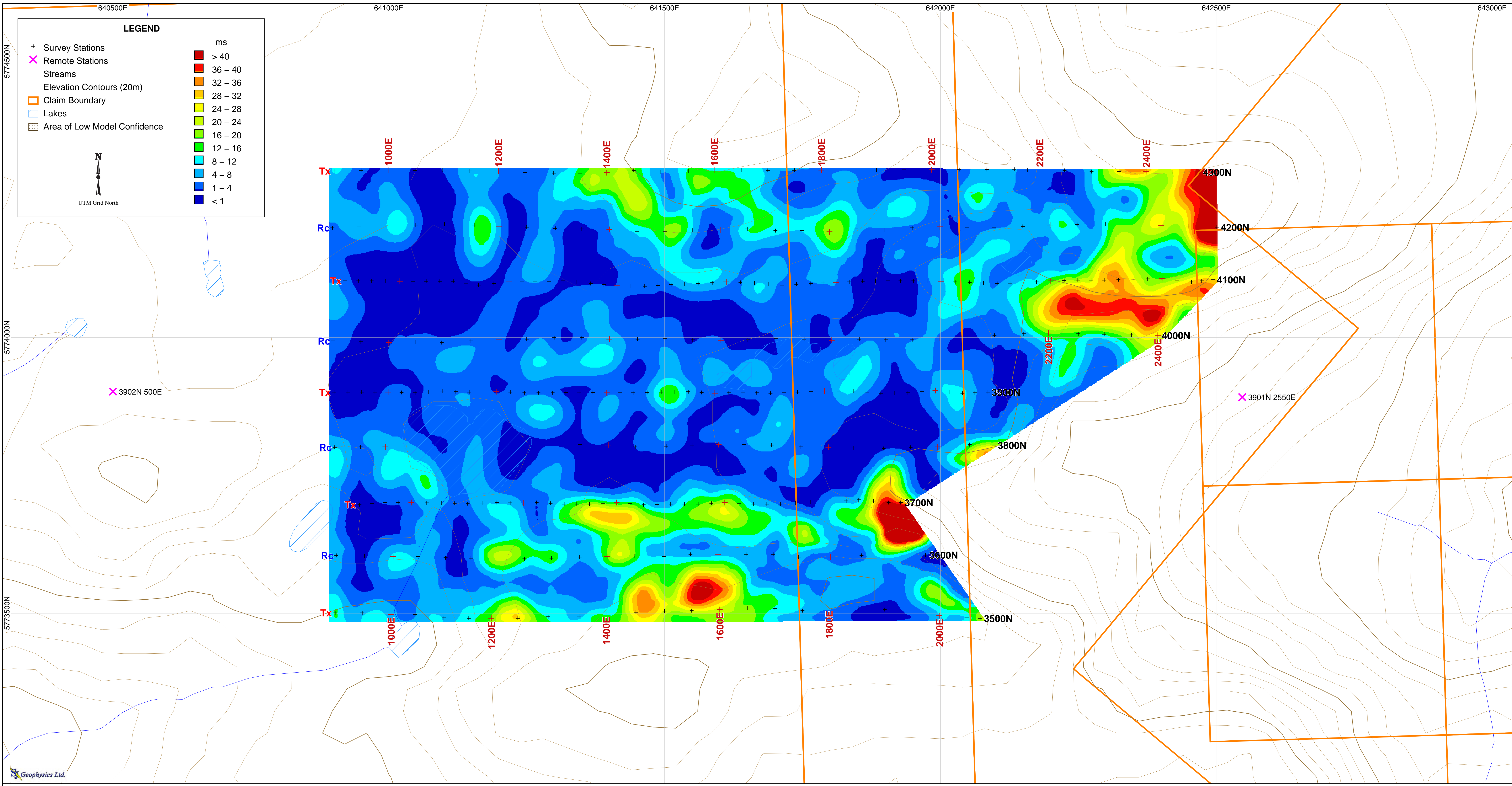
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 300m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**







**LEGEND**

+	Survey Stations	ms
×	Remote Stations	> 40
—	Streams	36 - 40
—	Elevation Contours (20m)	32 - 36
□	Claim Boundary	28 - 32
□	Lakes	24 - 28
□	Area of Low Model Confidence	20 - 24
		16 - 20
		12 - 16
		8 - 12
		4 - 8
		1 - 4
		< 1

UTM Grid North

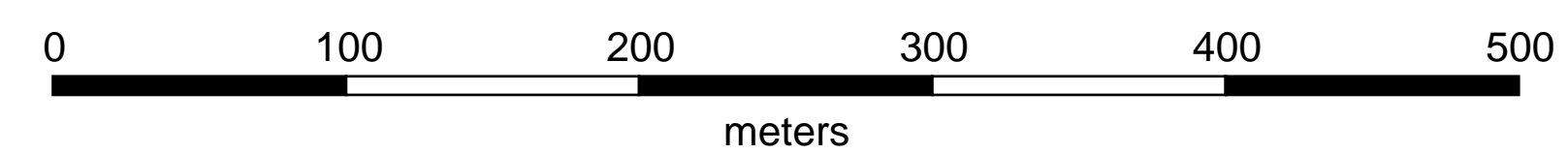
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

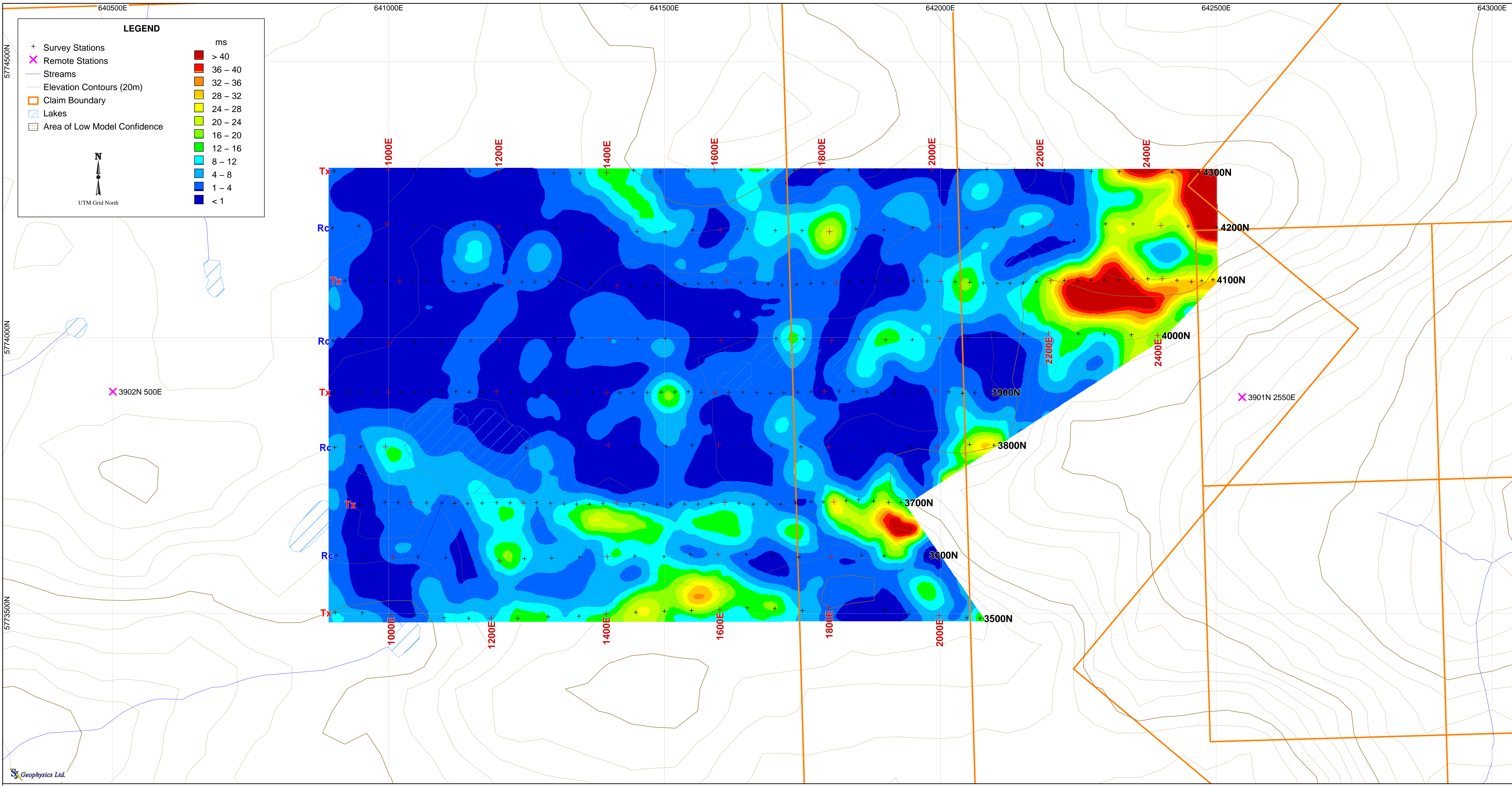
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 50m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







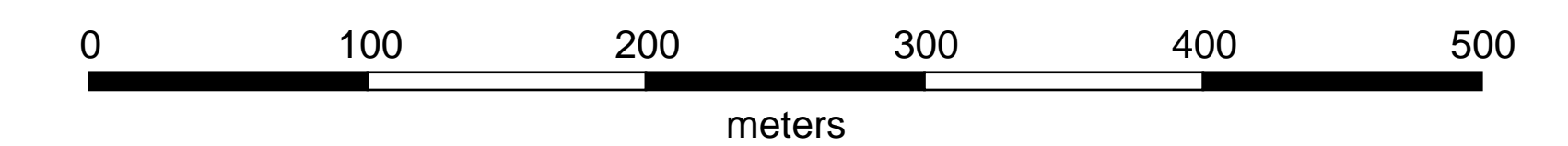
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

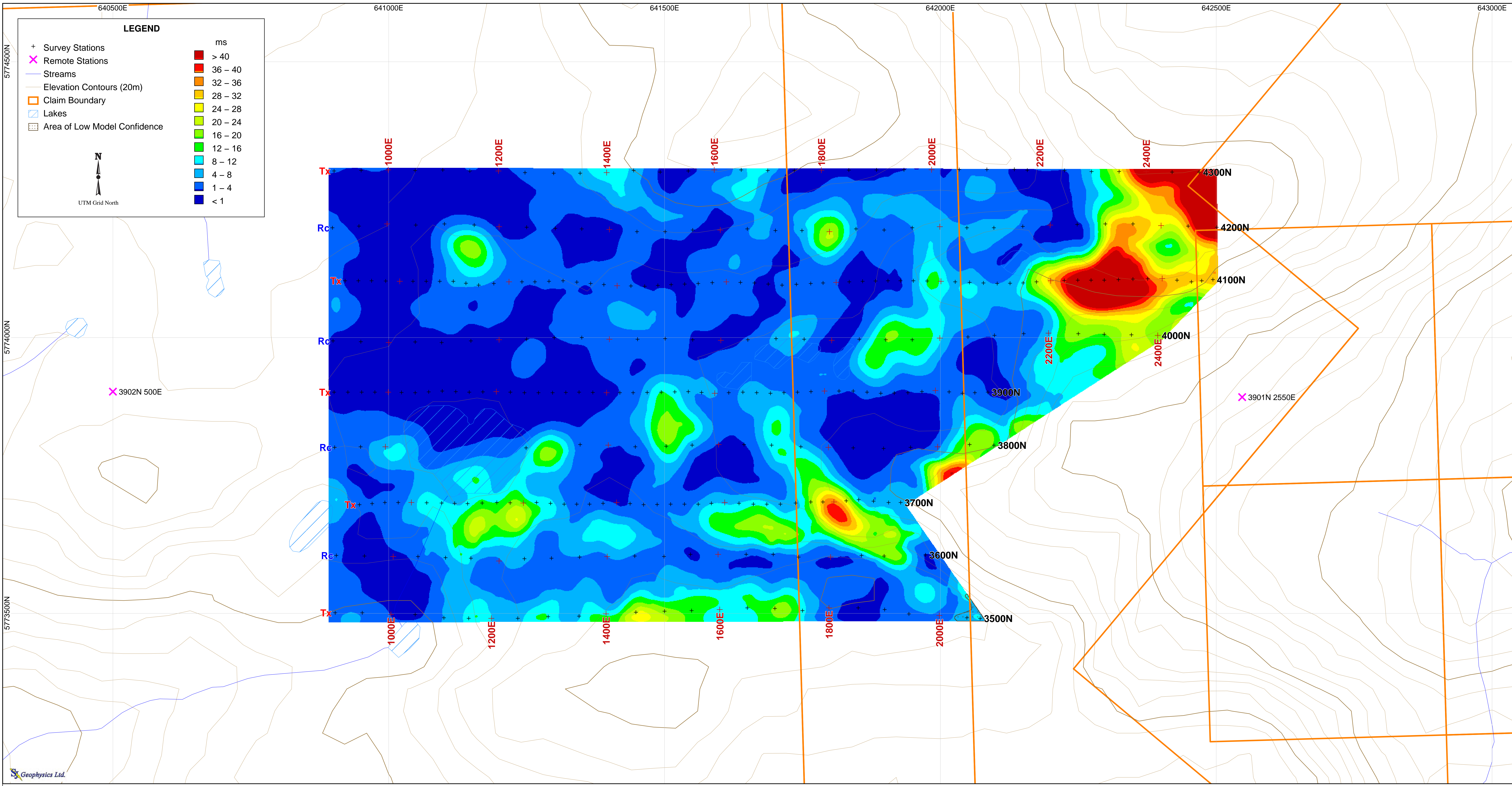
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
 Depth: 75m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







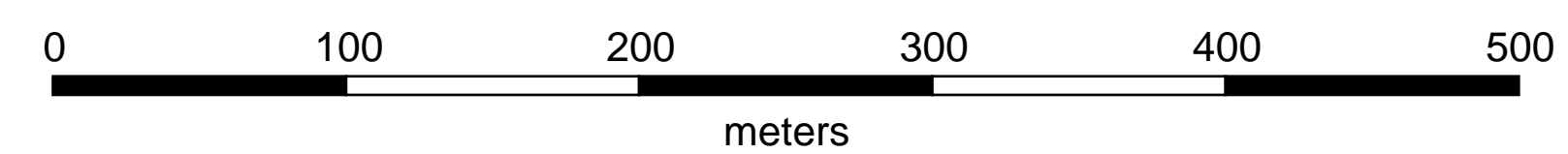
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

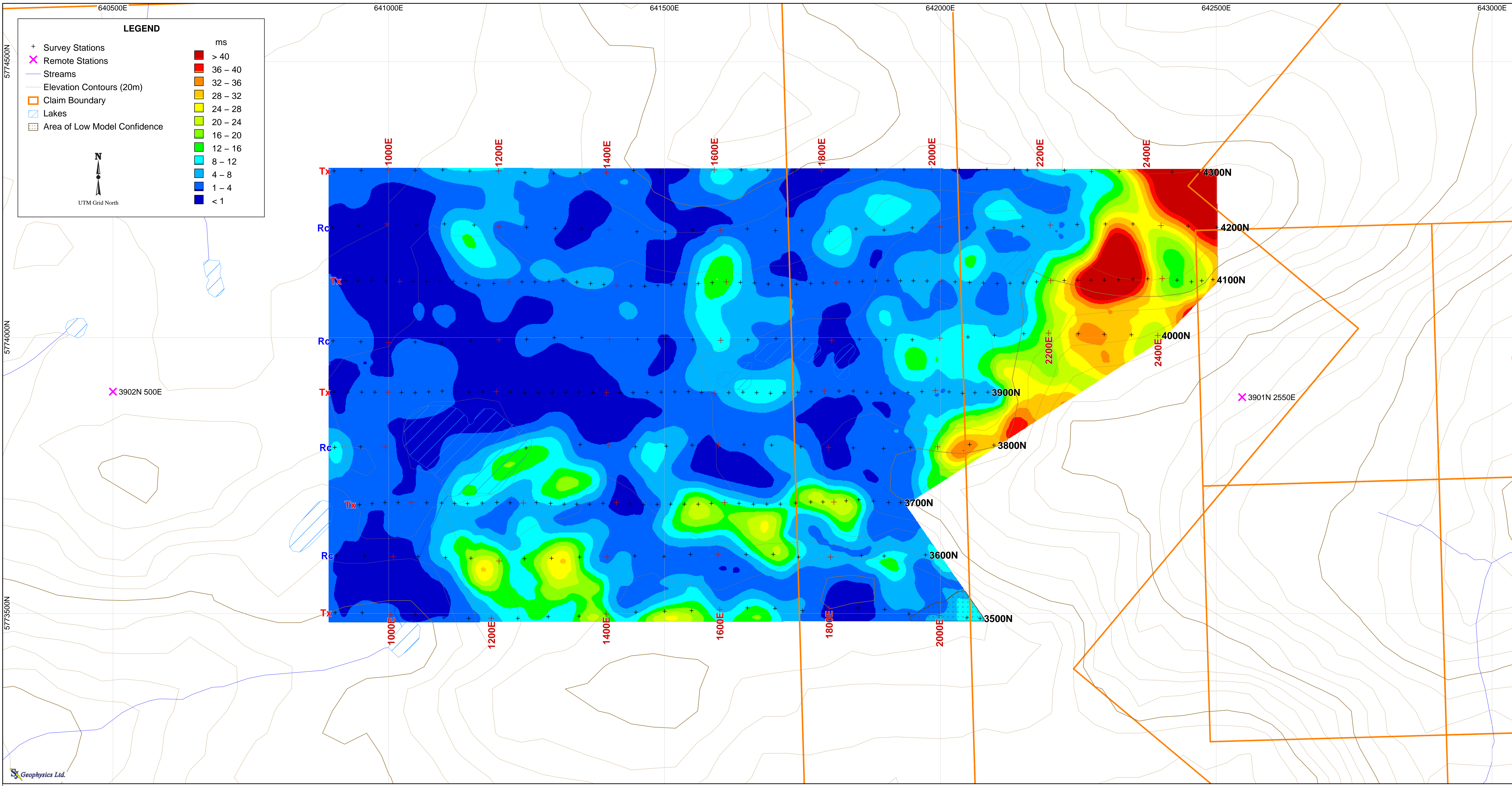
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

Planmap  
 3D Inversion Model  
 Depth: 100m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada







**LEGEND**

- + Survey Stations
- ✕ Remote Stations
- Streams
- Elevation Contours (20m)
- ▭ Claim Boundary
- ▭ Lakes
- ▭ Area of Low Model Confidence

**ms**

- > 40
- 36 - 40
- 32 - 36
- 28 - 32
- 24 - 28
- 20 - 24
- 16 - 20
- 12 - 16
- 8 - 12
- 4 - 8
- 1 - 4
- < 1

N  
UTM Grid North

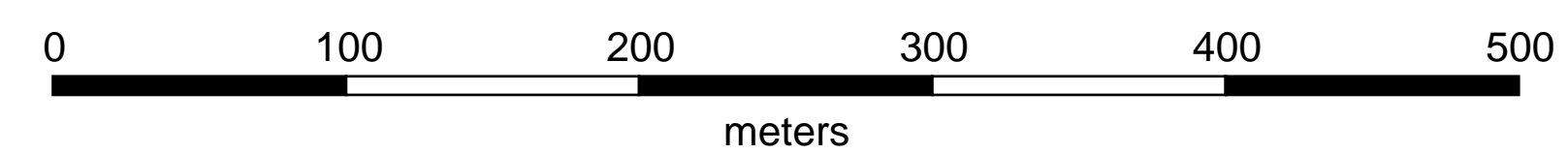
**Project Information:**  
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

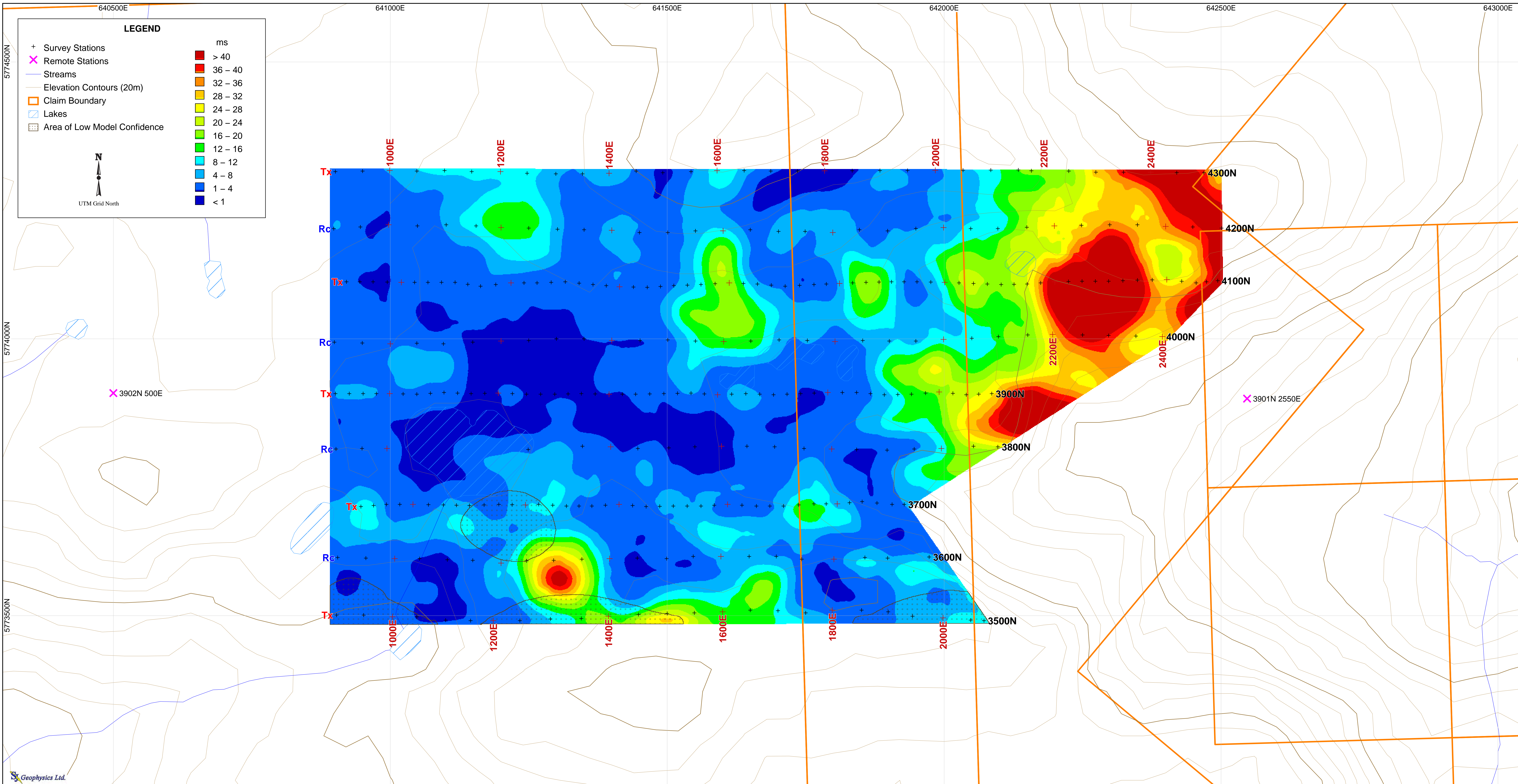
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
 Depth: 150m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada







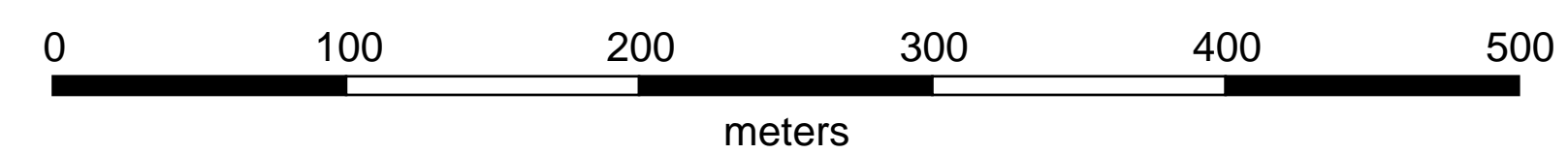
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
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 Transmitter: GDD TX II  
 Array Type: 3D

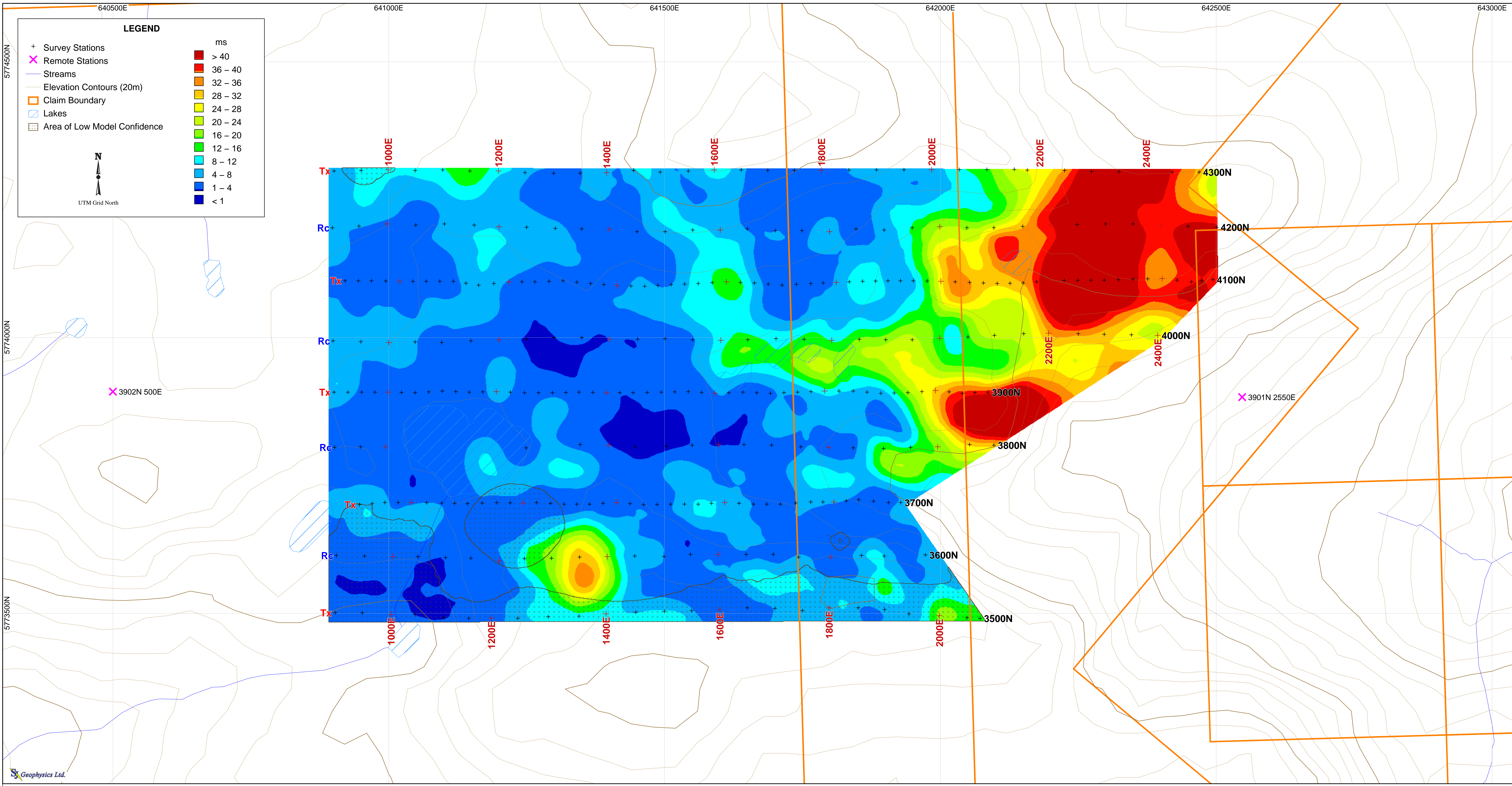
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 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
 Depth: 200m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







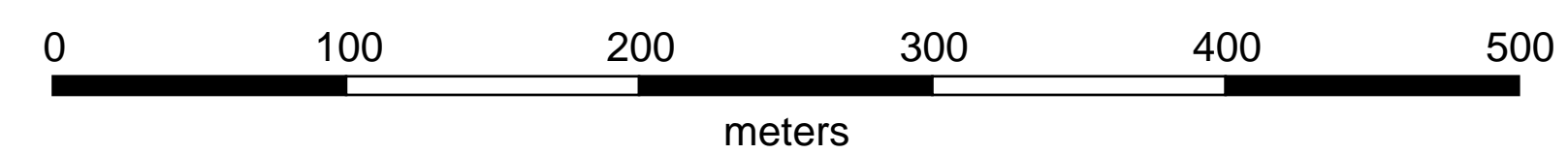
Project Information:  
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

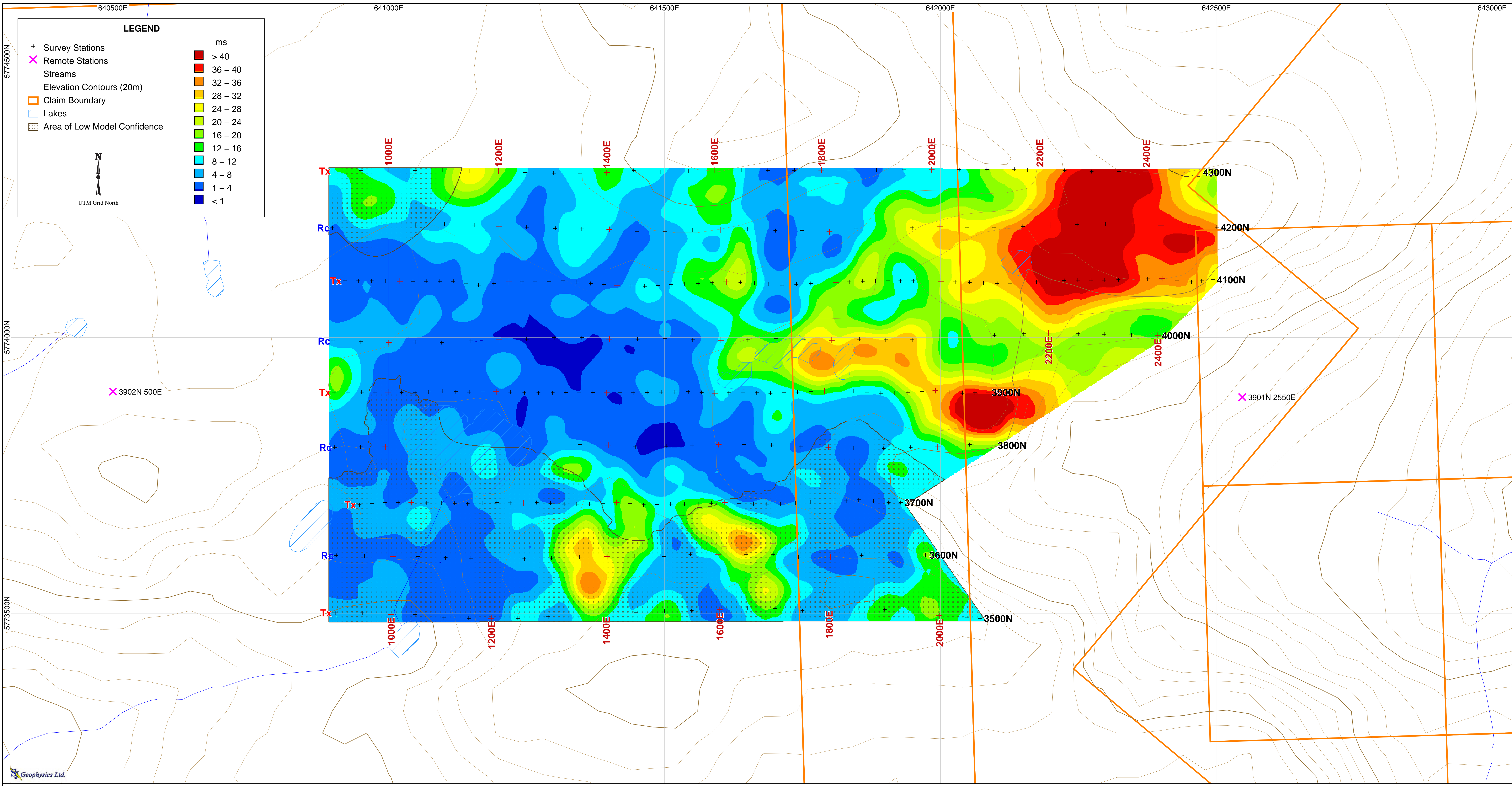
Mapping Information:  
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 250m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







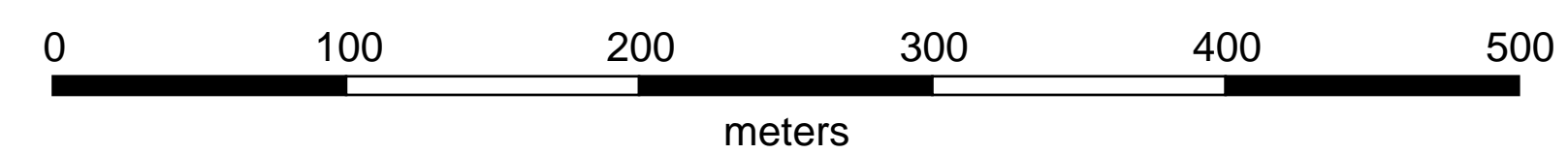
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

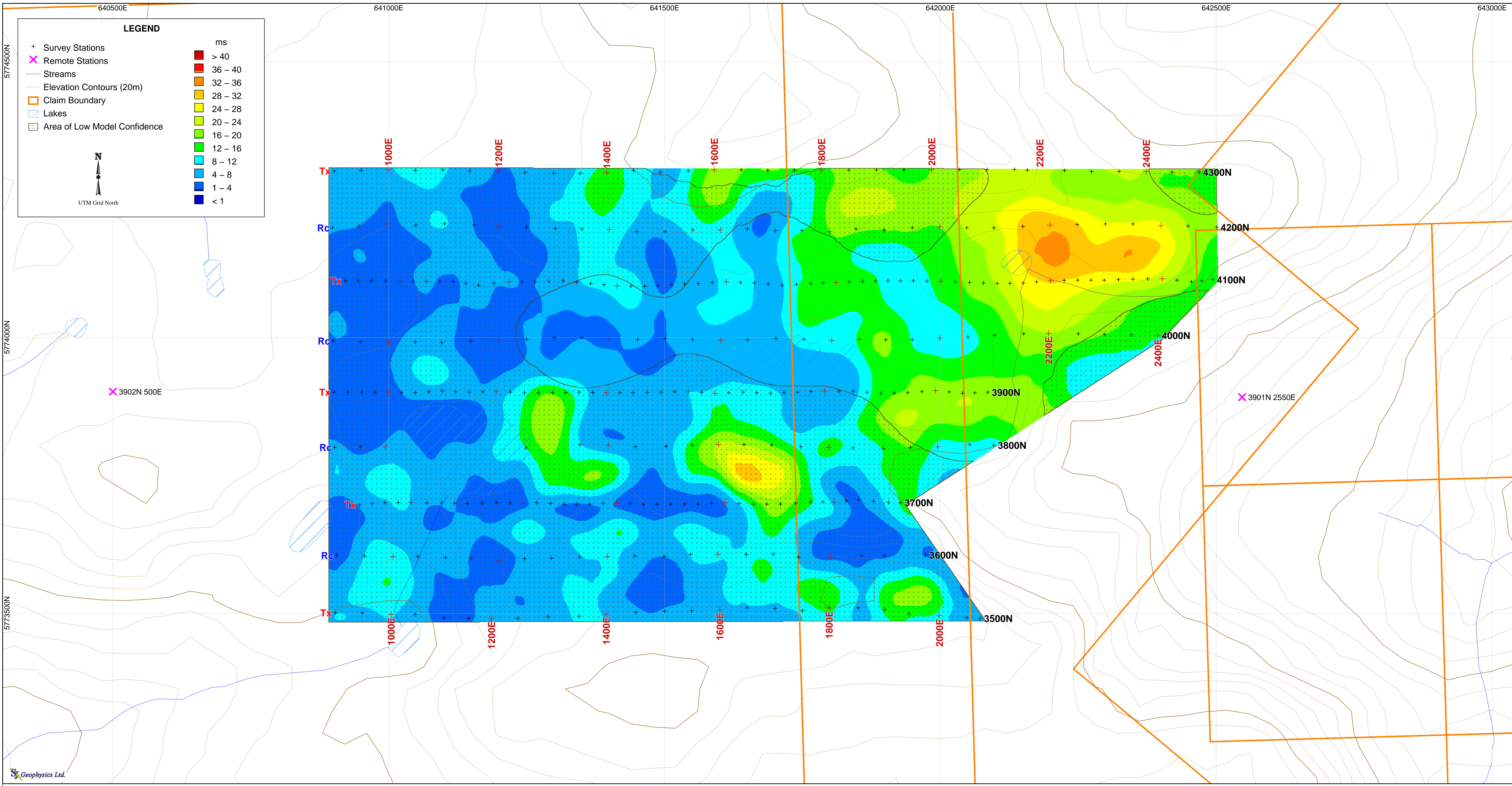
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
 Depth: 300m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







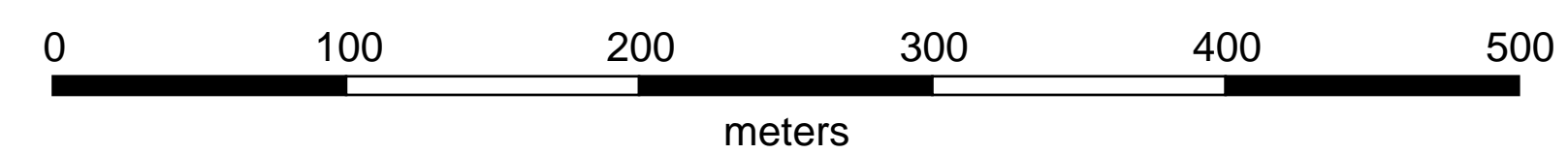
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

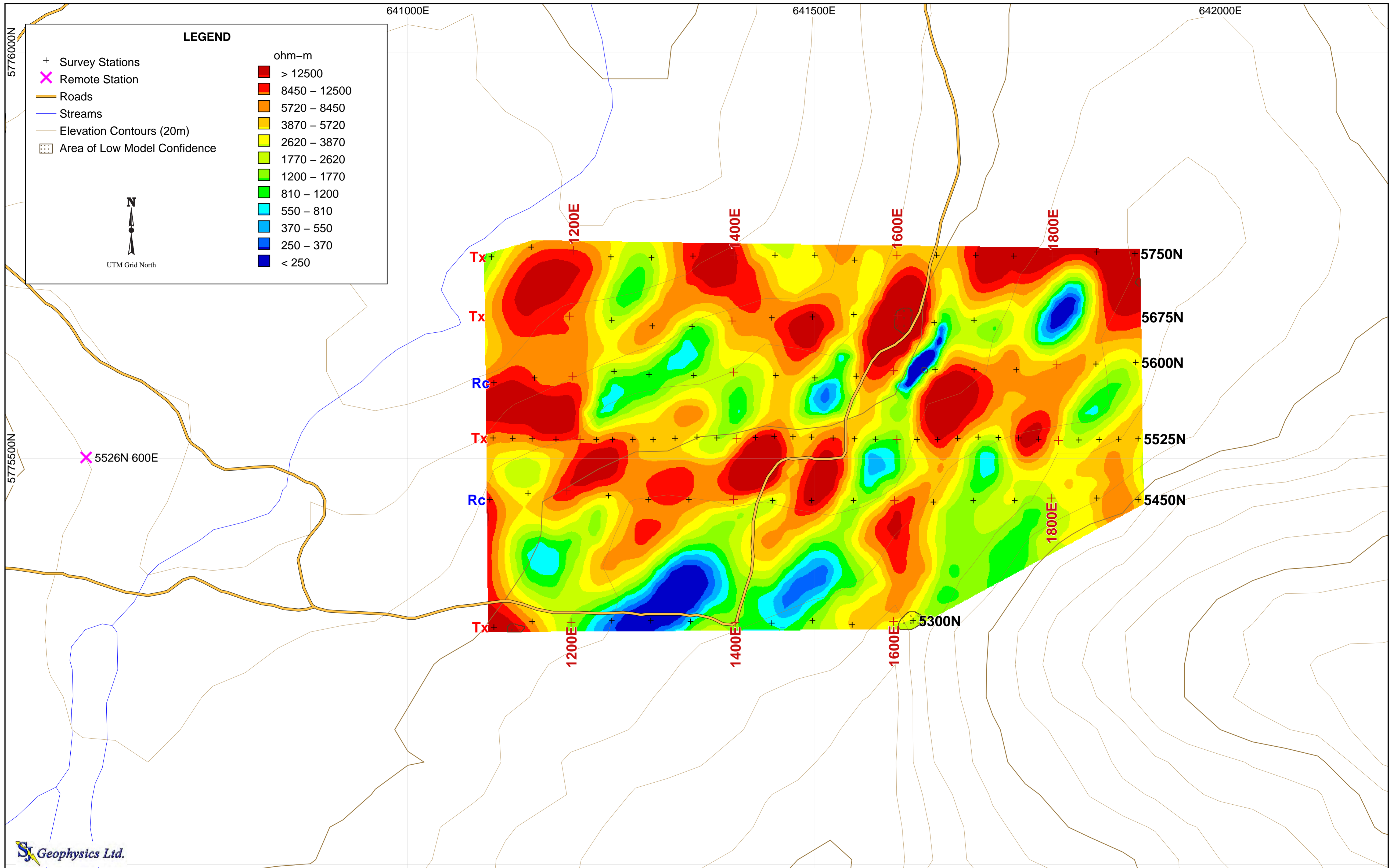
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
 Depth: 400m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Chargeability (ms)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







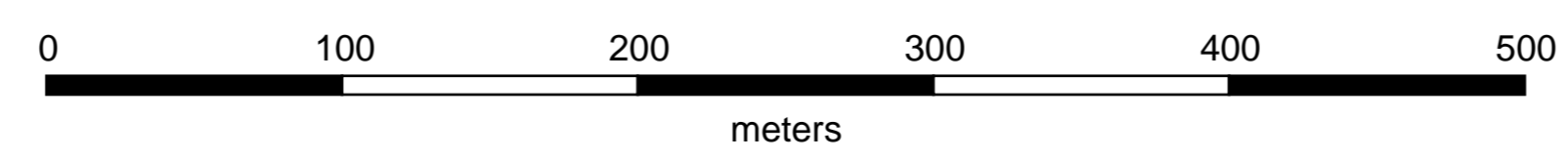
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

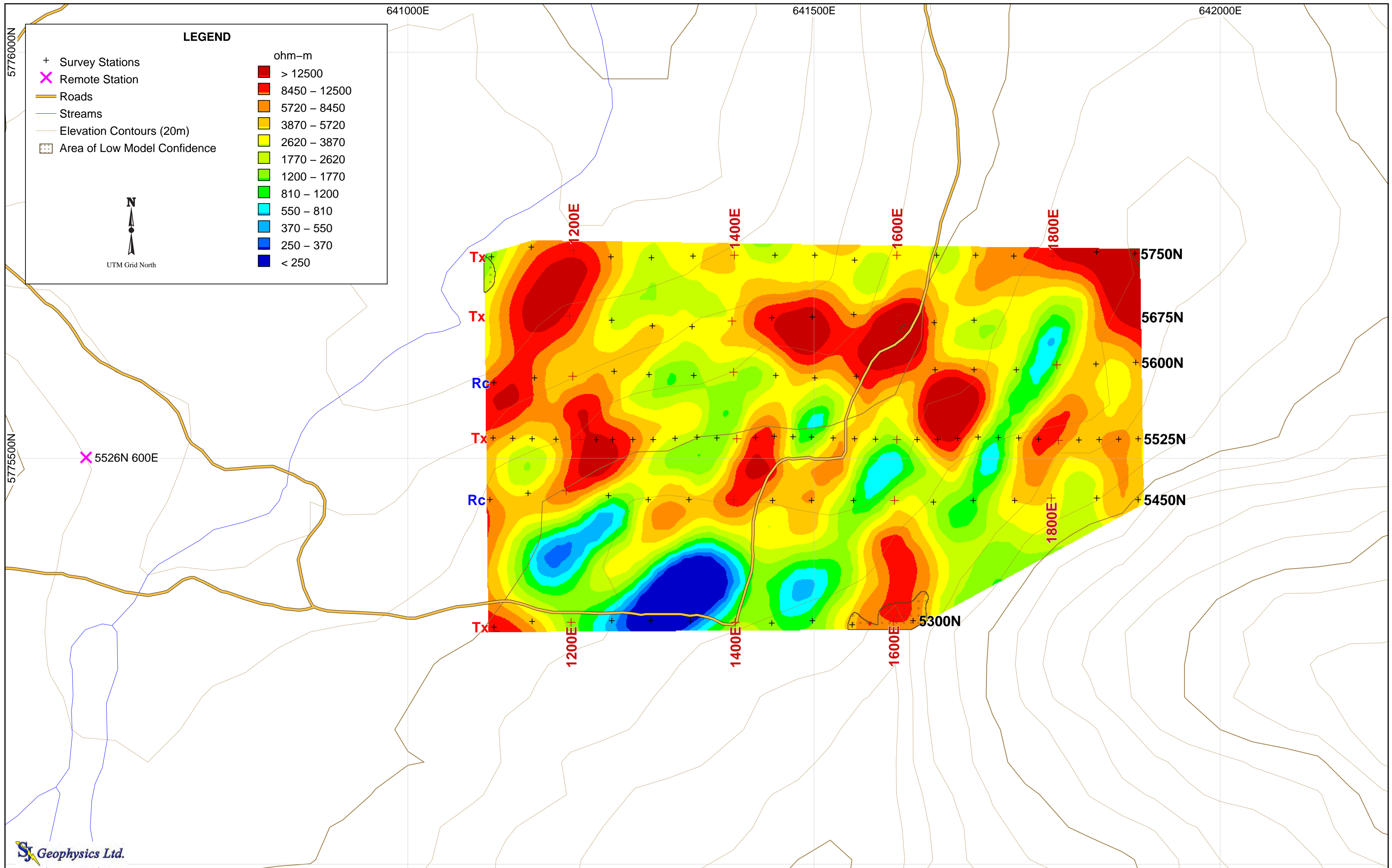
Instrumentation:  
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 Transmitter: GDD TX II  
 Array Type: 3D

Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log–Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 50m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm–m)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**





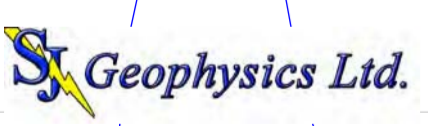
**LEGEND**

- + Survey Stations
- X Remote Station
- Roads
- Streams
- Elevation Contours (20m)
- ▨ Area of Low Model Confidence

ohm-m

- > 12500
- 8450 – 12500
- 5720 – 8450
- 3870 – 5720
- 2620 – 3870
- 1770 – 2620
- 1200 – 1770
- 810 – 1200
- 550 – 810
- 370 – 550
- 250 – 370
- < 250

UTM Grid North



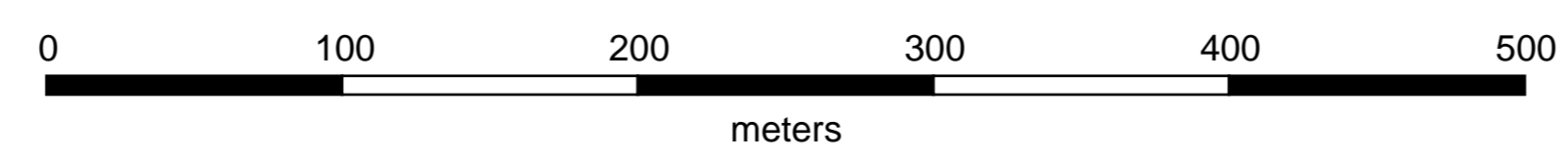
**Project Information:**  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

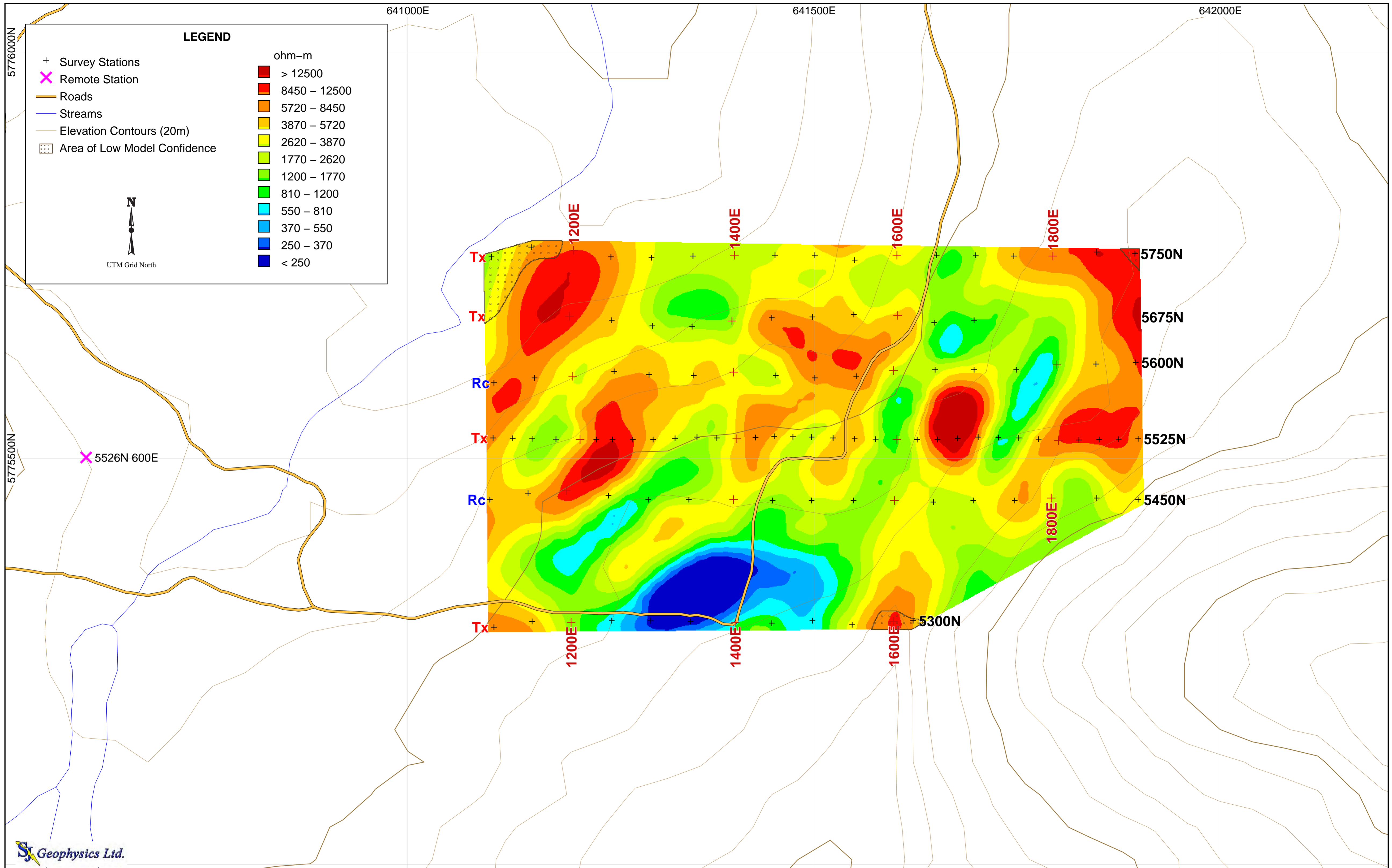
**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

**Planmap**  
**3D Inversion Model**  
 Depth: 75m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
 North Grid  
 100 Mile House, B.C., Canada







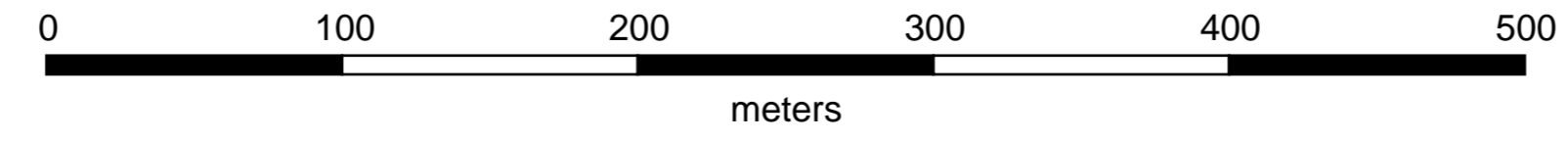
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

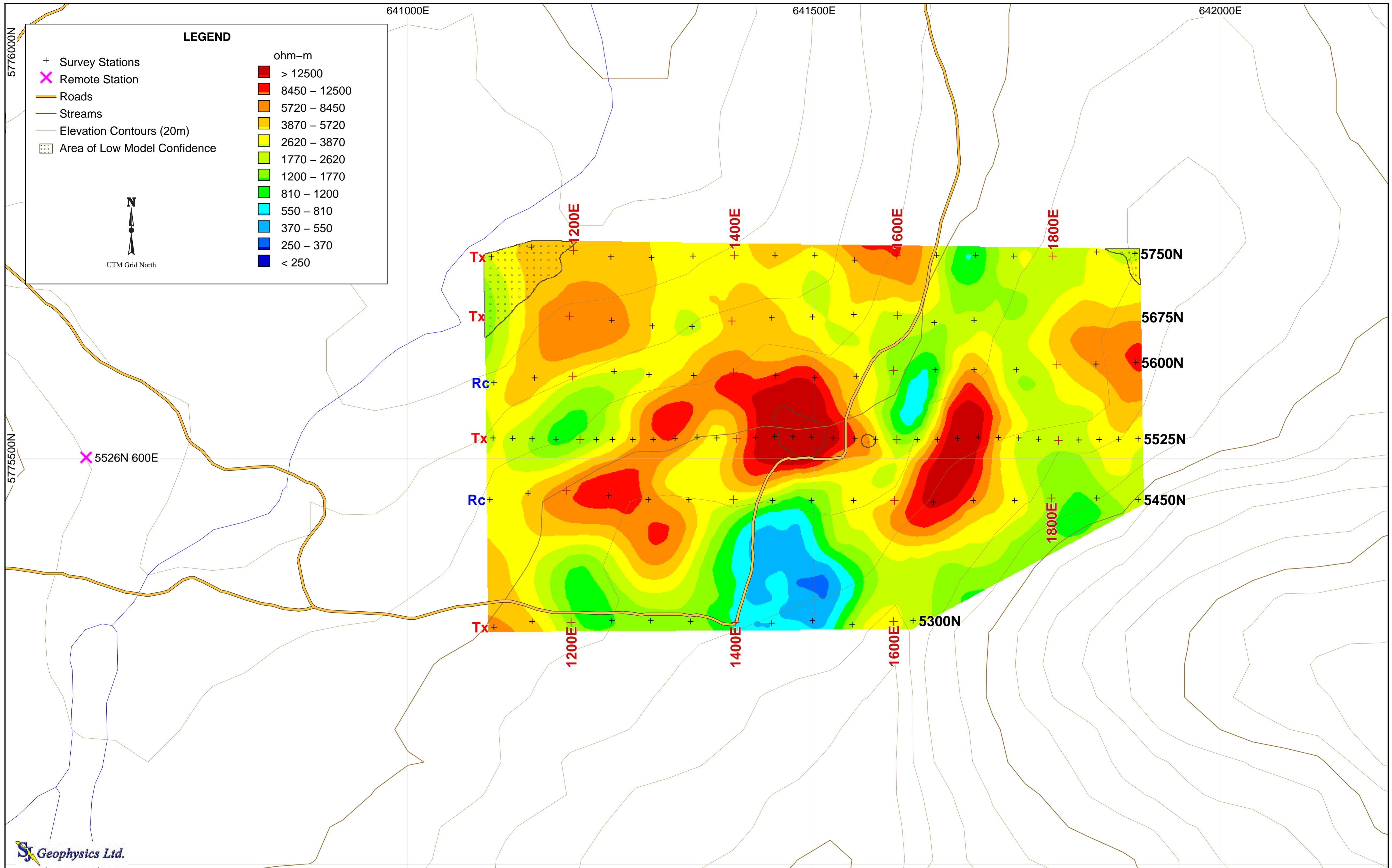
Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log–Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 100m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm–m)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**





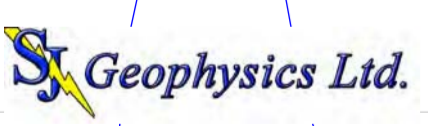
**LEGEND**

- + Survey Stations
- ✕ Remote Station
- Roads
- Streams
- Elevation Contours (20m)
- ▨ Area of Low Model Confidence

ohm-m

- > 12500
- 8450 – 12500
- 5720 – 8450
- 3870 – 5720
- 2620 – 3870
- 1770 – 2620
- 1200 – 1770
- 810 – 1200
- 550 – 810
- 370 – 550
- 250 – 370
- < 250

N  
UTM Grid North



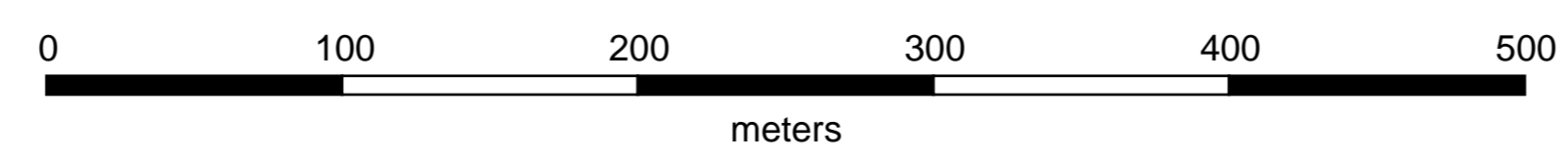
**Project Information:**  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

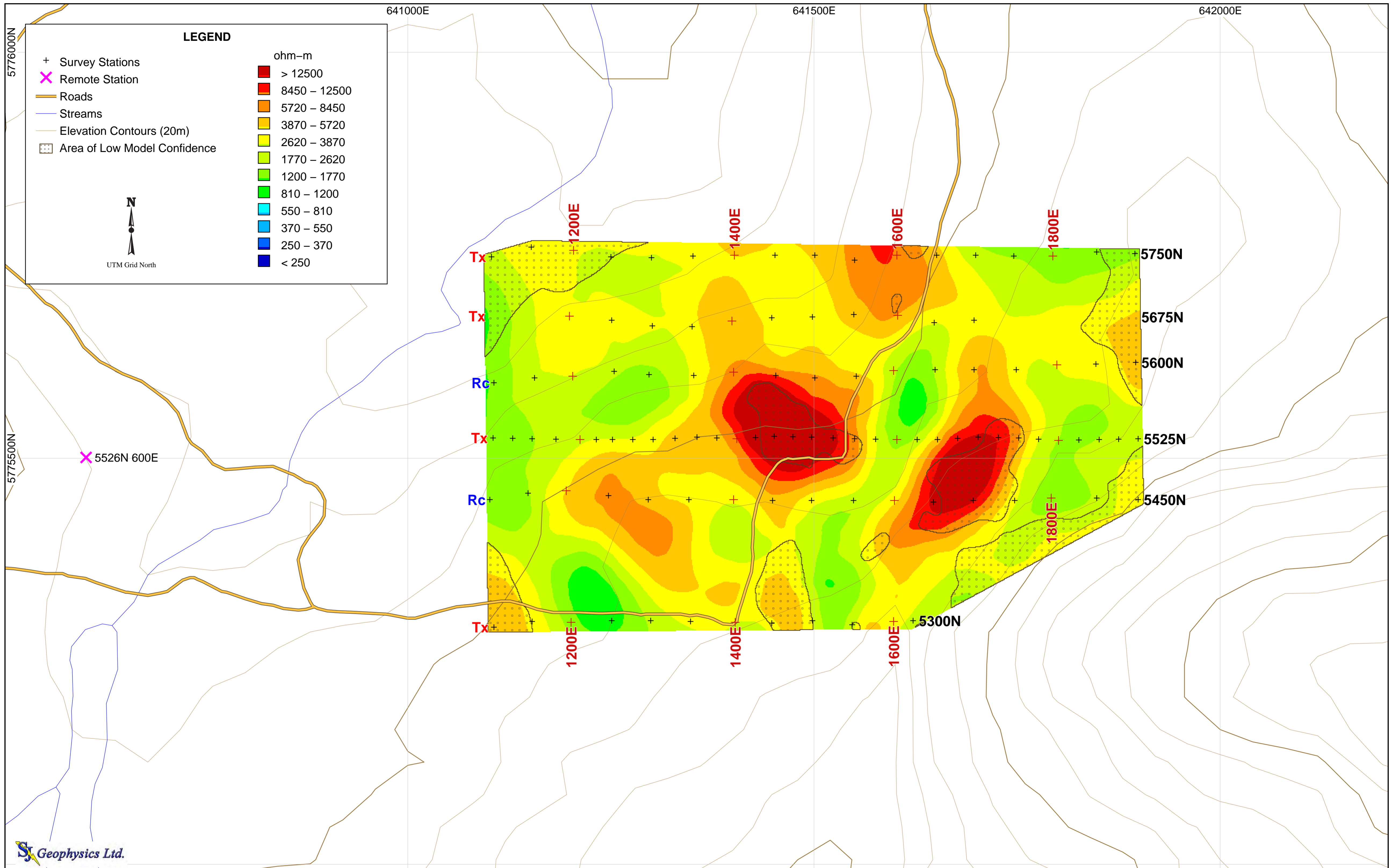
**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

**Planmap**  
**3D Inversion Model**  
**Depth: 150m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**







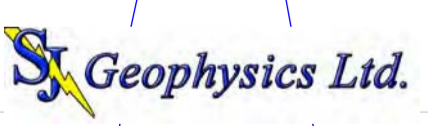
**LEGEND**

- + Survey Stations
- ✕ Remote Station
- Roads
- Streams
- Elevation Contours (20m)
- ▨ Area of Low Model Confidence

ohm-m

- > 12500
- 8450 – 12500
- 5720 – 8450
- 3870 – 5720
- 2620 – 3870
- 1770 – 2620
- 1200 – 1770
- 810 – 1200
- 550 – 810
- 370 – 550
- 250 – 370
- < 250

UTM Grid North



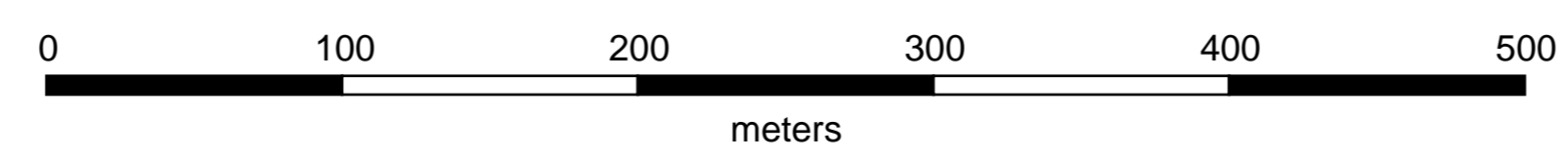
**Project Information:**  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

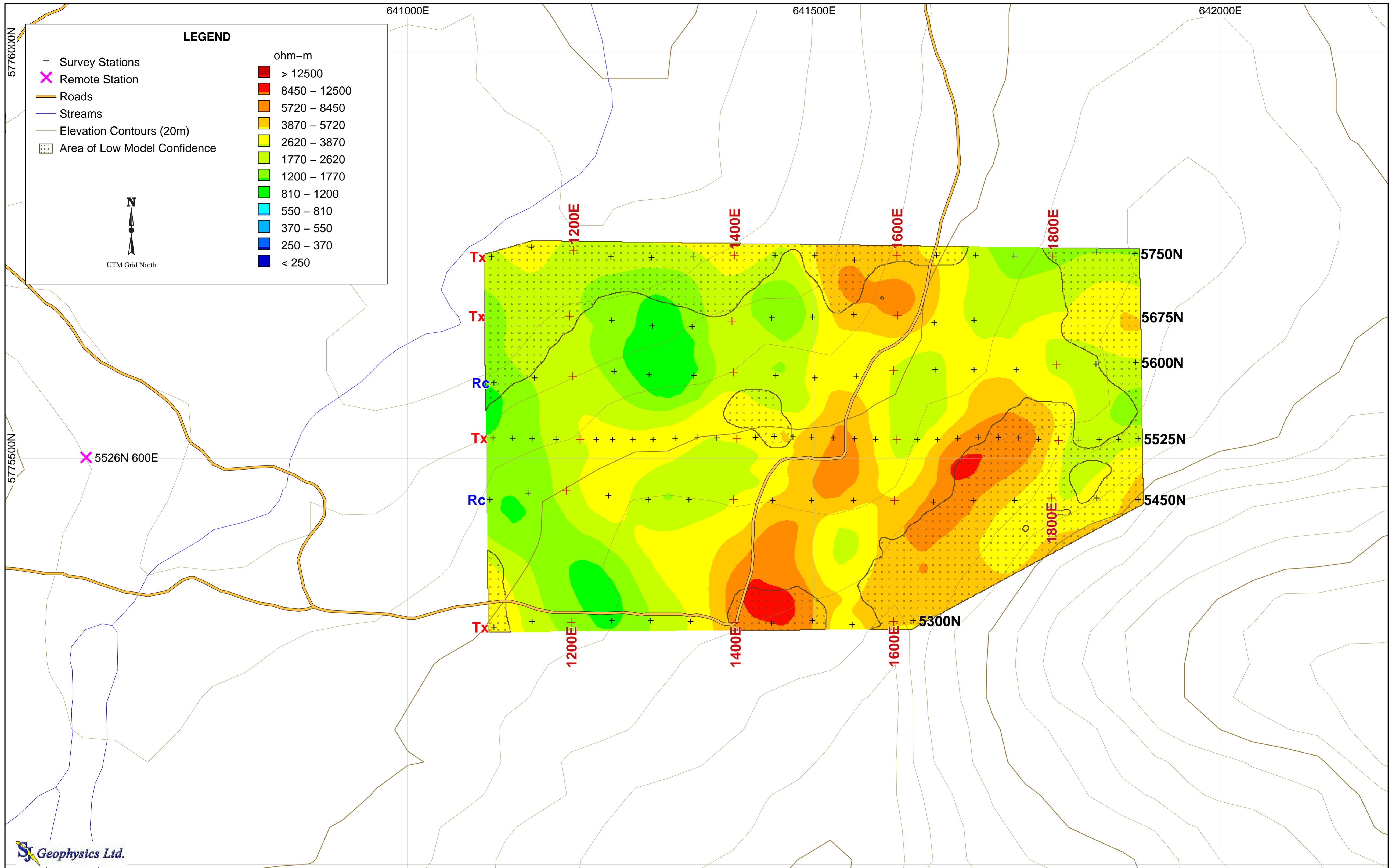
**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

**Planmap**  
**3D Inversion Model**  
**Depth: 200m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**







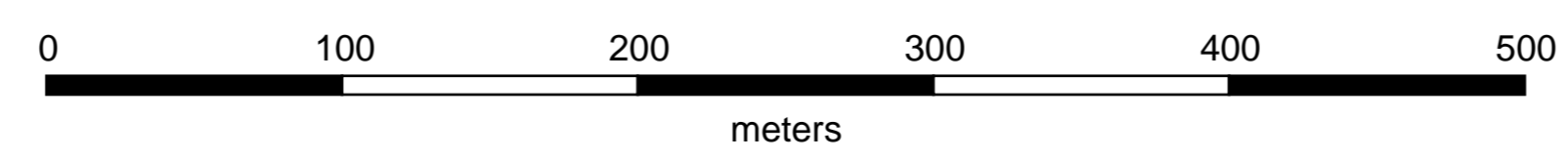
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 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

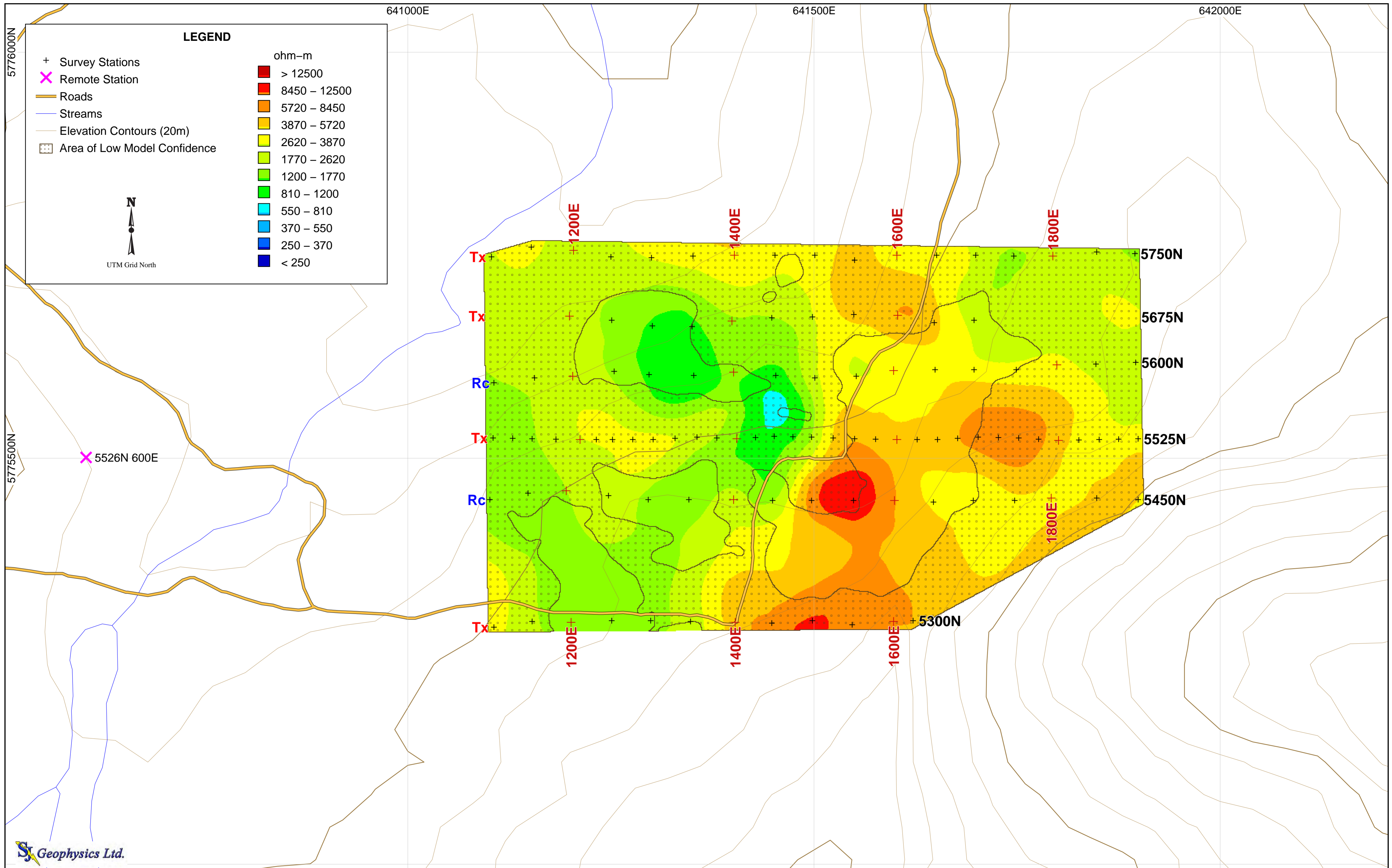
Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 250m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**





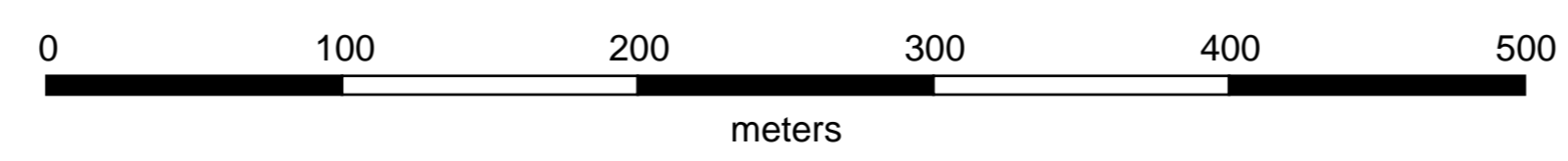
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

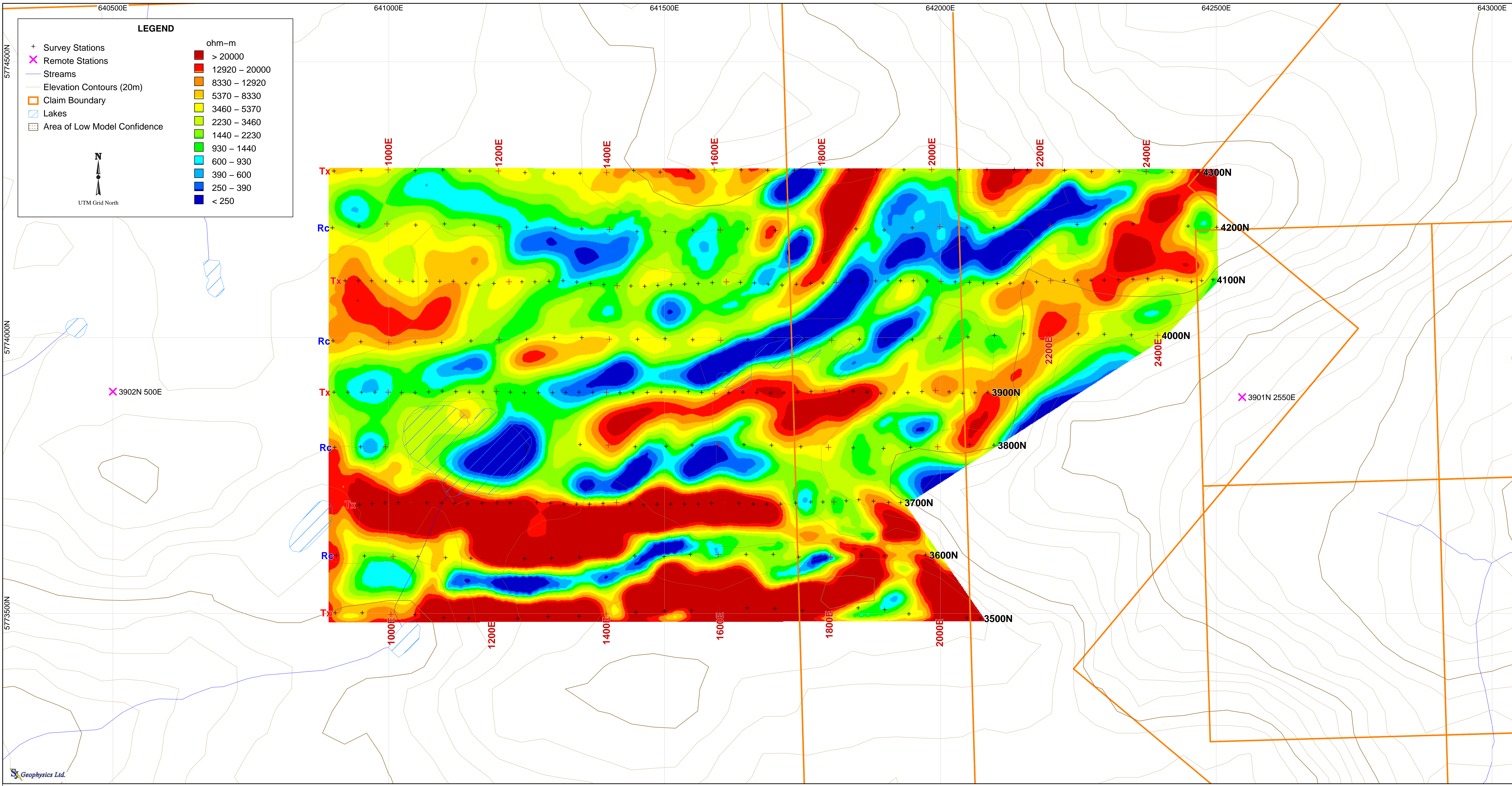
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 300m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**North Grid**  
**100 Mile House, B.C., Canada**







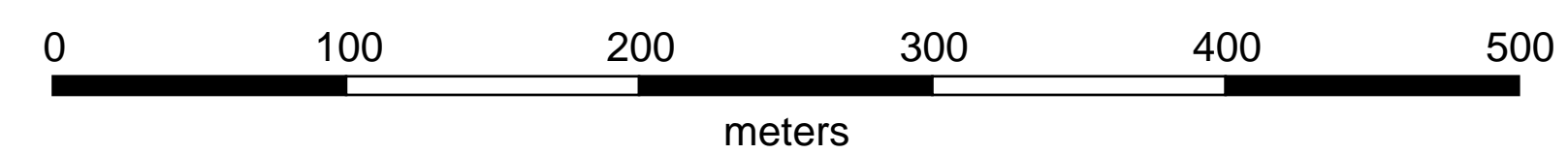
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

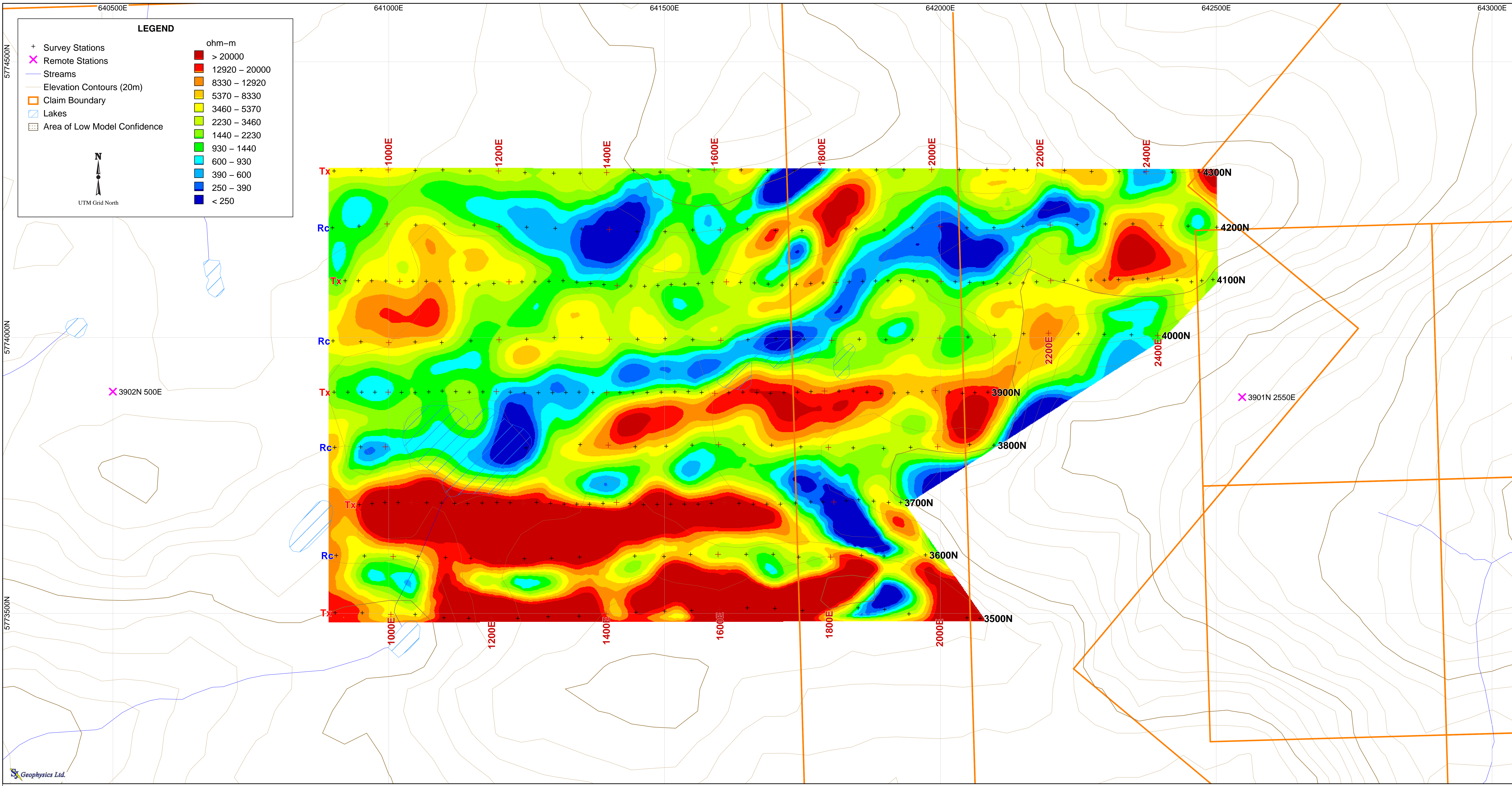
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29–Aug–2012

Planmap  
 3D Inversion Model  
 Depth: 50m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada







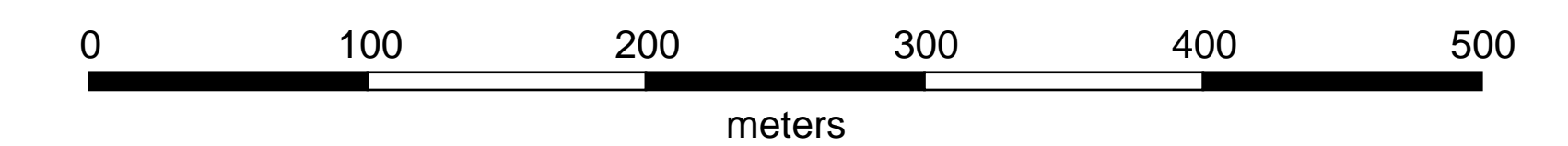
Project Information:  
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

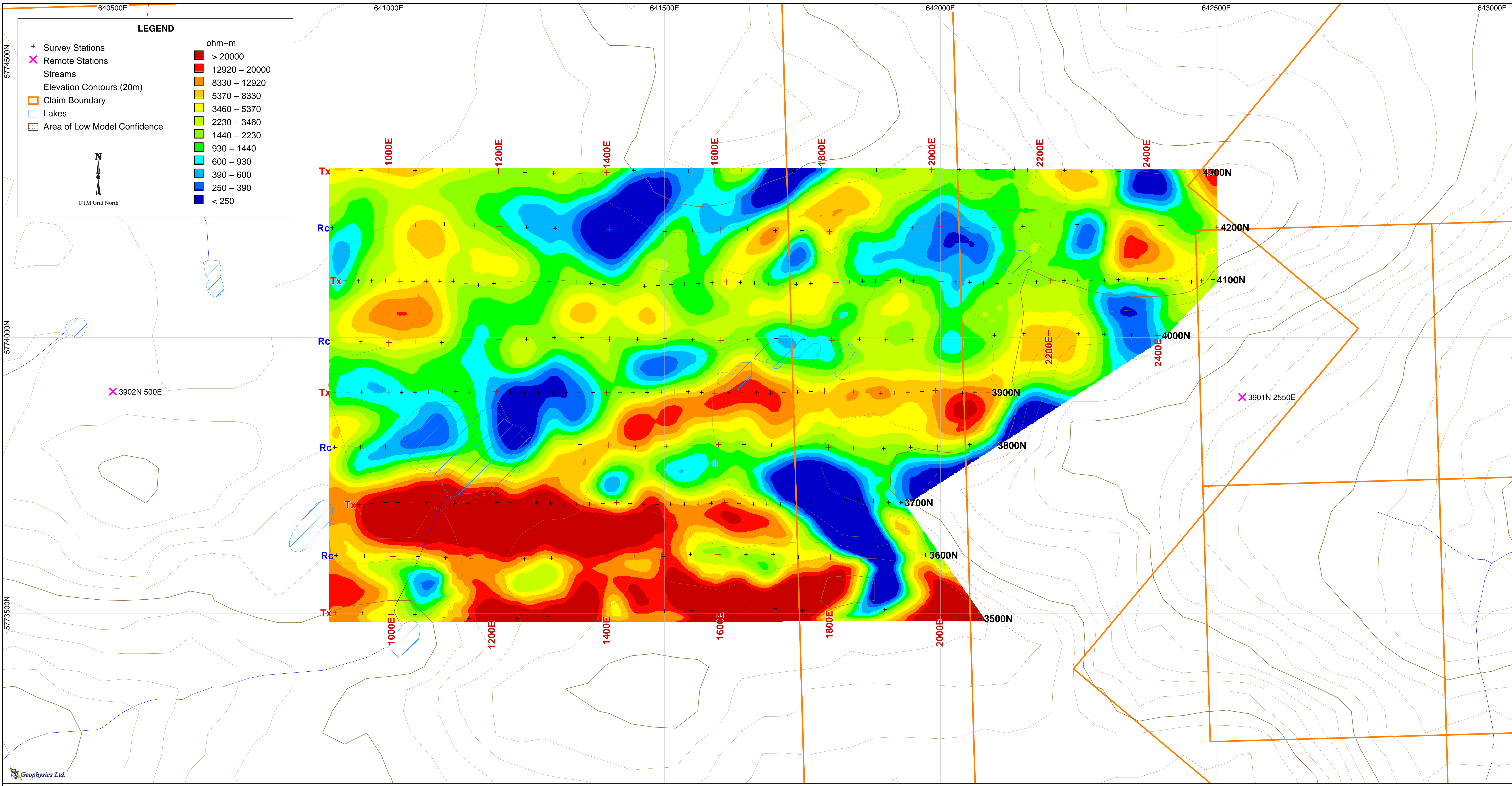
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 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29–Aug–2012

Planmap  
 3D Inversion Model  
 Depth: 75m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada







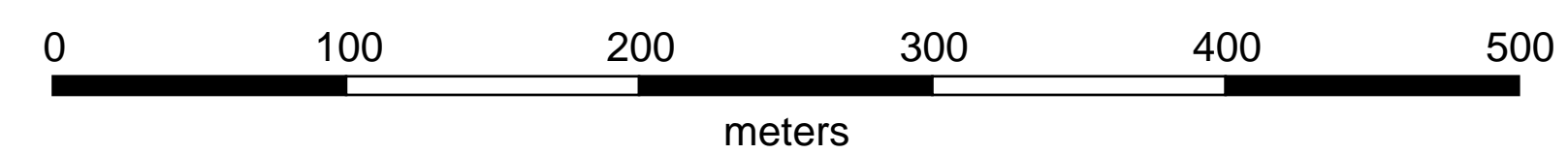
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

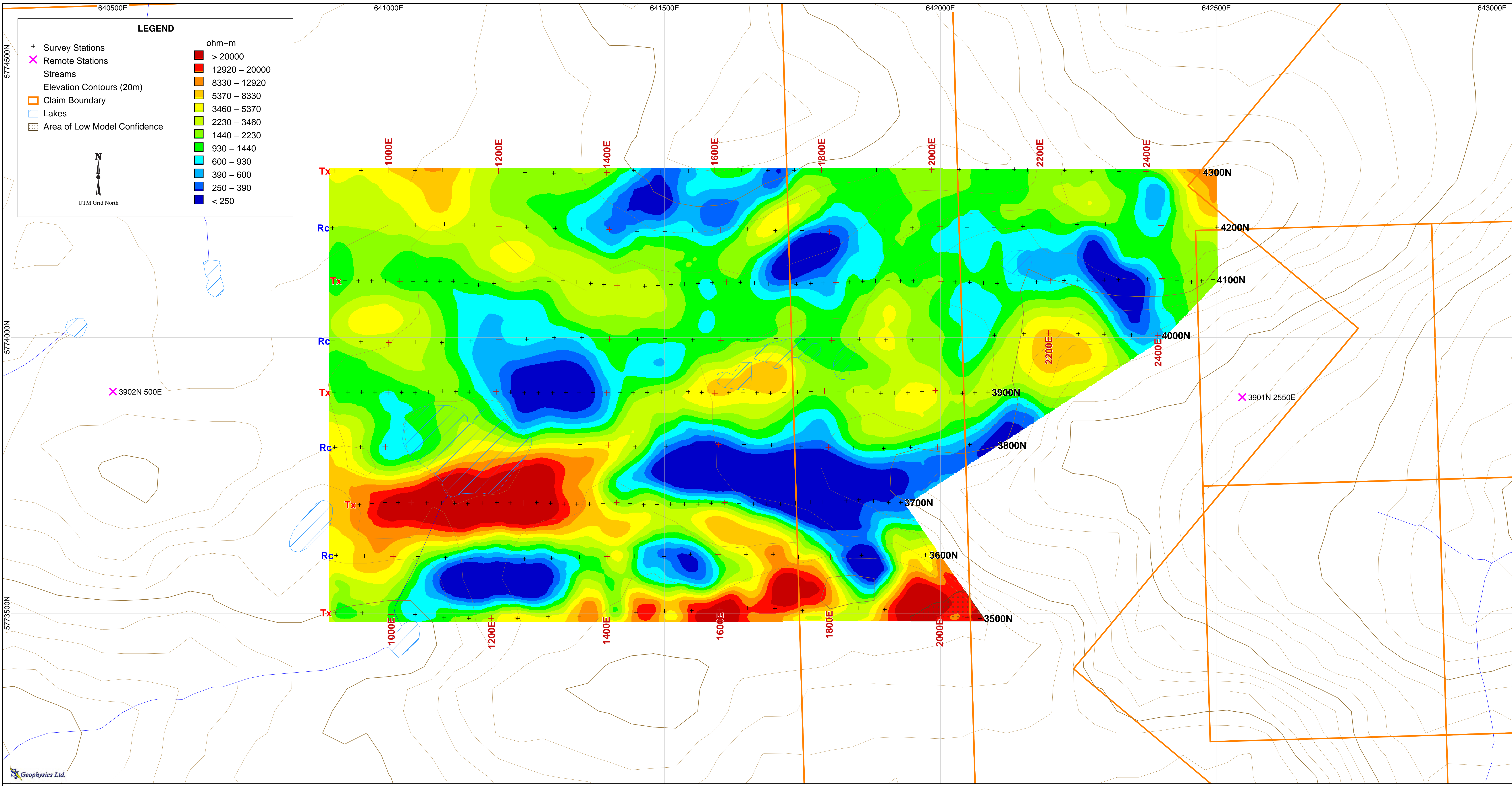
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29–Aug–2012

Planmap  
 3D Inversion Model  
 Depth: 100m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada







**LEGEND**

- + Survey Stations
- ✕ Remote Stations
- Streams
- Elevation Contours (20m)
- ▭ Claim Boundary
- ▭ Lakes
- ▭ Area of Low Model Confidence

ohm-m

- > 20000
- 12920 – 20000
- 8330 – 12920
- 5370 – 8330
- 3460 – 5370
- 2230 – 3460
- 1440 – 2230
- 930 – 1440
- 600 – 930
- 250 – 390
- < 250

N  
UTM Grid North

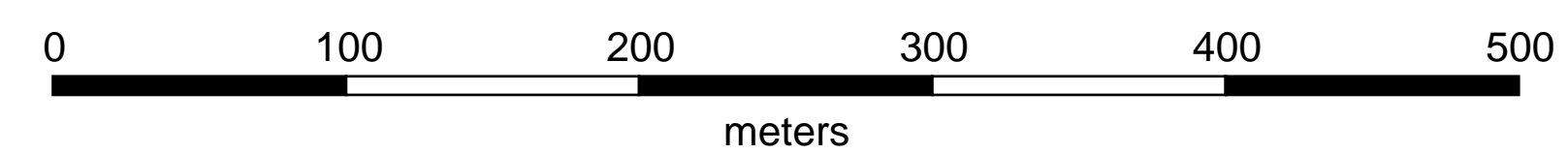
**Project Information:**  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

**Instrumentation:**  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

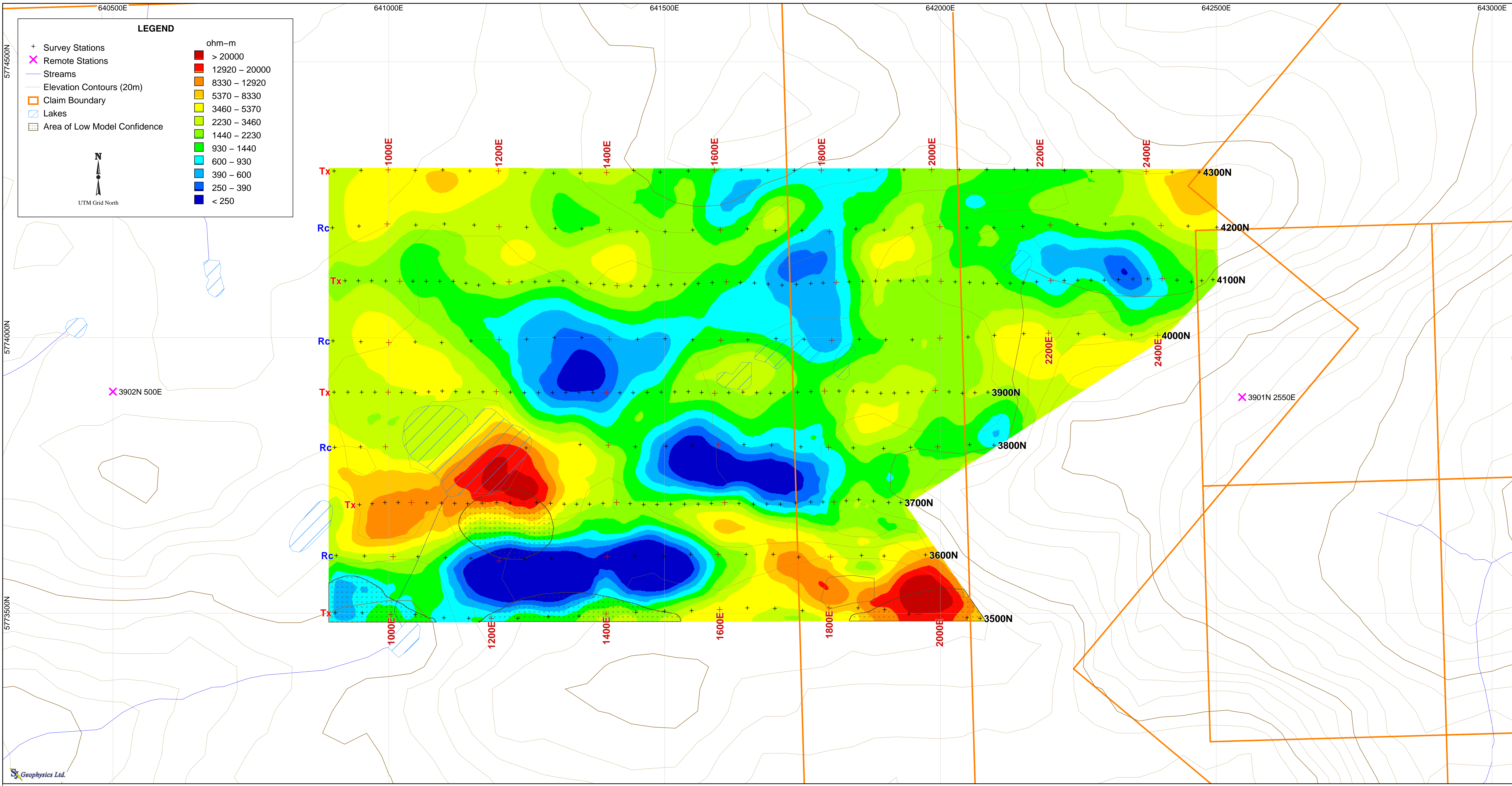
**Mapping Information:**  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

**Planmap**  
**3D Inversion Model**  
**Depth: 150m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







**LEGEND**

+	Survey Stations	ohm-m
×	Remote Stations	> 20000
—	Streams	12920 – 20000
—	Elevation Contours (20m)	8330 – 12920
▭	Claim Boundary	5370 – 8330
▭	Lakes	3460 – 5370
▭	Area of Low Model Confidence	2230 – 3460
		1440 – 2230
		930 – 1440
		600 – 930
		390 – 600
		250 – 390
		< 250

N  
UTM Grid North

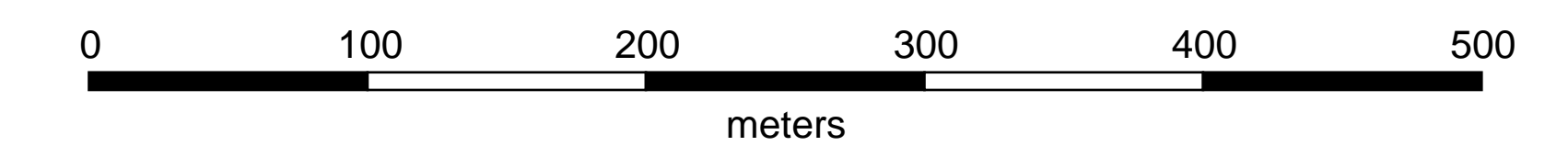
Project Information:  
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 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

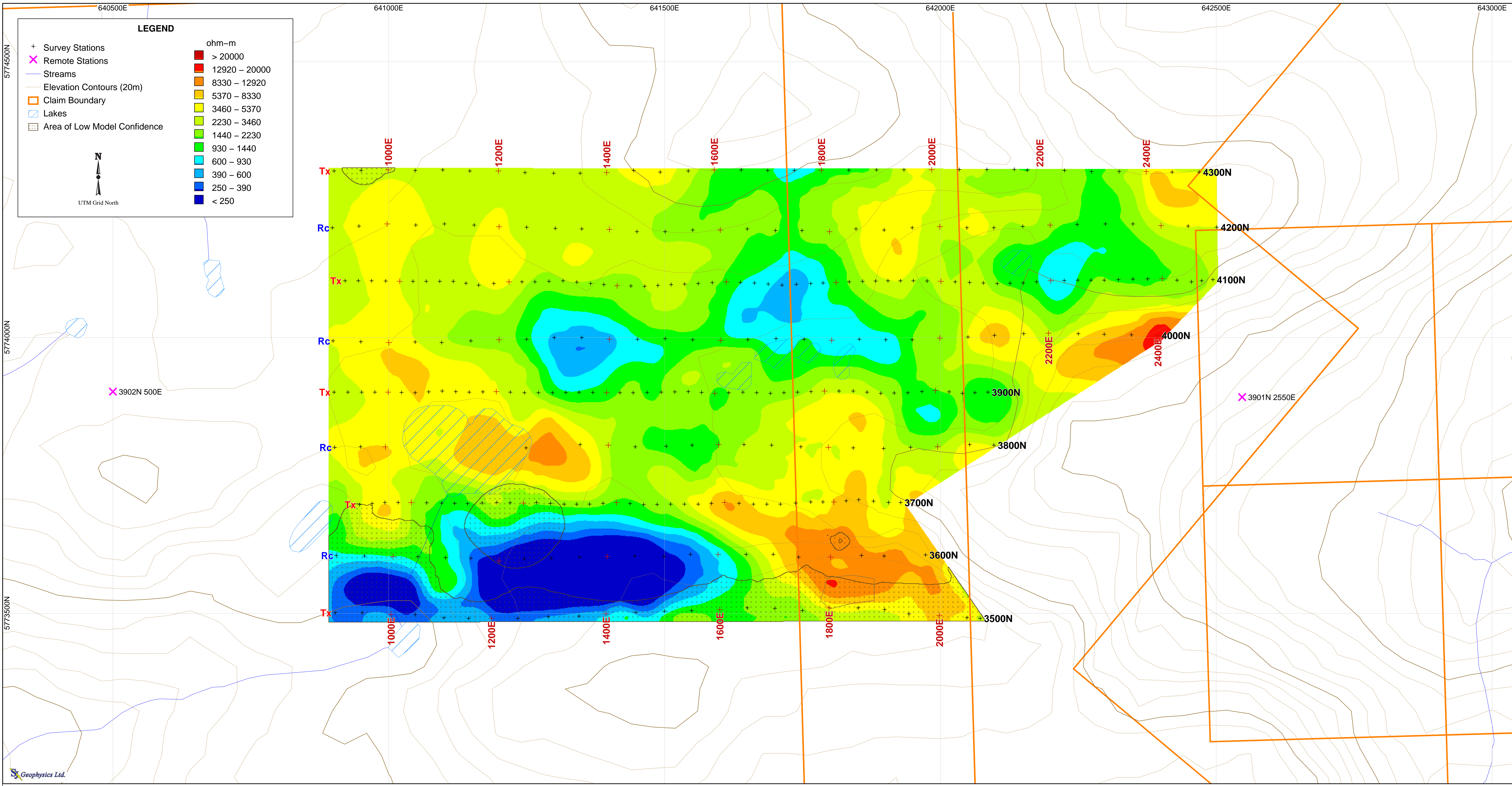
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

Planmap  
 3D Inversion Model  
 Depth: 200m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada







**LEGEND**

+	Survey Stations	ohm-m	> 20000
✕	Remote Stations		12920 - 20000
—	Streams		8330 - 12920
—	Elevation Contours (20m)		5370 - 8330
▭	Claim Boundary		3460 - 5370
▭	Lakes		2230 - 3460
▭	Area of Low Model Confidence		1440 - 2230
			930 - 1440
			600 - 930
			390 - 600
			250 - 390
			< 250

UTM Grid North

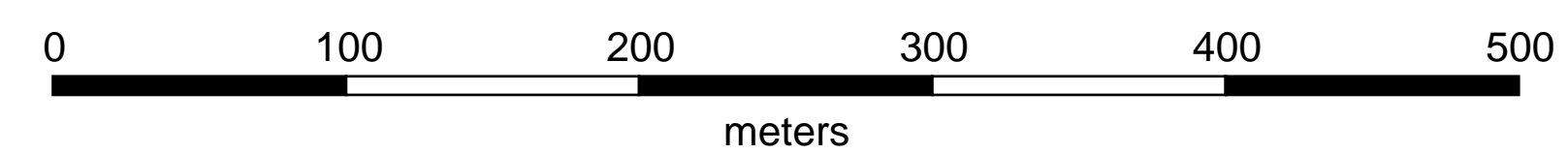
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

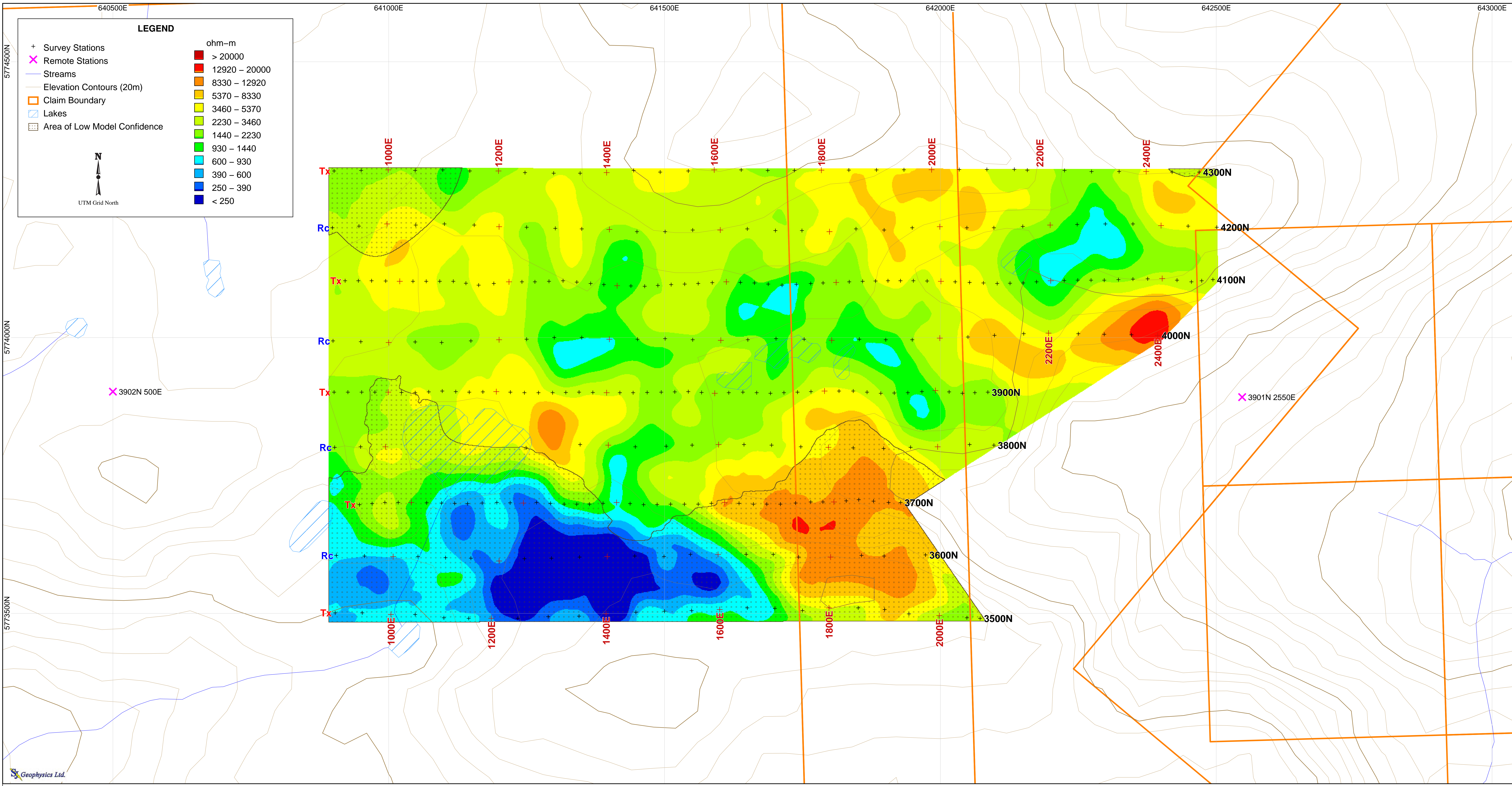
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29–Aug–2012

**Planmap**  
**3D Inversion Model**  
**Depth: 250m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







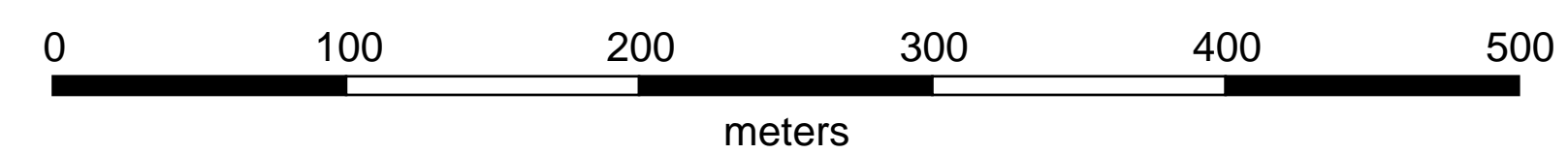
Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

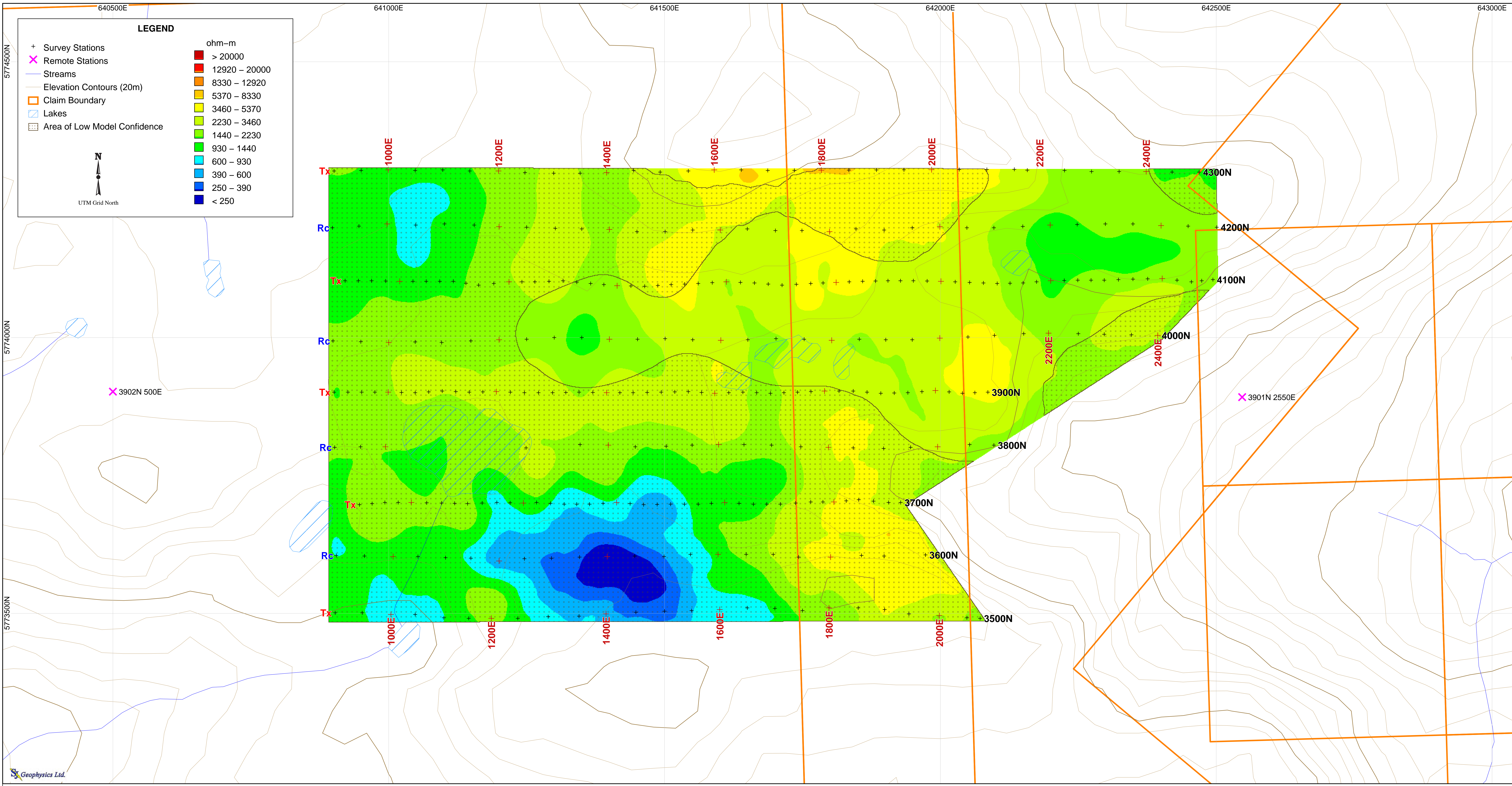
Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

**Planmap**  
**3D Inversion Model**  
**Depth: 300m Below Topography**

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
**Silverboss Property**  
**South Grid**  
**100 Mile House, B.C., Canada**







**LEGEND**

- + Survey Stations
- ✕ Remote Stations
- Streams
- Elevation Contours (20m)
- Claim Boundary
- ▭ Lakes
- ▨ Area of Low Model Confidence

**ohm-m**

- > 20000
- 12920 – 20000
- 8330 – 12920
- 5370 – 8330
- 3460 – 5370
- 2230 – 3460
- 1440 – 2230
- 930 – 1440
- 600 – 930
- 390 – 600
- 250 – 390
- < 250

N  
UTM Grid North

Project Information:  
 Survey by: SJ Geophysics Ltd.  
 3D Inversion by: S.J.V. Consultants Ltd.  
 Survey Date: July–August 2012

Instrumentation:  
 Receiver: SJ-24 Full-Waveform Digital IP Receiver  
 Transmitter: GDD TX II  
 Array Type: 3D

Mapping Information:  
 Datum: NAD83  
 Projection: UTM Zone 10  
 NTS Sheet: 093A02  
 Colour Classification: Modified Log-Linear  
 Mapping Date: 29-Aug-2012

Planmap  
 3D Inversion Model  
 Depth: 400m Below Topography

**Happy Creek Minerals Ltd.**  
**Interpreted Resistivity (ohm-m)**  
 Silverboss Property  
 South Grid  
 100 Mile House, B.C., Canada

