41P14NE2010 2.23403 HALLIDAY 010

2.234 0 3

C. Pegg Consulting

Halliday Project 2001

Geological Mapping and Prospecting

Assessment Report

NTS 41 P/14

RECEIVED
APR 0 8 2002
GEOSCIENCE ASSESSMENT OFFICE

PROVINCIAL RECORDING OFFICE - SUDBURY
RECEIVED
APR - 8 2002
A.M. P.M.
7 8 9 10 11 12 1 2 3 4 5 6

August 20, 2001

Ken Rattee
Brian Madill

TABLE OF CONTENTS

INTRODUCTION

Between July 18, 2001 and August 1, 2001, the authors completed a mapping and prospecting program for C. Pegg Consulting on portions of Unpatented Mining Claim #'s 1206301 and 1206302 in central Halliday Township, Ontario.

Detailed geological mapping was conducted in an area south of Power Line Lake and northwest Of Annie Lake. Reconnaissance geological mapping was conducted to the south and west of the detailed mapping area. A soil sampling survey was conducted over 3 airborne EM anomalies immediately southeast of Power Line Lake.

Unpatented Mining Claim #'s 1206301 and 1206302 in the Porcupine Mining Division, owned by C. Pegg and R. Whelan, encompasses 32 claim units in central Halliday Township just north of Relic Lake and between the two branches of the Grassy River, approximately 45 road kilometers northeast of the village of Shining Tree, Ontario (see figure 1).

Road access to the property is excellent. Access to the property was achieved by following the Grassy Lake Road, a gravel road branching off of Highway 560 approximately 10 kilometers east of Shining Tree, north for approximately 25 kilometers and following an east-west gravel road east for approximately 10 kilometers to Relic Lake. On this road just before the power line clearing is reached an old gravel road branches north which can be followed north to Power Line Lake (see figure 2).

The mapping area is generally flat-lying with the occasional small, rocky hill. Topographic relief is only approximately 15 meters throughout the mapping area. With the exception of the hydro power line clearing the area is covered by a spruce, cedar, poplar, balsam and alder forest with cedars, spruce and alders dominating in the flat low-lying swampy regions. Outcrops are generally only found on the occasional small, rocky hills or ridges. Outcrop exposures are generally only 5-10% throughout the mapping area.

HISTORY

This area has a long history of geological activity dating back to 1909. A summary of the more significant work referenced during the present program is outlined in chronological order.

1965 Consolidated Mining And Smelting T-2297

Completed a 395 foot diamond drill program on the west shore of Annie Lake to test a conductive horizon. No strong conductive horizon was intersected in any of the holes. Minor disseminated pyrite and rare chalcopyrite was encountered as well as thick sections of argillite and breccia.

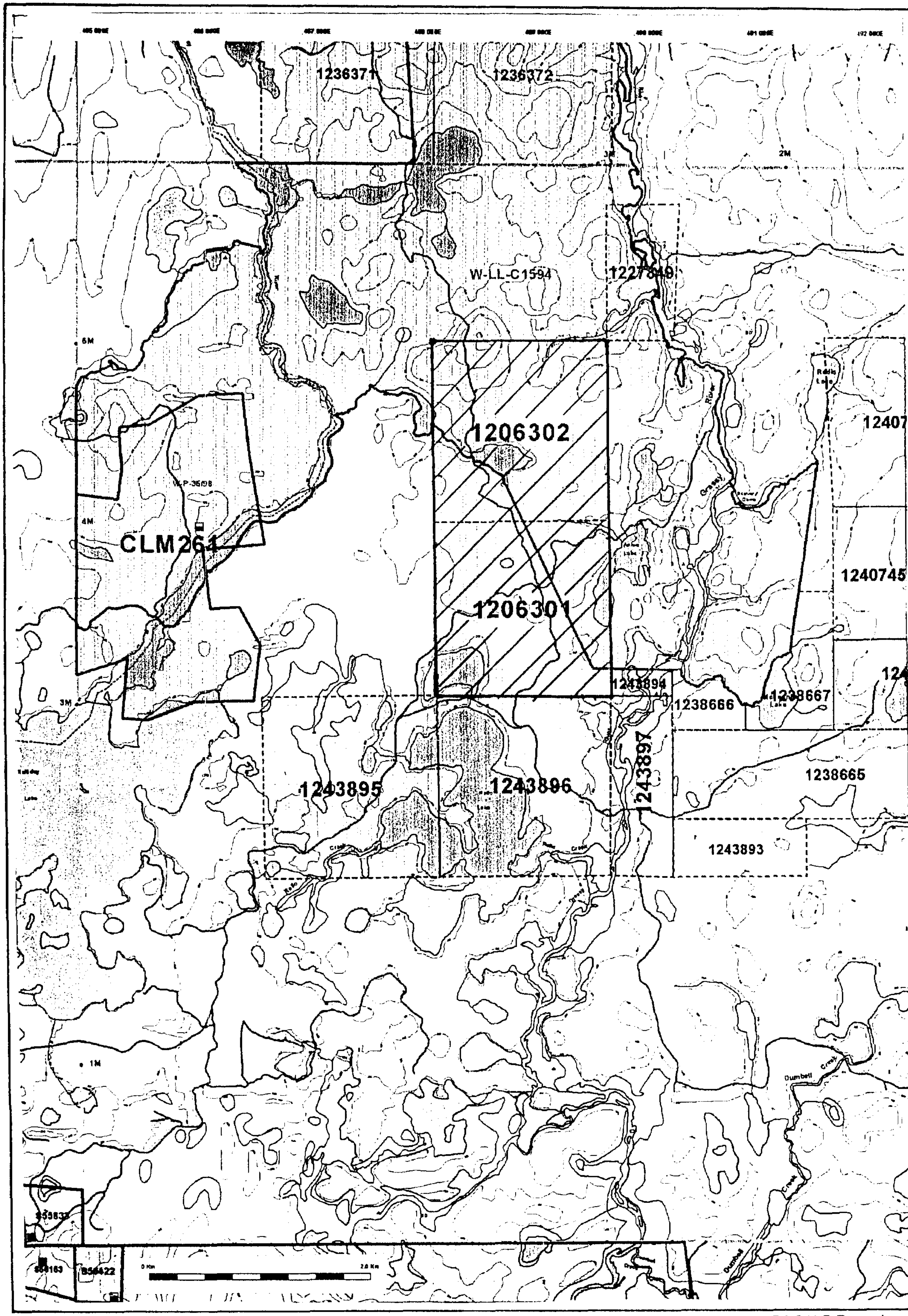
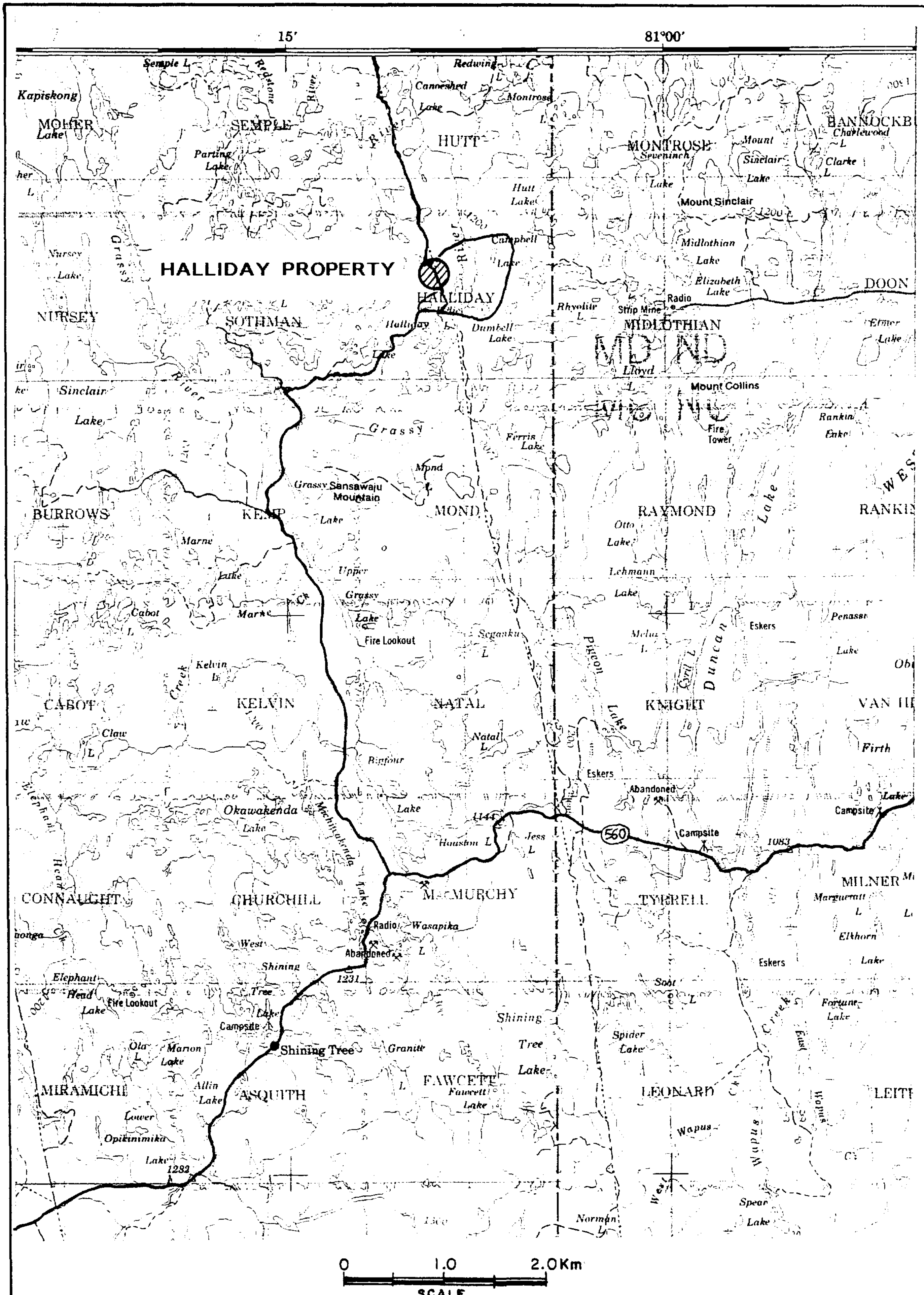

1236371
1236372
3M
2M
W-LL-C1594
1227849
6M
1206302
4M
CLM264
1240745
1206301
1243894
1238666
1238667
1243895
1243896
1243897
1238665
1243893
1M
Dumbell Creek
0 Km
2.0 Km

FIGURE: 1



15′
81°00′
HALLIDAY PROPERTY
HALLIDAY
Halliday Lake
Kapiskong
MOHER
SEMPLE
HUTT
MONTROSE
BANNOCKB
Semple L.
Redstone River
Redwing
Canoeshed Lake
Montrose
Parting Lake
Hutt Lake
Mount Sinclair
Midlothian Lake
Campbell Lake
Elizabeth Lake
DOON
Nursey Lake
NURSEY
SOTHMAN
Dumbell Lake
Rhyolite L.
Strip Mine
Radio
MIDLOTHIAN
Lloyd L.
Mount Collins
Sinclair Lake
Grassy River
Fire Tower
Ferris Lake
Rankin Lake
Mond L.
Grassy Lake
Sansawaju Mountain
BURROWS
KEMP
MOND
RAYMOND
RANKIN
Otto Lake
Marne Lake
Upper Grassy Lake
Lehmann Lake
Cabot L.
Fire Lookout
Seganku L.
Eskers
Penassi Lake
Kelvin L.
Pigeon Lake
Duncan Lake
CABOT
KELVIN
NATAL
KNIGHT
Claw L.
Natal L.
Firth
Eskers
Abandoned
Okawakenda Lake
Lake
Houston L
Jess L
560
Campsite
1083
1144
CONNAUGHT
CHURCHILL
MacMURCHY
TYRRELL
MILNER
Radio
Wasapika L.
Abandoned
Elkhorn Lake
Eskers
Elephant Head Lake
Fire Lookout
Shining Tree Lake
1231
Soot L
Fortune Lake
Campsite
Shining Tree
Granite
Spider Lake
Shining Tree Lake
Ola L.
Marion Lake
MIRAMICHI
Allin Lake
ASQUITH
FAWCETT
Fawcett Lake
LEONARD
LEITH
Lower Opikinimika Lake
Wapus
1282
Spear Lake
Norman L.
0
1.0
2.0Km
SCALE

FIGURE: 2

1967 Amax Exploration T-2668

Completed IP surveys with a follow-up diamond drill program including a drill hole 2000 foot north of Annie Lake, which intersected andesite-dacite tuffs and graphitic tuffs containing pyrite, pyrrhotite, marcassite and minor chalcopyrite.

1971 Farwest Mining T-2588

Completed an EM survey in central Halliday Township, which outlined 6 conductive horizons. No follow-up diamond drilling was reported.

1972 A. J. Salo T-2634

Completed ground magnetometer and EM surveys, mapping, prospecting and trenching programs in central Halliday Township. The most significant result of the program was the identification of a conductive horizon with a coincidental weak magnetic anomaly.

1972 H. D. Carlson T-2400

Completed ground magnetometer and EM surveys, mapping and prospecting programs over the present mapping area. This program outlined several east-west striking sulfide bearing horizons which returned anomalous copper, zinc and lead geochemical anomalies.

1977 Northgate Exploration Limited T-2603

Completed ground magnetometer and EM surveys, mapping and prospecting programs over the present mapping area between 1977 and 1979. Approximately 17 diamond drill holes were completed in a follow-up program on a number of EM anomalies. No significant economic mineralization was reported though massive sulfides including pyrite and marcassite was intersected as well as argillitic sulfides

1989 OGS Airborne EM Survey Map 81407

Flew an airborne EM and total intensity magnetic survey over the area which identified several EM anomalies over the present mapping area.

1989 BHP-Utah Mines Limited T-3385

Completed a geological mapping program and rock geochemical survey over the present mapping area.

1997 Panterra Mining Incorporated T-3853

Competed an IP survey and mapping and prospecting programs over the present mapping area with a follow-up 5 hole diamond drilling program just north of Relic Lake and west of Annie Lake. No significant economic mineralization was intersected during this program.

REGIONAL GEOLOGY

The central Halliday region is underlain by predominantly felsic to intermediate metavolcanic rocks of Archean age and is part of the southwestern portion of the Abitibi sub-province. These rocks are associated with a felsic volcanic dome, referred to as the Halliday Dome, which covers the adjoining townships of Sothman, Halliday and Midlothian. The dome lies near the western flank of the Round Lake granitic batholith and is approximately 35 kilometers long and 16 kilometers wide.

Felsic (rhyolitic to dacitic) metavolcanics in the central area of the Halliday Dome are interbedded with, and surrounded by intermediate (dacitic to andesitic) metavolcanics. Intermediate metavolcanics and thin metasediments along the margins of the dome occupy axial areas of tight folds. Ultramafic and mafic sills and stocks have intruded the volcanic and sedimentary sequence. Matachewan type diabase dykes occupy some of the north-trending faults and fractures. Thin beds of sulfide and graphitic occurrences have been the focus of several volcanogenic massive sulfide exploration programs over the years.

The Ontario Geological Survey completed a mapping program through Halliday Township in 1970 (G.R. 79) and based on displacement of major marker strata indicated by field mapping and air photo interpretation have interpreted a series of northeast to north-northeast trending faults throughout the central Halliday region.

PROPERTY GEOLOGY

Detailed geological mapping was conducted over an area south of Power Line Lake and west of Annie Lake, roughly an area of 1.6 square kilometers, encompassing the 3 airborne EM anomalies southeast of Power Line Lake identified in the OGS airborne survey flown over the area in 1989. Reconnaissance geological mapping was conducted over the perimeter of this area. A total of 57 rock outcrop samples and 19 boulder samples were collected for analysis.

Mapping was conducted without a cut grid using a Garmin Etrex GPS unit. A reference point was established at the field camp north of Relic Lake and daily GPS readings, using UTM coordinates, were taken to establish accuracy of the unit. After 9 readings at this reference point the maximum discrepancy from the average reading was 20 meters. If one of the northing readings is ignored the maximum discrepancy is reduced to 6 meters. The map datum used was NAD-27.

The geology of the mapping area consists predominantly of a thick sequence of felsic to intermediate metavolcanics and minor exposures of mafic and ultramafic metavolcanics south of Power Line Lake. The majority of outcrops examined consisted of rhyolitic to andesitic massive flows and lapilli to agglomeritic, rhyolitic to andesitic pyroclastics.

Foliations where evident were generally east-west striking, but due to the weak fabric evident when present, accurate dip measurements were not obtained. Though a north-northeast trending fault was indicated on Bright's OGS Map 2187, no evidence of this structure was encountered in the field.

FRAGMENTAL FELSIC TO INTERMEDIATE METAVOLCANICS

The felsic to intermediate pyroclastic units exhibits a wide variety of clast abundance and size. Clasts found in these units are generally sub-angular to sub-rounded though both rounded and angular clasts are found in lesser abundance. Where angular clasts are dominant the rock takes on a brecciated appearance. Angular clasts are more prevalent than rounded clasts. Clast abundance varies between 5% and 65% with clast sizes up to 30 centimeters in one location (Outcrop K-5, 250 meters south of Power Line Lake) though generally sizes are between 0.5 to 4 centimeters. The large clast sizes evident in the fragmental rhyolite unit 200 to 300 meters south of Power Line Lake, suggest this unit is proximal to a volcanic vent. The clasts are generally light colored and felsic. The felsic clasts are generally massive rhyolite and dacite, often exhibiting a weak foliation. Mafic volcanic clasts though often evident are much less abundant. The clasts occasionally exhibit a moderate stretching with the preferred orientation defining a weak foliation (generally east-west). The units are unsorted and do not show a facing direction.

The matrix of the pyroclastic units is generally grey to dark grey to black. It is presumed that very fine grained graphite causes the dark discoloration of these units. Felsic fragmental units generally show a fine to very fine grained groundmass, often aphanitic. Where discernable, compositionally the groundmass is greater than 90% felsic with a high quartz content giving the unit a hard texture. Intermediate fragmental units generally show a fine grained groundmass with 10 to 30% fine grained mafics. Secondary carbonate and chloritic alteration occur locally.

The mineralized trend identified immediately south of Power Line Lake is hosted by predominantly a fragmental rhyolite unit with up to 10% very finely disseminated pyrite with minor pyrrhotite and chalcopyrite. Occasionally the pyrite occurs as nodules of fine grains up to 1 centimeter in size or as rims of generally 1 millimeter thickness enclosing a felsic clast. Occasionally mafic clasts show a rusty oxidation.

MASSIVE FELSIC TO INTERMEDIATE METAVOLCANICS

The felsic to intermediate volcanic flows are generally massive and fine grained. Massive felsic volcanic units are generally light colored from light grey to grey to light greenish grey and are fine to very fine grained. Occasionally a massive rhyolite will exhibit a dark grey coloration similar to the dark matrix of the fragmental felsic units and again it is presumed a very fine grained graphite causes this discoloration. Compositionally the massive rhyolites are greater than 90% felsic with fine grained quartz dominating. With increasing feldspar and lesser quartz the rock would be considered a dacite. Secondary carbonate alteration occurs locally. Generally these units exhibit a massive, equigranular, featureless texture.

Massive intermediate volcanic units are generally crystalline, grey to greenish grey to light greenish grey in color and are fine to locally medium grained. Compositionally the rocks are 10 to 30% mafics with plagioclase being the dominant felsic mineral. The rocks generally show a massive, equigranular, featureless texture though one area southeast of Power Line Lake a weak schistosity is evident, possibly the result of localized shearing. Secondary carbonate, chlorite and minor sericite occur locally. One outcrop southeast of Power Line Lake exhibits a pervasive carbonate alteration giving the unit a carbonate breccia appearance. In the power line clearing west of Annie Lake, pillow structures are evident in one intermediate volcanic outcrop. The pillows are insufficiently developed to provide stratigraphic information.

MAFIC METAVOLCANICS

Massive mafic volcanic flows occur immediately south of Power Line Lake. These flows are massive, equigranular, crystalline, dark grey and fine to medium grained. Compositionally these rocks are approximately 50% mafics (pyroxene, hornblende with minor biotite. Secondary chloritic alteration appears common. One sample shows 1 to 2% fine pyrite as fine disseminations with the occasional coarse clast of fine pyrite. One outcrop indicated poorly developed pillows though this could not be verified with certainty. Fine magnetite causes the rock to be weakly to strongly magnetic. The mafic flows are probably interbedded with the ultramafic flows.

ULTRAMAFIC METAVOLCANICS

Ultramafic flows occur in two areas south of Power Line Lake. They are distinguished by a spinifex texture, especially evident on weathered surfaces, typical of komatiitic flows. These rocks generally exhibit a pervasive carbonate alteration with lesser talc. On fresh surface the ultramafic flows are dark greenish grey to dark grey and are fine to locally medium grained. Total carbonate-talc replacement gives the rock a brecciated appearance locally. Medium grained olivine can be discerned locally where alteration is not dominant though generally the rock is too fine grained and altered to ascertain it's mafic mineralogy. A typical slight greenish hue to the rock especially evident under hand lens is probably indicative of antigonite and chlorite alteration. The rocks are locally weakly magnetic.

DISCUSSION

The primary focus of this field program was to map and ascertain the field characteristics over the 3 airbourne EM anomalies southeast of Power Line Lake and to investigate all rock geochemistry metal value features in the area to determine their potential for volcanogenic massive sulfides.

The two northern most airborne anomalies occur in a flat cedar/spruce swamp and no outcrops can be found over or adjacent to these anomalies though a small, rocky hill 100 to 200 meters north and east of the anomalies offers excellent bedrock exposure. Though these rocks are barren of any significant economic mineralization a strong pyrite zone was identified and followed across the northern portion of the hill. This zone consists of up to 10% finely disseminated pyrite with minor pyrrhotite and chalcopyrite with the occasional coarse pyrite nodules in a graphitic to non-graphitic fragmental rhyollite grading to massive andesite on the east side of the hill. This zone can be followed over the approximately 250 meters of the hill and has a width of up to 10 meters in one area showing good cross sectional bedrock exposure. The trend of this zone is roughly east-west and projects to a similar pyrite mineralized zone west of the power line clearing and immediately south of Annie Lake. The pyrite mineralized zone west of the power line clearing is similarly hosted by a fragmental rhyolite unit and contains up to 7% finely disseminated pyrite. It is in this pyrite zone that Northgate in 1977 identified a narrow carbonate veinlet striking east-west with sphalerite and galena (Outcrop K-1).

Just south of Power Line Lake and immediately north of the fragmental rhyollite unit hosting the pyrite concentrations, a sequence of ultramafic and mafic rocks was identified. This stratigraphy is significant as it shows similarity to the Kidd Creek massive sulfide deposit and indeed the contact between felsic and mafic volcanics is where massive sulfide deposits may develop at the hiatus of volcanism. A carbonate-talc alteration was evident in the ultramafics nearest to the felsic units to the south. Again this feature could be analogous to the carbonate-talc alteration in the ultramafics along the felsic contact at the Kidd Creek deposit. South of Power Line Lake this contact is buried beneath a cedar/spruce swamp and thus is never exposed in bedrock. The east-southeast trend of this swamp projects to the two-airborne EM anomalies southeast of Power Line Lake. Indeed a line drawn through these two anomalies almost exactly parallels the trend of the cedar/spruce swamp. To further strengthen the potential of this area Carlson's 1972 ground EM survey indicates a strong conductive horizon roughly following the pyrite zone identified in this area. As well, Northgate's 1977 rock geochemical analyses indicate a long east-west lead anomaly through this area. A copper anomaly southeast of Power Line Lake corresponds to the rock hill described above though only trace chalcopyrite was identified in rocks gathered from this area. It is the author's opinion that this cedar/spruce swamp to the southeast of Power Line Lake, presumably where the rhyolite/ultramafic-mafic contact would occur, should be a focus of any future exploration work in this area.

If the pyritic zone in fragmental rhyolite, discussed above, identified on both sides of the power line clearing is the same horizon this would imply the ultramafic-mafic sequence would lie just to the north of the rock hill southeast of Power Line Lake. No outcrop occurs in this cedar/spruce swamp. Coincidentally Carlson has interpreted a conductive horizon in this area. Presuming a south dip to the units this potential contact could be intersected in proposed diamond drillhole H-01-3.

The southern airborne EM anomaly, approximately 750 meters southeast of Power Line Lake was also investigated. This anomaly occurs on another small rocky hill with good bedrock exposure. Nothing was evident in the outcrops examined in this area that would suggest a reason for this anomaly or for that matter the various rock geochemical anomalies suggested from Northgate's 1977 program. The rocks adjacent to the EM anomaly are for the most part a barren, massive andesite with some fragmental andesite to the northwest and massive dacite to the southeast, both barren. The only significant mineralization was a weak pyritic zone in fragmental rhyolite approximately 250 meters southwest of the EM anomaly. This area would correspond to the anomalous zinc, lead and barium rock geochemical values indicated in past surveys. Nothing was observed in the field that could be considered causal of these anomalies.

Three diamond drill holes have been proposed and laid out in the field. Two of the holes target the two northern airborne EM anomalies and the third tests the ground adjacent to the pyritic zone on the small rock hill. It is hoped that this third hole would be drilled deep enough to the north to test for the possibility of an ultramafic contact just north of the hill. It is the author's opinion that a fourth hole drilled from south to north through the fragmental rhyolite unit, cedar/spruce swamp and into the ultramafics to the immediate southwest of Power Line Lake could be advantageous.

PROSPECTING

On July 18, 2001 a base camp was established at a point where it dissects the northern portion of Relic Lake. Between July 20, 2001 and July 29, 2001 a detailed prospecting program was conducted over an area covering 1.6 square kilometers around 3 airborne EM conductors identified during an OGS Airborne EM Survey (1989 OGS Map 81407)

The focus of this program was to investigate the outcrop areas in close proximity to the 3 airborne EM anomalies in search of possible sulfide mineralization, graphite or mineralized boulder trains, as well to unearth new outcrop areas.

A previously discovered mineralized stringer zone to the west of the power line along the road, approximately 250 meters southwest of Power Line Lake was to be closely looked at.

2.23403

In a systematic approach in conjunction with the detailed mapping program, a series of traverses was carried out over the above mentioned targets. A total of 18 boulders were unearthed using a 5 foot sounding bar, grub-hoe and spade (see Boulder Sampling Index). The boulders varied in shape from sub-angular to sub-rounded and from 30 centimeters to 3 meters in size. Numerous new outcrops were stripped and investigated (see Map No. 1). In the areas around the outcrop areas where cedar/spruce swamps prevailed the sounding bar failed to penetrate the overburden cover.

SOIL SAMPLING

On July 28th through the 30th, 2001 a total of 75 soil samples were collected in the area of the 3 airborne anomalies. Control for the grid was established using a Garmin Etrex GPS unit. UTM coordinates 5305333N/0488782E define BL0+00/L0+00 (see Map No. 4). From this point a base-line was established along the power line at an azimuth of 160°. The base-line was then chained and lines were established at 00, 160 meters south, 300 meters south, 450 meters south and at 600 meters south. Flagged lines were established at 90° to the baseline and extended eastward at an azimuth of 70°. A total of 15 samples were taken along each line at approximately 26 meter intervals.

Composition of the samples ranged from clay, fine silt, to coarse-grained sand. These type samples make up 67% of the samples taken. The remaining 33% were organic in composition (see Soil Sample Index). All 75 samples wee catalogued and sent to XRAL Laboratories in Val-d'Or, Quebec for analysis. Results are pending.

BEEP MAT SURVEY

A Beep Mat survey, using GDD Inc.'s Model BM-1V, was carried out over the south airborne EM conductor and also over the Lead Stringer Zone (outcrop K-01). The Beep Mat is a simple electromagnetic prospecting instrument adapted to the search for outcrops and/or boulders containing conductive and/or magnetic minerals. Since the Beep

Mat's maximum depth of penetration is about 1.5 meters and has a radius of 2 meters, conductive bodies found by this instrument are close to surface. The Beep Mat was able to find only one conductive boulder at surface, approximately 70 meters southwest of the southern airborne EM anomaly. The boulder was well rounded and approximately 1 meter long and 0.5 meters wide. It was granitic in appearance and displayed a moderate magnetic signature. No sulfides were observed.

The Beep Mat survey over the Lead Stringer Zone was only able to detect sulfide concentrations >10% and consequently nothing was detected.

REFERENCES

ASSESSMENT FILE DATA:

A. J. Salo 1972, T-2634

H. D. Carlson 1972, T-2400

Northgate Exploration Limited 1977, T-2603

BHP-Utah Mines Limited 1989, T-3385

Panterra Minerals Incorporated 1997, T-3853

REFERENCES:

Bright, E. G. 1977
Geology of Halliday and Midlothian Townships, Disticts of Sudbury and Timiskaming, O.G.S., Report 79, accompanied by Map 2187

Coad, P.R.
Rhyolite Geology at Kidd Creek - A Progress Report, misc. O.G.S. file

Eaton, David,et al 1996
Seismic Imaging of Massive Sulfide Deposits: Part III. Borehole Seismic Imaging of Near-Vertical Structures, Economic Geology Vol. 91, 1996, p. 835-840

Huston, D. L., et al 1995
Isotope Mapping Around the Kidd Creek Deposit, Ontario: Application to Exploration and Comparison with Other Indicators, Exploration Mining Geology, Vol. 4, No.3, 1995, p. 175-185

Lesher, C. M., et al 1986
Trace-Element Geochemistry of Ore-Associated and Barren, Felsic Metavolcanic Rocks in the Superior Province, Canada, Canadian Journal of Earth Sciences, Vol. 23, 1986

STATEMENT OF QUALIFICATIONS

I, **Ken Rattee**, of 29 Day Ave. Kirkland Lake, Ontario, do hereby certify that:

1. I am the author of this report.

2. I am a graduate of the University of Toronto, having received a Bachelor of Science (Geology), in 1980.

3. I have practiced my profession continuously since graduation in Ontario and Newfoundland.

4. I don not have or expect to receive any interest in the properties that form the basis of this report.

Ken Rattee, B.Sc.

STATEMENT OF QUALIFICATIONS

I, **Brian Madill**, of 142 Carter Ave. Kirkland Lake, Ontario, do hereby certify that:

1. I am a Prospector/Geological/Geophysical Technician and have been practicing my profession for the past 22 years.

2. I am a graduate of Cambrian College, Sudbury, Ontario having received a Geological Engineering Technician diploma in 1979.

3. My knowledge of the property described herein was obtained by fieldwork and documentation.

4. I don not have or expect to receive any interest in the properties that form the basis of this report.

5. I am qualified to co-author this report.

Brian H. Madill

OUTCROP SAMPLE INDEX

SAMPLE #	ROCK TYPE	LOCATION E	LOCATION N	DESCRIPTION
B-01	FR	8454	5394	graph, rhyl clasts, sulf
B-03	BAS	8428	5507	low hard, mod mafics
B-04	DAC	8550	5343	low hard, low mafics
GP-03	FR	8541	5524	mod hard, black matrix (graph), sulf
K-01	FR	8465	5351	low hard (graph?), sulf
K-03	FR	8609	5324	low hard (graph?), lapilli rhyl clasts, sulf
K-05	FR	8516	5346	large fel frag in FR
K-06	UM	8536	5450	carb, spinifex
K-07	UM	8536	5456	carb
K-09	BAS	8521	5438	sulf
K-10	UM	8581	5444	carb-talc, spinifex
K-11	BAS	8603	5458	high mafics, massive
K-12	FR	8618	5484	graph
K-13	MR	8388	5380	mod hard, patchy black (graph?)
K-14	MR	8326	5374	mod hard, black (graph), vfg,
K-15	MR	8326	5380	mod hard, light grey, fg
K-16	FR	8319	5448	low hard (graph?)
K-18	UM	8388	5501	carb
K-20	MA	8477	5298	low hard, <5% mafic clasts
K-21	UM	8466	5263	spinifex, carb-talc
K-22	MA	8566	5271	low hard, mod mafics
N-01	FR	9034	5382	mod hard, black matrix (graph?), carb
N-02	FA	9045	5405	mod hard, mod mafics, chl-carb-qtz
N-03	MA	9022	5461	+carb, bx, low hard,mod mafics
N-04	MA	9026	5499	mod mafics, small size
N-05	MA	9036	5504	low hard, weak schistosity, small size
N-06	FR	9014	5483	hard, black graph matrix, sulf
N-08	MA	8993	5425	carb-chl, low hard, low mafics, mod size
N-09	MA	9099	5347	low hard, low mafics, sulf, mod size
N-11	FR	9010	5523	hard, black graph matrix, mod size, carb
N-12	FR	9136	5490	mod hard, graph, sulf, chl, 3 samples
N-13	MA	9156	5495	mod hard, mod mafics, MR?, sulf
N-14	MA	9187	5493	low hard, mod mafics, sulf
N-15	MR	9174	5412	mod hard, patchy black (graph?), fg
N-17	FR	8996	5457	hard, sulf
R-01	MA	9055	5006	low hard, low mafics
R-02	MA	9061	5026	low hard, low mafics, mod size
R-03	MR	9072	5040	hard, fg, chl-qtz
R-04	MR	9078	5046	hard, sil, chl
R-06	MA	9100	5050	mod-low hard, mod mafics
R-08	MA	9149	5025	mod mafics, mod mafics
R-11	MR	9124	4884	mod hard, v low mafics, carb
R2-03	MA	9013	4874	mod-low hard, low mafics, weak chl
R2-04	DAC	9030	4789	mod-low hard, low mafics
R2-05	FR	9012	4782	low hard, black matrix, graph, sulf, mod size
R2-06	MR	9007	4776	mod hard, black, vfg, graph
R2-08	MR	8999	4762	mod hard, patchy black (vfg graph),

SAMPLE #	ROCK TYPE	LOCATION E	LOCATION N	DESCRIPTION
R2-10	FR	8997	4786	mod hard, black matrix (graph), sulf
R2-11	FR	8907	4831	mod hard, black matrix (graph), sulf
S1	DAC	8986	4505	mod hard, low mafics, mod size
S2	MR	8412	5660	mod hard, sil, chip samples (small)
W-01	FA	8759	5216	low hard, mod mafics with matrix, sulf
W-03	FA	8694	5190	low hard, patchy black (graph)
W2-01	MR	8479	4452	v hard, vfg, cherty
W2-02	MR	8458	4432	v hard, vfg, cherty
W2-04	MA	8168	4927	mod hard, low mafics,sulf
W2-06	FA	8387	5018	low hard, patchy black (graph), sulf

ROCK TYPE LEGEND:
MR - Massive Rhyolite
FR - Fragmental Rhyolite
DAC - Dacite
MA - Massive Andesite
FA - Fragmental Andesite
BAS - Basalt
UM - Ultramafic Flow

BOULDER SAMPLE INDEX

SAMPLE #	LOCATION N	LOCATION E	ROCK TYPE	DESCRIPTION
K-4	5305338N	0488558E	FR	sulfide nodules up to 5cm.(8% total content), py.,minor cpy.,bn.,weak carb. Alt
K-5	5305351N	0488527E	FR	sulfide nodules up to 4cm.,(5% total content) py.
K-17	5305472N	0488344E	MR	1%py., 5% black glassy nodules up to 2mm.
R-10	5305004N	0489144E	FR	graphitic matrix, 5-7% finely diss. sulfides, py.
KR-3	5305303N	0488536E	FR	60% light grey fragments in a 35% dark grey very fine grained matrix
KR-5	5305280N	0488579E	FR	agglomerate, poorly sorted sub-rounded rhyolite clasts up to 10cm, 3% finely disseminated py, minor blebs of py up to 1cm carb and sil
B-2	5305408N	0488420E	MR	light grey, <1% fine py
B-5	5305361N	0488541E	FR	dark grey with light grey clasts up to 1.5cm, minor py in blebs
BLD-1	5305354N	0489176E	MR	cherty py (%?)
BLD-2	5304893N	0489305E	DAC	massive, soft, minor py
BLD-3	5305304N	0489154E	MA	carb, minor py
BLD-4	5305396N	0488990E	FR	dark grey graphitic, minor finely disseminated py
BLD-5	5305347N	0489076E	FR	dark grey,slightly graphitic
SS-1	5305420N	0489025E	DAC	light greenish grey felsic, carbonated, minor disseminated py
SS-2	5305305N	0489176E	MA	light grey to greenish grey, unmineralized
SS-3	5305158N	0489176E	MR	light greyish green, 2 - 3% black mafic mineral, possibly biotite, <1% finely disseminated py
SS-4	5305175N	0489224E	MR	light grey, dark grey cherty bands (?), <1% finely disseminated py
SS-5	5304795N	0489068E	FR	dark grey, graphitic, minor blebs of py up to 0.5cm and finely disseminated py

ROCK TYPE LEGEND:
MR - Massive Rhyolite
FR - Fragmental Rhyolite
DAC - Dacite
MA - Massive Andesite
FA - Fragmental Andesite
BAS - Basalt
UM - Ultramafic Flow

ABBREVIATIONS:
py - pyrite
cpy - chalcopyrite
bn - bornite
carb - carbonate
sil - silicified
alt - alteration

SOIL SAMPLING PROGRAM

HALLIDAY TWP.

SAMPLE NUMBER	SAMPLE LOCATION Line / Station	SAMPLE DEPTH	SAMPLE TYPE	SAMPLE DESCRIPTION f=fine / m=medium / c=coarse
001	L0+00 / BL 00	-45cm	Humus	black with partially degraded organic material
002	L0+00 / 0+26mE	-45cm	Humus	black with partially degraded organic material
003	L0+00 / 0+52mE	-45cm	Humus	black with partially degraded organic material
004	L0+00 / 0+78mE	-50cm	Clay	light greyish brown,very f grained.
005	L0+00 / 1+04mE	-40cm	Clay	light greyish brown, very f grained
006	L0+00 / 1+30mE	-30cm	Clay	dark grey, f to m grained
007	L0+00 / 1+56mE	-40cm	Clay	light brown to dark grey, f to m grained
008	L0+00 / 1+82mE	-40cm	Clay	light greyish brown, f to m grained
009	L0+00 / 2+08mE	-65cm	Clay	light greyish brown, f to m grained
010	L0+00 / 2+34mE	-50cm	Clay	dark brown to dark grey, f to m grained
011	L0+00 / 2+60mE	-40cm	Sand	reddish brown to grey, f to m grained, some small rock chips
012	L0+00 / 2+86mE	-40cm	Sand	light grey to reddish brown, m to c grained
013	L0+00 / 3+12mE	-40cm	Sand	light grey to reddish brown, m to c grained
014	L0+00 / 3+38mE	-50cm	Sand	light grey to reddish brown, m to c grained
015	L0+00 / 3+64mE	-40cm	Sand	reddish brown to rusty black, m to c grained, weathered boulder fragments

SOIL SAMPLING PROGRAM

HALLIDAY TWP.

SAMPLE NUMBER	SAMPLE LOCATION Line / Station	SAMPLE DEPTH	SAMPLE TYPE	SAMPLE DESCRIPTION f=fine / m=medium / c=coarse
016	L1+60S / BL 00	-55 cm	Sand	reddish brown to light grey,f. to m. grained
017	L1+60S / 0+26mE	-35cm	Sand	reddish brown to light grey,f. to m. grained
018	L1+60S / 0+52mE	-40cm	Silt/Clay	reddish brown to grey, very f. grained
019	L1+60S / 0+78mE	-40cm	Silt/Clay	reddish brown to grey, very f. grained
020	L1+60S / 1+04mE	-40cm	Silt/Clay	greenish grey to reddish brown,very f. grained
021	L1+60S / 1+30mE	-50cm	Silt/Clay	greenish grey, very f. grained
022	L1+60S / 1+56mE	-40cm	Silt/Clay	greenish grey to reddish brown,very f. grained
023	L1+60S / 1+82mE	-50cm	Sand/Silt	greenish grey to reddish brown, f. to m. grained.
024	L1+60S / 2+08mE	-75cm	Sand	reddish brown. c. grained
025	L1+60S / 2+34mE	-75cm	Humus	black muck, somewhat woody
026	L1+60S / 2+60mE	-40cm	Humus	black muck, somewhat woody
027	L1+60S / 2+86mE	-40cm	Humus	black muck, somewhat woody
028	L1+60S / 3+12mE	-30cm	Humus	black muck, somewhat woody
029	L1+60S / 3+38mE	-30cm	Sand	greyish white to reddish brown, c. grained.
030	L1+60S / 3+64mE	-30cm	Sand	greyish white to reddish brown, c. grained.

SOIL SAMPLING PROGRAM

2.23403

HALLIDAY TWP.

SAMPLE NUMBER	SAMPLE LOCATION Line / Station	SAMPLE DEPTH	SAMPLE TYPE	SAMPLE DESCRIPTION f=fine / m=medium / c=coarse
031	L3+00S / BL OO	-50cm	Humus	black muck, somewhat woody
032	L3+00S / 0+26mE	-35cm	Humus	black muck, somewhat woody
033	L3+00S / 0+52mE	-40cm	Humus	black muck, somewhat woody
034	L3+00S / 0+78mE	-50cm	Humus	black muck, somewhat woody
035	L3+00S / 1+04mE	-45cm	Humus	black muck, somewhat woody
036	L3+00S / 1+30mE	-50cm	Humus	black muck, somewhat woody
037	L3+00S / 1+56mE	-55cm	Humus	black muck, peat moss ?
038	L3+00S / 1+82mE	-40cm	Humus	black muck, peat moss ?
039	L3+00S / 2+08mE	-50cm	Humus	black muck, peat moss ?
040	L3+00S / 2+34mE	-50cm	Humus	black muck, peat moss ?
041	L3+00S / 2+60mE	-45cm	Humus	black muck, peat moss ?
042	L3+00S / 2+86mE	-55cm	Humus	black muck, peat moss ?, woody.
043	L3+00S / 3+12mE	-40cm	Sand	red to grey brown, m. to c. grained
044	L3+00S / 3+38mE	-30cm	Sand	red to grey brown, m. to c. grained
045	L3+00S / 3+64mE	-50cm	Sand	red to grey brown, m. to c. grained

SOIL SAMPLING PROGRAM
HALLIDAY TWP.

SAMPLE NUMBER	SAMPLE LOCATION Line / Station	SAMPLE DEPTH	SAMPLE TYPE	SAMPLE DESCRIPTION f=fine / m=medium / c=coarse
046	L4+50S / BL 00	-50cm	humus	black muck, somewhat woody.
047	L4+50S / 0+26mE	-40cm	humus	black muck, somewhat woody.
048	L4+50S / 0+52mE	-30cm	humus	black muck, somewhat woody.
049	L4+50S / 0+78mE	-40cm	Sand	reddish brown, m. to c. grained
050	L4+50S / 1+04mE	-45cm	Sand	dark grey to dark brown, f. to m. grained.
051	L4+50S / 1+30mE	-50cm	Sand	light grey to reddish brown, m. to c. grained
052	L4+50S / 1+56mE	-50cm	Sand	light grey to reddish brown, m. to c. grained
053	L4+50S / 1+82mE	-20cm	Sand/Silt	light grey, c. graindeed
054	L4+50S / 2+08mE	-30cm	Sand	reddish brown, m. to c. grained
055	L4+50S / 2+34mE	-40cm	Sand	light grey to reddish brown, m. to c. grained
056	L4+50S / 2+60mE	-50cm	Sand	light grey to reddish brown, m. to c. grained
057	L4+50S / 2+86mE	-40cm	Humus	black muck, somewhat woody?
058	L4+50S / 3+12mE	-40cm	Sand	light grey togrey brown, m. to c. grained
059	L4+50S / 3+38mE	-40cm	Sand	grey to dark brown,m. to c. graindeed
060	L4+50S / 3+64mE	-35cm	Sand	grey to reddish brown, m. to c. graindeed

SOIL SAMPLING PROGRAM
HALLIDAY TWP.

SAMPLE NUMBER	SAMPLE LOCATION Line / Station	SAMPLE DEPTH	SAMPLE TYPE	SAMPLE DESCRIPTION f=fine / m=medium / c=coarse
061	L6+00 / BL 00	-40cm	Organic	black muck, somewhat woody
062	L6+00 / 0+26mE	-40cm	Organic	black muck, somewhat woody
063	L6+00 / 0+52mE	-35cm	Sand	reddish brown, m. to c. grained
064	L6+00 / 0+78mE	-40cm	Sand	reddish brown, m. to c. grained
065	L6+00 / 1+04mE	-30cm	Sand	dark reddish brown, m. to c. grained
066	L6+00 / 1+30mE	-35cm	Sand	greenish red brown, f. to m. grained
067	L6+00 / 1+56mE	-40cm	Sand	greenish red brown, f. to m. grained
068	L6+00 / 1+82mE	-40cm	Sand	greenish grey to red brown, m. to c. grained
069	L6+00 / 2+08mE	-45cm	Sand	greyish red brown, m. to c. grained
070	L6+00 / 2+34mE	-55cm	Sand/Silt	greyish green to red brown, f. to m. grained
071	L6+00 / 2+60mE	-50cm	Silt	dark grey to brown, very f. grained
072	L6+00 / 2+86mE	-50cm	Sand	greyish brown, f. to m. grained
073	L6+00 / 3+12mE	-50cm	Sand	greyish red brown, f. to m. grained
074	L6+00 / 3+38mE	-40cm	Sand	greenish red brown, f. to m. grained
075	L6+00 / 3+64mE	-40cm	Sand	greenish red brown, f. to m. grained

Prospecting Manual

BEEP MAT

Model BM-IV

INSTRUMENTATION GDD INC.

3700, boul. de la chaudière, Ste-Foy (Québec) G1X 4B7, CANADA
tel: (418) 877-4249 Email: gdd @qbc.clic.net Fax: (418) 877-4054

1. INTRODUCTION

This manual is intented for geologists and prospectors. It concerns the model BM-IV, but should also be useful to operate the former model, the BM-II.

1.1 Brief Description of the Beep Mat

The Beep Mat is a simple and efficient electromagnetic prospecting instrument adapted to the search of outcrops and/or boulders containing conductive and/or magnetic minerals. It basically consists of a sleigh-shaped short probe and a reading unit. For prospecting, you pull the probe on the ground to be explored. The Beep Mat takes continuous readings while you walk and sends out a distinctive audible signal when detecting a conductive or magnetic object in a radius of up to 2 meters (6 feet). The Beep Mat directly detects and signals the presence of ores, even slightly conductive, containing chalcopyrite, galena, pentlandite, bornite and chalcocine. It also detects native metals (copper, silver, gold) as well as generally barren conductive bodies (pyrite, graphite and pyrrhotite), but which may contain precious ores such as gold or zinc (sphalerite), which are themselves non-conductive. Besides detecting conductors, the Beep Mat measures their intrinsic conductivity and their magnetic susceptibility (magnetite content). This helps geologists and geophysicists to better interpret the other geophysical and geological surveys.

1.2 Beep Mat Components

When you receive your Beep Mat, check if it contains all components shown at illustration 1. Please note the terminology used on that illustration since it will be used next in this manual.

The following optional components may also be included:
- a solar panel with a rechargeable battery
- a dumping cable

Make sure that you have all components as shown at illustration 1. If not, please contact Instrumentation GDD Inc.

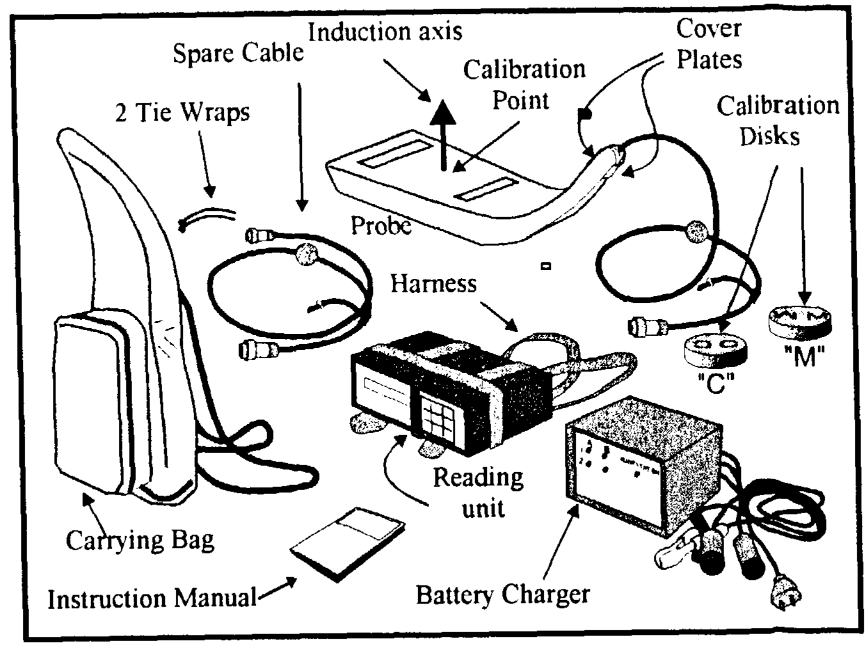


Illustration 1: Beep Mat Components

1.3 Specifications

Power supply:		2 rechargeable 6-V batteries
Battery life:		over 10 hours
Storage capacity:		3,000 readings
Size:	Reading unit:	18 x 20 x 6.4 cm
	Probe:	30 x 91 x 7.6 cm
Weight:	Reading unit:	1.9 kg
	Probe:	3.8 kg
Operating temperature:		from -10 °C to 40 °C
Humidity:		can be operated on rainy, foggy or snowy days

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064921 Date: 07/09/01 PRELIMINARY

Element.	Cu	Zn	Cd	Pb
Method.	MMI-A	MMI-A	MMI-A	MMI-A
Det.Lim.	5	5	10	20
Units.	ppb	ppb	ppb	ppb
HS 001	<5	190	<10	<20
HS 002	<5	129	<10	<20
HS 003	<5	191	<10	<20
HS 004	91	54	<10	<20
HS 005	14	11	<10	<20
HS 006	56	81	<10	<20
HS 007	34	18	<10	<20
HS 008	115	26	<10	<20
HS 009	56	17	<10	<20
HS 010	85	57	<10	<20
HS 011	176	2000	37	<20
HS 012	64	981	20	<20
HS 013	121	669	11	<20
HS 014	27	104	<10	68
HS 015	177	758	<10	<20
HS 016	48	64	<10	62
HS 017	18	63	<10	<20
HS 018	57	85	<10	<20
HS 019	65	50	<10	<20
HS 020	13	22	<10	<20
HS 021	6	10	<10	<20
HS 022	118	41	<10	<20
HS 023	23	18	<10	<20
HS 024	25	125	<10	<20
HS 025	<5	534	<10	<20
HS 026	<5	773	<10	<20
HS 027	<5	1590	<10	<20
HS 028	7	1750	<10	<20
HS 029	477	7180	135	229
HS 030	264	3330	70	60

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064921 Date: 07/09/01 PRELIMINARY

Element.	Cu	Zn	Cd	Pb
Method.	MMI-A	MMI-A	MMI-A	MMI-A
Det.Lim.	5	5	10	20
Units.	ppb	ppb	ppb	ppb
HS 031	5	62	<10	<20
HS 032	<5	56	<10	<20
HS 033	<5	39	<10	<20
HS 034	<5	19	<10	<20
HS 035	<5	23	<10	<20
HS 036	<5	46	<10	<20
HS 037	<5	343	13	<20
HS 038	<5	81	<10	<20
HS 039	<5	190	<10	<20
HS 040	<5	75	<10	<20
HS 041	7	55	<10	<20
HS 042	<5	192	<10	<20
HS 043	99	193	14	59
HS 044	58	818	13	73
HS 045	124	1120	19	143
HS 046	<5	356	<10	<20
*Blk BLANK	<5	<5	<10	<20
*Std MMISRM07	731	9410	21	413
HS 047	9	331	<10	<20
HS 048	10	599	<10	<20
HS 049	30	26	16	44
HS 050	91	254	12	<20
HS 051	69	68	<10	<20
HS 052	9	12	<10	34
HS 053	10	471	25	<20
HS 054	108	447	13	92
HS 055	22	159	<10	<20
HS 056	46	756	16	125
HS 057	19	717	<10	<20
HS 058	212	105	<10	<20

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064921 Date: 07/09/01 PRELIMINARY

Element.	Cu	Zn	Cd	Pb
Method.	MMI-A	MMI-A	MMI-A	MMI-A
Det.Lim.	5	5	10	20
Units.	ppb	ppb	ppb	ppb
HS 059	72	42	<10	<20
HS 060	31	148	12	123
HS 061	<5	165	<10	<20
HS 062	51	103	<10	<20
HS 063	70	68	<10	<20
HS 064	718	2100	29	35
HS 065	326	813	18	<20
HS 066	23	55	<10	33
HS 067	19	10	<10	25
HS 068	60	333	21	23
HS 069	33	100	<10	21
HS 070	32	28	<10	<20
HS 071	14	252	<10	41
HS 072	21	12	<10	<20
HS 073	27	30	<10	36
HS 074	44	162	10	39
HS 075	35	166	<10	53
*Dup HS 001	<5	170	<10	<20
*Dup HS 013	125	736	<10	<20
*Dup HS 025	<5	591	<10	<20
*Dup HS 037	<5	305	19	<20
*Dup HS 049	27	22	12	34
*Dup HS 061	<5	153	<10	<20
*Dup HS 073	26	21	<10	54
*Blk BLANK	<5	<5	<10	41
*Std MMISRM07	710	9420	23	437

XRAL

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm
HS 001	<0.5	0.01	0.14	0.22	0.05	<0.01	2.45	<0.5	<0.01	7	5	243	0.33	2
HS 002	<0.5	0.02	0.12	0.18	0.05	<0.01	2.44	<0.5	<0.01	5	4	250	0.23	2
HS 003	<0.5	0.02	0.13	0.10	0.03	<0.01	3.00	<0.5	<0.01	2	1	213	0.33	2
HS 004	<0.5	0.02	0.43	1.01	0.03	0.05	0.30	2.6	0.06	27	50	224	1.38	7
HS 005	<0.5	0.02	1.87	0.75	0.04	0.05	4.34	2.5	0.05	24	46	235	1.20	8
HS 006	<0.5	0.02	0.69	0.85	0.05	0.07	1.00	2.8	0.05	27	50	123	1.31	8
HS 007	<0.5	0.02	1.95	0.65	0.04	0.05	5.45	2.5	0.05	23	45	228	1.15	7
HS 008	<0.5	0.02	1.53	0.74	0.04	0.06	3.21	2.4	0.05	23	43	233	1.14	7
HS 009	<0.5	0.02	1.86	0.47	0.04	0.03	4.91	1.9	0.05	18	33	156	0.88	6
HS 010	<0.5	0.01	0.32	0.84	0.03	0.02	0.30	1.8	0.04	21	87	164	1.02	13
HS 011	<0.5	0.01	0.22	0.75	0.02	0.02	0.13	1.5	0.05	27	84	107	1.58	9
HS 012	<0.5	0.01	0.12	0.39	0.01	0.02	0.11	0.8	0.05	17	32	52	0.52	4
HS 013	<0.5	<0.01	0.13	0.63	0.03	0.01	0.12	0.9	0.03	15	39	51	0.72	6
HS 014	<0.5	<0.01	0.16	0.48	0.04	0.02	0.14	0.8	0.03	16	24	93	0.74	5
HS 015	<0.5	<0.01	2.25	2.06	0.04	0.01	0.11	3.1	0.03	52	1890	4960	5.70	269
HS 016	<0.5	0.01	0.21	0.70	0.03	0.02	0.12	1.4	0.04	18	32	90	0.95	7
HS 017	<0.5	0.01	0.21	0.81	0.02	0.02	0.16	1.3	0.04	18	30	108	0.91	7
HS 018	<0.5	0.02	0.23	0.59	0.03	0.03	0.24	1.7	0.04	19	28	133	1.51	6
HS 019	<0.5	0.02	0.69	0.51	0.03	0.02	1.01	1.7	0.04	18	29	103	0.82	6
HS 020	1.5	0.02	1.61	0.54	0.04	0.03	3.10	3.3	0.05	20	37	140	0.87	6
HS 021	<0.5	0.02	2.30	0.57	0.04	0.03	5.28	2.5	0.05	23	41	211	1.10	7
HS 022	<0.5	0.02	1.21	0.55	0.04	0.03	1.91	2.1	0.05	20	36	187	1.03	7
HS 023	<0.5	0.01	0.18	0.51	0.01	0.01	0.13	1.1	0.04	14	21	69	0.65	6
HS 024	<0.5	0.01	0.19	0.46	0.04	0.02	0.20	0.9	0.04	17	26	57	0.70	4
HS 025	<0.5	0.02	0.07	0.09	0.03	<0.01	3.93	<0.5	<0.01	<2	4	122	0.32	3
HS 026	<0.5	0.02	0.05	0.10	0.04	<0.01	3.40	<0.5	<0.01	4	4	511	0.30	2
HS 027	<0.5	0.02	0.06	0.14	0.04	<0.01	4.38	<0.5	<0.01	8	9	130	0.22	5
HS 028	<0.5	0.02	0.05	0.10	0.05	0.01	3.29	<0.5	<0.01	10	6	270	0.38	4
HS 029	<0.5	0.01	1.43	2.46	0.03	0.05	0.13	9.0	0.04	105	413	2050	5.40	67
HS 030	<0.5	0.01	0.14	0.57	0.02	0.02	0.11	1.0	0.05	27	37	118	1.25	5

XRAL

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm
HS 031	<0.5	0.02	0.12	0.13	0.02	<0.01	2.25	<0.5	<0.01	<2	5	16	0.15	<1
HS 032	<0.5	0.02	0.11	0.16	0.03	<0.01	1.92	<0.5	<0.01	<2	5	12	0.10	<1
HS 033	<0.5	0.03	0.12	0.14	0.05	<0.01	1.90	<0.5	<0.01	<2	4	14	0.09	2
HS 034	<0.5	0.02	0.03	0.08	0.03	<0.01	1.48	<0.5	<0.01	<2	2	6	0.05	1
HS 035	<0.5	0.02	0.05	0.11	0.03	<0.01	1.56	<0.5	<0.01	2	7	30	0.11	2
HS 036	<0.5	0.02	0.04	0.12	0.05	<0.01	1.32	<0.5	<0.01	2	7	12	0.09	2
HS 037	<0.5	0.02	0.03	0.09	0.04	0.01	0.53	<0.5	<0.01	2	10	20	0.09	2
HS 038	<0.5	0.02	0.01	0.10	0.04	<0.01	0.32	<0.5	<0.01	<2	2	5	0.04	2
HS 039	<0.5	0.02	0.03	0.11	0.03	<0.01	0.34	<0.5	<0.01	<2	1	10	0.04	2
HS 040	<0.5	0.02	0.03	0.15	0.03	0.01	0.48	<0.5	<0.01	<2	2	6	0.04	1
HS 041	<0.5	0.02	0.04	0.09	0.04	0.01	0.52	<0.5	<0.01	<2	1	8	0.04	1
HS 042	<0.5	0.02	0.08	0.08	0.03	<0.01	1.20	<0.5	<0.01	<2	1	7	0.10	2
HS 043	<0.5	0.01	0.32	0.86	0.02	0.02	0.13	1.7	0.05	24	85	196	1.23	14
HS 044	<0.5	0.01	0.07	0.67	0.01	0.02	0.06	0.8	0.05	26	22	55	0.89	2
HS 045	<0.5	0.01	0.21	1.08	0.04	0.02	0.09	1.5	0.05	34	57	165	1.73	11
HS 046	<0.5	0.02	0.14	0.32	0.06	<0.01	2.57	0.8	<0.01	5	20	291	0.38	4
*Blk BLANK	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<2	<1	<2	<0.01	<1
*Std XRAL01	<0.5	0.06	0.78	0.75	0.11	0.10	0.89	2.1	0.06	29	300	553	3.17	519
HS 047	<0.5	0.02	0.15	0.18	0.04	<0.01	3.21	0.5	<0.01	<2	8	201	0.33	2
HS 048	<0.5	0.01	0.17	0.15	0.04	0.01	2.11	<0.5	<0.01	4	4	45	0.29	3
HS 049	<0.5	0.01	0.14	1.58	0.01	0.02	0.06	1.7	0.08	45	48	49	1.91	6
HS 050	<0.5	<0.01	0.06	0.39	<0.01	0.01	0.04	0.6	0.05	24	20	22	0.62	2
HS 051	<0.5	0.01	0.22	0.50	0.02	0.02	0.18	1.2	0.04	19	41	99	0.84	9
HS 052	<0.5	0.01	0.19	0.73	0.02	0.02	0.09	1.1	0.04	17	31	66	0.82	8
HS 053	<0.5	<0.01	<0.01	0.11	<0.01	<0.01	0.02	<0.5	0.02	8	4	11	0.13	2
HS 054	<0.5	0.01	0.23	1.66	0.03	0.02	0.11	2.0	0.05	29	92	137	1.92	12
HS 055	<0.5	0.01	0.19	0.76	0.02	0.02	0.08	1.2	0.04	18	31	64	0.88	7
HS 056	<0.5	0.01	0.28	1.32	0.02	0.02	0.11	1.4	0.05	24	50	100	1.32	11
HS 057	<0.5	0.02	0.16	0.35	0.07	0.01	3.23	1.6	<0.01	18	23	332	0.43	3
HS 058	<0.5	0.01	0.31	0.62	0.02	0.02	0.20	1.6	0.05	24	56	101	1.05	8

XRAL

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm
HS 059	<0.5	<0.01	0.18	0.69	0.02	0.02	0.20	1.2	0.04	17	34	61	0.83	6
HS 060	<0.5	<0.01	0.22	1.19	0.02	0.02	0.08	1.4	0.05	21	45	74	1.17	11
HS 061	<0.5	0.02	0.13	0.58	0.06	<0.01	2.40	1.3	<0.01	18	28	285	0.48	4
HS 062	<0.5	0.01	0.54	1.50	0.06	0.03	2.31	6.4	0.02	32	128	204	2.00	13
HS 063	<0.5	0.01	0.21	0.95	0.01	0.02	0.08	1.8	0.05	19	52	66	0.96	10
HS 064	<0.5	0.01	0.33	1.23	0.03	0.02	0.11	2.3	0.05	31	154	245	2.02	17
HS 065	<0.5	0.01	0.22	1.34	0.03	0.01	0.11	1.7	0.05	23	77	135	1.72	8
HS 066	<0.5	0.01	0.19	1.07	0.02	0.01	0.09	1.3	0.04	18	36	69	0.95	10
HS 067	<0.5	<0.01	0.12	0.46	0.04	0.01	0.15	0.7	0.03	13	22	77	0.64	5
HS 068	<0.5	0.01	0.26	1.09	0.03	0.02	0.10	1.2	0.05	24	82	119	1.45	10
HS 069	<0.5	<0.01	0.17	0.88	0.03	0.02	0.09	1.1	0.04	20	36	70	1.00	8
HS 070	<0.5	0.01	0.16	0.49	0.03	0.01	0.11	0.8	0.03	13	30	50	0.64	7
HS 071	<0.5	<0.01	0.04	0.38	0.01	<0.01	0.05	0.5	0.02	6	12	13	0.14	2
HS 072	<0.5	<0.01	0.14	0.38	0.02	<0.01	0.10	0.6	0.02	7	16	35	0.34	4
HS 073	<0.5	0.01	0.21	0.96	0.02	0.02	0.11	1.1	0.04	19	32	70	0.96	7
HS 074	<0.5	0.02	0.25	1.20	0.03	0.02	0.10	1.5	0.05	26	54	95	1.37	10
HS 075	<0.5	<0.01	0.16	0.85	0.03	0.01	0.09	0.9	0.03	18	29	71	0.87	6
*Dup HS 001	<0.5	0.02	0.14	0.23	0.05	<0.01	2.61	<0.5	<0.01	7	4	260	0.31	2
*Dup HS 013	<0.5	0.01	0.14	0.64	0.02	0.01	0.12	0.9	0.03	15	40	52	0.71	5
*Dup HS 025	<0.5	0.02	0.07	0.09	0.03	<0.01	4.10	0.5	<0.01	2	4	128	0.33	4
*Dup HS 037	<0.5	0.02	0.03	0.09	0.04	0.01	0.54	<0.5	<0.01	2	11	21	0.09	1
*Dup HS 049	<0.5	<0.01	0.14	1.62	0.01	0.02	0.05	1.7	0.08	46	48	48	1.89	6
*Dup HS 061	<0.5	0.01	0.13	0.59	0.07	<0.01	2.39	1.2	<0.01	18	28	281	0.49	4
*Dup HS 073	<0.5	0.01	0.19	0.97	0.02	0.02	0.10	1.1	0.04	19	30	63	0.94	7
*Blk BLANK	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<2	<1	<2	<0.01	<1
*Std XRAL01	<0.5	0.05	0.79	0.75	0.11	0.10	0.89	2.1	0.06	29	288	522	3.23	504

XRAL XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	Ni	Cu	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Sn	Sb	Ba	La
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	1	0.5	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
HS 001	11	10.7	24.4	<3	46.0	2.4	2.6	2	<0.2	<1	<10	<5	28	4.4
HS 002	9	7.4	16.9	<3	36.4	1.8	<0.5	1	0.6	<1	<10	<5	25	1.5
HS 003	8	4.7	15.3	<3	44.0	0.6	1.5	1	<0.2	<1	<10	<5	26	0.8
HS 004	26	8.1	20.6	<3	12.1	5.4	5.6	<1	0.2	<1	<10	<5	37	14.1
HS 005	24	11.3	19.6	<3	31.8	5.5	9.8	<1	0.3	<1	<10	<5	31	14.0
HS 006	25	11.9	24.9	<3	16.4	6.6	9.9	<1	0.4	<1	<10	<5	41	16.4
HS 007	24	11.8	19.6	<3	40.9	5.4	9.9	<1	0.4	<1	<10	<5	24	13.0
HS 008	22	9.6	18.9	<3	25.9	5.6	7.9	<1	0.4	<1	<10	<5	33	14.3
HS 009	18	9.5	13.6	<3	35.1	4.8	9.0	<1	<0.2	<1	<10	<5	17	11.1
HS 010	129	10.4	18.0	<3	9.1	4.5	2.0	<1	<0.2	<1	<10	<5	26	11.4
HS 011	75	8.0	32.4	<3	6.7	2.8	3.2	<1	<0.2	<1	<10	<5	12	10.2
HS 012	14	3.1	13.4	<3	5.5	1.9	1.3	<1	<0.2	<1	<10	<5	9	8.2
HS 013	52	4.1	19.7	<3	5.0	2.3	1.7	<1	<0.2	<1	<10	<5	8	10.5
HS 014	22	3.6	8.6	<3	5.5	3.2	2.9	<1	<0.2	<1	<10	<5	11	11.6
HS 015	3330	26.3	44.0	<3	3.3	10.2	<0.5	<1	0.2	<1	<10	13	35	14.6
HS 016	22	5.3	9.3	<3	5.6	3.3	3.2	<1	<0.2	<1	<10	<5	16	7.6
HS 017	19	3.3	11.3	<3	7.9	3.0	1.8	<1	<0.2	<1	<10	<5	22	8.5
HS 018	16	5.1	14.3	7	10.5	4.5	4.4	<1	0.6	<1	<10	<5	31	12.4
HS 019	16	5.9	14.0	<3	12.1	4.3	4.5	<1	<0.2	<1	<10	<5	18	11.0
HS 020	20	10.0	16.2	<3	24.7	6.0	9.1	2	<0.2	1	<10	<5	18	13.8
HS 021	22	11.0	16.6	<3	36.5	5.7	10.3	<1	0.4	<1	<10	<5	19	13.1
HS 022	19	9.4	15.3	<3	17.2	5.2	7.4	<1	0.3	<1	<10	<5	19	12.3
HS 023	12	2.5	9.0	<3	7.1	2.5	2.1	<1	<0.2	<1	<10	<5	16	8.1
HS 024	19	3.2	10.6	<3	7.0	2.9	1.9	<1	0.5	<1	<10	<5	12	7.2
HS 025	89	10.1	45.3	<3	45.9	0.7	0.9	<1	<0.2	<1	<10	<5	19	<0.5
HS 026	136	18.5	103	<3	37.4	0.9	<0.5	2	<0.2	<1	<10	<5	22	<0.5
HS 027	485	31.6	166	<3	47.1	1.5	1.5	<1	0.3	1	<10	<5	16	1.0
HS 028	459	53.2	217	<3	40.2	2.5	0.7	1	<0.2	2	<10	<5	18	1.0
HS 029	247	51.7	135	43	5.5	3.3	<0.5	1	<0.2	<1	<10	6	41	2.8
HS 030	16	6.9	28.7	<3	7.6	1.4	1.6	<1	<0.2	<1	<10	<5	26	7.0

XRAL XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	Ni	Cu	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Sn	Sb	Ba	La
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	1	0.5	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
HS 031	9	2.4	6.8	<3	38.8	0.6	2.0	<1	<0.2	<1	<10	<5	17	1.0
HS 032	8	3.2	5.1	<3	31.0	0.7	1.1	<1	<0.2	<1	<10	<5	13	0.5
HS 033	8	4.6	4.3	<3	31.8	0.6	1.7	<1	<0.2	<1	<10	<5	14	0.8
HS 034	2	2.3	3.6	<3	16.1	<0.5	<0.5	<1	<0.2	<1	<10	<5	11	<0.5
HS 035	5	3.3	5.7	<3	17.7	<0.5	1.0	<1	<0.2	<1	<10	<5	17	0.8
HS 036	5	3.2	6.5	<3	19.1	0.5	0.9	<1	<0.2	<1	<10	<5	20	0.5
HS 037	3	3.6	16.1	<3	9.9	<0.5	<0.5	<1	0.6	<1	<10	<5	17	<0.5
HS 038	2	3.4	6.5	<3	7.4	<0.5	0.8	<1	<0.2	<1	<10	<5	15	<0.5
HS 039	3	3.5	10.3	<3	10.3	<0.5	1.7	<1	0.3	<1	<10	<5	24	1.4
HS 040	2	2.8	5.9	<3	12.5	0.7	1.6	<1	<0.2	<1	<10	<5	16	1.4
HS 041	2	3.2	5.6	<3	11.9	<0.5	<0.5	<1	<0.2	<1	<10	<5	15	<0.5
HS 042	3	2.3	10.1	<3	29.2	<0.5	<0.5	<1	<0.2	<1	<10	<5	20	<0.5
HS 043	98	16.8	26.5	<3	6.2	2.7	4.1	<1	0.3	<1	<10	<5	24	5.3
HS 044	7	2.1	15.9	<3	4.7	1.4	2.6	<1	0.2	<1	<10	<5	17	6.9
HS 045	41	10.4	37.2	<3	5.3	2.0	2.6	<1	<0.2	<1	<10	<5	19	7.2
HS 046	29	14.4	69.7	<3	38.7	1.9	2.0	1	<0.2	<1	<10	<5	34	1.6
*Blk BLANK	<1	<0.5	<0.5	<3	<0.5	<0.5	<0.5	<1	<0.2	<1	<10	<5	<1	<0.5
*Std XRAL01	697	69.2	81.8	489	41.0	9.7	8.8	<1	4.5	<1	<10	<5	125	10.5
HS 047	20	8.4	31.6	<3	47.4	1.2	1.5	<1	<0.2	<1	<10	<5	19	1.4
HS 048	11	9.1	23.0	<3	44.0	0.7	1.2	<1	<0.2	<1	<10	<5	27	0.6
HS 049	20	5.5	10.6	<3	3.8	2.3	3.2	<1	<0.2	<1	<10	<5	14	6.9
HS 050	6	2.6	6.5	<3	3.8	1.4	1.7	<1	<0.2	<1	<10	<5	7	7.2
HS 051	37	8.0	12.8	<3	9.5	3.2	1.7	<1	0.4	<1	<10	<5	16	11.8
HS 052	25	4.0	8.1	<3	5.1	2.4	3.3	<1	0.2	<1	<10	<5	12	7.8
HS 053	<1	0.6	2.2	<3	2.5	1.0	1.6	<1	<0.2	<1	<10	<5	5	9.7
HS 054	54	8.0	35.0	<3	5.4	3.0	3.0	<1	<0.2	<1	<10	<5	16	7.2
HS 055	23	3.9	11.9	<3	5.0	2.4	3.6	<1	<0.2	<1	<10	<5	11	7.7
HS 056	44	9.2	31.3	<3	6.3	2.4	2.0	<1	0.4	<1	<10	<5	18	7.7
HS 057	53	51.4	77.9	<3	36.0	4.8	3.9	<1	<0.2	<1	<10	<5	42	5.9
HS 058	46	10.7	23.8	<3	7.8	3.0	2.4	<1	<0.2	<1	<10	<5	14	9.3

XRAL

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 **PRELIMINARY**

Element.	Ni	Cu	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Se	Sb	Ba	La
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	1	0.5	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
HS 059	27	5.6	10.5	<3	6.9	3.2	1.5	<1	<0.2	<1	<10	<5	15	11.7
HS 060	33	4.6	55.4	<3	4.3	2.4	2.5	<1	<0.2	<1	<10	<5	19	6.7
HS 061	44	27.9	42.7	<3	39.8	4.8	<0.5	<1	<0.2	<1	<10	<5	46	6.9
HS 062	82	41.8	44.1	<3	30.7	15.8	1.0	<1	0.3	<1	<10	<5	27	26.3
HS 063	55	11.6	13.7	<3	4.5	3.1	3.2	<1	0.4	<1	<10	<5	15	9.1
HS 064	177	24.0	96.5	<3	5.1	2.6	3.6	<1	0.2	<1	<10	<5	13	6.1
HS 065	45	13.7	25.3	<3	5.4	2.4	3.3	<1	<0.2	<1	<10	<5	18	5.8
HS 066	38	5.0	14.0	<3	4.9	2.6	2.9	<1	<0.2	<1	<10	<5	12	8.8
HS 067	15	2.5	4.5	<3	6.1	3.2	1.4	<1	0.3	<1	<10	<5	7	8.9
HS 068	72	6.4	15.4	<3	5.4	2.3	2.4	<1	<0.2	<1	<10	<5	15	6.7
HS 069	27	3.8	12.3	<3	4.9	2.7	2.5	<1	<0.2	<1	<10	<5	11	9.4
HS 070	21	4.8	6.7	<3	5.0	2.5	1.6	<1	<0.2	<1	<10	<5	12	6.6
HS 071	4	1.1	4.2	<3	4.0	1.4	0.8	<1	0.3	<1	<10	<5	11	6.6
HS 072	15	2.9	5.5	<3	4.3	2.3	1.3	<1	<0.2	<1	<10	<5	5	10.5
HS 073	26	4.3	8.9	<3	5.2	2.2	2.5	<1	<0.2	<1	<10	<5	13	7.9
HS 074	49	12.3	26.7	<3	5.9	2.4	3.5	<1	0.4	<1	<10	<5	22	7.3
HS 075	24	3.1	16.4	<3	4.5	2.2	2.6	<1	<0.2	<1	<10	<5	11	6.9
*Dup HS 001	11	10.7	26.0	<3	48.1	2.5	2.7	1	<0.2	<1	<10	<5	29	4.1
*Dup HS 013	53	4.0	19.9	<3	5.3	2.4	1.8	<1	<0.2	<1	<10	<5	9	10.6
*Dup HS 025	93	10.6	47.0	<3	47.8	0.9	0.5	<1	<0.2	<1	<10	<5	21	<0.5
*Dup HS 037	4	3.6	16.1	<3	10.0	<0.5	<0.5	<1	0.7	<1	<10	<5	19	<0.5
*Dup HS 049	20	5.5	10.6	<3	3.6	2.3	3.3	<1	<0.2	<1	<10	<5	14	6.5
*Dup HS 061	44	28.2	40.7	<3	39.4	4.8	<0.5	1	<0.2	<1	<10	<5	46	7.9
*Dup HS 073	24	3.9	8.5	<3	4.7	2.4	2.9	<1	<0.2	<1	<10	<5	12	7.6
*Blk BLANK	<1	<0.5	<0.5	<3	<0.5	<0.5	0.9	<1	<0.2	<1	<10	<5	<1	<0.5
*Std XRAL01	712	69.8	82.9	502	40.1	8.4	8.1	<1	4.6	<1	<10	<5	127	10.8

SGS Member of the SGS Group (Société Générale de Surveillance)

XRAL

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	W	Pb	Bi	Li	Hg
Method.	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	10	2	5	1	1
Units.	ppm	ppm	ppm	ppm	ppm
HS 001	<10	3	<5	<1	<1
HS 002	<10	<2	<5	<1	<1
HS 003	<10	5	<5	<1	<1
HS 004	<10	6	<5	12	<1
HS 005	<10	5	<5	10	<1
HS 006	<10	6	<5	11	<1
HS 007	<10	3	<5	9	<1
HS 008	<10	3	<5	10	1
HS 009	<10	3	<5	6	<1
HS 010	<10	4	<5	8	<1
HS 011	<10	4	<5	10	<1
HS 012	<10	2	<5	4	<1
HS 013	<10	4	<5	7	<1
HS 014	<10	5	<5	3	<1
HS 015	<10	6	<5	13	<1
HS 016	<10	<2	<5	5	<1
HS 017	<10	<2	<5	6	<1
HS 018	<10	3	<5	8	<1
HS 019	<10	<2	<5	5	<1
HS 020	<10	4	<5	8	<1
HS 021	<10	4	<5	7	<1
HS 022	<10	2	<5	7	<1
HS 023	<10	2	<5	4	<1
HS 024	<10	<2	<5	4	<1
HS 025	<10	4	<5	<1	<1
HS 026	<10	9	<5	<1	<1
HS 027	<10	6	<5	<1	<1
HS 028	<10	22	<5	<1	<1
HS 029	<10	10	<5	35	<1
HS 030	<10	7	<5	5	<1

XRAL

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	W	Pb	Bi	Li	Hg
Method.	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	10	2	5	1	1
Units.	ppm	ppm	ppm	ppm	ppm
HS 031	<10	4	<5	<1	1
HS 032	<10	<2	<5	<1	<1
HS 033	<10	<2	<5	<1	<1
HS 034	<10	<2	<5	<1	<1
HS 035	<10	3	<5	<1	<1
HS 036	<10	<2	<5	<1	<1
HS 037	<10	10	<5	<1	<1
HS 038	<10	<2	<5	<1	<1
HS 039	<10	3	<5	<1	<1
HS 040	<10	3	<5	<1	<1
HS 041	<10	<2	<5	<1	2
HS 042	<10	2	<5	<1	<1
HS 043	<10	2	<5	5	<1
HS 044	<10	6	<5	3	<1
HS 045	<10	4	<5	7	<1
HS 046	<10	<2	<5	<1	<1
*Blk BLANK	<10	<2	<5	<1	<1
*Std XRAL01	<10	23	<5	9	<1
HS 047	<10	3	<5	<1	<1
HS 048	<10	29	<5	<1	<1
HS 049	<10	5	<5	6	<1
HS 050	<10	6	<5	3	1
HS 051	<10	3	<5	5	<1
HS 052	<10	<2	<5	5	<1
HS 053	<10	2	<5	<1	<1
HS 054	<10	3	<5	12	<1
HS 055	<10	4	<5	4	<1
HS 056	<10	4	<5	7	<1
HS 057	<10	2	<5	1	<1
HS 058	<10	3	<5	6	<1

XRAL

XRAL Laboratories
A Division of SGS Canada inc.

Work Order: 064926 Date: 25/09/01 PRELIMINARY

Element.	W	Pb	Bi	Li	Hg
Method.	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	10	2	5	1	1
Units.	ppm	ppm	ppm	ppm	ppm
HS 059	<10	4	<5	5	<1
HS 060	<10	3	<5	6	<1
HS 061	<10	2	<5	<1	<1
HS 062	<10	4	<5	12	<1
HS 063	<10	2	<5	5	<1
HS 064	<10	<2	<5	9	<1
HS 065	<10	<2	<5	7	<1
HS 066	<10	4	<5	5	<1
HS 067	<10	<2	<5	2	<1
HS 068	<10	3	<5	6	<1
HS 069	<10	4	<5	5	<1
HS 070	<10	3	<5	4	<1
HS 071	<10	3	<5	2	1
HS 072	<10	4	<5	3	<1
HS 073	<10	5	<5	5	<1
HS 074	<10	5	<5	8	<1
HS 075	<10	2	<5	4	<1
*Dup HS 001	<10	2	<5	<1	<1
*Dup HS 013	<10	4	<5	7	<1
*Dup HS 025	<10	3	<5	<1	<1
*Dup HS 037	<10	11	<5	<1	<1
*Dup HS 049	<10	5	<5	6	<1
*Dup HS 061	<10	2	<5	<1	<1
*Dup HS 073	<10	2	<5	5	<1
*Blk BLANK	<10	<2	<5	<1	<1
*Std XRAL01	<10	23	<5	8	<1

Established 1928

Swastika Laboratories Ltd

Assaying - Consulting - Representation

Geochemical Analysis Certificate

1W-2190-RG1

Company: **C. PEGG**
Project:
Attn: C. Pegg

Date: SEP-27-01

We hereby certify the following Geochemical Analysis of 1 Rock samples submitted SEP-21-01 by .

Sample Number	Au PPB	Au Check PPB	Cu PPM	Pb PPM	Zn PPM
H-29 R	7	5	96	1	157

Certified by ____________

1 Cameron Ave., P.O. Box 10, Swastika, Ontario P0K 1T0
Telephone (705) 642-3244 Fax (705) 642-3300

Work Report Summary

Transaction No:	W0260.00684	**Status:**	APPROVED
Recording Date:	2002-APR-08	**Work Done from:**	2001-JUL-15
Approval Date:	2002-MAY-28	**to:**	2001-SEP-10

Client(s):

180618 PEGG, CHRISTOPHER CHARLES

301171 WHELAN, ROBIN CLOWATER

Survey Type(s):

ASSAY GEOL PROSP

Work Report Details:

Claim#	Perform	Perform Approve	Applied	Applied Approve	Assign	Assign Approve	Reserve	Reserve Approve	Due Date
P 1206301	$7,000	$7,000	$7,000	$7,000	$0	0	$0	$0	2003-APR-24
P 1206302	$7,069	$7,069	$7,069	$7,069	$0	0	$0	$0	2003-APR-24
	$14,069	$14,069	$14,069	$14,069	$0	$0	$0	$0	

External Credits: $0

Reserve:

$0 Reserve of Work Report#: W0260.00684

$0 Total Remaining

Status of claim is based on information currently on record.

41P14NE2010 2.23403 HALLIDAY 900

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

Ontario

GEOSCIENCE ASSESSMENT OFFICE
933 RAMSEY LAKE ROAD, 6th FLOOR
SUDBURY, ONTARIO
P3E 6B5

Tel: (888) 415-9845
Fax:(877) 670-1555

Date: 2002-JUN-12

CHRISTOPHER CHARLES PEGG
BOX 59
10 BEAVER DRIVE
CHAPUT HUGHES, ONTARIO
P0K 1A0 CANADA

Submission Number: 2.23403
Transaction Number(s): W0260.00684

Dear Sir or Madam

Subject: Approval of Assessment Work

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

If you have any question regarding this correspondence, please contact STEVEN BENETEAU by email at steve.beneteau@ndm.gov.on.ca or by phone at (705) 670-5855.

Yours Sincerely,

Ron Gashinski
Senior Manager, Mining Lands Section

Cc: Resident Geologist

Christopher Charles Pegg
(Claim Holder)

Robin Clowater Whelan
(Claim Holder)

Assessment File Library

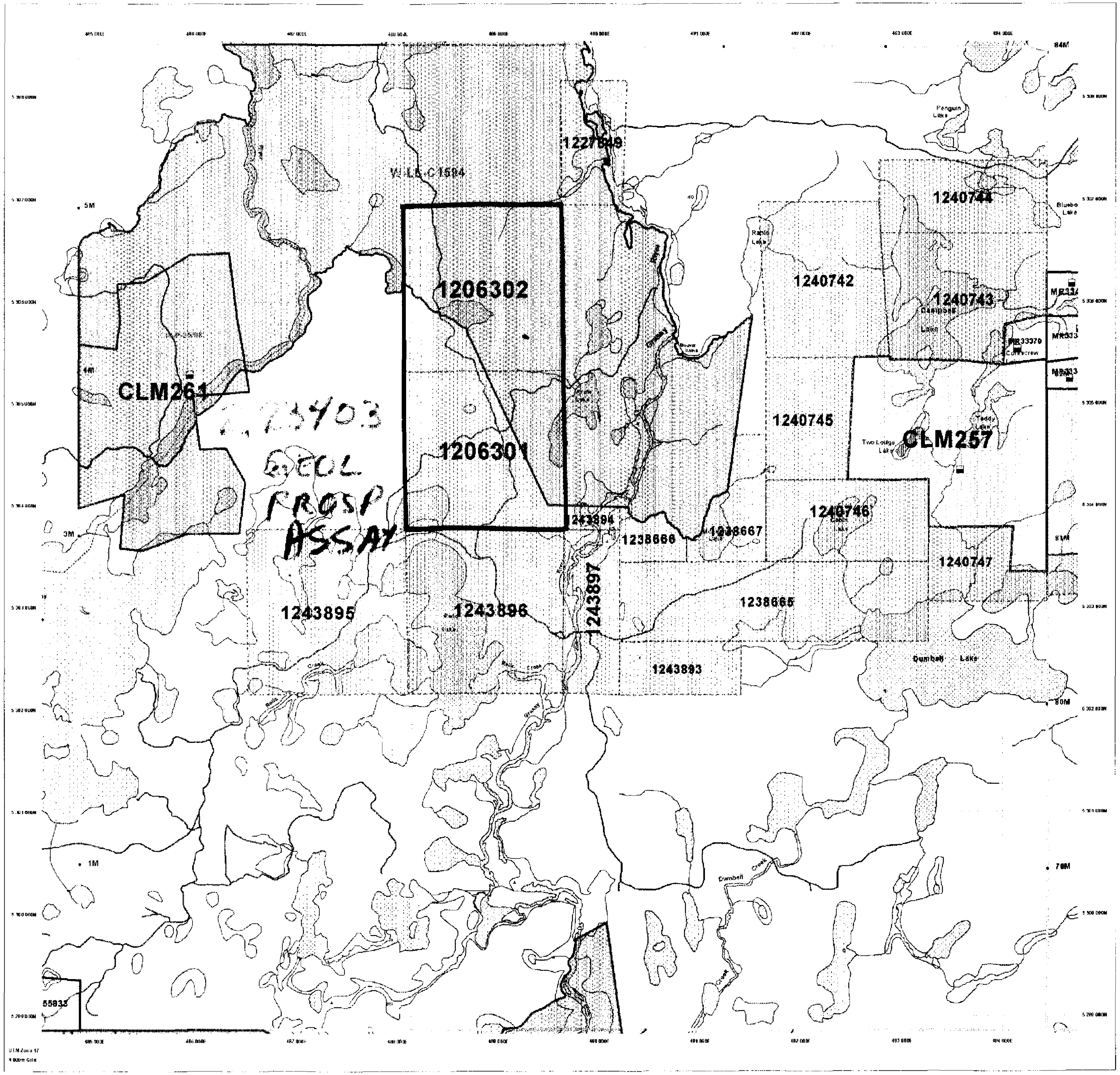
Christopher Charles Pegg
(Assessment Office)

MINING LAND TENURE MAP

Date / Time of Issue Jan 23 2002	11:49h Eastern
TOWNSHIP / AREA	PLAN
HALLIDAY	G-0976

ADMINISTRATIVE DISTRICTS / DIVISIONS

Mining Division	Porcupine
Land Titles/Registry Division	SUDBURY
Ministry of Natural Resources District	TIMMINS



TOPOGRAPHIC

LAND TENURE

LAND TENURE WITHDRAWALS

IMPORTANT NOTICES

LAND TENURE WITHDRAWAL DESCRIPTIONS

Identifier	Type	Date	Description
W-P-3569	Wm	Sep 3 1999	W-P-3569 SEPT.03/99 M.R.O.
W-LL-C1594	Wsm	Nov 21 2001	Mining and Surface rights withdrawal Section 35 of the Mining Act RSO 1990 Order # W-LL 2001/01 ONT, Nov. 21, 2001 Note: this boundary closely represents the area that is being proposed for regulation and may be subject to further change.
W-LL-P1630	Wsm	Nov 21 2001	Mining and Surface rights withdrawal Section 35 of the Mining Act RSO 1990 Order # W-LL 2001/01 ONT, Nov. 21, 2001 Note: this boundary closely represents the area that is being proposed for regulation and may be subject to further change.

IMPORTANT NOTICES

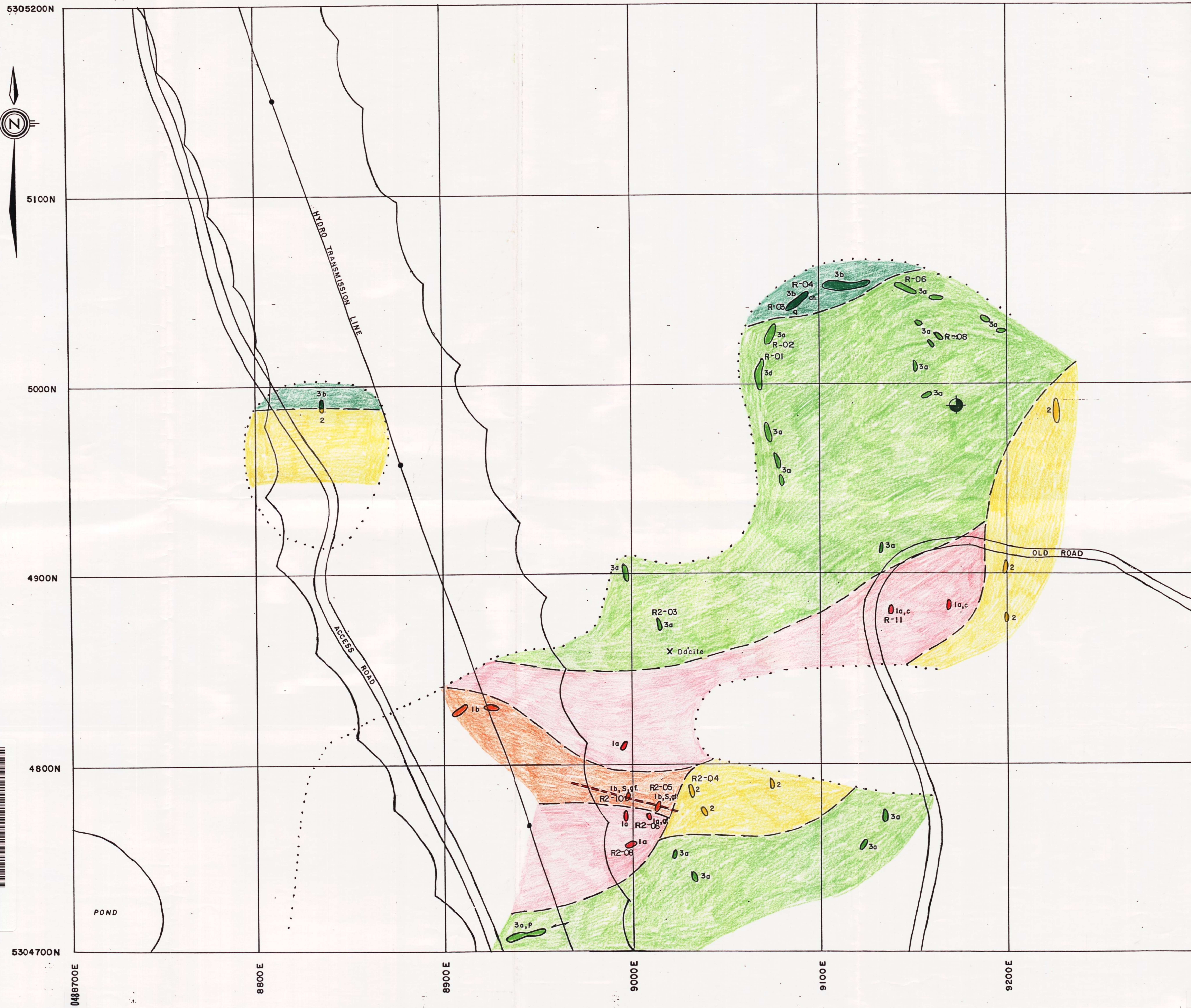
Areas under which special regulations, limitations or conditions exist that affect normal prospecting, staking and mineral development activities.

General Information and Limitations

41P14NE2010 2.23403 HALLIDAY

200

LEGEND
GEOLOGY
1a Rhyolite - massive
1b Rhyolite - fragmental
2 Dacite
3a Andesite - massive
3b Andesite - fragmental
4 Basalt
5 Ultramafic
ALTERATION MINERALS
c. Carbonate
ch. Chlorite
qtz. Quartz
MINERALIZATION
py. Pyrite
S Sulfides
gf. Graphite
SYMBOLS
Outcrop
W2-2 Indexed outcrop number
X Boulder
Lithology contact
Physiography boundary
P Pillowed
Foliation
Vein trend
Mineralized trend
7-8 Channel A.E.M. Conductor
9-10 Channel A.E.M. Conductor
11-12 Channel A.E.M. Conductor
Proposed diamond drill hole
Soil Sample location & number
GEOPHYSICAL LEGEND
VLF-EM-16 Conductors (Fraser Filter Method)
INSTRUMENT USED: GEONICS V.L.F. EM-16 UNIT
TRANSMITTER STATION: CUTLER MAINE (NAA)
FREQUENCY: 24.0 kHz.
LATITUDE: 44°39' N.
LONGITUDE: 67°17' W.
C. PEGG / R. WHELAN CLAIMS
Halliday Township, Ontario (M.N.D.M. Plan No. G-0976)
PORCUPINE MINING DIVISION
SOIL SAMPLING & BOULDER
LOCATION PLAN
GEOLOGY BY: K. Rattee
DRAWN BY: K. Rattee / B. Madill
N.T.S.: 41P/14
MINING DIV.: Porcupine
DRAWING NO.: 4
DATE: August 22/01
SCALE: 1:2500
POWER LINE LAKE
ANNIE LAKE
POND
BASE LINE 0+00
L 0+00
L 1+60 S
L 3+00 S
L 4+50 S
L 6+00 S
OLD ROAD
MIXED FOREST
CEDAR / SPRUCE
CEDAR / SPRUCE / ALDER SWAMP
POPLAR / SPRUCE / BALSAM
5305750 N
5500 N
5250 N
5305000 N
4750 N
4500 N
5304250 N
0488000 E
8250 E
8500 E
8750 E
0489000 E
9250 E
9500 E
9750 E
0490000 E



LEGEND

GEOLOGY

1a	Rhyolite - massive
1b	Rhyolite - fragmental
2	Dacite
3a	Andesite - massive
3b	Andesite - fragmental
4	Basalt
5	Ultramafic

ALTERATION MINERALS

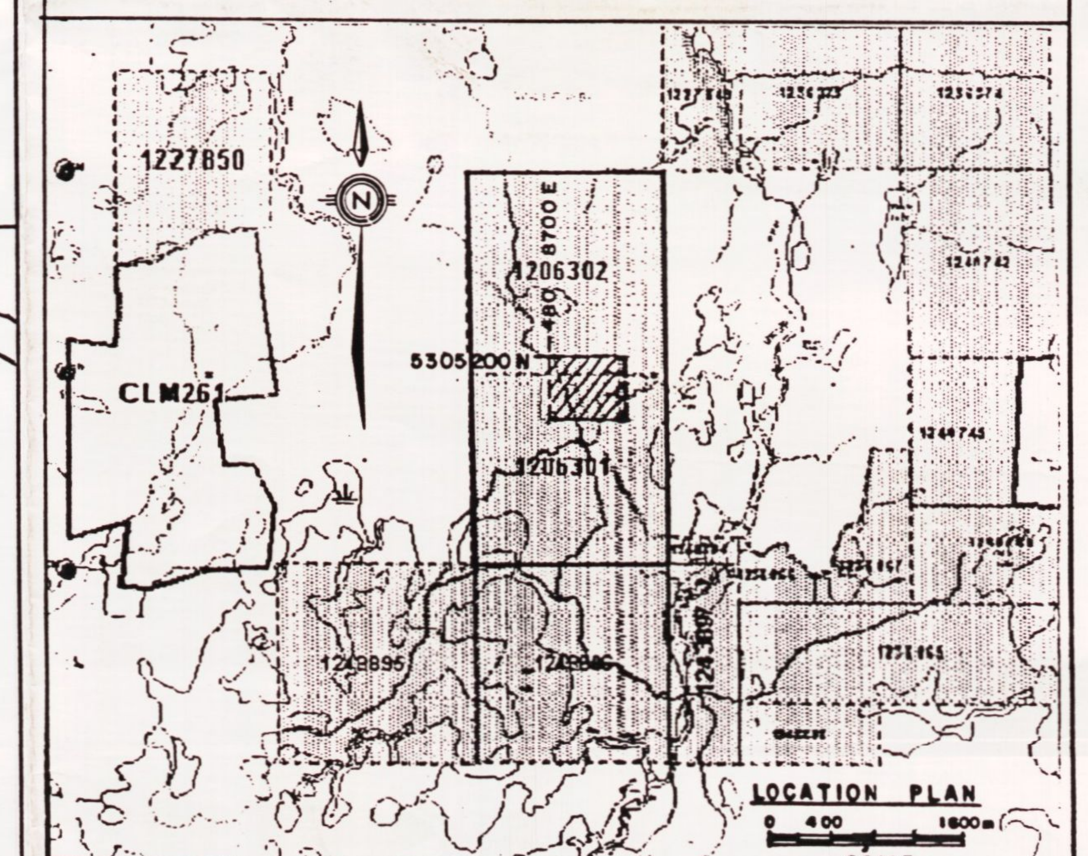
c.	Carbonate
ch.	Chlorite
qtz.	Quartz

MINERALIZATION

py.	Pyrite
S	Sulfides
gf.	Graphite

SYMBOLS

- Outcrop
- W2-2 Indexed outcrop number
- X Boulder
- Lithology contact
- Physiography boundary
- P Pillowed
- Foliation
- Vein trend
- Mineralized trend
- 7-8 Channel A.E.M. Conductor
- 9-10 Channel A.E.M. Conductor
- 11-12 Channel A.E.M. Conductor
- Proposed diamond drill hole



C. PEGG - R. WHELAN CLAIMS

Halliday Township, Ontario (M.N.D.M. Plan No. G-0976)

PORCUPINE MINING DIVISION

2. 23403

DETAILED GEOLOGY PLAN

(SOUTH SHEET)

GEOLOGY BY: K. Rattee	DRAWN BY: K. Rattee / B. Madill
N.T.S.: 41P/14	MINING DIV.: Porcupine
DRAWING NO.: 2	DATE: August 22 / 2001

SCALE: 1:1000

0 500 1000 METRES

41P14NE2010 2.23403 HALLIDAY 220


POWER LINE LAKE
HYDRO TRANSMISSION LINE
ACCESS ROAD
LEGEND
GEOLOGY
1a Rhyolite - massive
1b Rhyolite - fragmental
2 Dacite
3a Andesite - massive
3b Andesite - fragmental
4 Basalt
5 Ultramafic
ALTERATION MINERALS
c. Carbonate
ch. Chlorite
qtz. Quartz
MINERALIZATION
py. Pyrite
S Sulfides
gf. Graphite
SYMBOLS
Outcrop
W2-2 Indexed outcrop number
X Boulder
Lithology contact
Physiography boundary
P Pillowed
Foliation
Vein trend
Mineralized trend
7-8 Channel A.E.M. Conductor
9-10 Channel A.E.M. Conductor
11-12 Channel A.E.M. Conductor
Proposed diamond drill hole
LOCATION PLAN
SCALE
C. PEGG - R. WHELAN CLAIMS
Halliday Township, Ontario (M.N.D.M. Plan No. G-0976)
PORCUPINE MINING DIVISION
2.23403
DETAILED GEOLOGY PLAN
(NORTH SHEET)
GEOLOGY BY: K. Rattee
DRAWN BY: K. Rattee / B. Madill
N.T.S.: 41P/14
MINING DIV.: Porcupine
DRAWING NO.: 3
DATE: August 22/2001
SCALE: 1:1000
METRES
41P14NE2010 2.23403 HALLIDAY 230

C. PEGG / R. WHELAN CLAIMS

Halliday Township, Ontario (M.N.D.M. Plan No. G.-0976)

PORCUPINE MINING DIVISION

2.23403

GENERAL GEOLOGY PLAN

GEOLOGY BY: K. Rattee	DRAWN BY: K. Rattee/B. Madill
N.T.S.: 41P/14	MINING DIV.: Porcupine
DRAWING NO.: 1	DATE: August 22/2001

SCALE: 1:2500

0 500 1000 1500 2000 METRES

240