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THE HUNTER MINE PROPERTY

WHITNEY TOWNSHIP ONTARIO

GENERAL ACCOUNT

by

John L. Kirwan

March 20, 1987

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EARTH RESOURCE ASSOCIATES (ERA) JOHN L. KIRWAN

OM86-5-P-137

SUMMARY

The Hunter Mine, situated on the east shore of Porcupine Lake in the Porcupine Gold Belt of Northern Ontario, was discovered in late 1907 by conventional prospecting. Between 1910 and 1948 it underwent active exploration, development, and mining, with an incline shaft to 700 feet and levels established at 225, 300, 400, 500, 600, and 700 feet built. Mining took place between 1938 and 1940 from 2 levels only (225 and 300 feet) and totalled 10,821 tons from which 1,369 ounces of gold and 86 ounces of silver were recovered, for the most part from development rock-- the two main stopes in the mine are estimated to have averaged 0.282 and 0.61 ounces of gold to the ton, respectively. The mine and its owner, Porcupine Lake Gold Mines, were beset with difficulties during the period discussed: fires in 1911 and 1913, bankruptcy in 1914 and closure of the operations with the diversion of capital, equipment and workers during the first world war. The property was in litigation from 1926 to 1935 and, even in the face of excellent diamond drill results at depth below the mine workings in 1940, closed in that year, mainly due to the outbreak of war, and for similar reasons that forced the closing in 1914. Except for a modest drill program in 1948 the property has lain dormant from 1940 to 1983 when Wabigoon Resources Limited of Toronto acquired it.

Between 1983 and 1987, Wabigoon Resources have conducted exploration on the property through its Timmins consultants Earth Resource Associates and its contractors, Jogrem Resources Limited, also of Timmins. This work has consisted of, in 1983, stripping, geological mapping, and sampling and assaying at surface, in 1984, of reaching an agreement with the City of Timmins (who rezoned the area for mining) regarding development of the property, in 1985, geophysical surveys, underground sampling and mapping, and a program of diamond drilling from surface and underground to trace the gold-bearing units, in 1986, diamond drilling from the surface of Porcupine Lake to trace the mineralization below and beyond the mine workings, and, in 1987, some data compilation and assessment.

The results of this work have been as follows:

a. the geophysical survey and 1985 diamond drilling combined to show that the gold-bearing zones, of which there are several, occur within a geologically and geophysically distinct alteration zone which can be traced across the property some 4000 feet.

b. the underground work showed that mining had been very thorough in 1940, but that some gold-bearing material remains in place between the 225 and 300 foot level.

c. the 1986 surface drilling showed that the gold-bearing units could be traced below the mine workings into the trough of a syncline under Porcupine Lake, about 1000 feet down dip from the shaft, and that a 1450 foot strike length of gold-bearing material occurs below the upper levels of the mine in which an average, drill-indicated grade across 5 feet exists of 0.238 ounces of gold to the ton,

JOHN L. KIRWAN

within which a zone 950 feet long exists with an average grade of 0.3556 ounces of gold to the ton. Both of these values are uncut; if the assay values are cut to 1 ounce (approximately 4X the expected average grade) these values become 0.2034 and 0.302 ounces to the ton respectively.

Potential exists for the repetition of the gol-bearing alteration zone elsewhere on the property, due to folding, and for other gold-bearing zones at depth below the mine, but this is not confirmed at the present time. Old drilling information from the mine workings indicates the presence of multiple gold-bearing units within the alteration zone, but these have not been defined owing to the lack of more detailed drilling or underground information.

A program of exploration has been recommended for the purpose of bringing the 1450 foot gold-bearing zone closer to production and for testing other areas of the property for other zones. The program would consist of a limited amound of surface diamond drilling, and underground work, the latter consisting of dewatering the mine workings, driving drifts and crosscuts near and into the main vein structure(s), drilling and sampling this zone, and taking out a bulk sample of several thousand tons. This phase is estimated to cost about $2,500,000. Based on the results of this phase, a second level of the old mine is recommended for similar work, with the object of connecting the two levels with stopes for the purpose of active mining. A cost of the second phase, to the beginning of mining, is estimated at about $1,500,000. A 2½ to 3 year time period is estimated for the ~~tow~~ two recommended phases.

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THE HUNTER MINE PROPERTY
WHITNEY TOWNSHIP ONTARIO

GENERAL ACCOUNT

by

John L. Kirwan

INTRODUCTION

This report is intended to update, and replace, an earlier account by the writer dated April 14, 1986 titled "Background Information Relating to the Hunter Mine Property Whitney Township Ontario". In addition to the information contained in the 1986 report, the present account includes additional assay information, a longitudinal section of the deposit, a block diagram of the geology, and recalculation of the average drill-indicated gold content of the material now in place on the Hunter Mine property.

The current report is being prepared for the officers and directors of Wabigoon Resources Limited, Suite 2550, Toronto Dominion Centre, 55 King Street West, Toronto, Ontario, M5K 1E7.

LOCATION

The property is situated in the third concession, lots 9 and 10, of Whitney Township, Porcupine Mining Division, District of Cochrane, Ontario, Canada. It is entirely within the Regional Municipality of Timmins, part being in the Town of Porcupine, which is itself within that Regional Municipality. The northern boundary of the property is about 2 miles (1½ kilometers) south of latitude 48°30' north and the eastern boundary is about 8 miles (5 kilometers) west of longitude 81°00' west. The Timmins area is shown on the regional map of parts of Ontario, Quebec, and northern USA which forms page 3 below.

TERRAIN

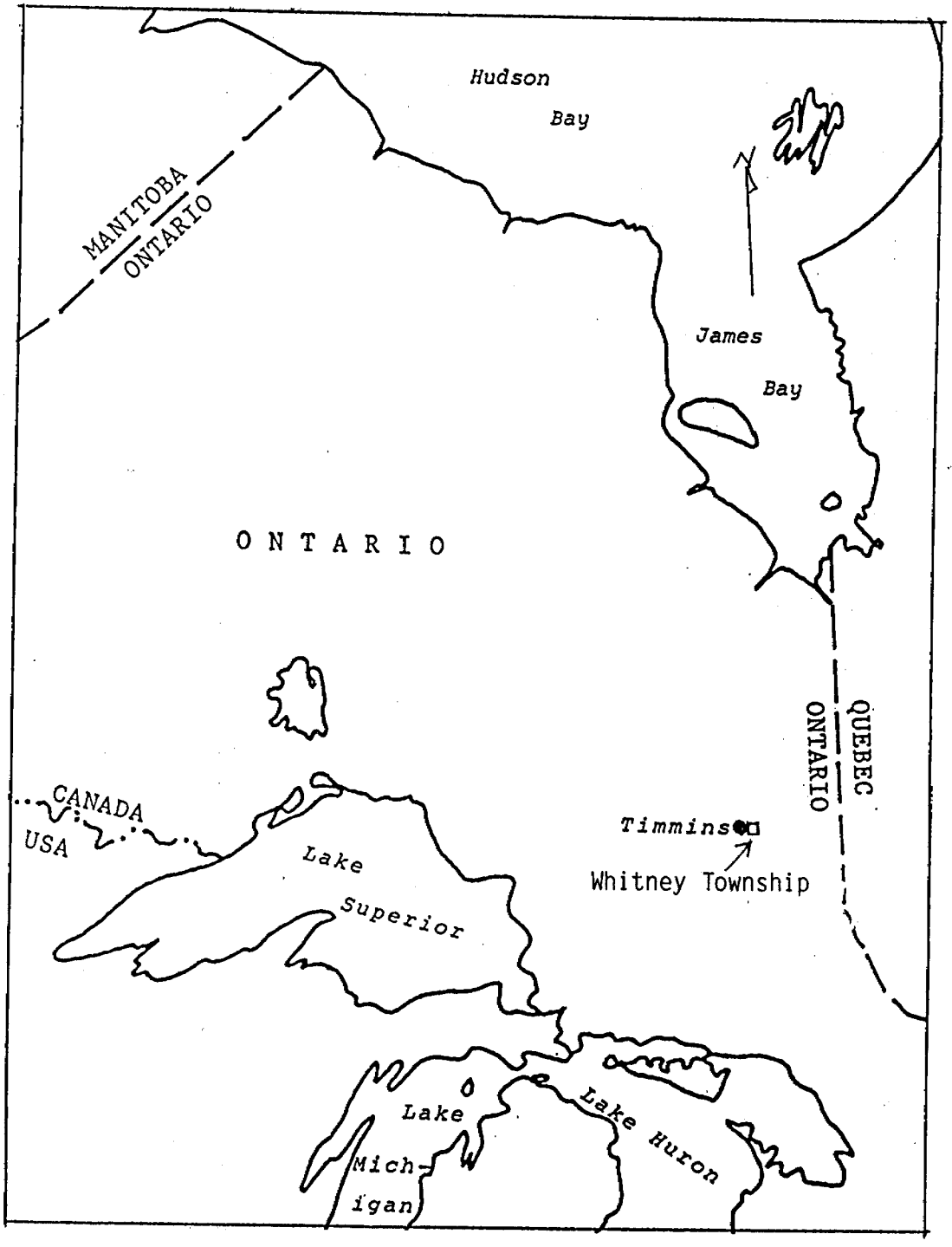
The western one-third of the ground is covered by Porcupine Lake, the shorelines of which form a gentle bluff about 40 feet (13 metres) high adjacent to the old mine. The remaining land is almost flat, though having a very gentle southeastward slope, and is mainly open grassland. Residential lots and buildings cover the most northerly few hundred feet of the property.

ACCESS

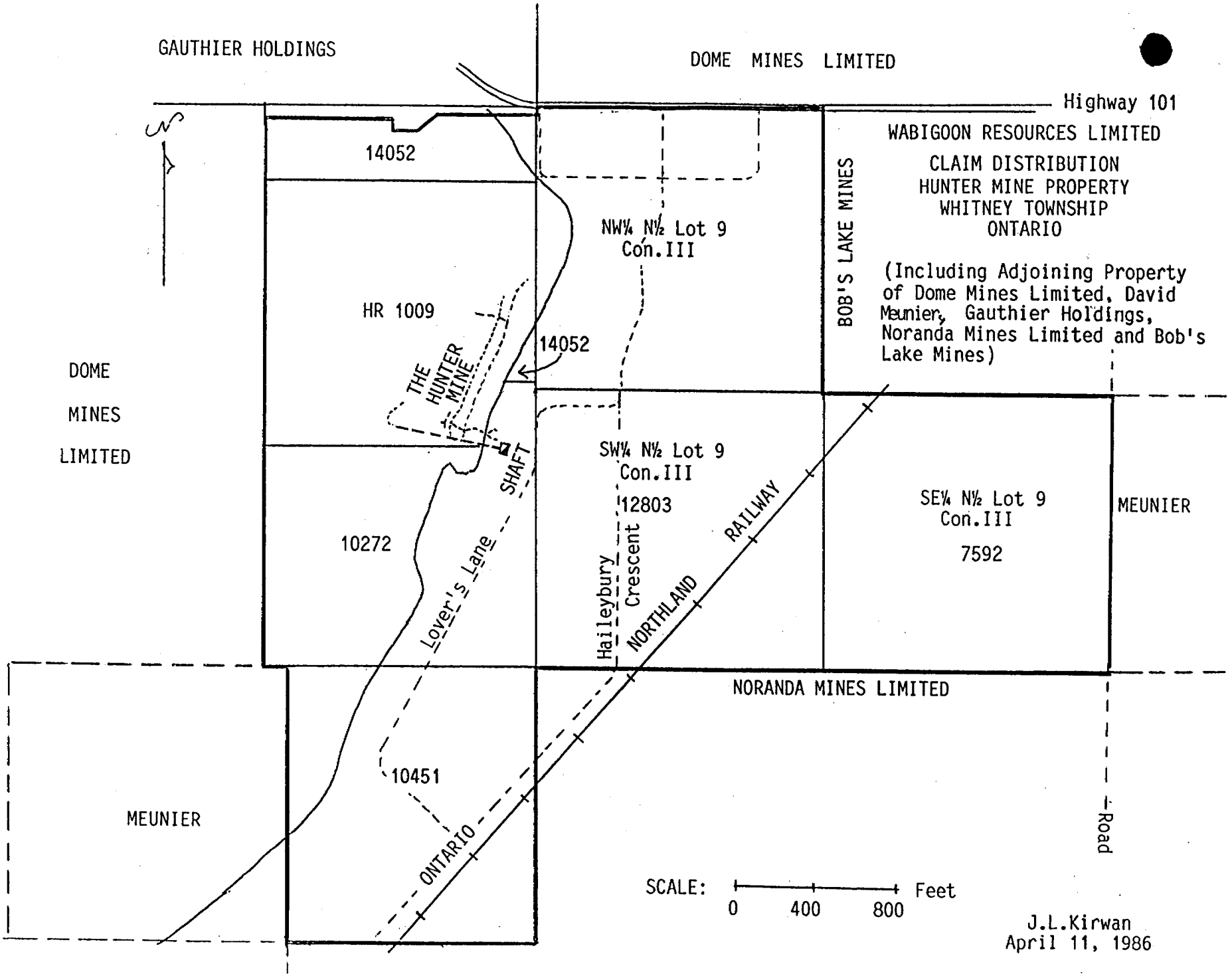
Highway 101, the principal access road to Timmins, forms the northerly boundary of the property, and the main line of the Ontario Northland Railway to Timmins cuts across the southeastern part of the ground. Two roads, Haileybury Crescent and Lover's Lane cut across the property in an almost due north-south direction. Two air bases exist on Porcupine Lake itself for float-equipped light aircraft and, to the nearby City of Timmins, numerous commercial aircraft flights arrive and depart daily, serving the community from Toronto, North Bay, Sudbury, and other areas.

THE MINING CLAIMS

Seven contiguous patented mining claims with an aggregate area of 240 acres, more or less, constitute the mineral holdings of the Hunter property (see map, page 4 below). These claims are:



Location of the Timmins Area of Ontario
and of Whitney Township


GAUTHIER HOLDINGS
DOME MINES LIMITED
Highway 101
WABIGOON RESOURCES LIMITED
CLAIM DISTRIBUTION
HUNTER MINE PROPERTY
WHITNEY TOWNSHIP
ONTARIO
(Including Adjoining Property of Dome Mines Limited, David Meunier, Gauthier Holdings, Noranda Mines Limited and Bob's Lake Mines)
BOB'S LAKE MINES
14052
NW¼ N½ Lot 9 Con.III
HR 1009
14052
THE HUNTER MINE
SHAFT
DOME MINES LIMITED
SW¼ N½ Lot 9 Con.III
12803
SE¼ N½ Lot 9 Con.III
7592
MEUNIER
10272
Lover's Lane
Haileybury
Crescent
NORTHLAND
RAILWAY
NORANDA MINES LIMITED
10451
MEUNIER
ONTARIO
Road
SCALE:
0
400
800
Feet
J.L.Kirwan
April 11, 1986

a. In Lot 10, Concession III, Whitney Township:
14052, HR1009, and 10451

b. In Lot 9, Concession III, Whitney Township:
P.7592 and P.12803 and Land Parcel 3984, being an unnumbered claim forming the NW quarter of the N half of the Lot.

As of March 19, 1986, the Mines, Minerals, and Mining rights to these claims are recorded in the Land Titles Office of the Disctrict of Cochrane, Ontario, as vested in Wabigoon Resources Limited, 111 Elizabeth Street, Toronto, Ontario. No liens, cautions, or other encumberances are recorded against the clear title of Wabigoon Resources Limited to this ground, except for claim 10272, regarding which an agreement has been recorded between the City of Timmins and Wabigoon Resources regarding a plan for the development of mineral resources on that claim. This agreement, in recognition of the City of Timmins rezoning the ground for mining purposes, requires Wabigoon to explore for, and develop, mineral deposits on the ground in accordance with a filed plan or, should Wabigoon fail to develop such mineral deposits, to restore the ground to natural conditions or permit the City of Timmins to do so, using monies from a $50,000 bond deposited in the name of Wabigoon for the purpose.

Surface rights to the ground are vested in the various property holders of the community, except for claim 10272 where the surface rights are held by the Ministry of Natural Resources of the Province of Ontario

ADJOINING PROPERTY

Noranda Mines Limited is the recorded holder of mining claims immediately adjoining the Hunter Mine property to the south and east.

David Meunier of Timmins has staked two claims, one on the east boundary and the other on the southwest boundary of the ground. These are said to be under option to the Sheridan interests of Toronto.

M. Gauthier Holdings of Timmins is the recorded holder of land adjoining the Hunter ground to the northwest.

Bob's Lake Mines is the recorded holder of land adjoining the northeast part of the ground since 1945.

The mineral rights to the ground adjoining the Hunter and Bob's Lake holdings to the north are recorded in the name of Dome Mines Limited.

Dome Mines Limited is also the recorded holder of land adjoining the Hunter ground to the west under Porcupine Lake. This ground is contiguous with and part of the claims containing the main Dome orebodies about 2 miles to the west southwest.

The ownership of the small "bite" of ground at the north end of claim 14052 has not been determined. It is thought to be wharf allowance reserved for the Department of Highways at the time of the construction of the first access road to the area in 1911, but this has not been verified.

The map on page 4 above shows the distribution of the claims and the surrounding property ownerships; the map on page 7 below shows the distribution of the major gold deposits in the area in relation to the Hunter.

GENERAL GEOLOGY

Reconnaissance geology of the area is shown on the Ontario Geological Survey Map 2455 at a scale of 1:50,000 which is taken from Geological Report 219: "Geology of the Timmins Area" by D.R.Pyke dated 1982. This shows the area to be underlain by Early Precambrian (Archaen) basic or ultrabasic volcanic rocks on the west and east parts of the property with an intervening area of felsic volcanic rocks which are in fault contact with the basic volcanic rocks. As will be indicated below, the subsequent work on the ground during the 1983-1987 period has considerably altered this viewpoint.

Immediately north of the Hunter property, and extending to the west many miles and to the east many tens of miles into the Province of Quebec, and cutting across the northwestern part of the Hunter ground, a major east-west-trending shear zone known as the Destor-

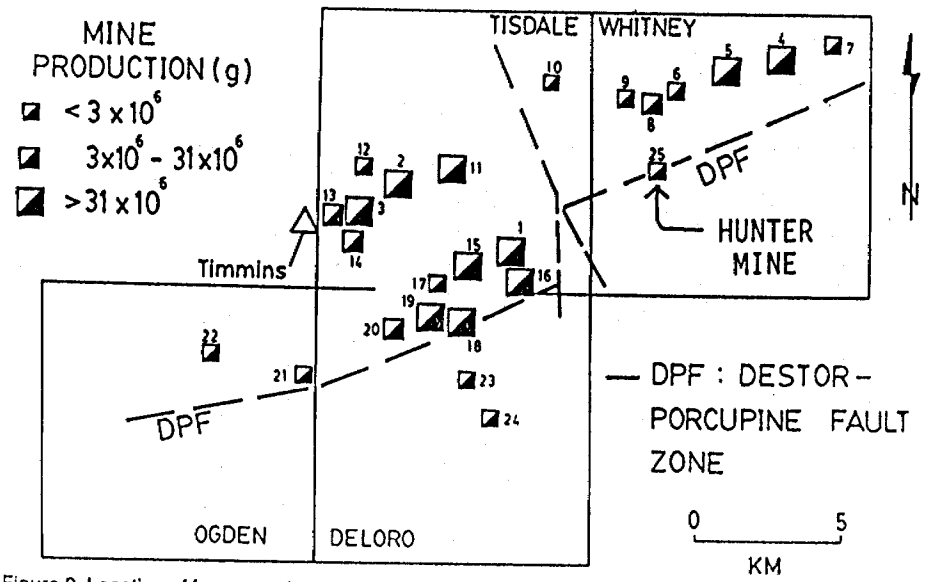


Figure 2–Location of former and presently producing mines, and the Destor-Porcupine Fault Zone in the Porcupine camp. The mining properties* are:

Producing Mines
1–Dome.
2–McIntyre (Pamour Schumacher property).
3–Hollinger (Pamour Timmins property).
4–Pamour #1.
11–Westfield Minerals (formerly Coniaurum; Pamour option).
19–Aunor (Pamour #3 Mine).
20–Delnite.
Former Producers
5–Hallnor.
6–Broulan Reef.
7–Hoyle.
8–Hugh Pam.
9–Banner Porcupine (formerly Canusa).
10–Davidson-Tisdale.
12–Consolidated Gillies Lake.
13–Moneta.
14–Vipond.
15–Paymaster Consolidated.
16–Preston.
17–Fuller Claim (Edwards shaft).
18–Romfield Building Corp. Ltd.
(Buffalo Ankerite Mine: Pamour option).
21–Kenilworth.
22–Desantis.
23–McLaren-Porcupine.
24–Faymar.
25–Porcupine Lake.

*For simplicity, the traditional names of mining properties and prospects, as listed by Ferguson *et al.* (1968) and Carlson (1967), are used.

Location of the Hunter Mine (No. 25) in Relation to the Major Gold Producers of the Timmins Area. From OGS Study 26.

Porcupine Fault Zone has been mapped. This fault has long been considered to be genetically related to the major gold-bearing orebodies, many gold mines of the area being spatially related to it or to one or more similar structures.

HISTORY

The earliest gold discovery in the greater Timmins area was made in 1896 in the vicinity of the Carshaw deposit of Shaw Township some 6 miles southward from the Hunter, and in 1901 some work was done on the ground now containing the Hollinger Gold Mine some 6 miles to the west. Little became of these showings at the time, but prospecting activity greatly increased in the area in 1907 when the Temiskaming and Northern Railway reached the general latitude of Timmins. In that year H.F.Hunter, a Toronto lawyer, and a group of businessmen, grubstaked a prospector named Gore Bruce who, together with 2 companions, began prospecting the area east of the new railway line. Towards the end of the year, and probably in response to the news of a gold discovery in Night Hawk Lake some 5 or 6 miles east of the Hunter site (later known as the Porcupine Peninsular Mines), the Bruce party began to prospect in the vicinity of Porcupine Lake, discovering visible gold mineralization at the eastern edge of the lake which extended under the level of the water. They wintered at the discovery site, protecting their find and, in the spring of 1908 recorded their claim at Haileybury. The news of their find led other prospectors to the Porcupine Lake area in 1908 and 1909, including Jack Wilson who discovered the Dome Mine, Sandy McIntyre who found the McIntyre Mine, Bennie Hollinger, discoverer of the Hollinger Mine and William Davidson who found the Davidson deposit. For the reason of the enormous rush which it sparked, the Hunter deposit may be considered to be the discovery mine of the Timmins camp.

The Porcupine Lake Gold Mining Company was incorporated in February, 1911, after diamond drilling from the ice in the winter of 1909-1910, and prospecting in the summer of 1910, demonstrated the presence of several gold-bearing zones both at surface and at depth. Shaftsinking began in early 1911, and in 1912 a level was established at 285 feet and lateral workings at this level begun. Fires in 1911

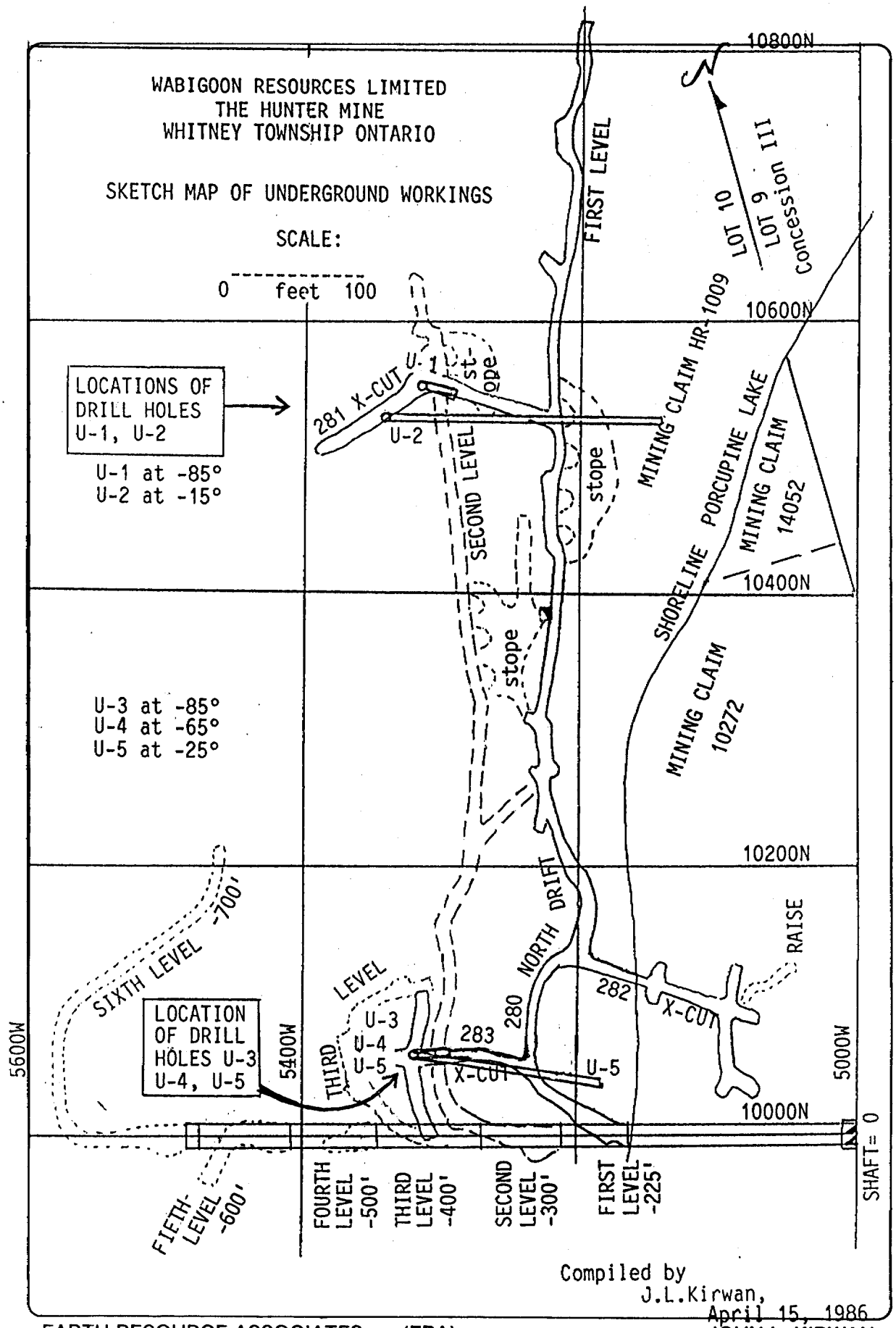
and 1913 nearly bankrupted the company and the 1914-1918 war closed it down. In 1926 H.F.Hunter died and a legal action was begun by the H.H.Sutherland interests for control of the ground, an action that did not terminate until 1935, when Sutherland obtained control and began a program of drilling, mine deepening, geological exploration, and, in 1938, actual mining. The level at 285 feet (true depth of 225 feet) was extended to the area of some good drill intersections, the shaft was deepened, with levels at true depths of 300, 400, 500, 600 and 700 feet, and a second level was established below that of 225 feet, and about 10,000 tons of gold-bearing rock was removed and treated at the mill on the site before the operation closed in 1940. Closing was effected by the operators' inability to define additional ore with a program of limited drilling, by the removal of personnel as a result of being drafted for the 1939-1945 war, and by the diversion of investment capital for exploration and development as a result of wartime needs for copper, iron, and other strategic metals.

In 1945 a ground magnetometer survey was conducted on the property and in 1948 some 5 diamond drill holes were put down (one of which was in the vicinity of the old mine) but in general no further work was done on the property until the 1983-1987 period covered in this report.

A sketch of the underground workings appears on page 10 below.

Actual mining was restricted to the 3 areas of stoping that are shown on the sketch, plus the mass of development rock that was excavated for the driving of the shaft, the drifts, and the crosscuts. In all, 10,821 tons of rock were processed from the Hunter Mine from 1938 to 1940, from which 1,369 ounces of gold and 86 ounces of silver were recovered (Ontario Ministry of Natural Resources: "Gold Deposits of Ontario", Part 1, 1971, page 121). It has been estimated that about 20 percent of the rock came from the stoped areas and the remaining 80 percent came from the development areas and that the recovered grade of 0.1265 ounces of gold to the ton represents a mixture of stoped material with average grades of 0.25 and 0.61 ounces to the ton and development rock with averages below 0.1.

No dividends were paid by the company or its successors.



Compiled by
J.L.Kirwan,
April 15, 1986

EARTH RESOURCE ASSOCIATES (ERA)

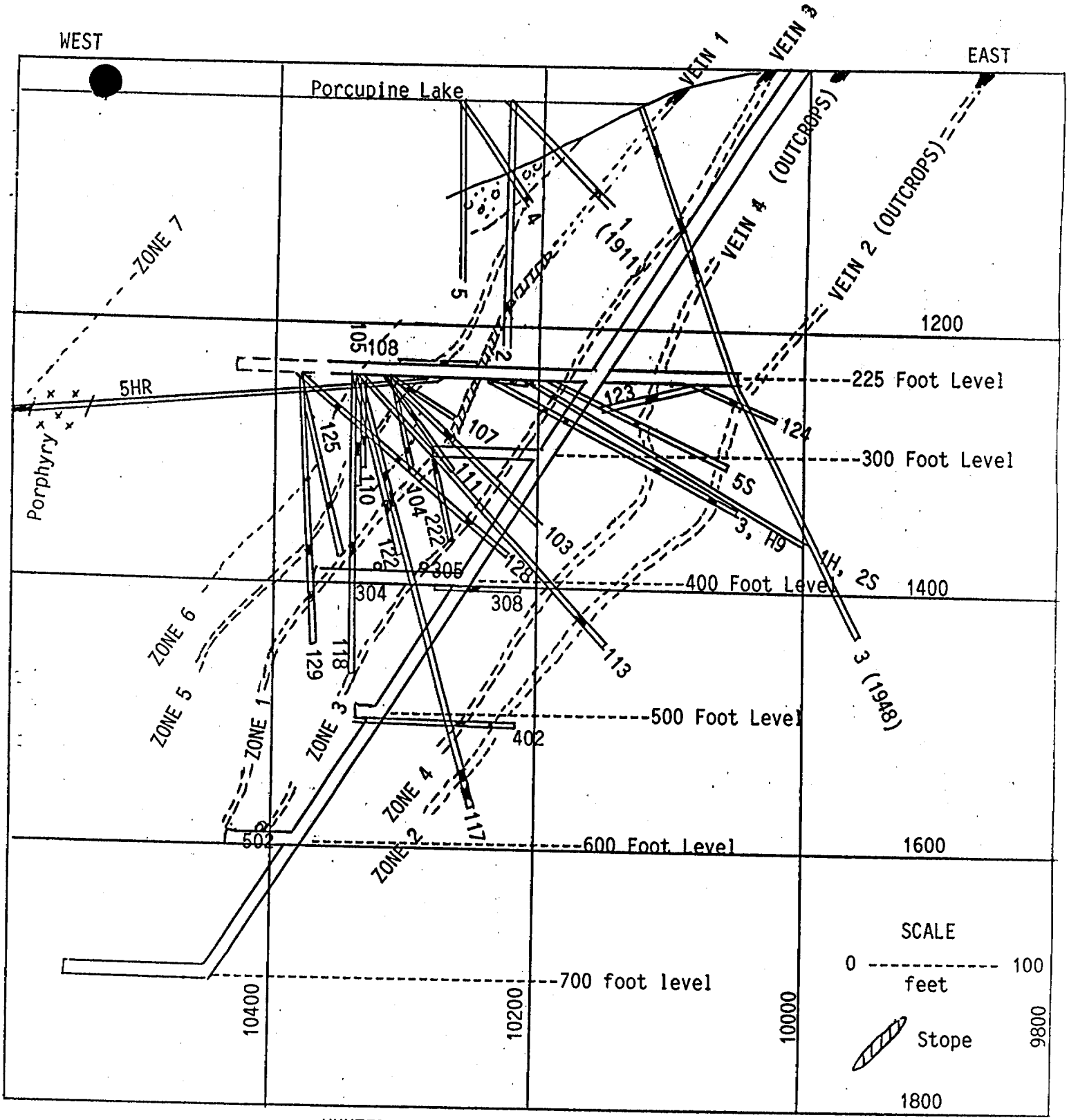
JOHN L. KIRWAN

During the 1935-1940 period considerable diamond drilling was done from underground at the Hunter Mine, with considerable encouragement. No drill logs have survived from this period, but sections of about half of the holes do still exist, and it is apparent from them that more than one gold-bearing vein system exists at the mine, although only one of these appears to have been mined. An attempt has been made to identify these several vein systems by projecting the various drill intersections along the axis of the vein systems to a common plane. This attempt is shown on page 12 below, and a table of the gold intersections given on page 13. The projection should be used with extreme caution, for any oblique faulting (which is thought to exist in the mine) or any crossfolding (which is also thought to exist) will produce the appearance of multiple veins in the projection where fewer are in fact present. It will be apparent, however, from the several intersections that are occasionally seen in the table on page 13, in a single drill hole, that multiple veins are in fact present and that these are all gold-bearing.

After the death of H.H.Sutherland in 1972 the property passed to his son, H.H.Sutherland, Junior, thence to a Sutherland-related company known as Earth Sciences International, and finally, in 1983, to Wabigoon Resources Limited.

In the period 1972-1983 numerous other companies have expressed interest in the deposit, and several studies were made from the surviving data, but no work was done on the property. The headframe had long since been burned, surface equipment dumped down the shaft, the mineshaft sealed in with steel plates, and the land reverted to wilderness or, removed from the shaft area in the Town of Porcupine, built on or farmed.

A report dated August 31, 1979 by E.A.Hart of Toronto, which examined the economic potential of the old mine by means of a study of surviving records, concluded that the property warranted further exploration, and recommended that a row of diamond drill holes at a 50 foot spacing be put across the area of the old mine so as to intersect the main ore zone at a depth of approximately 150 feet. This recommended work was not carried out.



HUNTER MINE, WHITNEY TOWNSHIP, ONTARIO

HORIZONTAL PROJECTION to show drill hole intersections of gold-bearing veins in the vicinity of the underground workings, 1910-1948. Plane of section, 105° along the axis of the incline shaft. Values in ounces of gold per ton of rock of the pertinent drill hole intercepts are given on the accompanying table.

Projection by J.L.Kirwan
October, 1985

DRILL HOLE NEMBER	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6	ZONE 7
2 (1911)	.89/9'						
3 (1948)	.07/10'						
4 (1911)					2.5/5'		
5S (1935)				.2/5'			
5HR(1935)							.02/2'
1H, 2S (1935)			.5/15'				
H9, 3 (1935)	.06/4'	.02/5'	.26/3'	.06/3'			
103 (1938)	.4/4'						
104 (1938)					.3/3'		
105 (1938)						.1/9'	
107 (1938)					.06/4'		
111 (1938)					.04/5'		
113 (1938)		.16/10'					
117 (1938)	.41/5'				.08/10		
118 (1938)	.04/11'						
122 (1939)	.08/5'						
123 (1939)				.04/20			
128 (1939)						vg	
129 (1939)					.04/10'	vg	
222 (1940)	.4/15'						
304 (1940)	.35/?						
305 (1940)			.58/10'				
402 (1940)			.16/?	.11/?			
502 (1940)				.14/2'			

TABLE to show the drill hole intersections at the Hunter Mine in Whitney Township, Ontario, as indicated in surviving records of surface and underground diamond drilling at the site, 1911-1948. Values are in ounces of gold per ton of rock converted from the original given in dollars based on gold at $20 per ounce before 1936 and $35 per ounce after. The 7 gold-bearing zones that are indicated here were interpreted from a horizontal projection of the drill results, which this table accompanys. Due to uncertainties involved in the projection there may be more, or fewer, zonespresent than are indicated here.

Compiled, J.L.Kirwan, October, 1985

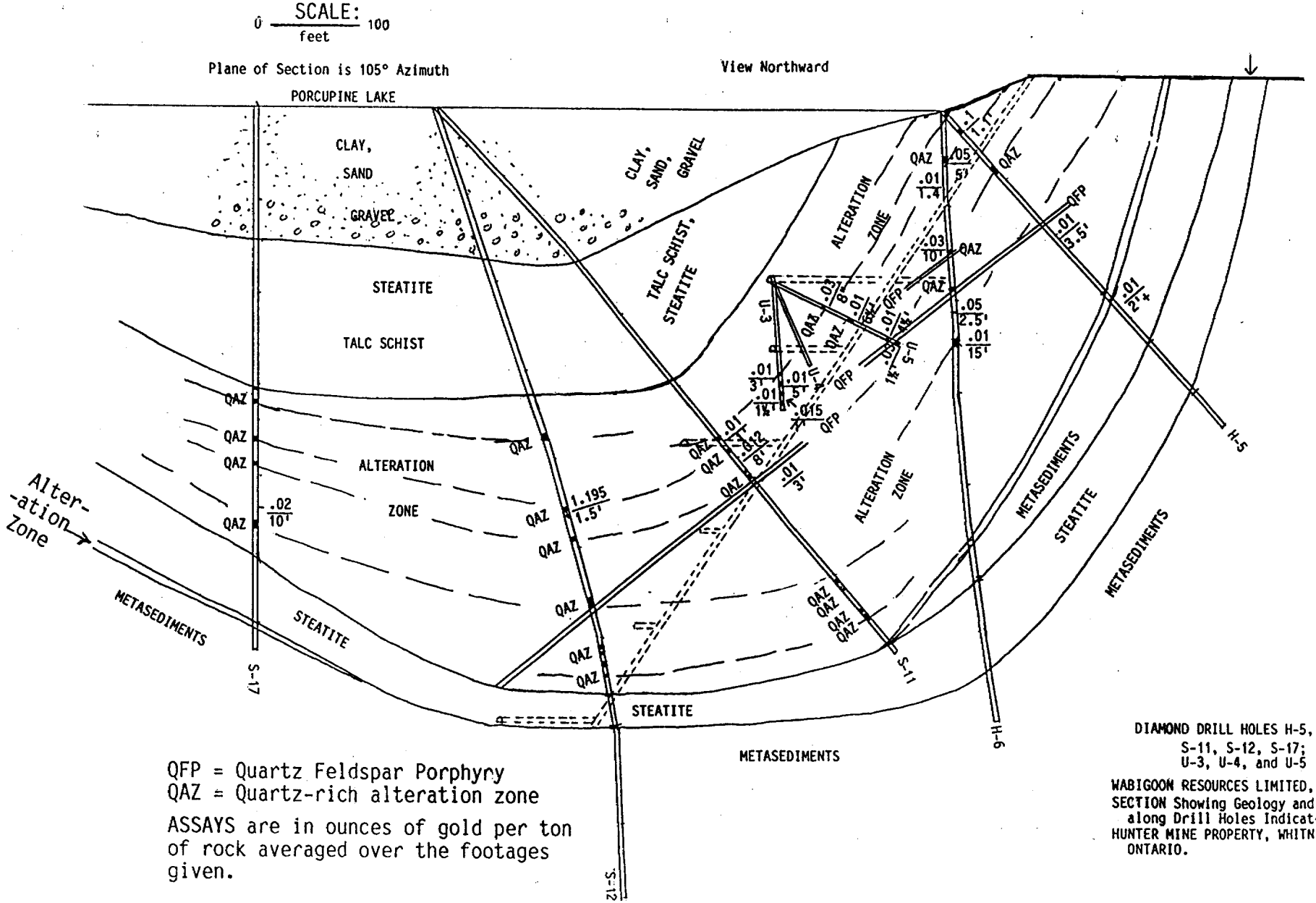
In 1983 Wabigoon Resources Limited of Toronto acquired the property and, over the next 3 years conducted an exploration program consisting of stripping, sampling, geological mapping, geophysical surveying and diamond drilling from surface, and sampling and diamond drilling from underground. The results of this work will be discussed in more detail below under the heading Wabigoon Resources Limited, except for the geological results, which follow.

GEOLOGY

The geological mapping, geophysical surveying, and diamond drilling which took place on the property in the 1983-1987 period has considerably modified the view of the Pyke map mentioned above (page 6). This is summarized in the report dated September 1, 1986 by John L. Kirwan titled, "Geological Report Hunter Mine Claims" and on the accompanying section (page 15 below) and block diagram (page 16 below).

The Hunter claims occupy a step-faulted block of ground which occurs between the Deloro Group of felsic volcanic rocks and metasediments to the south, and the Tisdale Group of mafic volcanics and metasediments and the Timiskaming Group of metasediments to the north. Some Deloro Group rocks exist on the Hunter ground, but they are separated from the bulk of the Hunter rocks by an east-northeast trending fault termed the Bob's Lake Fault. The northwestern extreme of the Hunter ground is underlain by the Destor-Porcupine Fault Zone, an east-northeast trending complex of sheared and altered mafic lavas, granitic bodies, and ultramafic sheets, which extends through the Timmins area and for many miles both eastward and westward. The Hunter claims are believed to contain the lowermost units of the Tisdale succession, consisting of ultramafic lavas, and the uppermost units of the Deloro succession, consisting of greywackes and argillitic metasediments. Separating the two, and probably derived from the latter by hydrothermal metamorphism,is a unit, about 300 feet thick,termed the Alteration Zone which consists mainly of quartz-sericite schist and which contains all of the known gold-bearing units.

The rocks have been folded into nearly north-south trending



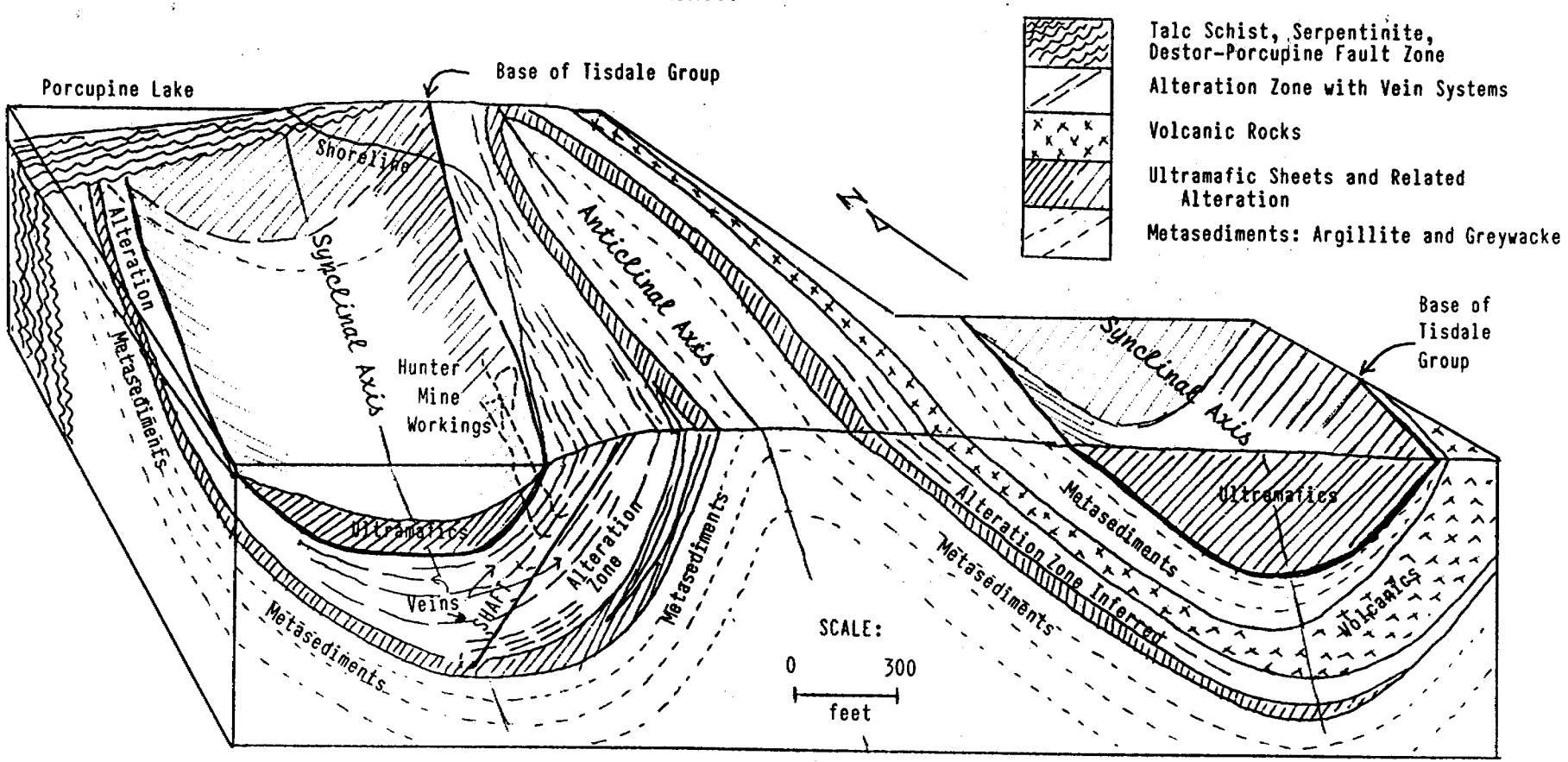
QFP = Quartz Feldspar Porphyry
QAZ = Quartz-rich alteration zone

ASSAYS are in ounces of gold per ton of rock averaged over the footages given.

DIAMOND DRILL HOLES H-5, H-5; S-11, S-12, S-17; U-3, U-4, and U-5

WABIGOON RESOURCES LIMITED,
SECTION Showing Geology and Assays along Drill Holes Indicated.
HUNTER MINE PROPERTY, WHITNEY TWP, ONTARIO.

BLOCK DIAGRAM (SKETCH) OF THE NORTHERN PART OF THE HUNTER MINE PROPERTY, WHITNEY TOWNSHIP, ONTARIO TO SHOW GEOLOGY AND STRUCTURE IN THE VICINITY OF THE HUNTER MINE WORKINGS.



Based on Diamond Drilling Results (1910-1986) and Geological and Geophysical Interpretations (1983-1987). Made by John L. Kirwan, March, 1987. Some geological information has been simplified and idealized and the above diagram contains interpretative and conceptual information: it is intended for illustrative purposes only.

anticlines and synclines with amplitudes of about 1000 feet and a periodicity of 2200 feet, the axial planes being tilted eastward about 10° off the vertical. Some possibility exists that the gold-bearing Alteration Zone is repeated eastward, near the east boundary of the ground, by the folding. A gold-bearing iron formation occurs on the ground south of the Hunter claims within the Deloro Group. This unit should occur at depth below the presently explored rocks on the Hunter ground.

WABIGOON RESOURCES LIMITED

Exploration, 1983-1987

1983

David S. Robertson and Associates of Calgary (Fred Barnes) were commissioned to examine the property by means of a study of the surviving technical data and production records of the Hunter. They presented a report dated May 9, 1983 which concluded that only one vein on the property had been adequately tested, that 4 more veins were present, that the tonnage potential of the already tested vein was so small that it was of doubtful economic potential, but that the possibility of developing tonnage on other veins should be tested, that additional ground should be acquired so as to test this possibility beyond the property boundaries, that an expenditure in the order of $250,000 was warranted, and that joint ventureship with a major resource development company was desirable.

Earth Resource Associates of Timmins (John L. Kirwan) were commissioned to make a similar examination of the property and produced reports dated August 22, 1983 and December 31, 1983 in which it was concluded that at least 4 gold-bearing vein systems were present on the property, that diamond drilling conducted in the 1938-1940 period demonstrated that these veins were gold-bearing to the deepest levels of the old mine, that the potential existed for the development of an economically viable orebody on extensions of the structures in the vicinity of the old mine, and that an exploration program was justified at a total cost of about $1,200,000 consisting of stripping, sampling,

geophysical surveys, geological mapping, mine dewatering, and diamond drilling. A grid sampling program consisting of 134 samples taken from mine waste rock used for fill on surface gave an average uncut grade of 0.177 ounces of gold to the ton, which is well above the reported average grade which was put through the mill in the 1938-1940 period of 0.126 (page 9 above) but very close to an average calculated grade of 0.183 derivable from assay results and mill tests from the entire length of the first and second levels of the mine (Robertson's report between pages 13 and 14).

A stripping program was started so as to expose the four vein systems where they sub outcrop, and about one-half acre was exposed before the work was terminated by the City of Timmins for violations of city zoning laws. Some geological mapping and sampling of the exposed area did take place, however, and in Kirwan's report dated December 31, 1983 it was suggested that the rock is of sedimentary rather than volcanic origin and thus presented a different exploration target than most areas in the Timmins camp. Grab sampling in the vicinity of the main vein structure at surface produced a wide range of assay values, from NIL to 9.47 ounces to the ton, including values of 0.065, 0.71, 0.19, 0.87, 1.21 and 3.31 ounces of gold to the ton. Grid sampling of the tailings pile on the site yielded an average assay value of 0.01, a value that would indicate an average grade of 0.20 from the underground workings if 95% recovery were obtained in the mill (the Robertson report, page 12, gives the recovery at 96.3% "reported").

1984

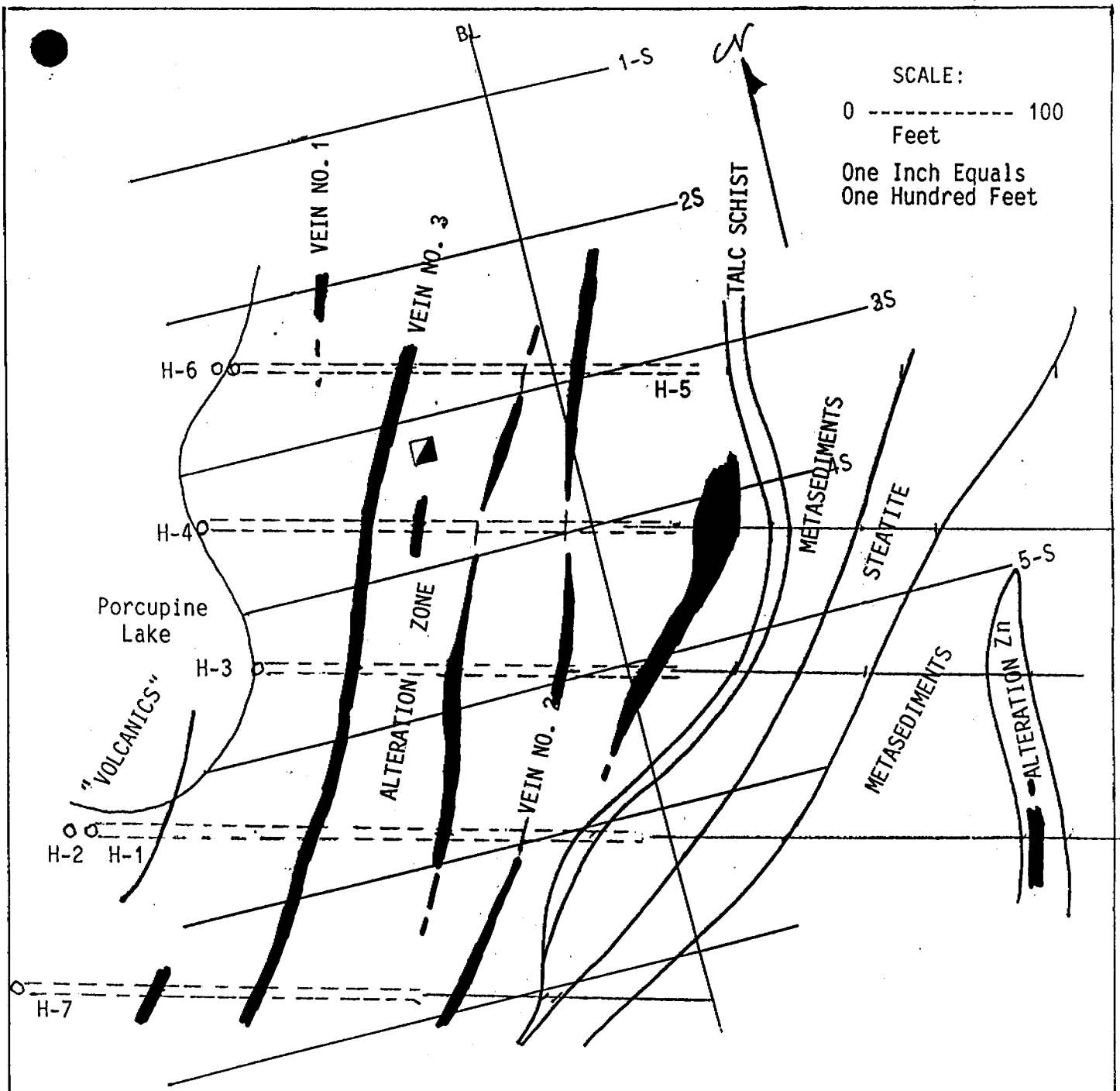
By agreement dated March 8, 1984, the City of Timmins and Wabigoon Resources Limited agreed to a development plan for the site. The City had rezoned the area for mining purposes, Wabigoon agreed to develop the area within the confines of a prepared plan, and Wabigoon deposited a $50,000 bond to ensure restoration of the site should the development not take place.

Mr. Ropert Weitzdoerfer of Timmins prepared the development plan.

1985

During the winter months in the early part of the year the proposed geophysical surveys were performed over the frozen surface of Porcupine Lake and extended, later in the year, to cover the rest of the property. These surveys consisted of magnetometer readings and Very Low Frequency (VLF) data, the latter read both as dip angles and as field strength. These surveys traced a diabase dike across the property in a north northwest direction and a zone of complex magnetic disturbance across the property in a north northeast direction, passing through the area of the old mine. Subsequent diamond drilling from surface (7 drill holes to bedrock and 1 which failed to reach bedrock) demonstrated that this zone of magnetic disturbance corresponds with the alteration zone which contains the known gold-bearing units which, by means of the magnetometer survey, could be traced a distance of some 4000 feet across the property, entering land held by Dome Mines Limited at the north boundary and other land held by David Meunier to the southwest.

The 7 diamond drill holes put down to bedrock demonstrated that the alteration zone and, by inference, the gold-bearing units, could be traced southward from the shaft area a distance of at least 4000 feet, though the assays obtained from the several quartz-bearing zones cut in these holes were low. It is probable that the Number 1 Vein, the chief ore-bearing unit at the Hunter Mine was not encountered in these drill holes (see sketch map, page 20 below). The sketch map, which is a projection of the drill hole intersections of quartz vein material at +45° to surface combined with surface exposures of veins in stripping, shows that the veins are contained within one or more zones of intense alteration in the layered rocks, that this zone is bounded on the east by a layer of talc schist beyond which metasedimentary rocks such as argillite and greywacke occur, and that alteration also exists within these metasedimentary rocks. Average dips were found to be about 45° westward, though these are steeper on surface, approximately 60°. It was concluded that the alteration effects on the sedimentary rocks combined with the bodies of talc schist and steatite are responsible for the complex magnetic patterns, which could be used to trace this alteration zone.



PLAN SHOWING PROJECTION TO SURFACE OF
PRINCIPAL ROCK-TYPE INTERSECTIONS AND
QUARTZ VEIN ZONES IN DIAMOND DRILL HOLES
H-1 to H-7

Projections are made up dip at +45° from drill hole intersection.

WABIGOON RESOURCES LIMITED, HUNTER MINE PROPERTY, WHITNEY TOWNSHIP, ONT.

Mining Claims 10272 (west of BL and east of Lake), 12803 (east of BL)
Lake north of H-6 is Mining Claim HR1009.

J.L.Kirwan, Dec., 1985
Modified, March 18, 1987

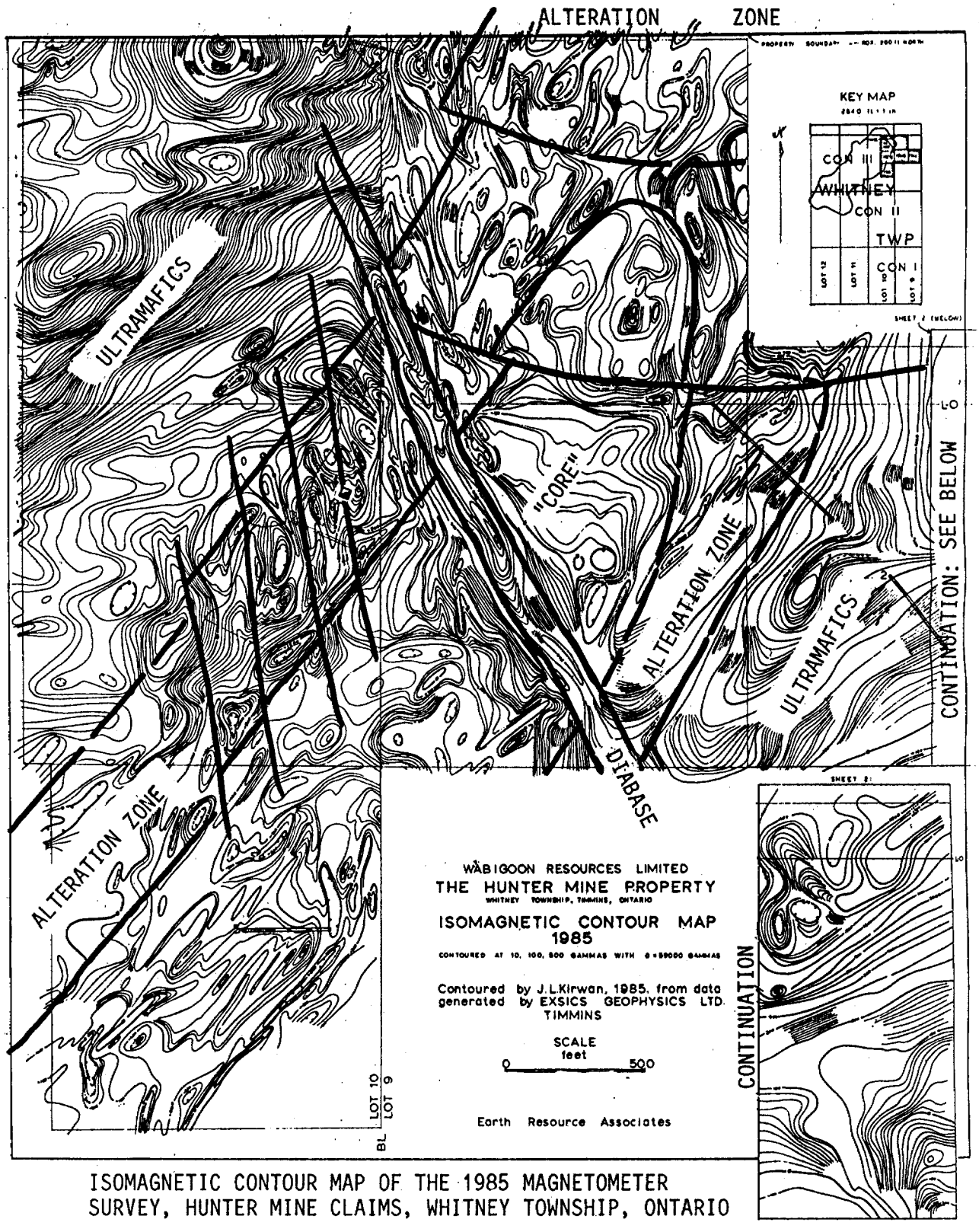
The ground magnetic map is reproduced below, on page 22, together with an interpretation of the indicated geology, both from the magnetic data alone and from the earlier drilling and outcrop information. Top determinations in the 1948 drill hole number 1 indicate that the rocks on the east central part of the ground face eastward, and similar determinations made from the 1985 drill holes indicate that the rocks on the western part of the ground face westward. An anticlinal axis must therefore exist near the centre of the claims. The possibility therefore exists that the gold-bearing rocks on the west part of the ground are repeated due to folding on the east, a possibility that suggests a target for future exploration in that area.

Underground Work

The shaft at the Hunter Mine was opened and cleared of debris and the groundwater that filled the mine workings was pumped out so as to obtain access to the first two levels of the mine: that is to say, to a depth of 300 feet below the shaft collar or 260 feet below the level of Porcupine Lake. The relative ease of pumping out and maintaining the workings in a dry condition indicated that little or no leakage exists between the lake overhead and the mine workings. A program of sampling on the first level indicated that mining of that level had been very thorough in 1940 and that little ore-grade material was to be found, although some uncertainty exists as to the validity of this work owing to an unfortunate bias in the sampling.

On the second level, assessment of earlier sampling results that covered an area that was left unmined in 1940 showed that a 205 foot length of drift exists, some 24 inches wide, in which gold values that average 0.24 ounces to the ton were determined.

Five drill holes were put down from underground for the purpose of obtaining short intersections across the vein systems. Locations of these holes are given above on page 10. These had varying success: Hole U-1 was lost in the workings themselves without cutting the veins; U-2 cut a section between the first and second levels, in an area where mining operations had been extensive, grading 0.207 ounces across 6½ feet (a true thickness of 5½ feet), indicating that potentially ore-



ISOMAGNETIC CONTOUR MAP OF THE 1985 MAGNETOMETER SURVEY, HUNTER MINE CLAIMS, WHITNEY TOWNSHIP, ONTARIO

Interpreted lithological units are indicated within the boundaries of particular magnetic signatures. The diabase dike, the western limb of the Alteration Zone, the eastern ultramafics unit and the "core" of greywacke and argillite are indicated in outcrop or diamond drilling. The "core" occupies the axis of an anticline as shown in top determinations from 1948 and 1985 diamond drill holes.

J.L.Kirwan, March 20, 198?

grade material was still in place in this area. This drill hole also cut zones assaying 0.027 over 5½ feet and 0.02 across 12 feet, illustrating that other veins cut in this area are also gold-bearing. Drill Holes U-3, U-4 and U-5, from an area near the south end of the workings, intersected several vein systems and returned assays in the 0.01 to 0.03 class.

1986

The principal, and the most important operation on the site to date, has been the diamond drilling conducted from the frozen surface of Porcupine Lake into the ore structures at the Hunter Mine, operations that were of necessity of short duration and limited scope because of the short period of time involved (February 1- April1) and the unavailability of more than one drill for the first half of this period.

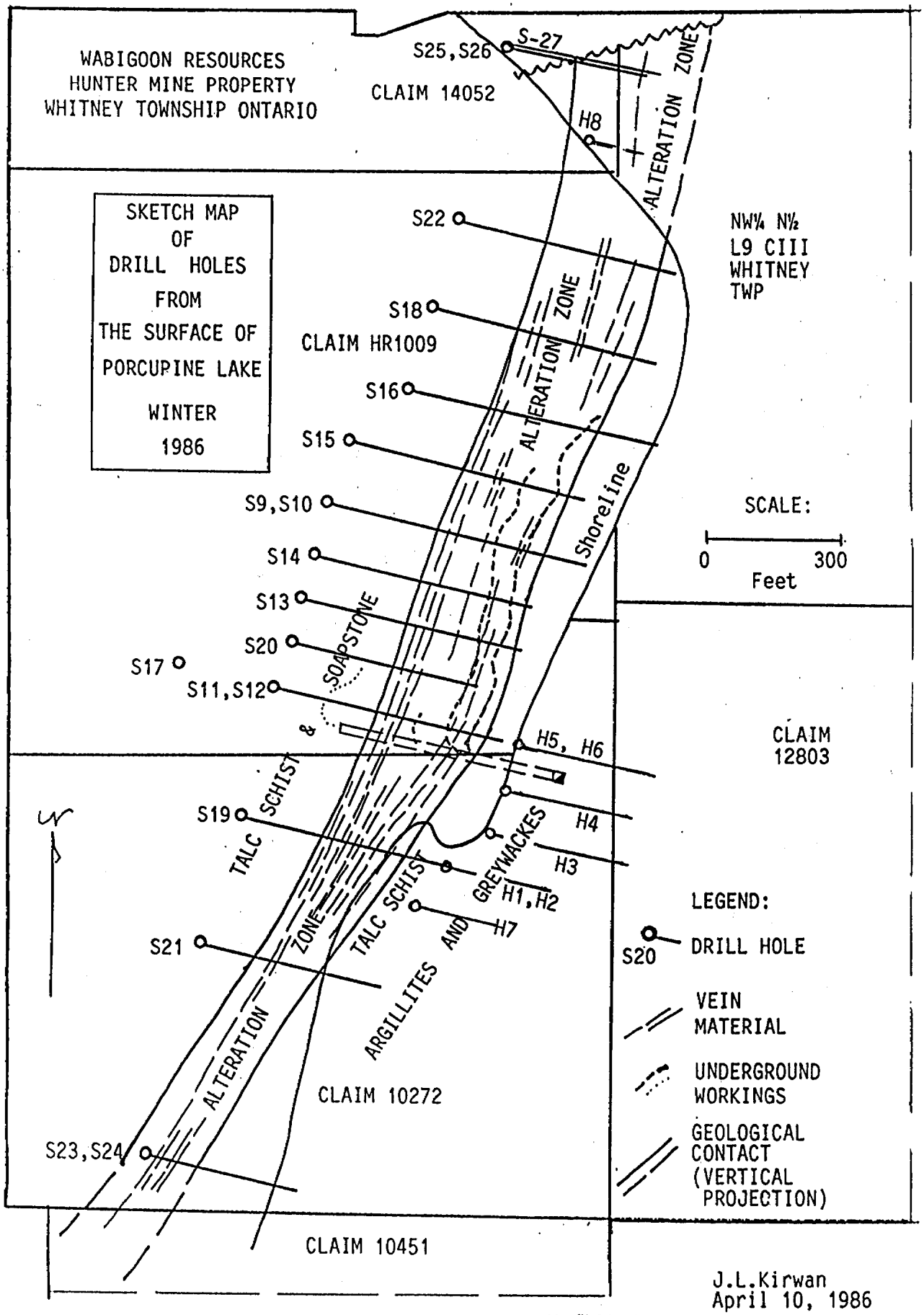
A total of 18 drill holes, most at an angle of -50°, but some at -70° and -90°, were put down so as to trace and define the ore-bearing structures and to test for their gold content. Holes were put down at intervals ranging from 100 to 470 feet, the greater spacings being used to compensate for the short period of time available.

The locations of these holes, together with the locations of the 1985 drill holes, are shown on the sketch map below, on page 24.

In summary:

a. the ore-bearing zone--that is to say, an alteration zone of up to 300 feet thickness--was traced from the southernmost drill hole numbered S-23 to the northernmost, numbered S-27, a distance of 2370 feet. Geological, geophysical, and physiographic evidence combine to indicate that this zone continues to the limits of the property, a distance of some 4000 feet, and may be repeated by folding on the eastern parts of the property, as indicated above.

b. the ore-bearing structure dips steeply westward near the shoreline of Porcupine Lake, then flattens, and then bends upwards (to dip gently eastward) so as to form a syncline about 1200 feet wide. The figures on pages 15 and 16 above illustrate this synclinal structure. Although the available drilling indicates that this


WABIGOON RESOURCES
HUNTER MINE PROPERTY
WHITNEY TOWNSHIP ONTARIO
SKETCH MAP OF DRILL HOLES FROM THE SURFACE OF PORCUPINE LAKE WINTER 1986
CLAIM 14052
CLAIM HR1009
CLAIM 12803
CLAIM 10272
CLAIM 10451
NW¼ N½ L9 CIII WHITNEY TWP
S-27
S25,S26
H8
S22
S18
S16
S15
S9,S10
S14
S13
S20
S17
S11,S12
H5, H6
H4
H3
H1,H2
H7
S19
S21
S23,S24
ALTERATION ZONE
Shoreline
SOAPSTONE & TALC SCHIST
TALC SCHIST AND GREYWACKES
ARGILLITES
SCALE:
0 300
Feet
LEGEND:
S20 DRILL HOLE
VEIN MATERIAL
UNDERGROUND WORKINGS
GEOLOGICAL CONTACT (VERTICAL PROJECTION)
J.L.Kirwan
April 10, 1986
Modified, September 4, 1986

structure continues northward and pitches very slightly in that direction, its exact shape remains undefined.

c. Quartz veining and alteration, of a sort that is usually associated with gold mineralization, was seen in the drill core obtained along the entire length of the 2370 feet drilled off. This veining and alteration is multiple, there being as many as 12 zones encountered in a single drill hole, and 4 or 6 zones being common. Assays from these zones, except as noted below, were commonly very low in gold, especially at the north and south extremes of the area where the separation between drill holes was very great. It is not known without additional information if the gold content of the rocks decreases in these directions or if the great separation between the holes (as much as 470 feet) was too great to permit following the gold-bearing zones properly.

A discussion of the gold content of the area, as indicated in the diamond drilling program, will be given below under the section labelled "Results". See pages 26-31.

The figure on page 24 above shows the drill hole locations, the vertical projection of the alteration zone, the vertical projection of the quartz vein systems, and the vertical projection of the mine workings on the property. The geology indicated on this plan has been simplified: there is more alteration present in the underlying metasediments than is indicated; considerably more variation in the alteration occurs in the rocks than is indicated; and more layers of talc schist or soapstone exist in the sequence, and more varieties of these rock types, than has been indicated.

To facilitate understanding of the structure of the mine area a model was constructed during the summer of 1986 to show the drilling results on Acrylic sheets mounted in a rigid transparent frame. Also in the summer of 1986 a draftsman was hired and the site geologist used to organize and update all technical data.

1987

No exploration took place on the property in early 1987.

RESULTS

This section will attempt to indicate the economic possibilities of the Hunter Mine ground from the results of the 1986 drilling alone. The 1985 drill holes (H-1 to H-8) are discounted because, except for H-5 and H-6, the main vein may not have been cut. In the case of H-5 and H-6, the holes may have intersected above the main gold-bearing area of this vein.

Earlier drilling from underground between 1935 and 1940, and from 1910 to 1948 is also excluded from the following calculations for a variety of reasons, including uncertainties as to their precise locations, uncertainties as to which veins were encountered, and lack of knowledge as to the meaning, in geological terms, of the various assays. However, with regard to the results of the 1935-1940 drilling, Hamlin B.Hatch, in 1939 and in 1940 (reports quoted in the D.S.Robertson report of 1983 already mentioned) the following reserve tonnage estimates were made:

H.B.Hatch, 1939		
Positive (Proven)	8,750 tons	
Probable	15,000 tons	
Possible	55,550 tons	
TOTAL	79,250 tons	at 0.237 oz.Au/t

H.B.Hatch, 1940	
Positive (Proven)	10,000 tons
Probable	37,500 tons
Possible	110,500 tons
TOTAL	160,000 tons

The above figures are based on one vein only, for the known strike length of the mine only, and for a slope length of the vein of 850 feet. Mr. Hatch, in 1939, reported 4,710 tons of rock being milled with a recovered grade of 0.133, the rock coming mainly from 6 foot wide development drifts cut along a 3½ foot wide vein system.

Most of the drilling information from which the above estimates were derived is shown on the longitudinal section below (page 28). In 1948, Gold City Porcupine Mines published a prospectus with the following additional drill intersections; all of which are from areas below the 360 foot level of the mine. These holes are not shown on page 28 because the intersections given are thought to be in a different plane.

DDH 117 from 70' N of shaft on the first level, 0.4 over 5 feet.
DDH 125 from 70' N of shaft on the first level, 0.36 over 5 feet,
DDH 113 from 70' N of shaft on the first level, 0.16 over 10 feet,
DDH 128 from 590 feet N of shaft on the first level, 0.07 over 10 feet,
DDH 129 feom 590 feet N of shaft on the first level, 7' with visible gold
DDH 401 from the fourth level, a 30' section with values up to 0.11, and
DDH 503 from the fifth level, a 22 foot section with values to 0.29.

The 1986 results are as follows:

DRILL HOLE	STRIKE* LENGTH REPRESENTED	INTERSECTION Oz./T/feet	BEGINS (Feet)	VERTICAL DEPTH (Feet)	GRADE OVER 5' Oz/T/Ft	GRADE x STRIKE	GRADE x STRIKE (assays cut)
S-19	300	0.015/7.2	443.5	340	0.015	4.625	4.625
S-12	200	1.195/1.5	455.5	430	0.385	71.771	60.000
S-20	100	0.125/2.2	584.3	460	0.055	5.550	5.550
S-13	100	trace				0.000	0.000
S-14	110	0.258/2.5	574.5	440	0.129	14.190	14.190
S-9	125	0.063/5.3	489	380	0.063	7.875	7.875
S-15	140	0.761/3.3	472	360	0.502	70.316	70.316
S-16	175	0.7136/9	363.2	285			
		incl. 1.299/3.7	368.5	290	0.9126	168.220	129.5
S-18	200	0.0144/5.4	481.8	370	0.0144	2.881	2.881
	1450 Ft=Strike Length					345.379	294.937

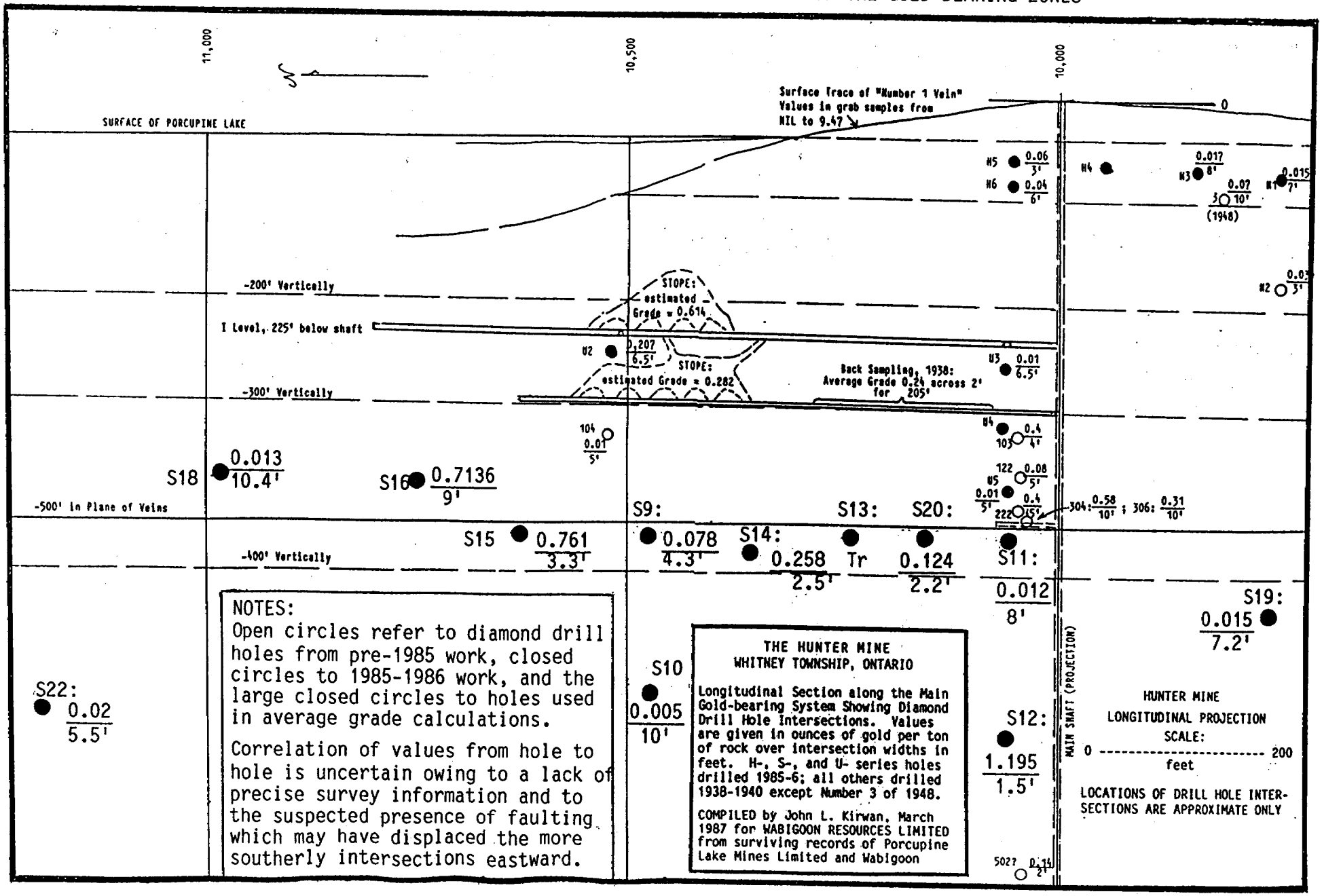
a. Average Grade = $\frac{345.379}{1450}$ = 0.238 ounces of gold per ton of rock

b. Average Grade, if the two distal holes, S-19 and S-18 are eliminated, thus reducing the strike length from 1450 to 950 feet, the Average Grade will become $\frac{345.379 - (4.625 + 2.881)}{950}$ = 0.3556 ounces gold/ton

The above values are taken across 5 feet measured along the drill hole,

*Strike Length=half the distance to hole on one side + half the distance to hole on other side.

HUNTER MINE: LONGITUDINAL SECTION ALONG THE CURVED PLANE OF THE GOLD-BEARING ZONES



a thickness which, on average, approaches the true width of the zone, since this is almost perpendicular to the drill holes at the points of intersection.

Cutting Assays

In producing mines, where mill results are available over a long period of time to indicate average grades and ranges of gold content in particular parts of the mine, it is a common practise to "cut" or reduce the assay values returned from drill intersections to some pre-determined value, commonly 4X the average grade. For example, if 15 drill holes were to penetrate a gold-bearing zone in a mine whose average grade is about 0.25, and two of these drill holes returned values over 1 ounce and two returned values of Trace or NIL, the mine geologist might cut the values over 1 ounce to 1 ounce (4X the average grade) and be tempted to raise the values of Trace or NIL to 0.06 (¼ the average grade) or else discard the low values. In the case of the Hunter, insufficient mill results are available to permit cutting the assay values to a meaningful figure, or raising assays (the opposite of cutting) to another meaningful figure, or discarding drill hole data. However, as an experiment, the assays from the 1986 drilling have been cut to 1 ounce (about 4X the grade determined in the drilling) with the following averages:

c. Average grade for the 1450 feet of strike length indicated above under a. $= \frac{294.936}{1450} = 0.2034$ ounces of gold to the ton, CUT to 1 oz.

d. Average grade for the 950 feet zone resulting from the elimination of holes S-18 and S-19 $= \frac{294.937 - (2.881 + 4.625)}{950} = 0.302$ ounces of gold to the ton, values CUT to 1 ounce.

Both of the above values are taken across 5 feet measured along the drill hole.

Inclusion of Additional Drill Holes

In the case of drill hole S-12, a second nearby cut was made in the zone by hole S-11, and in the case of drill hole S-9 a second cut was made by hole S-10, in each case some 200 feet away, but in the

same plane. If the results of holes S-9 and S-10 are averaged together and of S-11 and S-12 are averaged together to produce average values in the planes of section of S-9 and S-12, the following average over the 950 foot section below the mine workings results. S-11 had an intersection of 0.012 over 8 feet, S-10 had an intersection of 0.005 over 10 feet.

e. Average Grade for 950 feet of strike length, with holes S-10 and S-11 included = $\frac{299.477}{950}$ = 0.3309 ounces of gold to the ton.

If, in addition to including holes S-9 and S-10, the assay results are cut to 1 ounce, the following averages result along the 950 foot length below the mine workings.

f. Average Grade for 950 feet of strike length, with holes S-10 and S-11 included = $\frac{294.937 - 39.931}{950}$ = 0.268 ounces of gold to the ton, the values cut to 1 ounce.

Above figures are averaged across 5 feet taken along the axis of the drill holes.

SIGNIFICANCE OF THESE FIGURES

What is termed the "nugget effect" in gold mineralization produces extremely erratic assays in drill hole intersections from ore zones: very high or very low assays may result from drill hole sampling of ore horizons of almost any grade, and averages calculated from these very low or very high assays tend to be misleading. Only where values are obtained from a very large sample number--for example from bulk sampling or close-spaced drilling techniques--may the averages be expected to approximate the true value. Mining and milling of specified tonnages, panel sampling, or 5 x 5 grid sampling from underground or from surface exposures of the mineralized zone, or close-spaced diamond drilling (for example 25 x 25 feet) from surface, are all commonly used methods of approximating the grade at a point in a deposit. With the present information from widely spaced drill holes the calculation of grades and tonnages is felt to be a very hazardous undertaking.

What the drilling results at the Hunter do indicate is that the rock is gold-bearing, that the gold occurs in multiple zones, that these zones extend to distances both below the mine workings and in both directions northward and southward from them, and that some very interesting assays are available from rock in place. The drilling results give a first indication of the geometry of the gold-bearing zone or zones.

While it has been stated above that bulk or high density sampling is necessary to obtain a more precise indication of the actual average grade of the gold at depth, some indication of what may be expected may come from the results of previous mining operations:

1. In a report by E.A.Hart in 1979 it is mentioned that in 1938, 52 tons of test ore were shipped from the stope area on the 280 foot level of the mine to a test mill and yielded an average grade of 0.70 ounces of gold to the ton.

2. The mine operators in 1939 (above, page 26) calculated the average grade of reserves to be 0.237 ounces of gold to the ton.

3. H.B.Hatch's 1939 report mentioned 4,710 tons of development rock to have averaged 0.133 ounces of gold to the ton, taken across a width of 6 feet. David S. Robertson's 1983 report on the Hunter makes the following estimates from this figure, from the 1938 assay plans, and from records of actual mining from the site:

280 Foot Level	Length	830 feet
	Stoping Length	200 feet = 24.1% of total length
	Stope Grade	0.614 ounces of gold to the ton
	Drift Grade	0.084 ounces of gold to the ton
	Average	0.212 ounces taken across 42 inches
360 Foot Level	Length	540 feet
	Stoping Length	111 feet = 20.6% of total length
	Stope Grade	0.282 ounces of gold to the ton
	Drift Grade	0.103 ounces of gold to the ton
	Average	0.140 ounces taken across 42 inches
Averages	Stope Grade	0.495 ounces across 42 inches
	Drift Grade	0.092 ounces across 42 inches

To bring the above average into concordance with the present report where a 5 foot width is felt to be a better approximation to a mining width than 42 inches used by Robertson, the following results:

Averages, 5 ft.	Stope Grade	0.346 ounces of gold to the ton
	Drift Grade	0.064 ounces of gold to the ton

Assuming the Robertson figures to be correct elsewhere in the Hunter Mine than on the first and second levels, the average grade in the entire deposit will depend on the relative lengths of stope to drift (which Robertson gives as 22.7:77.3) and the average volume of stope material, a much more important figure: for every foot of access drift that is driven, 10 feet of stope may be removed, thus changing the ratio of material sent to the mill from about 1 to 3.4 to 10 to 1. Moreover, the 1986 drilling results suggest that the high grade portion of the deposit may be broadening at depth, thus changing the stope/drift ratio, and thickening along strike, as suggested in the 9 foot intersection in hole S-16.

Taking the above figures from previous operations on the site, and integrating them with the indications of continuity obtained in old and new drilling, it seems likely that the calculated grades from the 1986 drilling (between 0.2 and 0.36 ounces to the ton) for mining operations in one vein system only along a strike length of 950 to 1450 feet, may be realistic estimates of the true grade to be expected in actual mining.

TONNAGE

Insufficient drilling has been done to define tonnage potential at the Hunter Mine. Taking the 1450 foot length of the gold-bearing zone that has been indicated in diamond drilling, approximately 700 tons per vertical foot along the structure might be expected. There is drilling evidence that this structure may be traced down dip for as much as 1000 feet (section, page 15 above) but what the thickness and grade of this zone may be has not been determined, nor what its persistency may be horizontally.

OTHER POSSIBILITIES

The presence of multiple veins is indicated in both modern and old diamond drilling, and gold-bearing zones in addition to the one discussed in this report might be expected to be developed during future mining operations.

The possibility of repetition of the vein structures on the eastern side of the property exists (pp 14-17 above).

Additional alteration zones may exist downwards in the stratigraphic section beneath the Hunter Mine.

Farther down in the succession, below the Hunter Mine workings at an unknown depth, the sericite schists and iron formations from the Deloro Group are thought to exist. These contain gold-bearing zones where they outcrop at surface on the ground south of the Hunter claims which may extend to areas below the Hunter Mine.

RECOMMENDATIONS

Diamond Drilling

So as to test for repetition of the vein structures on the east side of the property, to test for other alterations zones in the succession, and to test for the sericites and iron formations of the Deloro Group at depth, a long diamond drill hole, perhaps 3000 feet in length, should be cut from the northeastern part of the property into the east limb of the anticline on the claims.

Drilling from the ice of Porcupine Lake to determine the shape of the gold-bearing structures under the lake should be done before the second phase of underground operations to be recommended below is begun. However, as drilling from the ice, through thick overburden, and through soapstone to reach the vein systems is extremely expensive (some drill holes costing $35 a foot and others averaging $25) it is recommended that as much exploration drilling from underground as possible be done.

Surface Stripping

A limited amount of stripping, in continuation of the stripping conducted on the site in 1983, should be done so as to study the geometry and gold distribution of the several vein structures where they reach surface. It is thought that this would be the cheapest possible way of examining the gold distribution and the geology of the deposits.

Underground Operations

Mining and exploration operations on the site, both historically and at the present time, have indicated the presence of a gold-bearing zone with a strike length in excess of 1000 feet and a dip length of perhaps the same amount, containing an average gold content that is usually considered to be of commercial grade. For comparisons, the average grade at the Dome Mine, Hunter's neighbour to the west, is in the order of 0.131 ounces of gold to the ton (1981 figures) and Pamour Mines in the Timmins area operate in the 0.07 to 0.08 class.

Underground operations are now warranted, as follows:

a. Dewater the mine workings to the deepest levels, refurbish the shaft, build headframe and erect hoist for access to the entire mine workings, build surface plant in accordance with the plan on file with the City of Timmins.

b. Drive a northeast-trending drift from the 400 foot (true depth below shaft collar: 360 feet below the lake and 100 feet below the 360 foot level of the mine). This should be below the gold-bearing zone by about 40 feet. Length of drift: 1000 feet initially, 500 feet of crosscuts.

c. From this drift conduct a series of drill holes to explore the gold-bearing zones in detail, both in the hanging wall and the footwall.

d. Drive raises into the gold-bearing zone(s) and bring out multiple ton bulk samples for assessment. In all, perhaps 10,000 tons might be removed.

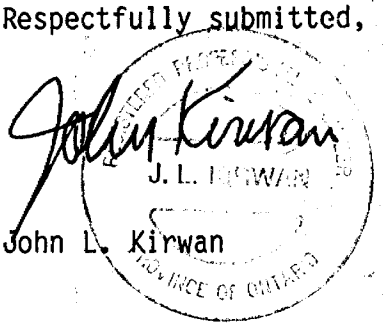
e. The workings should be thoroughly mapped, sampled, and surveyed.

The above would constitute a first phase of mining--mainly an exploration and assessment program--and take a year to complete at a cost of about $2,500,000. Based on the results of this work and on the results of the surface diamond drilling recommended above from the frozen surface of Porcupine Lake, a further, second, phase of underground operations would be recommended in the form of a second drift below the first from which mining operations would proceed upwards

so as to connect the two drift systems with stopes. A cost of about $1,500,000 is estimated for this second phase and a two year period is forecast.

An initial exploration/development/mining operation on the site, at an estimated cost of $4,000,000 and a time frame of 3 years, is therefore recommended to bring the Hunter deposit into production phase.

Respectfully submitted,



John L. Kirwan

At Timmins, Ontario
March 20, 1987

DECLARATION

I, John Laurence Kirwan of the Town of Centre Harbor, State of New Hampshire, United States of America, and of the City of Timmins, Province of Ontario, Canada, state:

1. That I am a practising consulting geologist with offices at 1111 Government Rd.,South Porcupine, P.O.Box 2150, Timmins, Ontario, P4N 7X8 and at Knockdoe, Old Meredith Road, P.O.Box 985, Centre Harbor, NH, 03226.
2. That I am President and Principal Consultant of John L. Kirwan and Associates Limited (Earth Resource Associates) which was incorporated in the Province of Ontario in 1976.
3. That I have practised my profession as Geologist contunuously since 1961 and as Consulting Geologist continuously since 1972.
4. That I am the holder of a Bachelor of Science degree in Geology and Mathematics from Carleton University and of Master of Science and Doctor of Philosophy degrees, both in Geology, from the University of London in England.
5. That I am a registered Professional Engineer in the Province of Ontario and in the State of New Hampshire, and that my licence to practise in either juristiction is not, and never has been, in a state of suspension or revocation.
6. That I am a Life Fellow of the Geological Association of Canada and of the Royal Geographical Society of England and have been elected an Associate, Fellow, or Life Fellow of other scientific or professional societies in Canada, the USA, Ireland, England and Brazil.
7. That the material presented in this report is accurate and that I have direct knowledge of this material; that I have examined all of the data myself, or supervised other competent professionals in their work with this material; and that the conclusions and recommendations reached in this report are my own and have not been derived through the influence of other parties, including the management of Wabigoon Resources Limited.
8. That I do not now have, and do not anticipate receiving any direct or indirect financial or propriorty interest in the property under discussion. However, my wife, Victoria Helen Hanson is the registered holder of 5000 common shares of Wabigoon Resources Limited as of this date, March 20, 1987

John L. Kirwan

GEOLOGICAL REPORT

HUNTER MINE CLAIMS

SOUTHWEST WHITNEY TOWNSHIP

TIMMINS AREA, CANADA

For

Wabigoon Resources Limited

by

John L. Kirwan

Earth Resource Associates,
1111 Government Road,
PORCUPINE, Ontario.

P.O.Box 2150,
Timmins, Ontario, P4N 7X8

705 235-2777

September 1, 1986

GEOLOGICAL REPORT, HUNTER MINE CLAIMS, WHITNEY TOWNSHIP, ONTARIO

by

John L. Kirwan

SUMMARY

The 7 claims (240 acres) which comprise the Hunter Mine property have been the scene of mining and exploration activity since the discovery of gold on them in late 1907, including the development and operation of a producing gold mine which ceased production in 1940.

Geologically, the ground straddles the boundary zone between two Archean terrains, consisting to two volcanosedimentary complexes: the Deloro Group to the south and the Tisdale Group to the north. Both Groups are hosts to important lode gold deposits, with the Tisdale Group containing the larger tonnage deposits such as the Dome and Hollinger Mines.

The Deloro Group, as exposed near the Hunter Mine consists of east northeast-trending carbonate-sericite schists, lean oxide and sulfide iron formation, ultramafic sheets, and chlorite schists, all dipping, and topping, northward, folded into gentle anticlines and synclines which plunge to the east at low angles. Gold is associated in these rocks with the sulfide iron formations.

The Tisdale Group, as exposed northwest from the Hunter Mine, is made up of steeply-dipping, south facing pillow lavas and mafic sheets with intercalated sedimentary units. In these rocks, gold is associated with the mafic units, but in crosscutting structures such as fault zones with quartz stockworks as occur at the nearby Davidson Mine.

Between the Tisdale Group and the rocks of the Hunter Mine area, the Timiskaming Series occurs, consisting of steeply dipping to overturned clastic sedimentary rocks, mostly greywackes and conglomerates, trending east northeasterly and cutting across the northwest-trending Tisdale rocks in angular unconformity. The Timiskaming Series hosts major gold deposits at the Dome Mine to the west and at the Pamour Mine to the east and contains several unexplored gold showings.

The Hunter Mine rocks, south of the Timiskaming and north of the Deloro, consist of a thick succession of greywackes capped by graphitic argillites which are overlain by a 300 foot thick unit termed the Alteration Zone which consists of highly carbonatized sericite schists, quartzose units and quartz veins with gold mineralization cut by thin dikes of quartz feldspar porphyry. These rocks underly a thick succession of pillowed ultramafic lavas and possibly non-extrusive ultramafic units. The Hunter rocks have been deformed into anticlines and synclines which trend nearly north-south and plunge very gently northward. The folds have an amplitude of about 1000 feet and a periodicity of about 2500 feet and are slightly overturned westward. The Hunter rocks are believed to represent the contact zone between the Deloro and the Tisdale Groups, the gold mineralization being associated with the unconformity between these two groups, an unconformity that may be repeated both eastward and westward from the property. The gold-bearing iron formations of the Deloro Group should occur at depth below the Hunter

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GEOLOGICAL REPORT HUNTER MINE CLAIMS

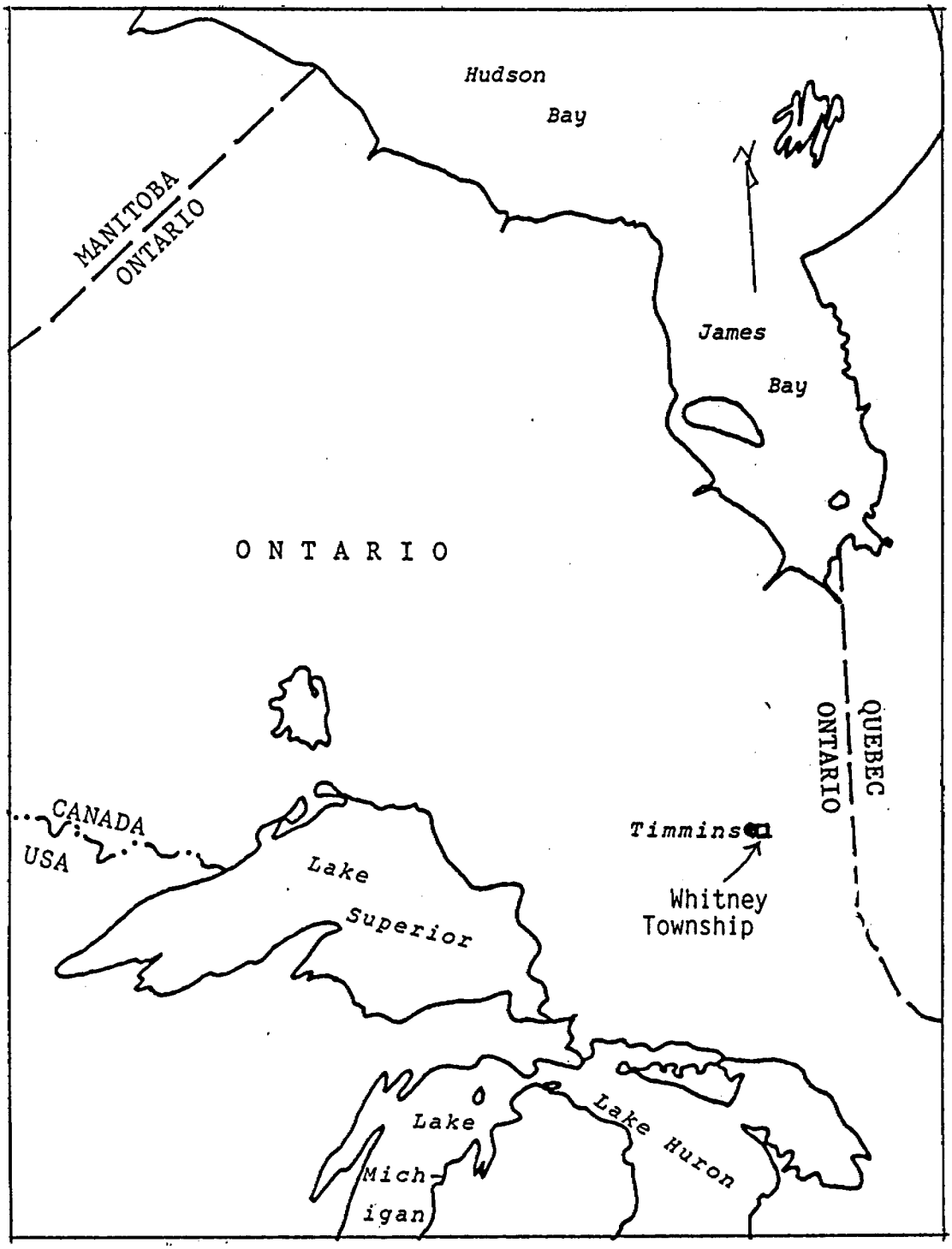
SOUTHWEST WHITNEY TOWNSHIP, TIMMINS AREA, CANADA

by

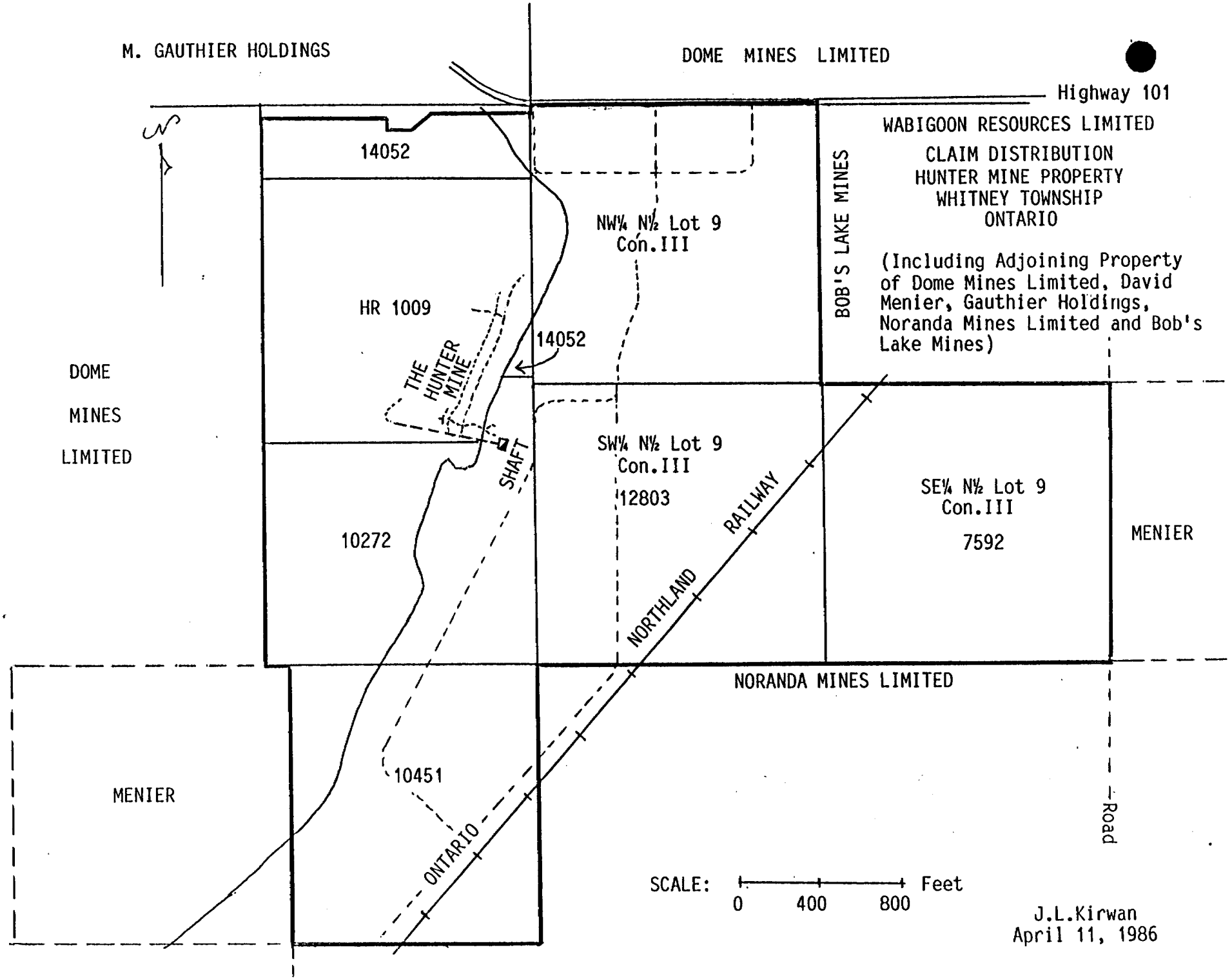
John L. Kirwan

INTRODUCTION

This is intended to be a brief geological report to describe the geological setting of a group of 7 mining claims situated in the southwest part of Whitney Township, City of Timmins, Porcupine Mining District, Ontario, Canada. The claims are numbered HR1009, 10452, 10272, 12803, 7592, and one, unnumbered. All are patented and registered in the name of Wabigoon Resources Limited of Toronto. They underly all but the northeastern quarter of the north half of Lot 9, all of the eastern half of the north half of Lot 10, and the northeastern quarter of the south half of Lot 10, Concession III, Whitney Township. Total area is about 240 acres. No liens, mortgages or other encumberances are recorded against the clear possession of the mining rights to this ground by Wabigoon.



Location of the Timmins Area of Ontario


M. GAUTHIER HOLDINGS
DOME MINES LIMITED
Highway 101
WABIGOON RESOURCES LIMITED
CLAIM DISTRIBUTION
HUNTER MINE PROPERTY
WHITNEY TOWNSHIP
ONTARIO
(Including Adjoining Property of Dome Mines Limited, David Menier, Gauthier Holdings, Noranda Mines Limited and Bob's Lake Mines)
BOB'S LAKE MINES
14052
NW¼ N½ Lot 9 Con.III
HR 1009
14052
THE HUNTER MINE
SHAFT
DOME MINES LIMITED
SW¼ N½ Lot 9 Con.III
12803
SE¼ N½ Lot 9 Con.III
7592
MENIER
10272
RAILWAY
NORTHLAND
NORANDA MINES LIMITED
MENIER
10451
ONTARIO
Road
SCALE:
0
400
800
Feet
J.L.Kirwan
April 11, 1986

This report was prepared for the Management of Wabigoon Resources Limited to describe the geological results of the exploration program which was conducted on the ground between June of 1983 and June of 1986. This exploration continues.

HISTORY

In late 1907, Gore Bruce, a prospector who had been grubstaked by a group of Toronto-based businessmen headed by H.F.Hunter, an attorney, discoved visible gold in quartz veins under the waters at the east end of Porcupine Lake in what was then an utter wilderness. He and his two companions stayed on the site for the winter, protected their find, and recorded their claim early in 1908, thereby leading to the staking rush of 1909 which resulted in the discoveries of the Dome, Hollinger, Davidson and McIntyre Mines of the Timmins area. Drilling by the Hunter interests in 1910 outlined enough gold-bearing material to justify the sinking of a shaft and the development of a mineable deposit, but fires in 1911 and 1913 and the coming of the First World War in 1914 closed the operation. Additional work in the 1918-1926 period was terminated by litigation between 1927 and 1935 which was initiated by the Hugh H. Sutherland interests at the death of H.F.Hunter.

Development in 1935 (under option to Hollinger) and in 1937-1940, deleloped a small gold orebody on what was known as the Number 1 Vein, and about 10,000 tons of ore was removed from it before the mine closed (in 1940) from the drying up of development capital for gold after the outbreak of World War II. Some drilling from underground in 1940 indicated that the gold-bearing zones continued to much greater depths than had been mined. A geophysical survey in 1945 and 5 diamond drill holes put down in 1948 failed to locate gold-bearing zones elsewhere on the property.

Various attempts were made in the 1970's by the Sutherland interests (Hugh H. Sutherland, Jr.) to exploit the old mine, the tailings dump, the stockpiles or targets on other parts of the property, but without success. Recommendations were made by Earth Sciences International, and by E.A.Hart Limited of Toronto to do close-spaced drilling in the vicinity of the mine workings but this did not take place.

Gold Exploration in Timmins Area

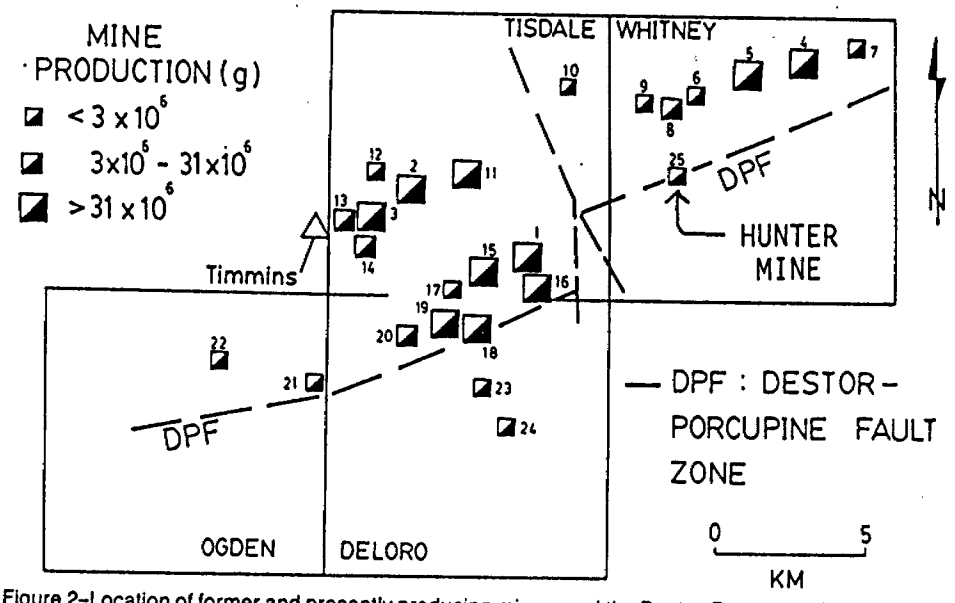


Figure 2–Location of former and presently producing mines, and the Destor-Porcupine Fault Zone in the Porcupine camp. The mining properties* are:

Producing Mines
1–Dome.
2–McIntyre (Pamour Schumacher property).
3–Hollinger (Pamour Timmins property).
4–Pamour #1.
11–Westfield Minerals (formerly Coniaurum; Pamour option).
19–Aunor (Pamour #3 Mine).
20–Delnite.
Former Producers
5–Hallnor.
6–Broulan Reef.
7–Hoyle.
8–Hugh Pam.
9–Banner Porcupine (formerly Canusa).
10–Davidson-Tisdale.
12–Consolidated Gillies Lake.
13–Moneta.
14–Vipond.
15–Paymaster Consolidated.
16–Preston.
17–Fuller Claim (Edwards shaft).
18–Romfield Building Corp. Ltd.
(Buffalo Ankerite Mine: Pamour option).
21–Kenilworth.
22–Desantis.
23–McLaren-Porcupine.
24–Faymar.
25–Porcupine Lake.

*For simplicity, the traditional names of mining properties and prospects, as listed by Ferguson *et al.* (1968) and Carlson (1967), are used.

Location of the Hunter Mine (No. 25) in Relation to the Major Gold Producers of the Timmins Area. From OGS Study 26.

In 1983 the property was acquired by Wabigoon Resources Limited and appraised, first by Arthur S. Roberston Associates of Calgary and, second, by John L. Kirwan and Associates of Timmins. Both of these consultants concluded that the property warranted further work and that the indications were that the mine was not completely worked out but had indications of on-strike and down-dip continuity of the gold-bearing zones and, further, that additional potential existed elsewhere on the property for other deposits. In addition, Kirwan's study indicated that several parallel veins existed in addition to the one that was mined, and that potential existed for numerous other, parallel, zones. In preparation for more accurate appraisal of the ground, about a half acre of it was stripped of overburden in the vicinity of the Number 1 Vein, but this work was stopped by the City of Timmins in which the old mine is physically situated, pending rezoning. The stripping showed that the gold occurs in altered sedimentary rocks and that the deposit is thus geologically dissimilar to the normal deposit in the Timmins area. Sampling of surface exposures of the Number 1 Vein produced assays up to 9 ounces of gold per ton of rock, and sampling of a surface muck pile showed an average of about .18 ounces in this material from underground.

In 1984 the property was rezoned and an agreement reached with the City whereby Wabigoon would develop a mineral deposit or, failing this, restore the land to parkland condition.

Geophysical work was done in 1985, both over the water of Porcupine Lake and over the land portions of the claims, 8 diamond drill holes were put down to test for structure and continuity of the known mine geology, and the mine workings were pumped out to a depth of 300 feet, the geology and ore structures examined, and 5 drill holes put down from underground. This work showed that the 4 or more gold-bearing veins continue at least 400 feet beyond the mine workings southward, that they dip westward about 45°, and that they occur in an alteration zone which can be traced across the property, geophysically, some 4000 feet. Compilation of old data indicated that the zone occurs on the flank of an anticline whose axis exists to the east and trends nearly north-south.

In the winter months of 1986 some 19 drill holes were put down

from the ice of Porcupine Lake. These showed that the alteration zone and the contained quartz veins--both gold-bearing and relatively barren--were deformed into a syncline whose axis is under the lake and trends nearly north-south, pitching gently northward. They also showed that the quartz veins could be traced for the full length of terrain that was drilled (2500 feet) but that only some 1450 feet of this length contained respectable gold values (0.22 ounces to the ton across 5 feet). A length of 950 feet averaged 0.33 across 5 feet within this 1450 feet.

Geological mapping was completed by the site geologist in June, 1986 and a general compilation of all geological data and interpretation of the geophysical data was made of the Hunter claims and of considerable surrounding ground. The understanding of the geology of the area that resulted from the Hunter work, and the understanding of the Hunter geology that resulted from the surrounding work combined to produce a knowlegde of the local geology that is considerably better than was known before. This information has not only academic value, but also has considerable value in the exploration of additional gold deposits and extension of the known ones.

The present report with its two maps is intended to describe the geological setting of the Hunter gold deposit and of the surrounding area, where several other gold deposits are also known.

It is recognized that the continuing work on the Hunter may in time modify the conclusions reached here.

CHAPTER 1

REGIONAL GEOLOGY

The Timmins area of Canada is within the Abitibi Volcannic Belt of the Superior Structural Province of the Canadian Shield. The volcanic belt occupies an area of about 100,000 km^2 and consists of nearly east-west-trending, steeply-dipping volcanic, sedimentary and intrusive rocks of Archaen age, of approximately 2800 million years. Within the same area are included older rocks which may be of the order of 3200-3700 million years (my) and younger intrusive bodies including diabase dikes of 2400, 1700, 1200 my, and possibly younger intrusives such as kimberlites, alkaline bodies and carbonatites. Paleozoic rocks of about 400 my occur in the Cobalt area and overly the Abitibi Belt rocks north of Cochrane, Ontario, and once may have overlain the rocks of the Timmins area as a veneer of limestones occupying a system of rift valleys. Associated with this complex geological history have been fault systems of many different ages and orientations.

Thanks to the enormous value of the mineral deposits of the area

a vast amount of geological work has been done. Yet, paradoxically, the degree of understanding of the geological history remains relatively poor. Mining camps such as Timmins, Cobalt, Kirkland Lake, Noranda and Val d'or exist where, thanks to the mine workings, the geology is known in three dimensions. Yet areal mapping is often poor or, where relatively complete, of poor quality owing to paucity of outcrop, varying standards of mapping, differing perspectives or prejudices of geologists, or unavailability of proprietory information such as drilling results and geophysical work.

In the Timmins area, several traditions in mapping have colored geological thinking, possibly detrimentally. Genetic classifications of rock are used in areas where no genetic information is available: green rocks are commonly mapped as Andesites, though the extrusive nature of the rock is not shown and its composition not known. In fact many of these rocks are chemically Basalt and probably intrusive in origin. Similarly, the writer has encountered "Rhyolite Tuffs" that can be shown to be altered Argillite; "Porphyry" that is Crystal Tuff, "Dacite" that is altered Greywacke, and "Arkose" that is weathered Granite.

Three geological reports are particularly useful for an understanding of the geology of the Timmins area. These are:

1. Ferguson, S.A.(1968): Geology of Tisdale Township. Ontario Department of Mines Geological Report 58.
2. Kirwan, J.L. (1968): Geology of the Northern Porcupine. University of London, PhD thesis.
3. Pyke, D.R. (1982): Geology of the Timmins Area. Ontario Geological Survey Report 219.

Ferguson's report, derived for the most part from detailed mapping by Hollinger Mines in the 1930's, indicates the geology in three dimensions in the vicinity of the main mines of the area; Kirwan's, which is derived from field mapping south of Timmins, compilation in the vicinity of Timmins, and geophysical work and diamond drilling in the area north of Timmins, is concerned with a synthesis of the geological history of the area; and Pyke's, based on compilation and field work, covers the ground eastward and southward from Timmins as seen in

the light of more recent concepts of Timmins geology, and Precambrian geology in general.

A geological compilation map published at 500 feet to the inch was published to cover the north half of Whitney Township (Ontario Department of Mines Maps P9, P10, 1958). The Ontario Geological Survey Resident Geologist's Assessment Files, several sets of private data files, and company files were used, together with field traverses, to compile data for the map of southwestern Whitney Township included with this report. The 1983-1986 work on the Hunter Mine property provided the essence of the data used herein.

GENERAL GEOLOGY

Kirwan's 1968 work recognizes 4 volcanic-sedimentary cycles of deposition in the Timmins area. The oldest of these is represented in Fripp Township to the south and consists only of the uppermost units of the cycle: greywackes and argillites in part altered to feldspathic gneisses. Overlying this, the Price Group consists of mafic lavas altered to hornblende gneisses and chlorite schists, felsic units now represented by coarse sericite schists, and thin horizons of argillite, now partly recrystallized to feldspathic schists. The Deloro Group is made up of mafic to intermediate volcanics, sericite schists, and both argillite and greywacke, with numerous sulfide and oxide iron formation units in the middle (sericitic) unit. The Tisdale Group consists, in its exposed sections, of intermediate volcanic units overlain by a thin acid pyroclastic unit and topped by a thick succession of greywacke.

The above-mentioned units are listed southward to northward in order of decreasing age, and it is therefore apparent that they represent a succession of deposits that reflect a northward-migrating shoreline of deposition laid down in early Precambrian time which must have been at least in part derived from an older landmass to the south. Northward, the sedimentary rocks grade through zones of finer-grained sediments into siltstones and argillites with minor quartzite and limestone, now largely altered to granitic gneisses and marbles, to form a broad depositional basin equivalent in age to the shoreline facies of volcanics and metasediments of the Volcanosedimentary cycles mentioned above.

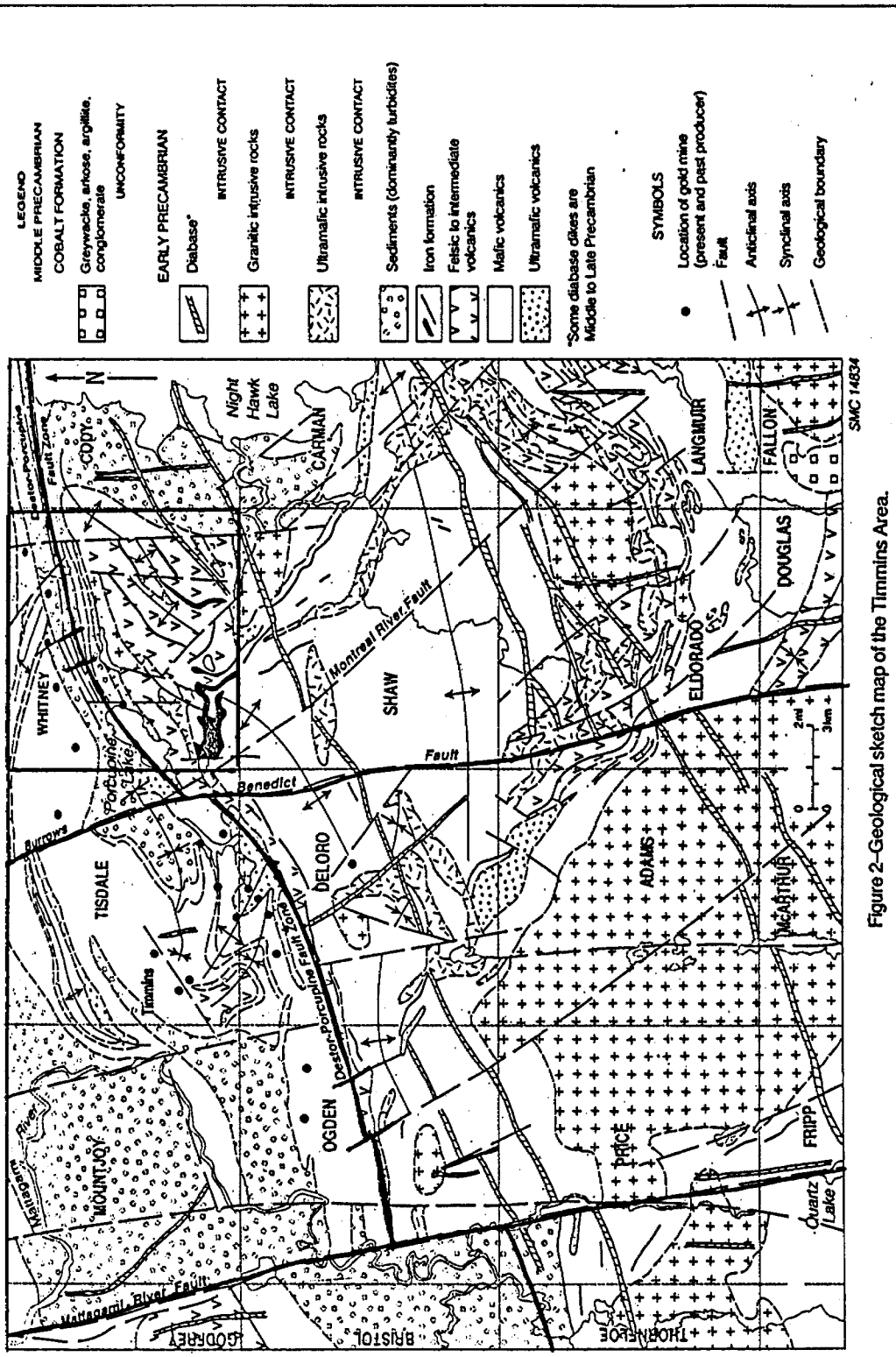


Figure 2-Geological sketch map of the Timmins Area.

Geological Summary of the southern part of the Timmins Area, including Whitney Township (outlined). Slightly modified from the map presented on page 7 of Pyke's (1982) geological report.

The Hunter Mine area straddles the contact area between the Deloro Group and the Tisdale Group, an area occupied by the major Destor Porcupine Fault. In order to understand this area, the nature of the faults should be known. This report, therefore, will be written in somewhat reverse order, beginning with the fault systems and ending with the deposional history of the area.

1. THE DESTOR-PORCUPINE FAULT

In the Timmins area, this fault separates the Deloro from the Tisdale rocks, thus obscuring the relationships between the two groups. The evidence for the existence of this great fault is::

a. a physiographic linear along which outcroppings of rock are rare, but which is nonetheless well-defined, narrow, and sufficiently prominent to be seen in satellite images taken from space. The linear is sinuous and extends for a distance of several hundred miles from an area west of Timmins to well beyond the border of the Province of Quebec.

b. a geophysically recognized zone which shows up

   i. on aeromagnetic maps as a zone against which prominent magnetic units abruptly truncate,

   ii. on aeromagnetic and ground magnetic maps as a zone of intense magnetic "high" which diamond drilling by Hollinger Consolidated Gold Mines, and others, has shown to be an ultramafic unit,

   iii. on electromagnetic maps as a zone of ionic conductivity, and

   iv. on AFMAG surveys as a zone of intense telluric currents.

c. a geologically identified unit across which the relatively higher grade metamorphic rocks of the Deloro Group which contain iron formations give way abruptly to the relatively lower grade metamorphic rocks without iron formations in the Tisdale Group across a zone where the moderately dipping Deloro rocks have been dragged to a nearly vertical attitude. Shearing associated with this fault is seen underground at the Kenilworth Mine as a vertically-dipping zone about 300 feet thick.

Drag on the north-south anticline in Tisdale Township indicates to Kirwan (1968) that motion along this fault has been left-handed in a lateral sense and with the south side moved up, in both cases by a

matter of miles.

The fault zone is far from simple. A parallel zone known as the Pipestone Fault east of Timmins appears to be genetically related and to splay off from the Destor-Porcupine; several other splays appear to have produced a series of northwest-trending shear zones in the area eastward and northward from Timmins; and other splays containing bodies of green carbonate with gold occur in the Timmins area at the Dome and Aunor and Buffalo Ankerite mines, at the Kenilworth Mine west from Timmins, and in several prospects in Deloro Township, notably the Powell property. The carbonate is mapped by many mine geologists as "ultra-basic" and regarded as intrusive; the gold is regarded by some as genetically related to these bodies and to the Destor-Porcupine Fault and not to the porphyries with which it has been historically and traditionally associated. The Destor-Porcupine Fault System appears to be in part extremely old as it antedates the porphyry bodies which are themselves coeval with the volcanism, if indeed the porphyries served as heat engines for the remobilization of the gold which came in with the faulting. The porphyries are themselves sheared by later fault action.

The Destor Porcupine Fault is regarded as a complex, through-going, sinuous series of branching faults and shears in which carbonate-rich ultrabasic sheets occur and along which intrusions of many differing compositions occur, ranging from ultramafic to felsic, some of which may have reached the surface as volcanic rocks. The fault system dips very steeply and extends to tremendous depth, to judge from the AFMAG response. It may be one of a family of similar fault systems as it is remarkably parallel with the Kirkland Lake-Larder Lake Fault to the south (which can be traced westward over 100 miles by means of satellite images, and eastward a similar distance) and several other, similar zones northward which, however, are less well-defined (Ontario Geological Survey Compilation Map 2205).

After the deposition and folding of the Keewatin rocks of the Tisdale Group, the Destor Porcupine Fault Zone appears to have been active, for it served as a zone of deposition for the conglomerates of the Timiskaming rocks at Timmins and Kirkland Lake, which rocks are

themselves cut by ultramafic units related to the faulting.

MATTAGAMI RIVER FAULT SYSTEM

This broad zone of faulting was first described and named by Kirwan (1968) who recognized its location and displacement by means of aeromagnetic and ground magnetic data and by field mapping in the areas northwest and southwest from Timmins respectively. The Main Fault occurs very close to the Mattagami River and is oriented a little west of due north. Displacements of magnetic marker horizons are between 3 and 7 miles in a left-handed sense, the amount increasing northward, but units of different ages have different displacements: the east-west volcanic units (2800 my) are displaced the full amount but the younger diabases (1200 my) are displaced about one-sixth that amount. Thus the fault has had a long history of activity: perhaps longer than indicated by these data as a 1931 earthquake epicenter appears to be coincident with it!

Both westward and, to a lesser extent, eastward, a great number of north-south diabase dikes occur in parallel fractures, each with a measurable displacement of a few feet to a few hundred feet in a left-handed direction. Cumulatively, the displacement across the subsidiary faults must have a displacement similar to the Main Fault. Slickensides in Fripp Township southwest of Timmins and an increase in metamorphic grade westward combine to indicate that in addition to the left lateral displacement across the fault system, there is also a net uplift effect westward. Thus the area westward from Timmins across the Mattagami River Fault System, like the area southward from Timmins across the Destor-Porcupine Fault System, represents a zone of uplift in which progressively older rocks are exposed, which rocks have also been displaced in a left lateral sense.

Both the Destor-Porcupine and the Mattagami River Faults appear to have interacted. The AFMAG survey shows that the Destor-Porcupine has been offset by the Mattagami River Fault a distance of about 6 miles in the area west from Timmins. Yet there is also evidence that part of the fault continues without interruption into Bristol Township (S.A. Ferguson, Geology of Bristol Township, Ontario Department of Mines,

Vol. LXVI Part 7, 1957).

Eastward from the Mattagami River, at least as far as Nighthawk Lake, numerous faults with which diabases are associated, which are sub-parallel with the Mattagami River Fault and which also have left-handed displacement, exist. The most prominent of these is the Burrows-Benedict Fault which passes through Murphy, Tisdale, and Deloro Townships and is exposed in the Dome mine workings. A great number of similarly-oriented faults are recorded in the northeast portion of Whitney Township east of the Hallnor Mine, some with right-handed displacement of a few to a few hundred feet, some with diabase dikes associated, and all clearly defined by means of the displacement of an easily recognized marker horizon, conglomerate (Ontario Department of Mines Map 47a, 1938). A great number of similarly-oriented faults, all with left-handed displacement and several with associated diabase dikes, are indicated in the southwestern part of Whitney Township in the present work, most particularly in the vicinity of the Hunter Mine where geophysical work is of sufficient detail to quantify them.

If generalizations can be made from the information generated in the vicinity of the Hallnor and the Hunter Mines, it would appear that the Whitney Township area has been sliced through by a vast number of faults with a general strike direction of about 350°, most with a left lateral displacement but some with a right lateral displacement, and some with contained diabase dikes. The vertical displacement of these faults is not known, whether with the west side upward as is indicated for the main Mattagami River Fault system, or more erratic displacements. In eastern Whitney Township there are progressively older units of the Deloro Group exposed as one progresses westward from Nighthawk Lake, but this may be due to fold geometry. If due to faulting it would indicate that the west sides of these fault slices has moved upwards.

Dip of the fault planes is probably very steep westward. The diabase dike which slices through the Hunter Mine has a westward dip of about 85° (more or less as survey information is inaccurate) and its attitude gives the attitude of the fault in which it occurs, and possibly therefore of the entire fault system, although this is obviously somewhat speculative.

MONTREAL RIVER FAULT SYSTEM

Several northwest-trending, extremely regular and persistent, linears are visible in the Timmins-Cobalt area on topographic maps, air photographs and satellite images. The Montreal River occupies one of these linears, hence the name.

Faults of this northwestern orientation have displaced the Paleozoic rocks in the Lake Timiskaming area and are thus younger than about 400 my. They are reported to be part of the Ottawa-Bonnechere Graben with which are associated various alkaline intrusive bodies, carbonatites, and possibly kimberlites, and may include the Monteregion Hills of alkaline compositions and Mesozoic age. These faults may be, therefore, exceptionally young when viewed in the Archaen timeframe of the Timmins area. See Pyke, 1982 p.70.

OTHER FAULTS

Most faults in the area can be related to one or another of the above three systems: a northeast-trending fault at the south edge of the Hunter Mine property (shown on the accompanying maps as the Bob's Lake Fault Zone) is correlated with the Destor-Porcupine Fault; numerous and very prominent linears with a nearly north-south orientation in the high grade metamorphic terrain southwest from Timmins, visible on topographic maps, satellite images, and air photographs, are all presumed to be part of the Mattagami River Fault system; north northwest-trending faults in the same area as shown on OGS Map 2205, are believed to be horsetails off of the Mattagami River Fault System; the north-south diabase dike swarm which is so prominent in the area south from Matheson, Ontario (OGS Map 2205) appears to be part of the Mattagami River Fault system; and numerous northwest linears in the area north of Kirkland Lake may be part of the Montreal River Fault system.

Other faults appear to exist: the prominent east northeast-trending diabase dike swarm of Late Precambrian age in the Timmins-Noranda area represents a fault pattern that does not appear to be one of the obove-mentioned systems; northeast-trending faults in the Kirkland Lake area may also belong to different systems; and numerous small-scale faults located in detailed mapping of almost any area are probably also independent of these systems.

Many of the faults, when seen in mine workings and outcrop have very little expression, sometimes seen as a well-healed knifeblade-thin line or else as a thin fault gouge a fraction of an inch thick, either healed with chlorite, carbonate or quartz or else filled with a soft clay gouge. In relatively homogenous rock or extremely complicated areas the faults may easily be missed. It is no wonder, therefore, that mineralized zones are often lost by miners who drift underground in an attempt to "follow the vein" while such veins can often be better followed by drilling from a distance.

FOLDING

A complex fold history has been imprinted on the rocks of the Tisdale Group, and is particularly well indicated in Tisdale Township where mine workings and abundant drilling has shown, by symmetry of units about fold axes, the geometry of the folds. This complexity must also exist in the underlying Deloro rocks, which would have been subjected to the same deformations as the Tisdale Group, as well as any deformations that would have occured before the Tisdale rocks were laid down. However, the complexities within the Deloro Group are not defined owing to the paucity of outcrop, the absence of mine workings, and the dearth of exhaustive drilling data. Moreover, folding in the Tisdale rocks may have been more local that was previously thought. The structural picture given by Ferguson in 1968 and elaborated by Kirwan, while still believed to be valid in the vicinity of the mines, does appear to be local, for traverses made by Kirwan and others east of the Burrows Benedict Fault on the eastern extension of the main Central Tisdale Anticline clearly show that the pillow tops uniformly face southward on both sides of this supposed anticline, thus indicating that this major structure vanishes in a short distance to be replaced by a monoclinal structure, with tops to the south.

Folding in the vicinity of the Hollinger-McIntyre Mines (ie, in central Tisdale Township) includes three recognizable events superipoosed one on the other (Kirwan , 1968, pp. 78, 79; 92-96; 108, 109; 159-167), as follows:

a. An early period of deformation in the form of open, compressional folds took place with fold axes trending almost perfectly east-west and with zones of distension at the crests of the folds along which masses of porphyry were intruded. Similar folds have been noted in the Deloro Group in Whitney Township, with axial crest granitic intrusion and silicification, and also with east-west orientation. The folds in Tisdale Township appear to have been formed near the close of the volcanic cycle, for extrusive equivalents of the porphyry exist (the Krist Formation consisting of porphyritic fragments in a crystal tuff matrix).

b. Antedating the east-west folds in part, and extending for a time afterwards, north-south folds exist. These are now overturned with the axial plane dipping eastward (now represented by a lineation within the schistosity) and with the western side of the anticline dipping eastward. Angular unconformities between the mafic lavas and the Krist Formation, between the Krist and the overlying argillites, and between the argillites and the overlying greywackes, attest to the continuing effect of these folds. An amplitude of 5 or 6 miles and a periodicity of nearly 12 miles is indicated.

c. Northeast-trending folds, with a similar amplitude but about half the periodicity, exist. They appear to be synchronous with the above folds. A parallel set of smaller folds are superimposed on these northeast units with a much smaller amplitude and periodicity. A later stage in the development of this fold system was the superimposition of shear deformation, or shear folds, on them. The Timiskaming rocks which overlie the Tisdale rocks with a very high-angle unconformity, are themselves folded along a northeast-trending axis and overturned, thus illustrating that this fold pattern was very persistent

The northeast-trending folds appear to disappear within a few miles of the McIntyre-Hollinger area and give way to a south-facing monocline. It is possible, therefore, that some of the north-south-northeast crossfolding merely represents doming on the flanks of a swelling shield volcano. However, the north-south fold patterns can be traced some 30 or 40 miles northward from Timmins, as can the effect of the northeast-trending crossfolds, and the 12 mile periodicity is found to be remarkably persistent, so an explanation of a simple shield volcano dome is insufficient to describe more than the earliest phases of this folding. Although compressional folding is described, its effect appears to be minor, for crustal shortening would have to be unreasonably extreme to account for the convolutions found in the major folds. Instead, shear or similar folding with virtually no crustal shortening appears to have been the dominant force.

STRATIGRAPHY

In simplist terms, a succession of volcanosedimentary cycles appears to have been deposited on a shoreline in Archaean time which migrated northward towards a geosynclinal basin in which clastic metasedimentary rocks now exist. Each volcanic cycle is presumed to have begun with a mafic or ultramafic sequence of lavas and intrusive bodies and to have progressed through more felsic phases, including rhyolites and felsic tuffs, into a sedimentary series, mostly argillites and greywackes. The Tisdale group appears to be one such cycle, overlying another termed the Deloro group, and yet older groups, with an old landmass to the south and a geosynclinal basin to the north. There may have been other depositional groups northeastward.

Total thicknesses of each group are in the 4 to 5 mile class. The lowermost layers of the Tisdale group are not exposed in Tisdale Township, but above the lowermost material encountered in the McIntyre Mine below 8200 feet there would be at least 2½ miles of volcanic rock and perhaps 1½ miles of felsic and sedimentary rock. The presumed ultramafic floor of the Tisdale rocks is not exposed in the workings or in drilling below them at the McIntyre, but Pyke (1982, page 80 and elsewhere) believes that ultramafic units above the sericitic units of the Deloro Group in Whitney and Shaw Townships constitute the base of the Tisdale group. A similar contact, this time above the argillite-greywacke unit that may represent the top of the Deloro group, occurs on the Hunter claims and probably represents the base of the Tisdale group at that point.

The metasedimentary cap to the succession which occurs northward from Timmins is only represented in drill core obtained during the Timmins Rush of 1964-1970 when over 2000 drill holes were put down in a 44 township area, and by geophysical data in which sedimentary rock is detected by a combination of aeromagnetic lows containing electromagnetic conductors of particular persistency. This material gives way northward to granitic gneisses and intrusives which sulfur isotope work demonstrates have gone through a sedimentary cycle (Shima et al. 1963, J.Geophys. Research, v. 68, No. 9, pp 2835-2847).

The writer is in agreement with Pyke that the most likely source of the ultramafic volcanics is the Destor-Porcupine Fault with which they are spatially associated, the fault being the conduit along which the volcanics rose from the earth's mantle. The numerous occurences of ultramafic sheets (particularly fuchite-bearing, gold-bearing carbonate bodies) in parallel and possibly converging faults and the existence along most of its length of fault-bounded ultramafic sheets within the Fault combine with the proximity of the ultramafic volcanics to the fault plane to suggest that this is so. It may be true that all of the major faults of the area, such as the Larder Lake Break, served as the conduits for the lavas and, by inference, the presence of lavas, in particular ultramafic lavas, would indicate the nearby presence of a major fault zone which, in deeply buried areas of the clay belt is otherwise undetected. Two areas are indicated in the northeast part of Map 2205 which have relatively narrow zones of sedimentary rock oriented nearly east-west, the presence of volcanic rocks, and ultramafic bodies nearby. These may be other Destor-type faults. Indeed, one is marked as a fault on Map 2205.

DEPOSITIONAL HISTORY

Sometime in the 3400 to 3200 my ago period, a continental area formed by a process of volcanism, sedimentation and mountain building in the area about 100 miles and farther southwest of Timmins. Marginal to this continent a geosynclinal area of deposition developed in which detrital and chemical sediments were deposited in the 3200 to 2800 my period. The shoreline area developed a series of major faults, all very steeply dipping, and large enough to tap mantle material. These faults served as the conduits for the eruption of, first, ultramafic and, later, basic and intermediate volcanic rocks which formed in large fissure eruptions and accumulated in stratigraphic thicknesses of from 1 to 3 miles. As differentiation continued the volcanism became more felsic and explosive and localized in newly-formed structural domes which became the centres of pyroclastic volcanism and granitic intrusion. Sedimentation in the sea to the north of the area progressed from the

erosion of the newly erupted material and from the exposed protocontinental area to the south, resulting in a broad area of deposition that included rock of several proveniences, including offshore equivalents of all of the volcanic successions. Successive volcanosedimentary successions took place progressively northward as new shoreline facies formed. However, these shoreline facies were nonetheless slightly farther removed from the continent as the absence of iron formations in rocks above the Deloro Group indicates.

Folding and doming progressed as both compressional folds involving crustal shortening and intersecting sets of shear folds with little crustal shortening or even, in the case of doming, mild crustal expansion. Fold axes directions were east-west for the compressional folds and both north-south and east-northeast for the shear folds, the latter being the tightest, resulting in overturning of the units and elongation of the domal structures.

The east-west major shear structures, of which the Destor-Porcupine Fault and its relatives is one, continued to move--generally with a left-handed displacement and downthrow northward--as later sedimentation took place. Crossing north-south faults such as the Mattagami River Fault and its numerous subsidiarys also had a long period of activity, both offsetting and interacting with the major shears, although in general these north-south faults are younger. Late Precambrian northeast-trending fractures now contain diabase dikes, and Paleozoic or Mesozoic gravity faults (rifts) trending northwesterly, also occur.

Minor felsic intrusions such as the Pearl Lake Porphyry appear to be related to the compressional folding, but other bodies are related to major folding or orogenic disturbances or else are pseudo intrusives produced by granitization of sedimentary rocks coupled with auto intrusion and lit-par-lit injection. These latter occur within the deep sea sedimentary (orogenic) offshore belt.

Pathways for the ultramafic and basic lavas appear to have been the major shear zones, and for the explosive felsic volcanics, the zones of distension along the crests of the anticlinal axes of compressional folds. In this latter regard, the work by Shima et al. on sulfur isotopes, while

indicating that most batholithic bodies in the Abitibi Belt have undergone a cycle of sedimentation, the Pearl Lake Porphyry has NOT, having a delta S_{34}/S_{32} ratio typical of mantle material.

The major shears, in addition to serving as the pathways for mafic extrusive, also serve as the pathway and host for ultramafic and mafic intrusives and, to a smaller extent, of granitic rocks, as magnetometer results and drilling both show in the Timmins-Val d'or area. The north-south, east-northeast, and northwest fault systems all served as the pathways for, and the resting ground of, diabase dikes ranging in age from 2400 my to (possibly) Mesozoic.

GOLD MINERALIZATION

The large gold deposits, such as occur at the Hollinger-McIntyre mines or the Dome Mine are, for the most part, spatially related to bodies of quartz-feldspar porphyry to which they have historically been genetically attributed. This left several puzzles, namely the poor gold values in quartz veins within the porphyries, the absence of such bodies at certain mines such as the Davidson, and the presence of gold in mineable quantities within fuchsite-bearing ultramafic sheets associated with the major shear faults. Subsequent to the work of R.W.Boyle in Yellowknife (Geological Survey of Canada Memoir 310, 1961), the results of which were tested and verified by Kirwan at the McIntyre Mine, a model emerged whereby the porphyries were merely the heat engines whereby the gold was literally sweated out of the rocks in which the gold was syngenetically present, and deposited in fissures and drag folds in the rocks where the heat, or chemical, or pressure, gradient was reversed. This model did not explain the presence of gold deposits in porphyry-free mines, or in sedimentary zones such as at the Dome Mine, or in sedimentary units such as at Owl Creek. Of course, several modes of gold occurence may exist.

More recently, Karvinen and others (eg. Abstracts, V.2 p.28 GAC Annual Meeting, 1977) have proposed a carbonate, gold-bearing stratigraphic unit within the Tisdale Group in which virtually all of the gold deposits

are to be found. This, however, fails to explain exceptions: the Hunter Mine, for example, or the gold-bearing ultramafic sheets, or the sedimentary deposits.

There is a growing acceptance of an origin within the ultramafic bodies for the gold in the Timmins area, the ultramafic bodies being the source of the gold and the route for its transport from the earth's mantle. This gold, where it is not found in the ultramafic rock itself (as in the fuchsite zone at the Dome Mine) was mobilized during a period of carbonatization (see Pyke, 1982, pp 98-101). This model has one serious drawback in that at the largest deposits in the Timmins area, namely the Hollinger-McIntyre-Coniarum Mines, ultramafic rocks are not found in the mine workings, and the hypothetical ultramafic body is presented as occuring "at depth" below the mine workings.

It is difficult to arrive at a simple, pat, explanation for all of the gold deposits in the Timmins area, one that can serve as a King's Highway for the discovery of more. Instead, the exploration geologist must keep his mind open to numerous possibilities, to the role of the various geological processes that affected the area, and to anything that he encounters that may be outside the current hypothes.

CHAPTER 2

GEOLOGY OF SOUTHWEST WHITNEY TOWNSHIP

The area covered in this part of the geological report includes Lots 7 through 12 in Concessions II, III and most of IV, Whitney Township, Porcupine Mining Division, District of Cochrane, Ontario. All of Porcupine Lake and most of Bob's Lake are included, as is the Town of Porcupine and the eastern edge of South Porcupine.

Geologically, the area includes 3 units. The oldest, the Deloro Group, occupies the southernmost part of the ground. The younger Tisdale Group occupies the northernmost areas and is separated from the Deloro by the ultrabasic bodies which mark the Destor-Porcupine Fault. North of this fault the youngest rocks of the Timiskaming Series occur, and south of the fault, the volcanic and sedimentary rocks which contain the Hunter Mine occur, being separated from the Deloro rocks to the south by a splay from the Destor-Porcupine Fault here called the Bob's Lake Fault.

Relationships between the units is only clear between the Tisdale and the Timiskaming rocks, best shown just off the map area in an outcrop in the first lot, Concession IV, Tisdale Township. Here the overturned current-bedded greywackes of the Tisdale Group are truncated against an unconformity at an angle of about 35°. This unconformity can be traced both westward and eastward where it truncates metasediments and volcanics at a similar angle. Drilling in Lot 11, Concession IV of Whitney Township shows that this unconformity dips northwestward at 70°, showing that the overlying Timiskaming conglomerates and greywackes, whose attitude must be close to parallel with the unconformity, are also overturned, a fact that the current bedding in the Temiskaming confirms. Thus the Timiskaming rocks were laid down on a folded and eroded land surface and were themselved severely folded and overturned.

The relationship between the Tisdale and the Deloro groups is less clear-cut than between the Tisdale and the Timiskaming, but the concensus of opinion is that the Deloro rocks are older. This is based in part on regional considerations of progressively younger rocks northward across the Archaean shoreline and in part on the supposed motion of the Destor-Porcupine Fault which separates the two groups. As mentioned earlier, the effect of drag on the fold axes of the Tisdale rocks has been interpreted as indicating not only that the Destor-Porcupine Fault has moved with left lateral displacement, but also that the south side has moved upwards relative to the north, a fact that would make the rocks to the south older than those to the north. Moreover, the Deloro rocks "look" older, being more coarsely crystalline, more highly sheared, and having more granitic bodies in them.

The rocks near the Hunter Mine present a correlation problem in that they occur half way between undoubtedly Deloro and undoubtedly Tisdale rocks, with a fault separating the Hunter from the Deloro rocks and a fault and the Timiskaming series separating them from the Tisdale. It will be argued later in this report that the Hunter rocks are in a wedge between typical Deloro and typical Tisdale rocks and contain the uppermost Deloro metasediments and the lowermost Tisdale ultramafic flows, in short containing the contact zone between the two Groups.

THE DELORO GROUP

The majority of Shaw Township, and parts of Deloro Township to the west, Adams, Eldorado and Langmuir Townships to the south, Carman Township to the east and Whitney Township to the north, are underlain by a large, elliptical area of mafic volcanic rock which is exposed by virtue of a structural dome known as the Shaw Dome, and which forms the middle (basic lava) units of the Deloro Group. Lowermost (ultrabasic lava) units, if present, would exist at depth beneath this dome. None of this basic lava unit is exposed in the part of Whitney Township covered in this report, but in drill holes on the Hunter claims and in the occasional outcrop on the Anglo Porcupine ground to the south of it, chloritic rocks exist which may be metavolcanics. Where exposed in relatively abundant outcrop, for example in northeastern Deloro Township, these chloritic rocks are interlayered gradationally with felsic tuffs and contain iron formations but do not show evidence of volcanic origin, so that uncertainties remain as to origin, whether intrusive, extrusive, tuffaceous or sedimentary being unclear. These rocks are fine-grained, dull green, weakly to strongly sheared assemblages of chlorite, sodic feldspar and quartz.

In that part of Whitney Township covered in the present report the dominant rock type of the Deloro Group is a medium-grained, platy, yellow sericite schist or quartz sericite schist trending northeasterly and dipping gently to steeply northwesterly. In some specimens it is possible to see small rhyolitic fragments, from which it is concluded that the rock is of tuffaceous origin, but apart from these fragments, little evidence of the volcanic origin of the rocks is found. This is no doubt due to the paucity of outcrop and the poor exposure of those outcrops that do exist, so that gross structures commonly found on well-presented weathered surfaces are not found.

Within both the mafic and the felsic units of the Deloro Group, and well-exposed in the contact or transitional zone between them, are lean, siliceous iron formations. These units are commonly made up of laminae of quartz dusted with chlorite alternating with laminae of iron oxides or sulfides as hematite, magnetite, pyrite or pyrrhotite. These units, being easily traced with the magnetometer in areas of poor exposure,

make excellent sedimentary marker horizons. They also make good facies markers as the iron oxide units give way to iron sulfide units, a transition that marks the passage from an oxidizing to a reducing environment in nature. Within the area under discussion and in nearby parts of Deloro Township, the iron formations are particularly lean and often grade from the oxide to the sulfide facies. Iron carbonates may also be present. These subtleties show up in magnetometer surveys, especially with careful field, contouring, and interpretive work, and are useful in exploration for gold as that metal is often associated with sulfide facies as in Whitney Township, or sulfide replacement, as in Shaw Township (the Carshaw-Malga property).

Granitic rocks within the Deloro Group are exposed in outcrops to the south of Bob's Lake and east of Porcupine Lake. These consist of nearly structureless bodies made up of quartz (sometimes in proportions up to 75% of the rock) and pink feldspar. They are usually fractured and cut by intersecting veins and veinlets of white quartz essentially free of other mineral. The abundance of quartz as discrete grains which often touch, such is their abundance, has led to the rock being identified by geologists of Noranda Mines as quartzite, but the lack of any layered structure or on-strike persistency, suggests a different origin. The bodies appear to mark and occupy the crests of anticlines into which they may have been intruded into zones of distension and, in a continuation of the process, silicified both as fine grains of quartz and as vein structures. With this explanation of the high quartz content of these rocks, the granitic classification as used by M.E.Hurst in 1938 (ODM Map 47a) is preferred here rather than the quartzite classification used by the Noranda geologists (private company data supplied by Neil McIsaac in 1985).

Ultramafic rocks are shown in the southeastern part of the area in all available maps: ODM Maps 47a, 2205, and 2245 and Noranda's geological map of the Anglo Porcupine ground, with the exception of A.G.Burrow's 1911 map of the Porcupine Gold Area. The present writer has not seen these units in the field, but Pyke has labelled them "serpentinized dunite-peridotite" and describes them in his report on the Timmins area

(OGS Report 219, 1982 p.51 et seq.). He also identifies in northern Shaw Township to the south of the present area, ultramafic flows in contact with the middle members of the Deloro Group and correlates these with the lowermost units of the Tisdale Group. This correlation has interesting structural implications, for it means that the Shaw Dome had formed and been folded and eroded down by several thousand feet before the Tisdale Group's first volcanic units were erupted.

The uppermost units of the Deloro Group are not shown on the accompanying map, but occur eastward in outcrop, elsewhere in Whitney Township. They consist of well-bedded greywackes and argillites which are not unlike those which occur in the overlying Tisdale and Temiskaming rocks: grey, medium-grained, current bedded and with graded bedding feldspathic arenites of turbidite association. Similar rocks also appear in drilling at the Hunter Mine and are described in drill holes put down by Dome Mines Limited in Porcupine Lake.

Folding in the Deloro Group

The Noranda maps show fold axes trending a little north of east, pitching eastward, and having a periodicity of about 3000 feet. No amplitude is apparent owing to the uncertainty as to the amount of pitch or plunge. These folds occur on the flank of the Shaw Dome which appears on Map 2455 as an oval about 24 miles long in an east-west direction and about 15 miles wide in a north-south direction. Its exact structural nature is unknown, whether a diapir-like zone, a folded unit, or a volcanic blister.

THE TISDALE GROUP

This volcanosedimentary unit is exposed over a large area to the north of Porcupine Lake, but in the map-area described in this report underlies only the northernmost 15%. These rocks consist of steeply-dipping, in fact overturned northward, mafic lavas generally of basaltic composition and commonly pillowed, and overlying well-layered greywackes and argillites.

The metavolcanic rocks are the uppermost members of the pre-sedimentary component of the Tisdale Group and consist of massive units which have been called "flows" (although no evidence of extrusive origin has been described in the literature or seen by the writer in outcrop), various structured units containing, in some cases, filled vessicles which strongly indicate extrusive origin, flow breccias which imply extrusive terrestrial origin, and pillowed units which indicate submarine extrusive origin. The rocks have traditionally been termed "andesite" but chemical analyses suggest a basaltic composition with calc-alkaline tholeiite affinities. The rocks are commonly altered to the greenschist facies of regional metamorphism, the feldspars being usually altered to felty assemblages of albite and zoisite, the titanium commonly forming as sphene or leucoxene, free quartz being formed from various minerals in metamorphic reactions, and chlorite being abundant after the ferromagnesians.

The sedimentary rocks are for the most part unremarkable for their types except for one fact: the quartz grains tend to be larger than the quartz that is available by erosion from the underlying volcanic rocks, even considering authigenic overgrowth, which implies that coarser-grained rocks were available to erosion than the volcanics, that is to say, granites. Such a conclusion adds some credence to the belief in an older protocontinent to the south at the time of sedimentation. The current bedding in the sediments indicates currents from the south and west.

A transitional phase often exists between the volcanics and the sediments in which graphitic argillites, felsic tuffs, and basic lavas exist. These argillites make an excellent electromagnetic conductor by means of which this interface can be traced, and has been traced, in areas of poor outcrop.

FOLDING IN THE TISDALE GROUP

This has already been described above, on pages 17 and 18. In Whitney Township these rocks all appear to be south facing and overturned: a monocline younging southward.

TIMISKAMING SERIES

Polymictic conglomerates unconformably underly the Tisdale Group immediately off the map-area to the west. These mark the lowermost unit of the Timiskaming series of rocks which in the Timmins area consist of conglomerates, minor argillites, and abundant greywacke and, elsewhere, minor intermediate to basic lavas. The unconformity itself is overturned and dips at about 70° to the northwest against similarly dipping rocks which face southeast and trend east northeast. Where exposed the unconformity is against well-bedded greywackes of the Tisdale Group which trend east southeast and dip steeply northeasterly, being also overturned. However, the unconformity has been encountered in drilling where it rests on basic lavas of the Tisdale Group.

Upwards in the Timiskaming succession the rocks abruptly truncate, but truncate conformably, against the ultramafic units which occupy the Destor Porcupine Fault Zone, a fact which clearly shows that this fault was active in post-Timiskaming time, although whether the ultramafic is intrusive into it, or in fault contact, is not proven at this point. The highly talcose nature of the ultramafic makes it a wonderful lubricant along a fault plane, which allows the fault to move without much shearing being imparted to the surrounding rocks. The metamorphic effect of the ultramafic, if present, has not been particularly noted by geologists who logged the holes that penetrate it and the surrounding metasediments (in Lot 11, Concession IV, Whitney Township).

One particularly important aspect of the Timiskaming rocks is the presence of a conglomerate unit which is distinctive enough to permit correlation from one drill hole to another. This has allowed the detection and definition of a large number of faults in the Hallnor Mine area immediately to the northeast of the area described in this report. These faults have a north-northwest orientation and, progressing westward from Three Nations Lake in eastern Whitney Township have a general left-handed displacement, although exceptions are present, and eastward from that Lake a general right-handed displacement, varying from about 50 to 200 feet, in one case about 350 feet (M.E.Hurst's 1938 map, ODM Sheet 47a and in S.A.Ferguson's 1958 maps, P-9, P-10). Some of these faults are

shown immediately north of the present map-area and would extend onto it. In a 4½ mile distance on Map 47a, 37 such faults are shown, with some areas not drilled off, Where adequately drilled off the faults have a density, though erratic, of about one every 200 to 400 feet.

It is apparent from this that the eastern part, and part of the western part, of Whitney Township, are each sliced by a great number of late faults with a general north-northwest strike direction and commonly with a left-handed displacement. Some of these have contained diabase dikes by means of which the faults may be traced in outcrop and, in areas of no outcrop, by means of the magnetometer. In the present work, several similar faults have been detected, notably the one through the eastern part of Porcupine Lake which was found by a combination of geological descriptions, physiography, and air photo examination. On the Hunter Mine property the faults were located by means of the excellent magnetometer surveys on the ground and quantified in a horizonal sense. Here they are found to have a periodicity of about 50-300 feet and a left-handed displacement of up to perhaps 50 feet, no vertical displacement being detected by virtue of the nature of the data. This work is interesting,as the number of faults, that is to say their density, is a product of the quality of the survey data and the presence of geophysically recognizable units. It is also interesting to note that these faults on the Hunter ground were located before the presence of similar, parallel faults was noted on the published maps so that their recognition was not a product of bias based on other geological interpretations or transplanting of data from one area to another. In short, though they were located by means of geophysical interpretation--always a source of ambiguity and bias--the faults are believed to exist as described. Their significance on the Hunter ground is very great, as will be discussed later in the section on the Hunter, for the old principle of "following the vein" that was used in underground exploration by the previous operators of the property can be expected to fail, as it did, without a thorough knowledge of all the faulting and folding to which the rocks were subjected.

It is apparent from the above that Whitney Township is cut by a very great number of north-northwest-trending faults, which faults are aprallel

with the Mattagami River Fault System, the Burrows Benedict Fault, and the diabase dike swarms west of the Mattagami River, east of Night Hawk Lake, and in Whitney Township, though these latter are of a much lower density than the others. It would appear that these faults and diabase dikes are ubiquitous in the Timmins area.

Folding in the Timiskaming rocks, as mentioned earlier, is very great--great enough to produce overturning of the strata--but is otherwise undetermined as to amplitude and periodicity in the present area.

THE DESTOR-PORCUPINE FAULT ZONE

Evidence for the existence of this major crustal feature is given above on pages 12 and 13. Within the southwest Whitney Township map area under discussion this zone is recognized by the presence of a large aeromagnetic linear which trends in an east-northeasterly direction (eg, Geological Survey of Canada Map 20013G) and passes along the northern edge of Porcupine Lake. Outcrops beside the lake and drilling results northward from it show that this magnetic high is due to an ultramafic body commonly labelled Talc Schist or Serpentinite. Across this unit there is a dramatic change in the rocks from the metamorphosed felsic volcanics and iron formations of the Deloro Group to the virtually unmetamorphosed sediments of the Timiskaming.

The geology within this zone may be very complex. As a preliminary to its discussion it seems desirable to mention that several types of "ultramafic" are probable involved. These are:

a. true intrusive bodies which are usually unrelated to stratigraphy and usually show relict igneous crystals as serpentinized olivine or altered pyroxenes. They have a chemical composition typical of ultramafics the world over.

b. true extrusive bodies, commonly part of the stratigraphy, commonly at the base of a volcanosedimentary succession, sometimes show pillow and other extrusive structures, tend to be highly altered but are chemically "true" ultramafics.

c. retrograde metamorphic sheets, which are usually talc schists or talc-

carbonate assemblages, are produced by desilicification of volcanic or other "country" rock. These are recognized chemically. Work by Kirwan in the 1960's on samples obtained by Hollinger Consolidated Gold Mines from their diamond drilling of the Destor-Porcupine Fault zone returned Al_2O_3 values thet were much too high to have been obtained from true ultramafic bodies, and MgO values that were much too low (over 12% and under 6% respectively) but which were much more typical of basalts. These rocks register on the magnetometer as magnetic lows such as are typical of the Destor-Porcupine Fault zone in northern Deloro Township to the southwest.

d. replacement zones involving magnesium metasomatism. One such zone is found on the Hunter Mine ground where it is seen in drill core as a talc schist which visually resembles the argillites which it replaces. This zone makes a prominent magnetic low and thereby serves as an excellent magnetic marker horizon which was used, incidently, to define the north-northwest-trending faults on the site.

Granitic bodies also appear to be an important component of the fault plane and its environs. Dome Mines Limited, in its drilling near and under Porcupine Lake in the 1940's encountered numerous intersections of rock logged as syenite or granite; their drilling north of the lake in Lot 10, Concession IV of Whitney Township encountered a large area of granitic rocks; Gold City Mines Limited in 1948, drilling on the Hunter Mine property near what is here called the Bob's Lake Fault encountered syenite; and Wabigoon Resources, drilling the Hunter gold zone in 1986 encountered quartz feldspar porphyry at various places in the section, including the overlying ultramafic rocks, as transgressive dikes, though a relationship, either genetic or spatial, with the Destor-Porcupine Fault of these porphyry bodies is not demonstrated.

One edge of the main fault appears to exist between Wabigoon drill holes S25 and S27 at the northeast corner of Porcupine Lake. The gold-bearing alteration zone under the lake appears to be abruptly cut off at this point.

The Bob's Lake Fault

This cuts across the map sheet near its southern edge, trending in an east-northesterly direction, parallel with the Destor-Porcupine Fault to the north. This zone is marked by the presence of a linear stretch of swampland and muskeg in which Bob's Lake Creek flows, by a series of

parallel, closely-spaced linears within this zone visible on enlargements of air photographs taken with low sun angle illumination from the south and processed with high contrast techniques, by a change in the lithology and strike of the rocks from the iron-bearing sericite schists of the Deloro Group which rocks trend east -northeasterly to the barren greywackes of the Hunter Mine rocks trending north-northeasterly, and by the dramatic increase in dip of the sericite schists as the fault is approached from the south, from about 40° northward to over 80° northward near the fault plane. The magnetometer surveys of the Hunter Mine ground show a linear magnetic low coincident with the fault zone.

The strike direction of this fault is parallel with that of the Destor-Porcupine Fault about 3000 feet to the north. It is presumed that the two faults are genetically related, the Bob's Lake being a splay of the Destor-Porcupine. The two faults may converge close to the southwest corner of Porcupine Lake where the AFMAG results indicate the plane of the Destor-Porcupine Fault to be, at a point that is on-strike with the air photograph linears which follow the south shore of the lake and which are believed to indicate the Bob's Lake Fault zone.

THE HUNTER MINE ROCKS

These rocks will be discussed in more detail in the later section dealing with the Hunter Mine, a brief description only being used here.

Diamond drilling and magnetometer readings in 1985 and 1986 has shown that:

1. The succession, from west to east, consists of:
   a. the topmost unit is a succession of unknown thickness consisting of ultramafic rock made up of massive steatite, talc- and talc-carbonate schist, steatite breccias, and layered talc-carbonate schists, the latter occuring near the bottom of the zone.
   b. an alteration zone about 300 feet thick made up of well-layered to laminated, often crenulated, sericite schists and quartz-sericite schists: greenish, fine-to medium-grained, and containing quartz veins, quartz breccias, and zones of silicification containing gold. Some units of this zone show possible lithic fragments and may therefore be derived from a felsic tuff; however, where alteration is slight the rocks grade imperceptably into grey argillites from which they appear to be derived.

Some units of this succession are massive and chloritic and show free leucoxene and are believed to be derived from a basalt. These are near the top of the zone.

c. a zone of talc schist from a few inches to nearly 50 feet that mimics, except for the talc content, surrounding black argillites. Within this, massive steatite usually occurs.

d. a succession of argillites, black, often graphitic, well-layered to laminated, with crenulations and intersecting lineations superimposed on a slaty cleavage usually, but not always, parallel with the bedding. These rocks alternate towards their base with greywackes of the underlying unit, hence have an undefined thickness, but their abundance usually decreases to a very small amount within 50 feet of the contact with the talc schist or alteration zone.

e. greywacke. This thick-bedded, medium grey unit is of undefined thickness. The 1985 drilling, combined with the 1948 drilling, tested a thickness of at least 1000 feet.

2. Structurally, a syncline is defined under the lake from shoreline outcrops and 1985-86 drill holes H-5 and H-6 and S-11, S-12 and S-17, whose axis is about 500 feet offshore. The matching anticline would be between drill holes H-5 (in which tops were found) of 1985 and 1 of 1948 some 1500 feet eastward, in which tops were also found, or about 1400 feet east of the synclinal axis. The syncline-anticline combination trends a little east of north, bending westward towards the south end of the property to trend parallel with the long axis of the lake (ie. due southwest) on adjoining ground. On the shore of the lake, rocks making up the core of the syncline crop out, and consist of ultramafic units showing convincing pillow structures (thus explaining the "breccias" observed in drill core) belonging to unit a. above. Drilling by Dome Mines in the area shows that the greywacke unit undrelies these ultramaficswith a very thin or, southward, a non-existent alteration zone.

A model of the drilling results on the Hunter ground shows that the syncline plunges at a rate of about 10 feet per hundred feet northward from the vicinity of the mineshaft and at an undetermined but steeper rate northward from about 500 feet north of the shaft. Using the talc schist as a marker horizon, the magnetometer data on the Hunter ground shows the anticline to the east similarly plunging northward, and aeromagnetic data, which located the ultramafics in

the synclinal troughs would place the next synclinal axis eastward on the easternmost claim of the Hunter property, and the next one eastward from that as near the eastern end of Bob's Lake. This gives the fold structures a periodicity of about half a mile, but with the spacing between the anticlinal and synclinal axes indicating that the folds are slightly overturned with the axial planes dipping to the east at about 70°. With the west limb of the Hunter anticline dipping at a maximum of 60° this would make the east limb dip very gently, perhaps as little as 10 or 20°. Such a low dip angle is consistent with the magnetometer readings on the Hunter ground. This is as yet unconfirmed by recent drilling, but if true it would explain many inconsistencies and puzzles in the older drill holes in the area.

The alteration zone not only appears to thin southward, but also eastward as well, being replaced by a progressively thicker zone of intermediate lavas, usually logged as "dacite" in the old drilling which occurs within the greywacke succession.

Stratigraphic Position of the Hunter Mine Rocks

Correlation of the rocks which occur in the wedge between the Destor-Porcupine Fault and the Bob's Lake Fault is difficult owing to the presence of the faults themselves. The general assumption that the Destor-Porcupine Fault has moved with the north side downward would make the Hunter rocks older than the Timiskaming rocks which abut against the fault northward. Similarly, the presumed relationship of the Bob's Lake and the Destor-Porcupine faults would indicate a similar direction of displacement for the Bob's Lake Fault, which in turn would make the Hunter Mine Rocks younger than the Deloro rocks south of it.

Correlation of individual units is difficult because ultramafic lavas are not known from either the Timiskaming rocks or the Tisdale rocks to the north, though they are assumed to occur at the base of the Tisdale and indeed at the base of most volcanosedimentary complexes (Pyke, 1982, p. 85 and elsewhere). Greywackes, the other dominent rock at the Hunter are found in the Deloro, Tisdale, and Timiskaming successions.

Pyke (eg. his Figure 19) has erected a large group of metasedimentary rocks that were deposited more or less continuously during both Deloro and Tisdale times, a group he calls the Porcupine Group which outcrops per his map, on the Hunter ground and eastward, overlying, also on the Hunter ground, the lowermost metavolcanic units of the Tisdale Group which are here folded into a tight syncline against the Destor-Porcupine Fault. Much of Pyke's work is based on the presumed equivalence of ultramafic units in the vicinity of the Destor-Porcupine Fault with the lowermost members of the Tisdale Group which are assumed to be ultramafic. With this in mind, the following correlation seems to be reasonable for the rocks of the Hunter claims.

a. the stratigraphically highest units on the ground occupy the core of the syncline that is immediately offshore in Porcupine Lake from the minesite. These rocks consist of ultramafic bodies which crop out on the shore of Porcupine Lake southward where they are seen to contain pillow structures: they are metavolcanic rocks. As no volcanic ultramafics are known from the Deloro Group[1] correlation in that direction seems unlikely and one is left with the Tisdale Group and its supposed ultramafic basal units as the time stratigraphic equivalents of the Hunter offshore ultramafics. This correlation, which is made here, would also give a displacement on the Destor-Porcupine Fault: a few hundred feet less than the combined thichness of the Tisdale and overlying Krist and Hoyle rocks, at least when considered in a purely vertical sense. These rocks have been measured and estimated at about 25,000 feet (eg. see Pyke, p.10) or more, or in round numbers about 5 miles.

b. aside from the alteration zone on the Hunter ground, the only other non-ultramafic rocks known are the argillites and greywackes which form the on-shore rocks and the core of the on-shore anticline.

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[1] The Shaw Dome, in which the deepest Deloro rocks are exposed, does not expose the basal units, but gravity surveys interpreted by Middleton (Ontario Geological Survey Report 135, 1976) over the area indicate the presence of no particularly mafic rocks at depth, an interpretation with which the aeromagnetic data agree.

If we are defining the beginning of the ultramafic volcanics as the base of the Tisdale Group, then the sedimentary rocks which underlie them must belong to an older succession which, in the Timmins area, would have to be the Deloro Group. Since "normal" volcanosedimentary cycles terminate in a succession of turbidites which overlie the volcanic rocks, then these greywackes would be the top of the Deloro sequence, and the interface between them and the ultramafic lavas would be the Deloro-Tisdale contact zone.

c. displacement across the Bob's Lake Fault, in a vertical sense, would be in the order of the thickness of the missing felsic volcanic unit plus the entire thickness of the turbidite cap, less any thickness due to normal dip of the Deloro Group northward. Most of these thicknesses are only poorly known; however, from information obtainable from Cody Township to the east, the turbidites would have a thickness of several thousand feet, even if a very gentle dip is ascribed to their exposed area. A vertical displacement in excess of a mile would not be unexpected. Alternatively, a horizontal, left-handed displacement, to bring the Cody Township material to the Hunter area, could explain the observed data if that displacement were in the order of about 6 miles.

From the information presented here it would appear that the Hunter ground contains the interface between the Deloro Group and the Tisdale, the interface being immediately at the base of the ultramafic lavas. If the equivalence of the ultnamafic base as indicated here, and the ultramafic basal unit which occurs in Shaw Township described by Pyke is accepted, then an unconformity is indicated here, since the interface occurs far down in the Deloro succession in Shaw Township and at the top of the succession on the Hunter, an impossibility without a period of folding and erosion following the Deloro and preceeding the Tisdale rocks. Yet the interface has been folded, a fact which positively indicates post-Tisdale folding. In this regard, the various cleavages and lineations visible in the Hunter argillites appear to be more complicated and numerous than those visible in the Tisdale rocks, although this has not yet been rigorously determined. Nonetheless, if true, it

would verify that the Deloro rocks have undergone one or more periods of folding than have the Tisdale rocks. The stereographic projections given by Pyke (page 80) from widely separated Tisdale and Deloro rocks would seem to indicate that this is so.

What all this means is that it would appear that the ore-bearing alteration zone on the Hunter ground occurs at or immediateld below an unconformity separating the Deloro volcanosedimentary cycle from the Tisdale volcanosedimentary. This zone appears to occur in the north-western part of Cody Township to the east where the old Peninsular Porcupine Gold Mine occurs and may represent a recognizable geological unit containing gold deposits in the area.

CHAPTER 3

GEOLOGY OF THE HUNTER MINE CLAIMS

Except for a very narrow strip along the shoreline of Porcupine Lake and on-strike extensions of this shoreline, no outcrops of bedrock are known on the Hunter claims. Geological understanding of the ground, therefore, is based on a regional understanding of the area, on the results of diamond drilling, on the geology obtained by mapping the underground workings, and on the interpretation of geophysical data. Only in the 1983-1986 period has much of this information become available, so that previous understanding of the geology has been rudimentary and, insofar as structure and depositional environment are concerned, not very trustworthy. Even now, the eastern part of the claims are very poorly understood and the geological interpretation presented here must by regarded as speculative.

Tops determinations of the rocks on the Hunter ground were made, in the eastern part of the ground, by Nelson Hogg who logged drill hole Number 1 of Gold City Mines in 1948, and in the western part of the ground by Arden Brooks who logged drill hole H-5 of Wabigoon Resources Limited in 1985. These determinations indicate that the rocks are right-side-up on the property and that an anticlinal axis exists in the middle part of the property separating these two drill holes. Subsequent drilling showed that the matching syncline occurs west of hole H-5, under the waters of Porcupine Lake and trends nearly north-south, pitching a few degrees to the north. This structural information allows the stratigraphic succession to be described: the core of the syncline contains the youngest, and the core of the anticline the oldest, units on the ground. These consist of ultramafic flows and clastic sedimentary rocks respectively. These two units are separated by a zone up to 300 feet thick of altered rock that is loosely known as the Alteration Zone. This zone contains several mappable sub-units which probably represent differences in original composition. Originally, most of this zone was probably of metasedimentary origin, but clastic material containing lithic fragments is present which may have been derived from felsic tuffs, and chloritic material is also present which may have been derived from basic or intermediate lavas. Alteration also exists around ultramafic units, consisting of talcification, and near porphyry bodies and elsewhere consisting of silicification. Intrusives consist of ultramafic bodies, porphyry sheets, a thin unit which may or may not be intrusive which has been called "Brooksite", and diabase dikes.

ULTRAMAFIC UNITS

1. Intrusive Bodies

In drill hole S-27 a long intersection--virtually the length of the hole--consisted of nearly black talc and talc-serpentine carbonated rock, fine-grained and containing abundant glossy black braiding shear planes oriented more or less vertically. This rock is from within what is believed to be the Destor-Porcupine Fault and is thought to be intrusive in origin, though no relationships with other rocks were seen, and no chemical data was obtained.

The core of the talc alteration unit that forms the base of the Alteration Zone consists of fine-grained, dark grey-green talc and is believed to be an intrusive sheet.

2. Extrusive Units

The core of the Hunter Syncline which underlies the bed of Porcupine Lake on the Hunter claims is made up of talc breccias, soapstone, talc-carbonate schist and talc schist. These units are fine-grained, grey-green to black in color, and the laminated units commonly occur in close proximity to the Alteration Zone and sometimes contain quartz veins. Only two of these units appear in outcrop: the core of the syncline is visible a few hundred feet south of the property on the shores of Porcupine Lake, and the Alteration Zone is found in contact with the talc-carbonate schist on the lakeshore opposite the location of Drill Hole S-21.

The outcrops on Porcupine Lake at Dead Man's Point and at the Dome Pump House on the south shore of the lake are made up of brownish white-weathering spheroidally weathered steatite or talc-carbonate rock cut by occasional breccia zones. The spheroidically weathered material is amygdaloidal and in most respects resembles pillowed lavas of the sort that is found elsewhere in the Timmins area and which is usually described as extrusive in origin. It is on the basis of this spheroidal structure that an extrusive origin is ascribed to this material and the argument presented that this unit marks the lowermost depositional material of the Tisdale Group in the area.

It is probable that the layered talc-carbonate schist which marks the transition to the Alteration Zone represents a layer of pervasive magnesium metasomatism that has in part replaced the uppermost Alteration Zone unit, preserving the quartz vein material within it.

3. Replacement Zones

The possible metasomatic replacement of the uppermost Alteration Zone has already been mentioned. Flanking the ultramafic unit at the base of the Alteration Zone there has been considerable replacement of the argillites, layer by layer, by talc, with preservation of the layering, the color, and the general appearance of the argillites.

4. Retrograde Units

Item c., pages 32, 33 above, describes an ultramafic unit that owes its origin to retrograde metamorphism of basic lavas. Such units would be expected within the Destor-Porcupine Fault and the Bob's Lake Fault on the property, but would require chemical analyses to identify. Such has not yet been done.

THE ALTERATION ZONE

This body of rock is the key gold-bearing horizon on the property. It is made up generally of a crenulated to well-banded, layered schist composed of sericite, quartz and feldspar, with very minor epidote, chlorite, fuchsite and other minerals that give it a dominantly greenish to greenish yellow color. Several varieties are noted:

a. a chloritic unit with massive zones within it and, in drill hole H-6, leucoxene. This unit, mainly on the evidence of the leucoxene, has been identified as a basic lava. It is relatively minor in the mine area, but descriptions of drill core from areas eastward indicate that the unit may thicken in that direction.

b. a buff-colored unit made up of small lithic fragments which, if correctly identified by Derek McBride as deposited during a period of airborne sedimentation, indicate the presence of a lithic tuff.

c. the talcose unit already referred to, which is thought to be due to magnesium metasomatism.

d. quartzose units, forming large zones within the Alteration Zone, which may represent areas where free quartz was "sweated out" of the host rocks, or where silicification took place.

e. fuchitic zones which probably indicate chromium or nickel metasomatism.

f. the general yellowish green fine- to medium-grained sericite schists which, in areas northward and southward from the main mine workings where the alteration weakens, appear to be derived from grey metasediments, dirty argillites and, to a lesser extent, greywackes.

Carbonatization is a ubiquitous feature of the Alteration Zone.

Ferrocarbonates such as ankerite, magnesium carbonates, and calcium carbonates were identified, and nickel carbonates are suspected, in the zone, the ferrocarbonates being the commonest and most pervasive. In weathered outcrop these carbonates form a rich, brown crust that makes the identification of the iron constituent simple. In drill core a chemical colormetric technique was used.

Silicification within the zone is also common, the silica occuring as aphanitic disseminations resembling chert, in abundant fine veinlets and, using the broader meaning of the term silicification, as quartz breccias and vein structures, some of which tend to be gold-bearing.

Origin of neither the silica nor the carbonate has been determined, whether syngenetic with the deposition of the sediments, or introduced from another source. The fact that the alteration follows the folding and therefore the stratigraphy suggests that a syngenetic source is involved, yet the fingering out of the alteration laterally, and possibly the crosscutting relationship of some of the alteration on a local scale, suggests at least minor migration of the carbonatizing material. Moreover, the observed alteration which includes the development of sericite at the expense of feldspar, the development of epidote, presumably at the expense of calcite or anorthite and quartz, and the production of other hydrous minerals, all suggest hydrous alteration which, because it involved a net expansion of a crystal species over the unaltered form with resulting expansion of the sedimentary unit and the production of crenulation in the metasediments to accomodate this expansion--which crenulation is observed in the Alteration Zone and not in the underlying metasediments--all suggest the introduction of water into the unit from an exotic source. Whether that source is a lateral (facies) expression of the depositional unit much like that which occurs in dolomitization, or whether it is an igneous source, has not been determined.

Gold mineralization in the rocks is an important association of the alteration: carbonate, silica, and water; hence the question of origin of these alterations is important from an economic standpoint.

SEDIMENTARY ROCKS

Two sedimentary rock-types are recognized: argillite and greywacke.

A third, chert, is found within the Alteration Zone, but may be a zone of silicification.

The argillites are grey to black, aphanitic, well-bedded units with graphitic horizons, pyrite as cubes, and at least one pyrrhotite zone of about 6 inches in thickness. They occur immediately below the Alteration Zone in the succession and grade downwards into greywackes.

The greywackes consist of thick-bedded medium grey medium-grained rocks generally without current bedding. They occur in the deepest holes drilled which, with the 1948 drilling of Gold City Porcupine Mines, means that about 1000 feet of these rocks exist in stratigraphic section on the property.

The lowermost units of the sedimentary succession have not been encountered so that the total thickness has not yet been determined. If these rocks are the uppermost units of the Deloro Group as has been suggested above (page 38) then it might be expected that the sericite schists and gold-bearing iron formations of the Deloro Group, which occur on the property adjoining the Hunter to the south, would exist beneath the greywacke succession on the Hunter ground. At what depth these would occur is a question whose answer will be determined by the thickness of the sedimentary units, which thickness is not at present known. In Cody Township to the east approximately 5000 feet of rock is exposed between the Deloro Group volcanics and an outcrop of conglomerate which is possibly Timiskaming. This 5000 feet is underlain by greywacke, slates, shale and quartzite of the Deloro Group (Map 47a) which dip eastward at angles of from 8 to 24°, exposing thereby a stratigraphic thickness of considerably less than 2000 feet. It is possible, therefore, that the sericite schists and auriferous iron formations of the Deloro Group exist beneath the Hunter claims at depths of 2000 feet or less.

INTRUSIVES

Ultramafic intrusive bodies have already been mentioned.

Quartz feldspar porphyry is exposed on the Hunter claims near the main shaft, in an area stripped in 1983, and was intersected in drill holes

during the 1985-6 work. This consists of reddish-weathering hard, usually siliceaus and silicified medium grey medium-grained porphyry with laths of white feldspar about 5 mm in length, often with blurred outlines. The rock is found in the Alteration Zone and in the overlying ultramafics, commonly as sheets only a few inches thick but, in the case of that in the ultramafic, as a body several tens of feet thick. The porphyry appears to be in sheet-like dikes which cut across all rock-types, striking almost due north-south and dipping westward at about 50°. In drill hole the unit is usually surrounded by a halo of silicification which is somewhat wider above the upper contact. Very little mineralization was noted in the porphyry and gold values are very low.

Diabase dikes were encountered in drilling in the northern half of the property, and one occurs in outcrop in the same area on the shore of Porcupine Lake. The diabase is fine- to medium-grained, typically brown-weathering, and made up of greenish feldspars in diabasic and ophitic textures with pyroxenes. The diabases strike north northwest and dip at a very high angle westward. Several dikes are present, with an irregular distribution with depth, some drill holes passing "through" them without encountering them, and some zones being multiple or non-existent in adjoining drill holes. They appear to occupy north northwesterly faults which occur in abundance in the area.

A hard aphanitic brownish rock was noted underground at the Hunter MIne and called Brooksite for lack of a better name. Its origin, whether igneous or sedimentary is not known. It occurs in thin sheets that are parallel with the schistosity of the Alteration Zone.

STRUCTURE

FOLDING

As already mentioned, the Hunter rocks strike a little east of due north and are folded into a syncline (under the lake)-anticline (east of the mineshaft)-syncline (at the eastern edge of the claims) fold pattern.

The distance from the synclinal axis to the anticlinal axis on the west is about 900 feet and from the anticlinal axis to the synclinal axis on the east about 1500 feet. The folds are therefore asymmetrical and slightly overturned, the dips being about 60° on the west side and about 30° on the east side of the anticline. The amplitude of the folds is about 800 or 1000 feet and the periodicity about 2400 or 2600 feet.

Superimposed on the main folds are drag folds with several different orientations, some plunging southwest (near the north end of the property) and some nearly horizontal (in the mine workings). The synclinal structure as a whole plunges a little northward, being about 10 feet per hundred in the vicinity of the mine workings and a little steeper northward.

Several sets of cleavages and lineations are present within the argillites. In addition to the bedding planes, there are two sets of prominent cleavages, one sub-parallel to these bedding planes and marked by the development of graphitic layers and weak mullioning, and another nearly perpendicular to this, having a nearly vertical dip. Within the graphitic cleavage planes two intersecting lineations are present. No analysis of these structures have been made as yet to sort out the tectonic history of the area and to serve as a basis of comparison with the Tisdale Group of rocks. A superficial examination of Tisdale rocks in Tisdale Township and Deloro Group rocks in highway cuts in Whitney Township suggests that the Deloro have undergone more stages of deformation than the Tisdale and that the Hunter Mine rocks belong to the Deloro Group. This conclusion has not yet been tested by rigorous analysis and structural interpretation.

FAULTING

THe Destor-Porcupine and Bob's Lake Faults have already been mentioned (pages 32-34 above). These trend east northeast and cut across the northwestern and southeastern parts of the property and separate the Hunter rocks from the Tisdale and the Deloro Groups of rocks respectively. Their existence is well documented in geophysical, geological, physiographic and other data. Each appears to be a left-handed fault with the south side having moved upwards some thousands of feet, the Destor-Porcupine Fault being the greater of the two.

On the Hunter Mine property at least 3 additional fault systems have been recognized:

a. in the mine workings, a set of low angle, westward-dipping fault planes occurs with unknown displacement and direction of movement.
b. a set of east-west faults has been indicated in magnetometer data and in shoreline geological mapping in which upthrow to the north is indicated. Dip has not been determined.
c. in geophysical data a set of north-northwest-trending faults has been identified with a very steep dip westward and, in a horizontal sense, a left lateral displacement of a few feet to about 50 feet.

All of the above structural units are of very great importance for consideration during the development of the gold-bearing zones on the property, for they distort and offset the orebodies and may also have served as controls for the mineralization. It is suggested that a lack of knowledge of these units led to the failure of the Hunter Mine on geological grounds in the past (most notably in the losing of the vein while "following the vein" during early development) and may well result in difficulties during the development in the future.

ECONOMIC GEOLOGY

GOLD

Four broad target areas within the general area of the Hunter Mine are indicated as prospecting ground for economic deposits of Gold mineralization: 1. The Keewatin Lavas, 2. The Timiskaming Metasediments, 3. The Deloro Iron Formations, and 4. The Hunter Alteration Zone.

1. The Keewatin Lavas

These rocks crop out in the northwestern part of the area and form a succession of steeply dipping basic intrusive and extrusive rocks with intercalated metasedimentary units. The writer knows of no occurances of gold mineralization within that part of these rocks mentioned in this report, whose area of interest is bounded by the west boundary of Whitney Township with Tisdale and the north edge of Concession IV of Whitney, but several former mines are known from these rocks immediately northward, in Concession V of Whitney, and northwestward, in Tisdale Township.

The deposits in Concession V consist of the Hugh Pam Porcupine Mine, the Broulan Reef Mine, and the Banner Porcupine Mine, formerly known as the Canusa and credited with being the first property staked in the Porcupine area after the Hunter, in 1908. The Davidson Mine, on strike about 1 mile

from these deposits in Concession V of Tisdale Township to the west, is an object lesson about the value of "mined out" deposits in the Timmins area. This mine was closed in 1920, tested by drilling by Ventures Limited in 1945, and tested again by drilling by Dome Mines Limited in 1982, but without mineable tonnage being developed. Work by the writer in 1982-4 is credited with outlining about 800,000 tons of gold-bearing rock at a grade of 0.23 ounces to the ton, and subsequent work by Getty Mines has outlined approximately 1.9 million tons with grades in the 0.25 to 0.35 class, with numerous additional targets still to be tested. These successes may be credited to the discovery and drilling of more regional structures than previous workers had recognized in their "following the vein", and it is suggested that these structures may be of greater importance in locating new deposits and extending old ones than the individual veins that the earlier workers followed. In this light, the area of Keewatin Lavas in Whitney Township and adjoining parts of Tisdale Township should be reexamined as a potential host for many million tons of gold-bearing ore.

2. The Timiskaming Sediments

The Timiskaming rocks form the hosts for much of the gold mineralization in the Dome Mine in Tisdale Township to the west and form a belt of rocks trending east-northeastward from the Dome, with offset across the Burrows-Benedict Fault, through the area covered by this report, and onward to the east onto the Hallnor and Pamour Mines where they form the host for large tonnage gold deposits. Thus, by extrapolation, these rocks within the area of the present report are of particular interest for exploration for gold. Within the area of interest an old shaft, marked on government maps as the "Rose Shaft" occurs, and a drill hole on property owned by Mr. K. Lehtimaki intersected a short zone of gold-bearing material with assays in the 0.1 to 0.3 class reported. Very little exploration work is known from this belt of Timiskaming rocks, probably due to the complexity of the land ownership in the past. However, as a potential source of mineralization and tonnage of the Dome-Pamour-Hallnor class, this belt of rocks highly warrants detailed exploration. Some of the land is available for option at the present time.

3. The Deloro Iron Formations and Related Rocks

At least one of the iron formations within the Deloro Group which adjoins the Hunter property to the south is gold-bearing. This unit, which has been trenched on the ground of Noranda Mines (Anglo Porcupine), is highly pyritiferous and contains gold values in the half ounce to one ounce class. Drilling on the adjoining ground to the west, of the South Shore Syndicate, reports similar values in the sulfides as well as in other rocks some distance across strike from the sulfides, and drilling westward from this point, on ground of Chappie Mammoth Gold Mines is reported to have persistent intersections in the 0.05 class but in an undisclosed rock type. Most of the information relating to this ground dates from before 1940 and is very sparse. Nonetheless, the presence of gold in the rocks is persistently indicated, and verified orally by the staff of Noranda who did recent sampling and assaying. The entire belt warrants detailed exploration and, considering that it probably underlies the Hunter ground at depth, exploration on that ground as well.

4. The Hunter Mine

A summary of the known mineralization on this property has already been given. In general, an alteration zone consisting of carbonatized sericite schists sandwiched between ultramafic flows and argillites has been traced by geophysical means and drilling across the Hunter Mine Property a distance of about 4000 feet and is truncated at the north by the Destor Porcupine Fault and at the south by the Bob's Lake Fault. Within this alteration zone several gold-bearing veins of quartz occur which are conformable with the fold structures and dip westward from the shoreline of Porcupine Lake to form a syncline under the lake, the syncline pitching very gently northward. Within this area, gold values in drill core indicate a strike length of at least 1450 feet containing an average grade of 0.223 across 5 feet within which a 950 foot length averages 0.334 across 5 feet. A second vein, about 750 feet long, contains assays in the tenth to quarter ounce class across shorter thicknesses and other veins appear to be gold-bearing but have not yet been defined by drilling or, in the cases of the results of older drilling, verified.

A program of underground exploration consisting of drifting below, but not in, the main vein, drilling and raising to that vein and to other veins, taking a bulk sample or several bulk samples from underground, geological mapping and surveying, also underground, and diamond drilling, from surface, has been recommended by the writer. The purpose of the surface drilling is threefold:

a. to determine the form and geometry of the gold-bearing syncline under Porcupine Lake,

b. to test for repetition of the gold-bearing alteration zone both downward and eastward, on the opposite limb of the anticline which adjoins the syncline, and

c. to explore for the presence of the Deloro Group and its gold-bearing iron formations and related rocks beneath the Hunter ground, and possibly at considerable depth.

In a larger time-frame, exploration beyond the Hunter Mine property is warranted:

a. to test for multiple repetitions of the Hunter Mine environment in inferred fold structures eastward and westward,

b. to explore the Deloro gold-bearing zones to the south of the property,

c. to determine the extent of the known gold occurences in the Timiskaming sedimentary rocks to the north, and

d. to search for gold deposits of the Davidson type both in the vicinity of old mines and in unexplored ground within the area occupied by the Keewatin Lavas to the north.

OTHER TARGETS

Talc, Soapstone, Magnesite, Asbestos

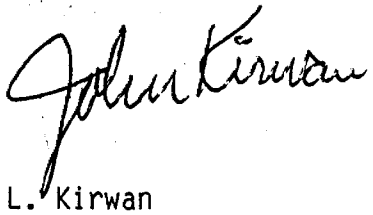
Southeast from the Hunter claims, in Whitney Township, a deposit of talc and magnesite known as the Allerston property has received considerable attention for some years (Kretschmar, U and D, 1986: Talc, Magnesite and Asbestos occurances in the Timmins-Kirkland Lake Area, Ontario Geological Survey, Study 28). This deposit consists mainly of a 300 foot thick strata-bound unit which dips very gently eastward within the iron formation

carbonate schist units of the Deloro Group.

On the Anglo Porcupine ground to the south of the Hunter Mine property, geological mapping by Noranda geologists indicates the presence of asbestos fibers within an ultramafic unit on that property.

Drilling on the Hunter property in 1986 has shown the presence of abundant ultramafic rock as intrusives, replacement bodies and extrusives under Porcupine Lake, within the sedimentary succession adjacent to the east shore of that lake, and in the mine workings at the Hunter. Short sections of this drill core appear to be of good quality talc. It is possible that a viable soapstone, talc, or magnesite deposit exists on the Hunter Mine property, possibly reasonably close to the present or future mine workings. The possibility should be kept in mind, therefore, of operating a mine within the Hunter Mine for one of these commodities, using the same workers and equipment as will be mining the gold deposit. Related minerals such as nickel, platinum and platinum group metals, and chromium, are possible related metals.

Respectfully submitted,

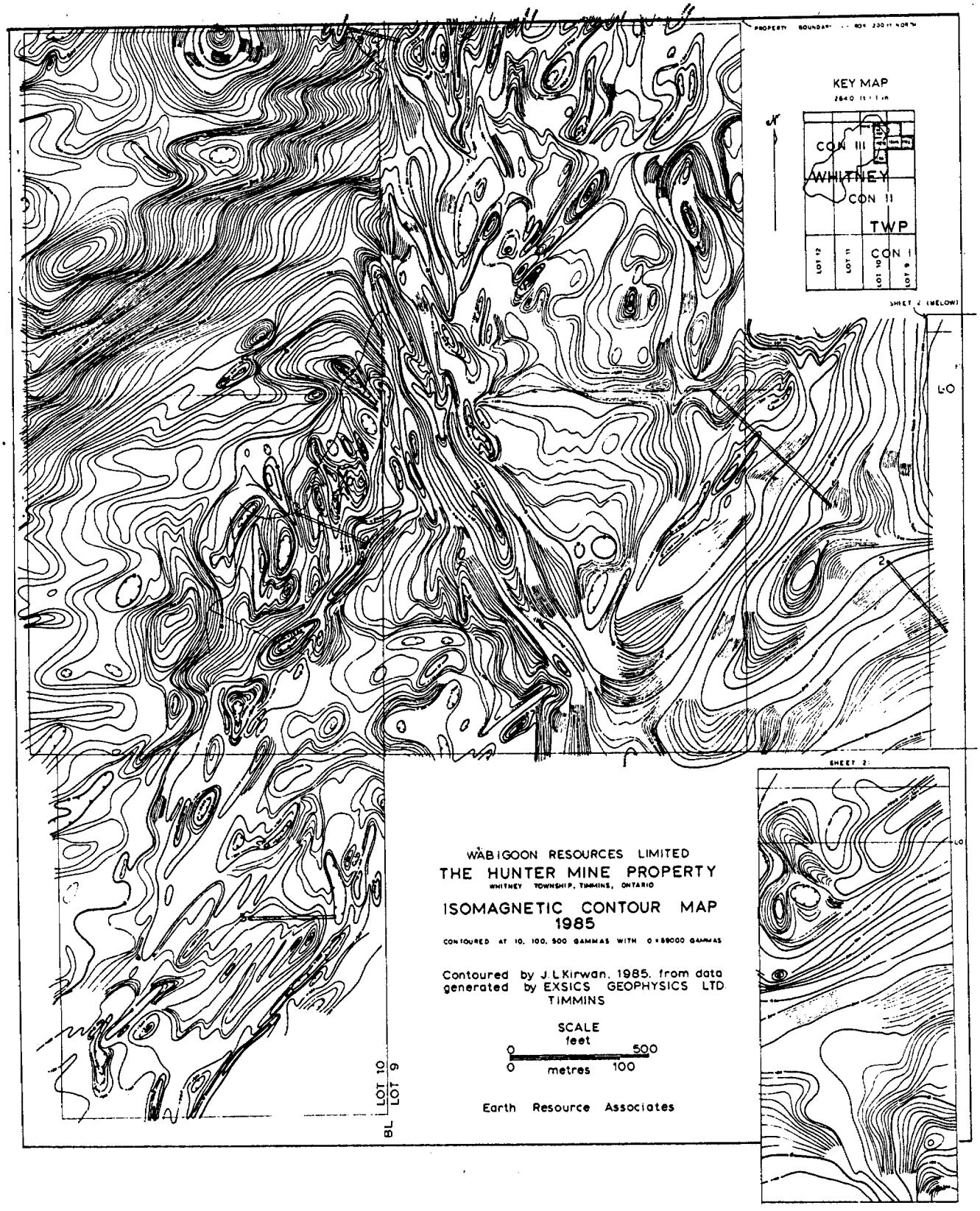


John L. Kirwan

At Timmins, Ontario,
September 3, 1986

APPENDIX I

GEOPHYSICAL MAPS



WABIGOON RESOURCES LIMITED

THE HUNTER MINE PROPERTY

WHITNEY TOWNSHIP, TIMMINS, ONTARIO

ISOMAGNETIC CONTOUR MAP 1985

CONTOURED AT 10, 100, 500 GAMMAS WITH 0 = 59000 GAMMAS

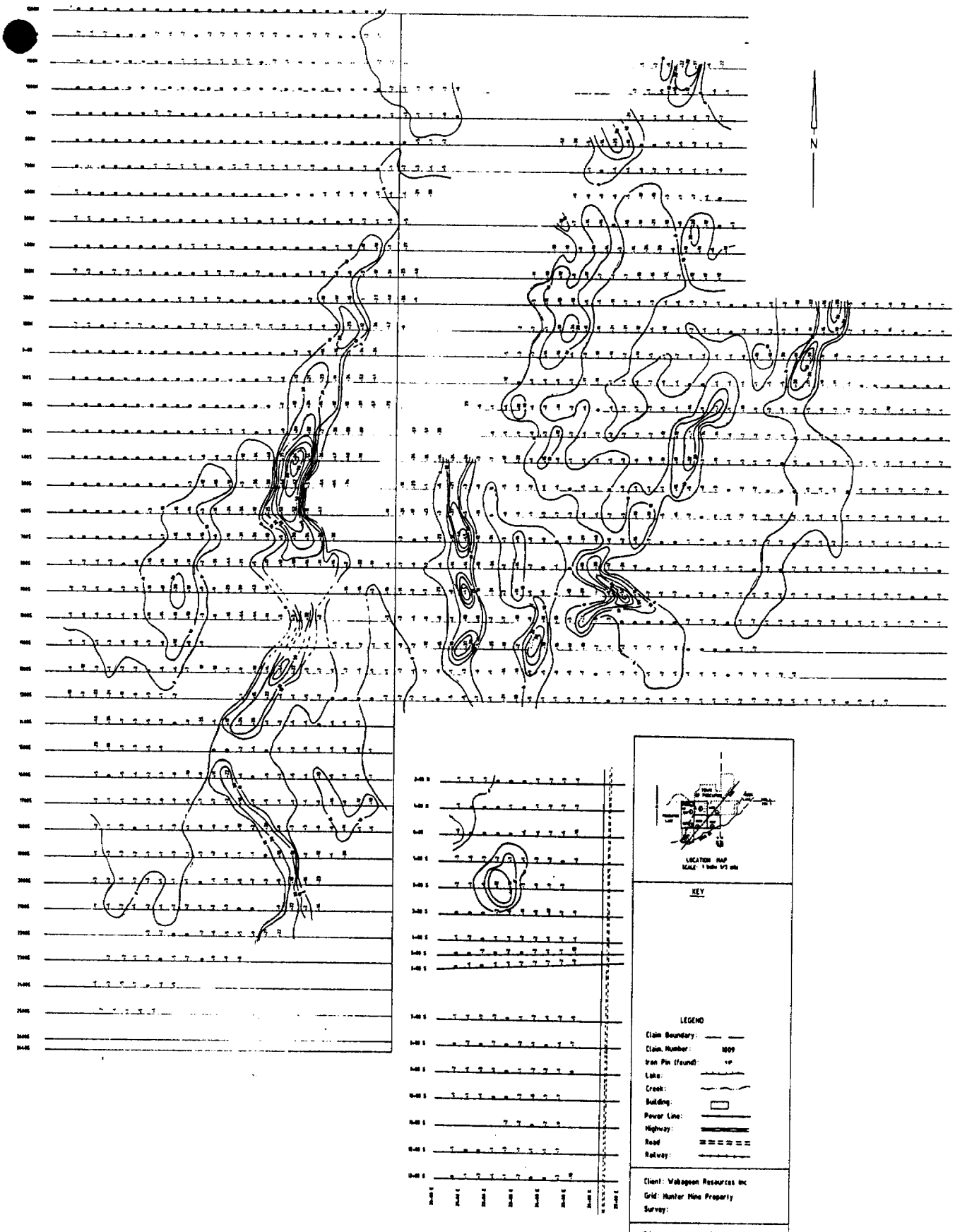
Contoured by J.L.Kirwan, 1985, from data generated by EXSICS GEOPHYSICS LTD. TIMMINS

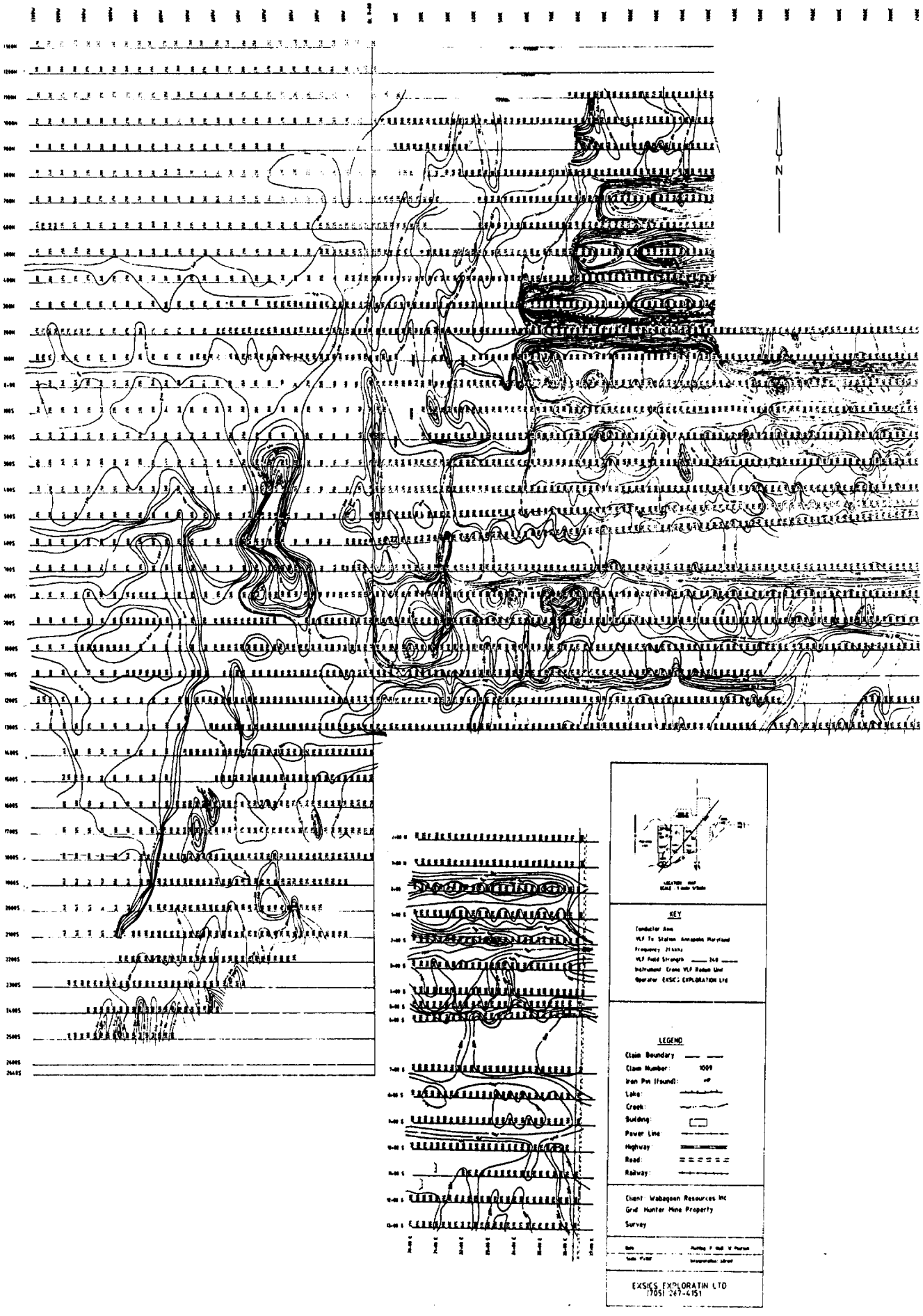
SCALE

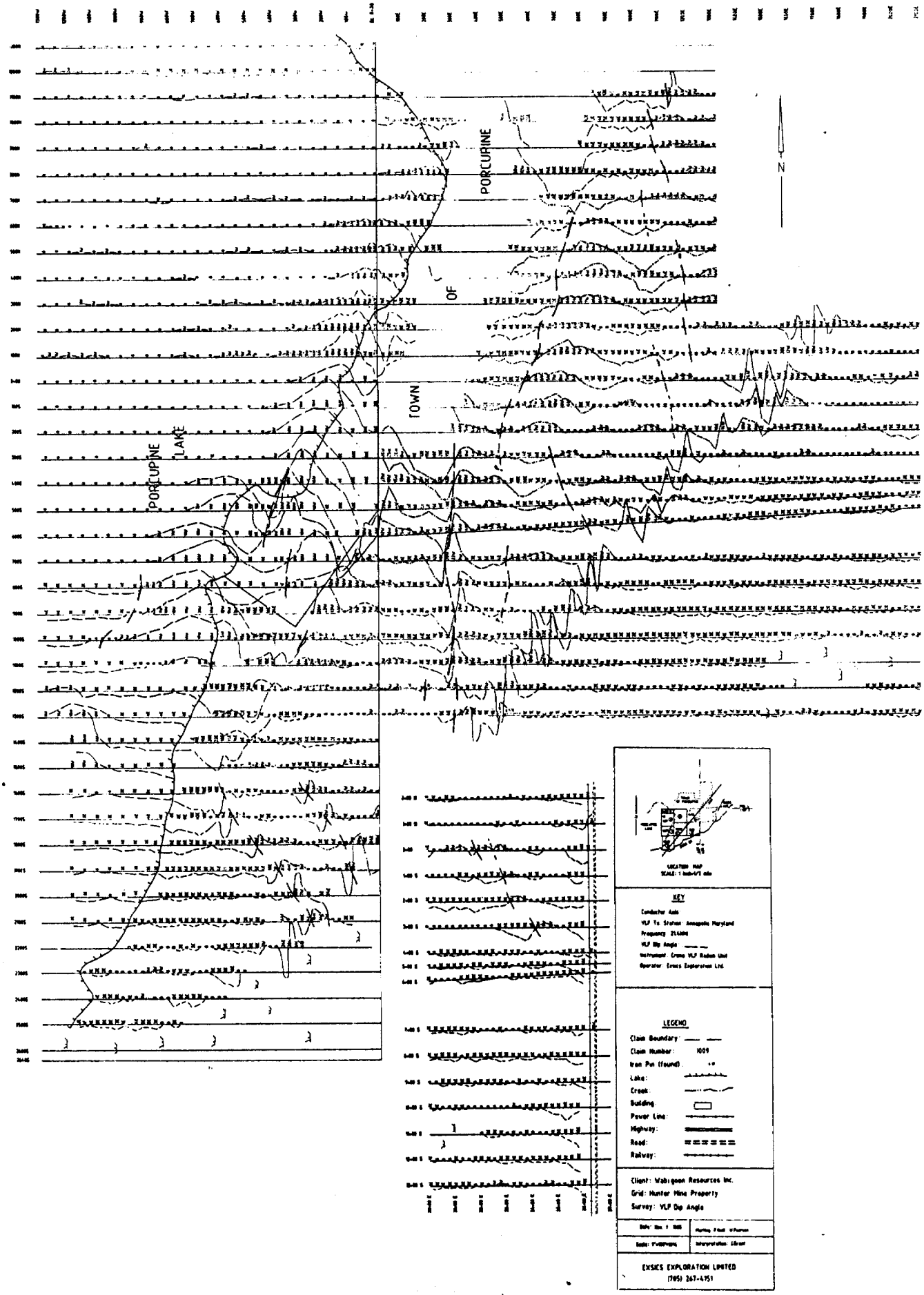
feet 0 500

metres 0 100

Earth Resource Associates


N
LOCATION MAP
KEY
LEGEND
Claim Boundary:
Claim Number: 1009
Iron Pin (found):
Lake:
Creek:
Building:
Power Line:
Highway:
Road
Railway:
Client: Wabageon Resources Inc
Grid: Hunter Mine Property
Survey:
Date:
Scale:
EXSICS EXPLORATION LIMITED
(705) 267-4151


N
KEY
Tombstar Area
VLF Tx Station Annapolis Maryland
Frequency 21.4 kHz
VLF Field Strength ____ 240 ____
Instrument Crone VLF Radon Unit
Operator EXSICS EXPLORATION Ltd
LEGEND
Claim Boundary
Claim Number 1009
Iron Pin (found)
Lake
Creek
Building
Power Line
Highway
Road
Railway
Client Wabageon Resources Inc
Grid Hunter Mine Property
Survey
EXSICS EXPLORATIN LTD
(705) 267-6151


PORCUPINE LAKE
TOWN OF
PORCUPINE
N
KEY
LEGEND
Claim Boundary
Claim Number
Iron Pin (found)
Lake
Creek
Building
Power Line
Highway
Road
Railway
Client: Wabigoon Resources Inc.
Grid: Hunter Mine Property
Survey: VLF Dip Angle
EXSES EXPLORATION LIMITED
(705) 267-4751

GEOLOGICAL REPORT

HUNTER MINE CLAIMS

SOUTHWEST WHITNEY TOWNSHIP

TIMMINS AREA, CANADA

For

Wabigoon Resources Limited

by

John L. Kirwan

PART 2--DIAMOND DRILLING RESULTS, 1985-1986

Earth Resource Associates,
1111 Government Road,
PORCUPINE, Ontario.

P.O.Box 2150,
Timmins, Ontario, P4N 7X8

705 235-2777

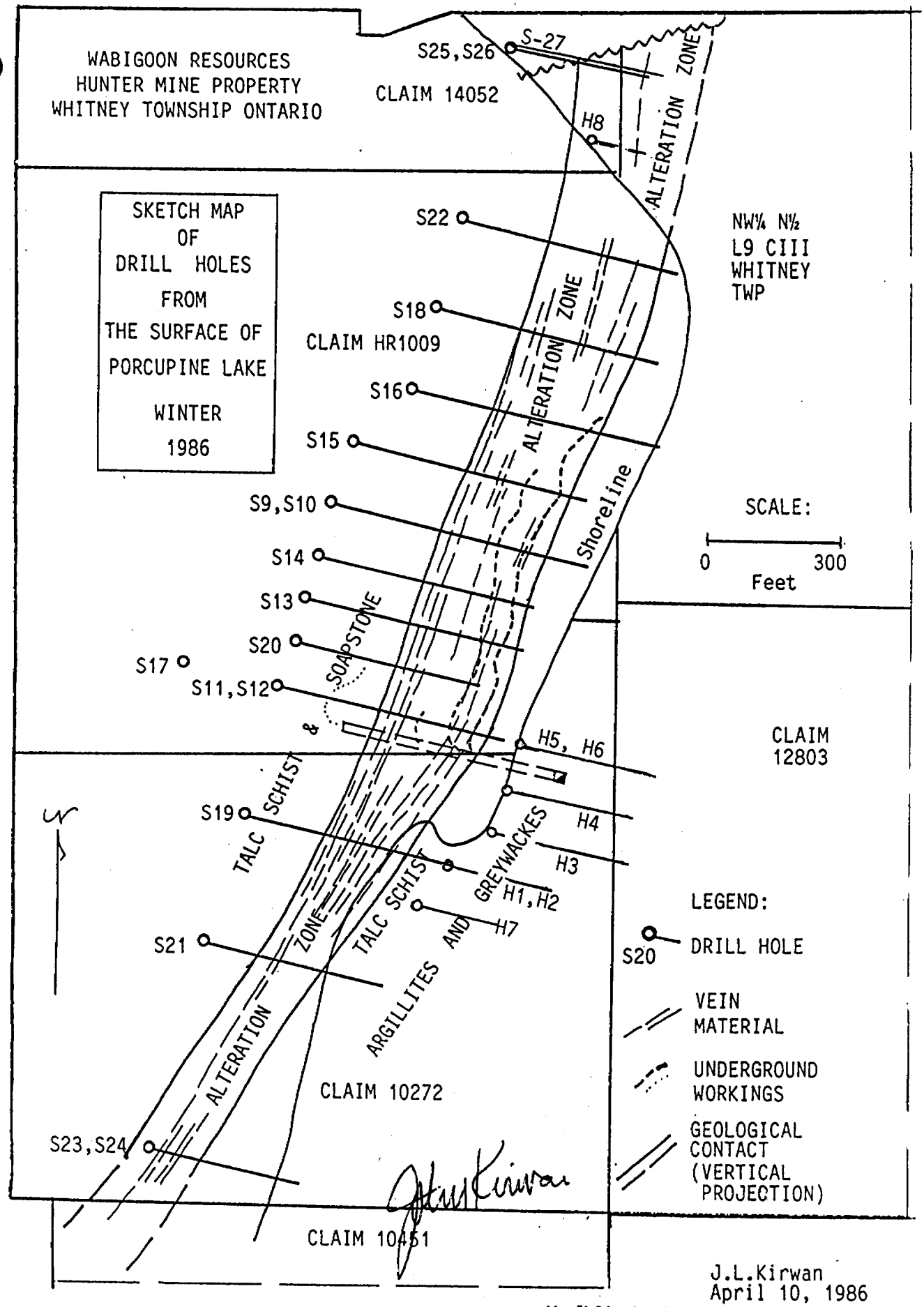
September 1, 1986

APPENDIX II

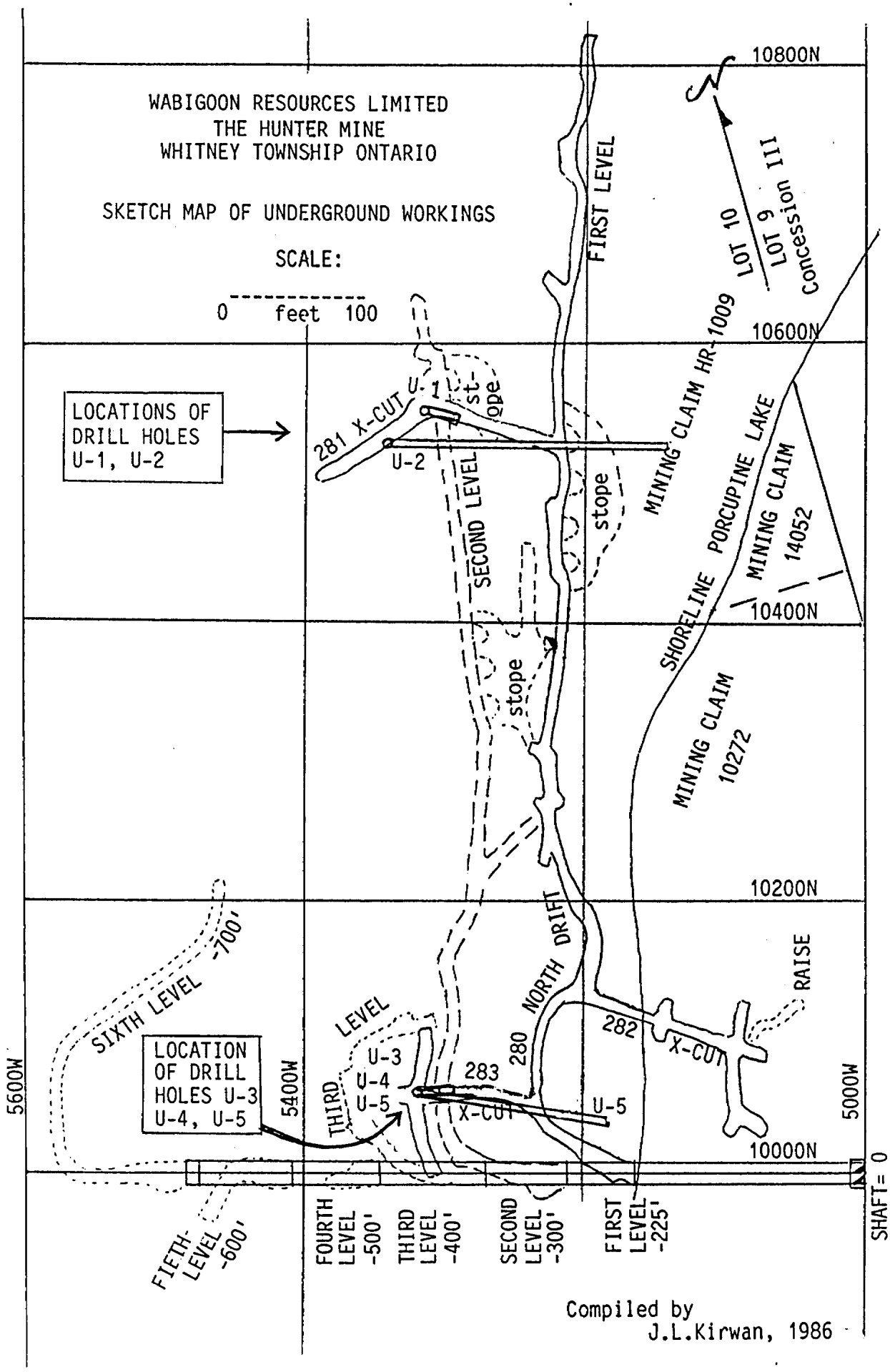
DIAMOND DRILL

LOGS

1985-1986



J.L.Kirwan
April 10, 1986
Modified, September 4. 1986


WABIGOON RESOURCES LIMITED
THE HUNTER MINE
WHITNEY TOWNSHIP ONTARIO
SKETCH MAP OF UNDERGROUND WORKINGS
SCALE:
0 feet 100
LOCATIONS OF DRILL HOLES U-1, U-2
LOCATION OF DRILL HOLES U-3 U-4, U-5
10800N
10600N
10400N
10200N
10000N
5600W
5400W
5000W
FIRST LEVEL
SECOND LEVEL
THIRD LEVEL
FOURTH LEVEL -500'
FIFTH LEVEL -600'
SIXTH LEVEL -700'
SECOND LEVEL -300'
FIRST LEVEL -225'
281 X-CUT
U-1
U-2
stope
stope
stope
LOT 10
LOT 9
Concession III
MINING CLAIM HR 1009
SHORELINE PORCUPINE LAKE
MINING CLAIM 14052
MINING CLAIM 10272
NORTH DRIFT
280
282
283
X-CUT
X-CUT
RAISE
U-3
U-4
U-5
U-5
SHAFT = 0
Compiled by
J.L.Kirwan, 1986

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H-1
GRID REFERENCE 5+03S 3+95W 1985 GRID
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -45°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 100':42°; 200'=44°; 300'=43°; 400'=42° 500'=41°
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Oct. 31, 1985

FOOTAGE	PRELIMINARY LOG DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
		Footage	OzAu/T
0	CASING		
55	ALTERATION ZONE- Layered, streaky, green and lt grey quartz-ankerite (chlorite) schist, possibly mylonitic; shearing and banding at 80-85° to core axis.		
	Nunerous quartz stringers; less sheared but more carbobatized by 86' where layering is at 50° to ca.	86-89	.002
	79-86': Quartz-carbonate zone	126-129	.02
	106-124': More chloritic phase (metavolcanic?); sheared at 50° to ca	129-132	.01
	115': Quartz carbonate vein, 80° to ca		
	116': Banding at 60° to ca cut by ½" QV at 80°	142-147	.002
	124-127': Massive porcellanite-type breccia intergrowth	147-152	.002
	127-144': Quartz alteration zone, about 30% white QV's at 10-90° to ca in pale green locally brecciated aphanitic material.	152-156	.005
	144-203': occas. ¼" or less QV; layering about 45° except at 176'= 85° to ca and at 186-189 is sub-parallel.	166-171	.005
	192': Good layering at 50° cut by cleavage at 30°		
	182': Lost core 1'		
203	TALC-CARBONATE layer: weakly sheared at 50° to ca: light colored, medium grain assemblage of platy talc and more massive carbonate crystals.		
210	METASEDIMENTS: Grey to dark grey with fine layering at 60° to ca		
261	TALC CARBONATE SCHIST: Medium grey, soft, greasy with massive and weakly sheared zones. Shearing at 80° to core axis.		
310	METASEDIMENTS: Well-layered dark grey to light grey, layered at 50° to ca but with well-developed cleavage at 20° (with an apparent orientation of 090 dipping about 70° South).		
	310-319': Silicified zone, nearly black, with fine pyrite in schistosity; gradational lower contact with (?) argillites.		
	400-427': Greywacke, upper contact at 50°: fg-my layered light grey rock layered at 45° to ca.		

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: **HUNTER MINE** HOLE NUMBER: **H-1**

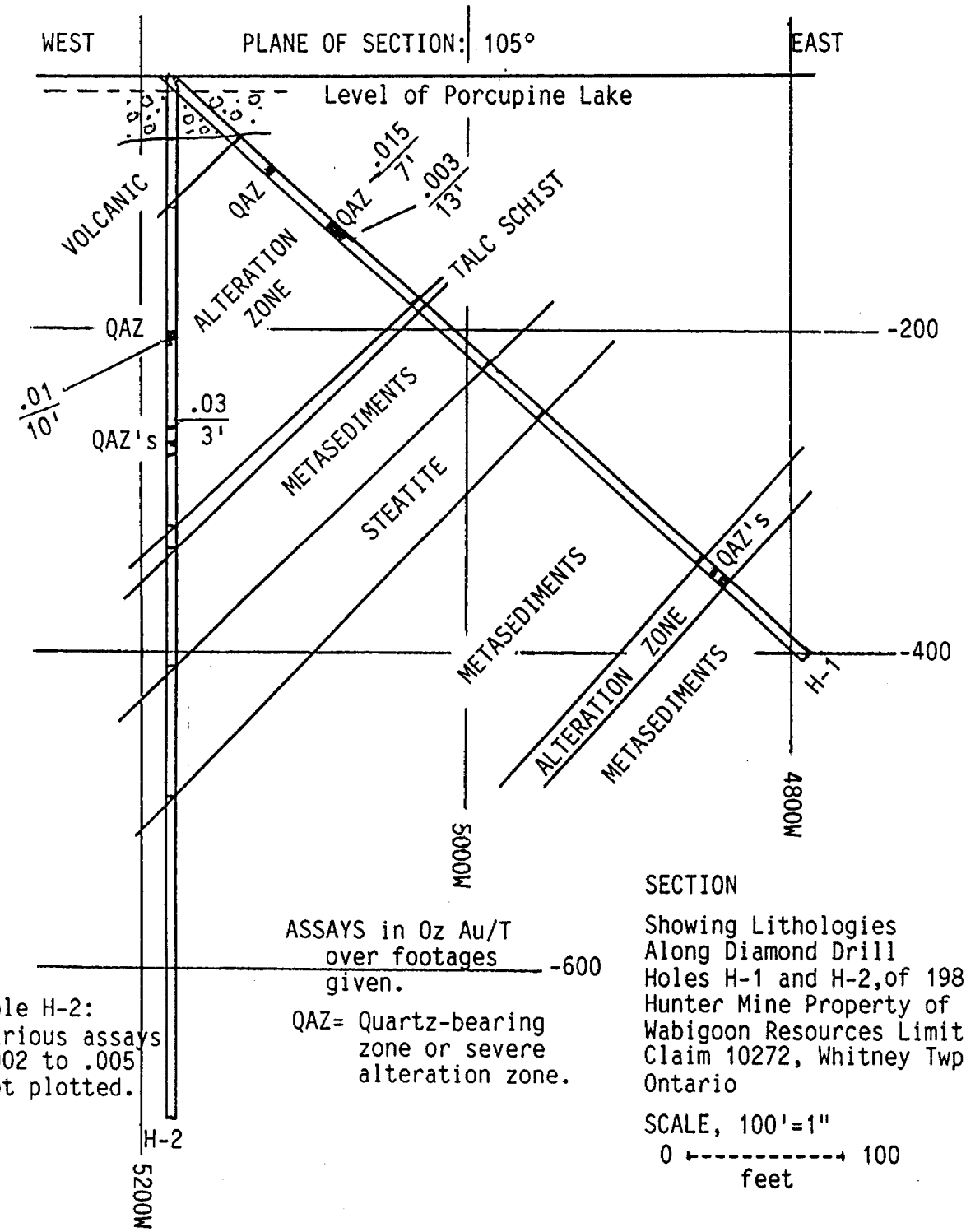
FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
	423': 6" QV with streaks of chlorite, 70° to ca			
	427-441': Metasediments have well-developed bedding at 70° to ca			
	428-430': Some irregular quartz veins			
	441': Irregular QV 3"			
441	ALTERATION ZONE; Sheared, brecciated, crenulated, streaky, silicified in places.			
	446-450': About 20% feee quartz as streaks, disseminations, veinlets.			
	456-461': Quartzose zone, about 30% quartz streaks etc.			
	461-466': Greywacke containing quartz alteration zone, under 10% quartz.			
466	METASEDIMENTS: Greywacke, or possibly silicified argillite; fine grained, layered at 70°			
	474½': 3" quartz vein			
	528': 4" quartz vein			
536	END OF HOLE			

John L. Kirwan
January 30, 1986

ASSAYS taken from split core cut from 55-186 feet and 426-473 feet in 3 to 5 foot sections are taken from the log of Derek McBride of February 15, 1986. All were NIL, except those given above. Data added May 5, 1986.

LOCATIONS: On 1985 Geophysical Grid:
H-1- 5+03S 3+95W;
H-2- 5+00S 4+00W.
On Mine Grid: 9750N, 5250W (H-2) or 5245W (H-1)
Both are on claim 10272

DIAMOND DRILL HOLES
H-1
H-2



ASSAYS in Oz Au/T over footages given.

Hole H-2: various assays .002 to .005 not plotted.

QAZ= Quartz-bearing zone or severe alteration zone.

SECTION

Showing Lithologies Along Diamond Drill Holes H-1 and H-2, of 1985, Hunter Mine Property of Wabigoon Resources Limited, Claim 10272, Whitney Twp., Ontario

SCALE, 100'=1"
0 ←----------→ 100
feet

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H- 2
GRID REFERENCE 5+00S 4+00W 1985 GRID
TOWNSHIP WHITNEY CLAIM 10372
AZIMUTH DIP ANGLE -90°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 100'=89°; 200'=88°; 300'=88°; 400'=88°; 500'=88½°; 600'=88°
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Oct.31, 1985

FOOTAGE	PRELIMINARY LOG DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING	Footage	OzAu/T
36	INTERMEDIATE VOLCANIC- Chloritic schist: sheared, layered, highly chloritic with talc; banding at 60° to ca	56-60	.005
	48-54': weak quartz vein zone with numerous irregular QV's to 10% of rock.	80-84	.005
78	ALTERATION ZONE- Beginning with sheared, layered unit well-banded at 45° to core axis with streaky quartz-feldspar-chlorite-carbonate zones, possibly a Mylonite; at	100-105	.002
	136' the rock becomes a laminated, crenulated quartz-carbonate zone with chlorite, both between the laminae and in crosscutting veins perpendicular to the layering. Layering is 40°-50° to core axis.	124-129	.002
	121'- QV's, 1", ¼" mutually perpendicular	160-170	.01
	153-158'- Quartzose alteration zone, about 10% quartz as streaks & veinlets	180-188	.002
	by 160' the layering is at about 60° to ca	188-193	.005
	181' 12" quartzose zone		
	201'-12" rusty quartzose zone	203-206	.03
	213-215'- Quartzose alteration zone, about 10% quartz as streaks etc.	206-211	.005
	224-226'- The same, about 15% quartz		
	228-232'- The same.	275-279	.005
	232-244'- Similar alteration, much less quartz.		
	262' This material is chaotically layered, with considerable chlorite, carbonate, epidote, and deformation in the form of down-dip mullioning. It is transitional between the spectacularly altered material above and the fresher metasediments below 296'; layering in 45-60° range but occas. less (eg 35° at 262').	283-288	.002
283	TALC-CARBONATE layer, beginning with highly carbonatized or carbonate layer with talc and progressing by 289 to very talcose unit.		

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HUNTER MINE HOLE NUMBER: H-2

FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
296	METASEDIMENTS: Well-layered to streaky or laminated; some mullioning and orthogonal cleavages in addition to the bedding; some intercalated coarser-grained material (greywacke?). Layering generally at 40° to ca; some chloritic alteration. Good cleavage at 343'.			
	320-323: Severe alteration			
367	TALC SCHIST-STEATITE: contacts sheared at 40° to ca; massive by 400'; layered by 408' and brecciated at 447'.			
450	METASEDIMENTS: Black to grey and green, layered at 45° to ca.			
	462-557': Greywacke: light grey, coarsely banded clastic 50° to ca			
	551': 1" quartzose layer at 70° to ca			
	557-565': Quartzose alteration zone, 20% quartz as irregular veins and streaks.			
	565-596': Metasediments, probably argillites, at 40-60° to ca but locally to 10°			
	580': 6" QV at 90°			
	587': 18" QV at 90°			
	597-656': Greywacke, locally argillaceous, nearly massive at the top, but becoming better layered with depth			
	648': 18" QV; banding in rock at 5-10°			
	649-654': Quartzose alteration zone with irregular QV's of 18", 3" and 3" at 90° to ca			
	654-656': Subgreywacke or argillite, layered at 10-20° to ca			
656	END OF HOLE			

John L. Kirwan
January 30, 1986

ASSAYS were taken from split core in 3 to 5 foot sections from 36-216 feet, from 258-288 feet, and from 296 to306 feet, all returning values of NIL except those given above. Data added May 5, 1986.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H-3
GRID REFERENCE 4+25S 2+40W 1985 GRID
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -45

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 100'=44°; 200'=43°; 300'=43°; 400'=42°
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Oct. 31, 1985

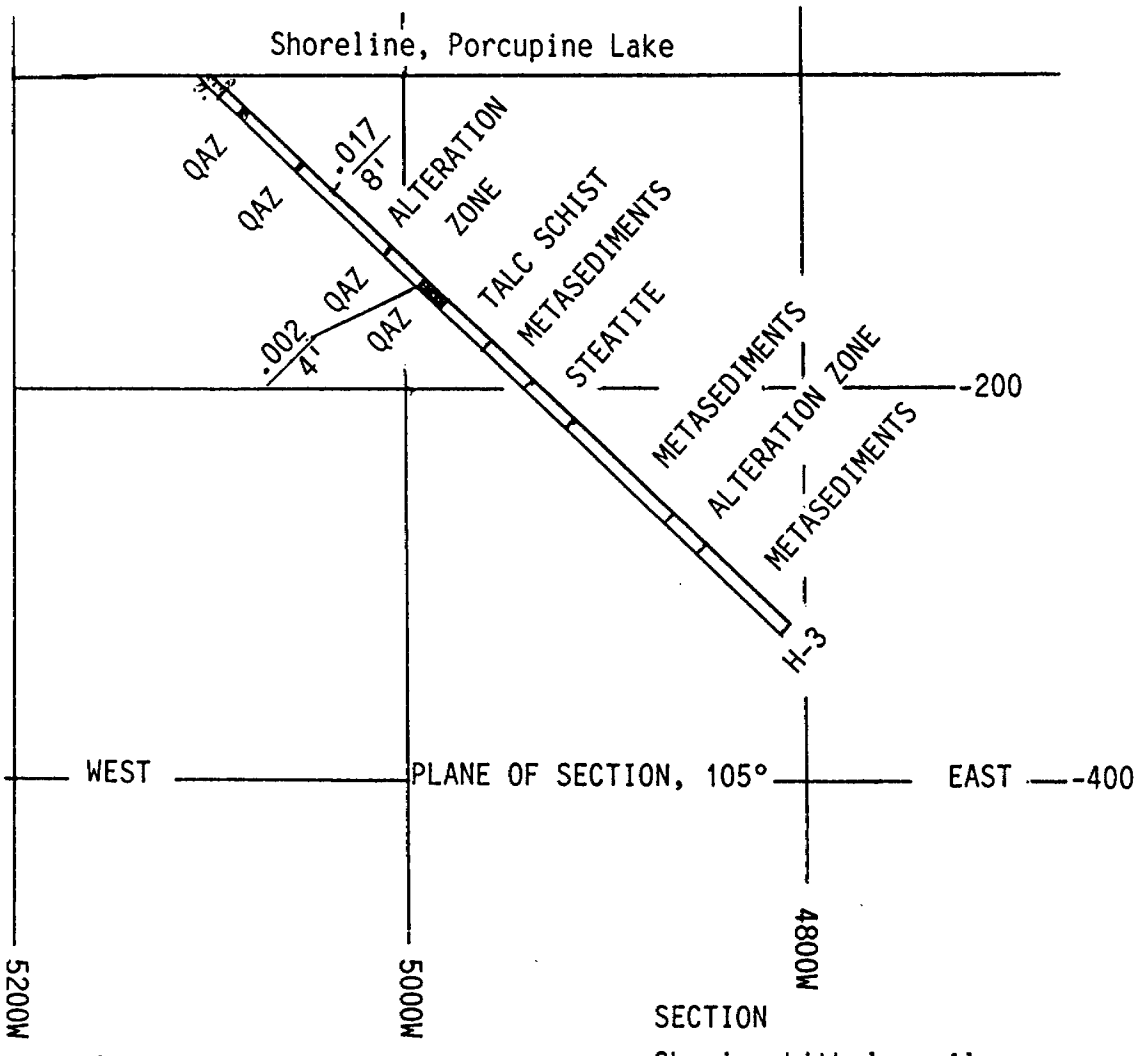
FOOTAGE	PRELIMINARY LOG DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING	Footage	OzAu/T
10	ALTERATION ZONE- Streaky, chloritic, green and grey quartz-ankerite (epidote) rock with banging at 60-70° to core axis;		
	from 21 to 45' about 10% free quartz as veinlets;		
	from 45 to 47' about 5% free quartz as veinlets		
	from 47 to 67' silicification with banding at 40° to ca, about 1% cubic py		
	from 60-62': Quartz-rich alteration zone		
	64-66': Breccia		
	70-73': about 10% quartz as veinlets and streaks		
	83-86': bleached zone, layered at 70° to ca	82-86	.02
	88-90': oxidized zone, layered at 70° to ca	86-90	.015
	a few thin QV's at 108': layered at 80° to ca	90-95	.002
	124-126': Quartzose alteration zone: veinlets and stringers abt 10%		
	149--164: Quartzose alteration zone: about 15% veinlets and stringers	141-146	.002
	146: layering sub-parallel to ca (abt 10°)		
164	TALC SCHIST- Beginning as well-layered kinked dark grey layered rock (argillite?) then becoming well-banded, talcose, layered at 65° to ca which, by 167 becomes highly talcose, kinked, crenulated at 50-80° to ca. Massive steatite by 186'		
200	METASEDIMENTS- Well-banded, with talcose sections, layered at 70-80° to ca		
223	TALC SCHIST- STEATITE; layered at 70-80° to ca.		
252	METASEDIMENTS- Massive to slightly slaty dark grey layered metasediment at 45-70° to ca		
	296: 6" quartz zone.		
	ALTERATION ZONE, 315-345' developed in metasediments; 323-333', 50° to ca. 333-345, fractured, mylonized		
	345-361: Banded metasediments, 70° to ca; sub-parallel cleavage with probable orientation at 090° dipping steeply south.		
	361-379: Greywacke, banded at 70° to ca		
	366'- 1" quartzose zone		

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HUNTER HOLE NUMBER: H-3

FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
	379-406: Argillite: black, well-layered, locally graphitic; crenulated sections. Layering is 50-70° to ca			
	391: 15" section containing about 40% quartz as veinlets and streaks.			
406	END OF HOLE			
	John L. Kirwan January 29, 1986			
	ASSAYS are derived from split core in 1 to 5 foot sections from 10-104', 141-156' and 177-199'. All values were NIL except those given. Data added May 5, 1986.			

LOCATION: On 1985 Geophysical Grid,
4+25S 2+40W.
On Mine Grid: 9850N 5105W
On Claim 10272, on shoreline of Porcupine Lake

DIAMOND DRILL HOLE H-3



QAZ= Quartz-bearing zone or severe alteration zone

ASSAYS in ounces of Gold per ton over footages given.

SECTION

Showing Lithology Along Diamond Drill Hole H-3 of 1985, Hunter Mine Property, Wabigoon Resources Limited, Claim 10272, Whitney Township, Ontario

SCALE, 100 feet equals 1 inch.

0 ⊢----------⊣ 100
feet

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

ASSAYED: 35-173'; 208½-228½; 259-264½'; and 265-282'. All assayed NIL except those shown.

PROPERTY HUNTER MINE
HOLE NUMBER H-4
GRID REFERENCE 3+30S, 2+60W 1985 GRID
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -45°

DRILLING COMPANY NOREX FOREMAN A. Gagnon DIP TESTS: 100'=40°; 200'=41°; 300'=43°; 400'=43°
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Oct. 31, 1985

FOOTAGE	PRELIMINARY LOG — DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
		Footage	OzAu/T
0	CASING		
35	ALTERATION ZONE- Streaky, banded, green and grey quartz-ankerite (chlorite, epidote) rock with banding at 60-70° to core axis.	46-49½	.002
	37' - 1" quartz zone	49½-50½	.002
	41' - 1" beige aphanitic dike (porcellanite)	76-78	.002
	50-56': Quartzose alteration zone	80-82½	.005
	73-75': Quartzose alteration zone	86-88½	.002
	77-81': Quartzose alteration zone.	96-97½	.002
	93-108': Breccia zone	99-104	.004
	Well-layered at 70-80° to ca after 108, still very altered (epidote)	110½-115	.002
	Somewhat bleached after 124'	116-120	.005
	169' : 12" quartzose alteration zone	120-125	.002
	203-206: Quartzose alteration, brecciation, about 15% free quartz as veins		
	208-228: Quartzose alteration zone, about 5% quartz, up to 2% pyrite	140-144	.005
	Unidentified lurid green mineral at 218	146-159	.002
246	TALC SCHIST- Dark grey to black talc-carbonate rock, well-developed schistosity at 60°	159-166	.005
258	METASEDIMENTS- Greenish grey, well-layered (almost slaty), about ½% pyrite	166-169	.002
300	STEATITE and talc schist: dark green to black	169-173	.005
343	METASEDIMENTS- Greywacke: massive to slaty with pyrite on slaty cleavage at 75° to ca. Contains intersecting cleavage along axis of core which would have a true orientation in the field of about 080° dipping steeply to the south.	222-226½	.002
		273½-277	.002
	Argillite by 409 with good layering at 60-70° to ca; intersecting cleavage may have orientation of about 125°, with steep S dip.		
	449': 4" irregular QV		
	454': 2" irregular quartz vein.		
456	END OF HOLE		

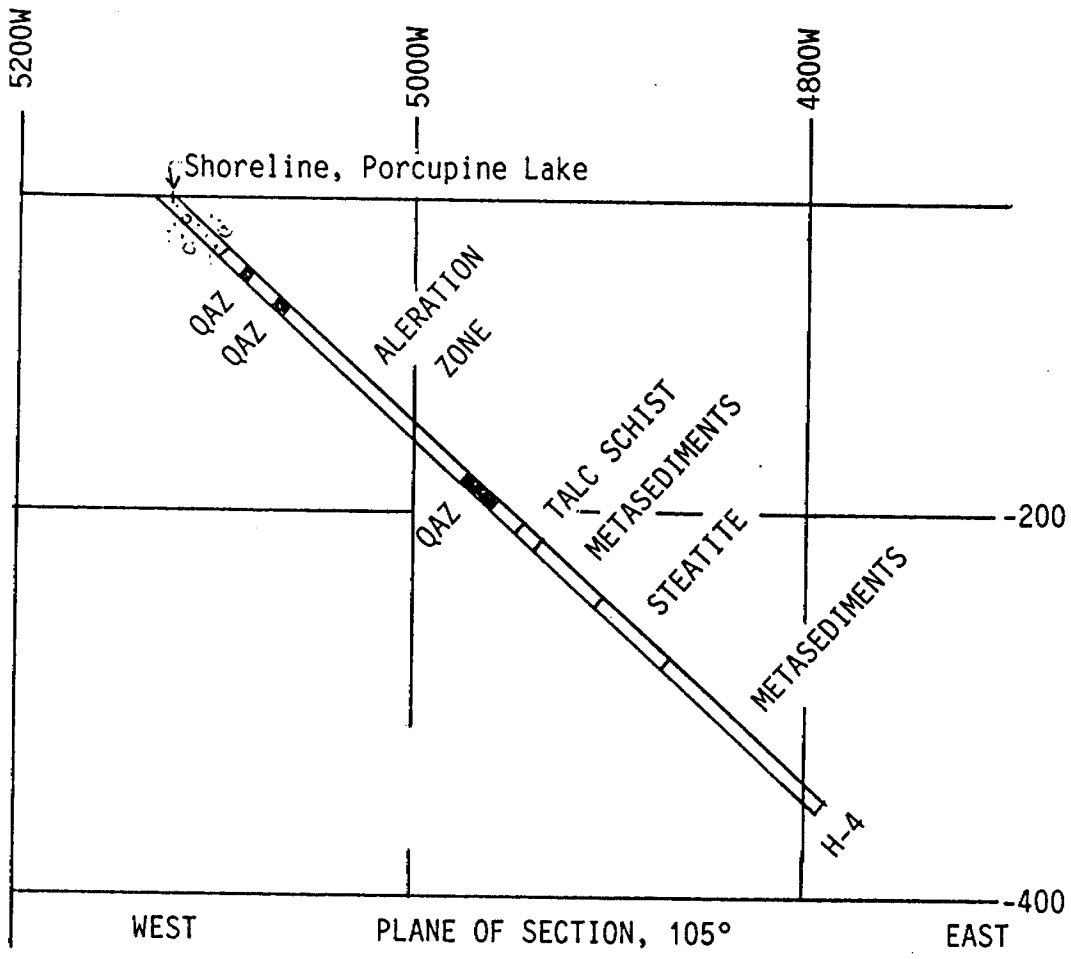
John L. Kirwan

PAP 8451

LOCATION: On 1985 Geophysical Grid:
3+30S 2+60W.
On Mine Grid: 9950N 5150W

DIAMOND DRILL HOLE
H- 4

On Claim 14052 on shoreline with Porcupine Lake.



QAZ= Quartz-bearing zone or severe alteration zone

ASSAYS: Numerous values in the .002-.005 range (see Log).

SECTION

Showing Lithology along DDH H-4 of 1985, Claim 14052, Whitney Twp., Ontario

HUNTER MINE PROPERTY

WABIGOON RESOURCES LIMITED

Scale: 100 feet to 1 inch

0 ⊢----------+ 100
feet

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H-5
GRID REFERENCE 2+38S 2+00W 1985 GRID
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -45

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 0'=47°; 100'=48°; 200'=47°; 300'=46°; 400'=4
Note: Actual inclination at 0'measured 45
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Oct. 31, 1985

FOOTAGE	PRELIMINARY LOG DESCRIPTION OF CORE Log contains some material from the complete log of A.Brooks	SAMPLE NUMBER	ASSAYS
		Footage	OzAu/T
0	CASING		
10	CHERT vfg assemblage of quartz, with minor feldspar and pyrite		
11.5	ALTERATION ZONE: Streaky, well-banded green and grey layering at about 70° to ca.	10-11½	.01
	The rock is a quartz-ankerite (feldspar, epidote, chlorite) schist.	11½-16½	.002
	50-52 Irregular Quartz (ankerite-Tourmaline) Vein.	26½-28½	.040
	61- Rusty Zone; 1" QV @ 10° to ca	28½-29½	.1
	68- QV ½" @ 10°	29½-32.3	.002
	69-83- Quartz Ankerite Breccia	32.3-34.8	.005
	Chloritic Quartz-Ankerite Schist, less strongly sheared than above	34.8-44	.002
	101- ½" QV @ 45° to ca	46½-48½	.002
	105- ½" QV @ 45° to ca	90½-91½	.002
	114- 3" Qtz-Ankerite vein parallel to schistosity	91½-96	.001
	124- 1" Qtz-Tourmaline str cutting shearing; 70° to ca; py	115-120	.002
	151-154- becoming silicified, less schistosity.	123½-124½	.002
154.3	QUARTZ FELDSPAR PORPHYRY; dark grey with small quartz eyes; upper contact @ 50° to ca.	151½-154.3	.006
	157- A few QV's	154.3-157.3	.002
161.4	ALTERATION ZONE: Quartz-Ankerite Chlorite Schist, sheared at 75° to ca	157.3-161.4	.004
	169- Quartz-tourmaline veinlet ½" @ 65° to ca	164.7-168½	.001
	170-180-Several Qtz-Tour veins at about 50° to ca	168½-169½	.005
	184- Fuschite on shear planes	169½-172½	.005
	Sericitic Quartz Ankerite Schist: carbonatized, silicified; 70-80° to ca.	172½-175	.035
	207, 223, 243: rusty zones . Rock is less sericitic below 204.	176-179½	.01
	204, 213, 215, 225, 227, 229: QV's approx 2" at 50° to ca	179½-182½	.001
	Quartz Ankerite Rock; silicified zone 241' (6"); some fuschite at 239'	236-239	.002
259	TALC SCHIST: Talc-carbonate rock, dk grey to black, layered to schistose 60-65° to ca	259½-263	.002
	267- 1' layer of lt grey banded rock. possib. Greywacke	268.8-270.8	.01
	Talc schist becomes less schistose, less talcose towards bottom, 70° ca	276-277½	.005

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HUNTER HOLE NUMBER: H-85

FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
270.8	METASEDIMENTS: Greenish grey layered rock at 75° to ca, weakly pyritiferous, layering more pronounced with depth; by 290 feet may be argillite. Locally talcose. Silicified, 272-299'; layered @ 80-90° to ca. 304-312' Highly "S" contorted beds.			
330	STEATITE- Highly talcose, dark green to black, locally layered at 60-70° to ca; Some carbonate layers. 338- 1" QV 389- ½" brown quartz veinlet @ 50° 390-410' Shearing at 45-50° to ca			
410	METASEDIMENTS- Argillite. Well-layered at 40° to ca. Possible tops up hole at 420.3'; 422-426' "S" folds 423-435' Intense folding at 0-90° to ca 445-455' Silicification, sericitization, bleaching; banding 30° (upper) to 55° 445-447' Irreg, discontinuous, brecciated quartz veins with tr po, py.			
455	END OF HOLE			

Original Preliminary Logging by J.L.Kirwan, October 31, November 1 and 2, 1985; final logging by Arden Brooks, December, 1985.

John L. Kirwan,
January 27, 1986

ASSAYS were derived from split core taken in lengths of 1 to 5 feet from 10 to 455 feet. Values of NIL were returned for much of the hole except for the values given above. Assays derived from the log of Arden Brooks as corrected April 20, 1986 and added to this Preliminary Log on May 5, 1986.

LOCATIONS: On 1985 Geophysical Grid: 2+38S, 2+00W

On Mine Grid: 10050N, 5120W

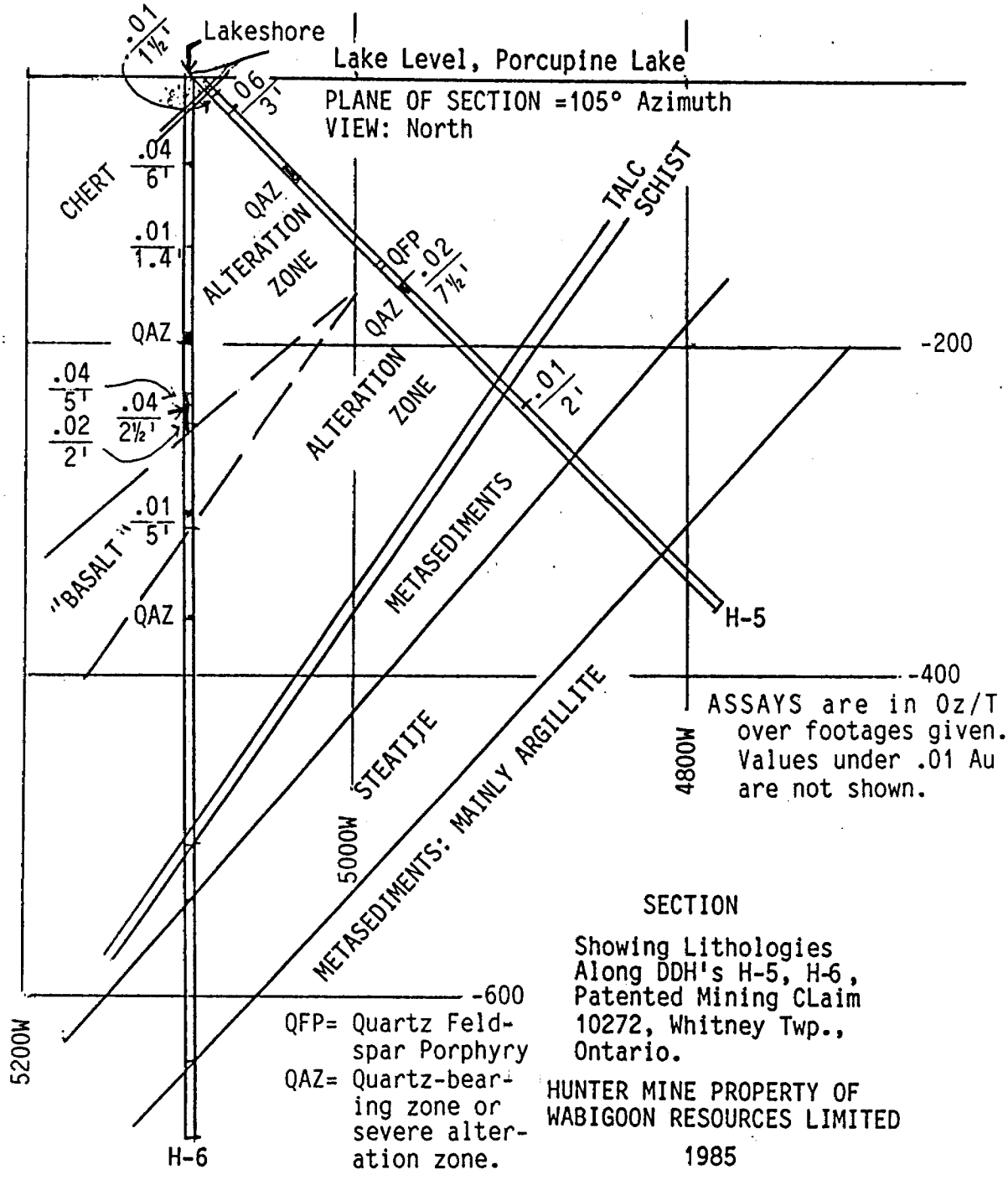
On Claim 10272: on W boundary (Lakeshore)

DIAMOND DRILL HOLES

H-5

H-6

1985



SECTION

Showing Lithologies Along DDH's H-5, H-6, Patented Mining CLaim 10272, Whitney Twp., Ontario.

HUNTER MINE PROPERTY OF WABIGOON RESOURCES LIMITED

1985

QFP= Quartz Feldspar Porphyry

QAZ= Quartz-bearing zone or severe alteration zone.

SCALE, 100 feet equals one inch.

0 ←----------→ 100 feet

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H-6
GRID REFERENCE 2+39S 2+05W 1985 GRID
TOWNSHIP WHITNEY CLAIM10272
AZIMUTH DIP ANGLE -90°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 100'=88°; 200'=88°; 300'=88°; 400'=87°; 500'=86°
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Nov. 3, 1985

FOOTAGE	PRELIMINARY LOG — DESCRIPTION OF CORE — Contains some data derived from log of A.Brooks, December, 1985
0	CASING
10	CHERT; Sedimentary layer or zone of silicification, vfg assemblage of Qtz, some carb.
	Lower contact @ 25° to ca
12.5	ALTERATION ZONE: Sericitic Quartz-Ankerite Schist;
	Well-banded green and light grey zone, banding at 60° to ca
	15'- Qtz Str; contacts at 15/55° to ca
	20'- Qtz Str; contacts at 40/65° to ca
	23; 38; 40'- rusty weathered zones, 40-65° to ca
	31-40'- thin, talc-filled fractures, 35-55° to ca
	41'- brown qtz veinlets cutting schistosity; 50° to ca
	50,52'- Quartz tourmaline veins
	Alteration becomes more intense by 60'; local silicification; rusty fault zones present, with reorientation of schistosity to 35-40° to ca.
	Chloritic quartz ankerite schist by 94' 50° to ca
	94-96'- Bleached areas
	97'- ½" qtz-ank str 5° to ca ; silicification at 100'
	100-120- sericitized, v. weak pyrite mineralization
	135'- bleached
	137-144'- weakly talcose
139	QUARTZ FELDSPAR PORPHYRY- very thin unit abt 1% py
140.3	ALTERATION ZONE: some fuschite present on shear planes
	149'- 1" zone intensely sheared, silicified, brecciated; some brown qtz
	Quartz Ankerite Breccia, 75° to ca; 157'=4"layer of Quartz Feldspar Porphyry
	Quartz Ankerite Tourmaline Schist from 158', 40° to core axis.
	Sericite ankerite schist from 159.5'; some fuschite from 165-175; 1" seam py 169'
	170-180'- Bedding crenulated with fractures at 70° to core axis.

SAMPLE NUMBER	ASSAYS Footage	OzAu/T
	10-12½	.005
	12½-19	.002
	41½-44	.002
	49-52½	.03
	52½-55.3	.06
	55.3-62	.01
	73.3-74½	.002
	99.1-100½	.01
	105-108	.002
	158-160½	.002
	160½-163	.005
	163-168	.01
	168-173	.002
	178½-182½	.002
	185½-190	.01
	190-193½	.005
	193½-198	.04
	198-199	.002
	199-203	.020
	203-207	.005
	207-211	.025
	211-213½	.002
	213½-216	.047
	216-221	.005
	221-223	.023
	223-226	.005

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HUNTER MINE HOLE NUMBER: H-6

FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
	186-198'- Brecciated			
	192½- ¼" brown qtz str 30° to banding	231.7-240	.002	
	198'- Talc-filled slip or fault	240-245	.005	
	198-206'-Silicified zone;	250-257	.015	
	206½'- Brown quartz stringer; seam of sphalerite in grey str.	257-258	.005	
207	BASALT: Fairly massive green to grey zone finely banded at 55° to ca; local brecciation	258-263	.010	
	and occasional talc-chlorite seams. From 230 becomes light colored and massive,	268-273	.005	
	perhaps porcellanite alteration.	301-306	.002	
	270-275'= Flow Breccia, then silicified section	316-321	.002	
275	ALTERATION ZONE: Quartz Ankerite Rock: Medium greenish color, average banding at 45° to ca	461½-464½	.002	
	Total carbonate alteration and considerable replacement; some local	468.2-471	.002	
	silicification. Quartz veining from 303-310 and 316-323'	481-487	/002	
	323-326'- Brecciation	624-629	.002	
	373-460'- occas. thin talc seams	640-642.3	.002	
	402,407'- QV's			
462	TALC SCHIST: Silicified fuschitic schist, possibly metagreywacke; 5% disseminated pyrite			
468	METASEDIMENTS- Well layered dark grey argillites or tuffs, banding at 50-60°, 50° commonest			
	abundantly carbonatized, both pervasively and in numerous stringers.			
	Chloritic towards 500'; crenulated by 503.			
503	STEATITE: Solid talc, weakly schistose at 50°, suggestion of mullioning (gouge);			
	graphitic material towards bottom.			
603	METASEDIMENTS: Well-layered argillite with graphite along shear planes or interbed layers;			
	Intercalated with minor siltstone showing excellent graded bedding with tops upwards.			
	620-634: Silicification, sericitization, bleaching, 35-40° to ca			
	640-642½- Weak vein system at 70/50° to ca; pervasive graphite (mo?)			
	643' - Extremely contorted; cross faulting; bedding is 65-70° to ca			
656	END OF HOLE			

ASSAYS are from split core taken from 10-384'; 401-402.2'; 407½-408'; 460-506; and 619-642.3. All are NIL except those shown. Data added May 5, 1986.

Original preliminary logging by J.L.Kirwan, Nov. 1-3, 1985; subsequent log by A.Brooks, December, 1985-January, 1986; this log derived from both sources.

John L. Kirwan, January 28, 1986

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H-7
GRID REFERENCE 5+85S 4+70W 1985 GRID
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -45°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 100'=49½°; 200'=48°; 300'=45°; 378'=44°
CORE SIZE BQ CORE STORED AT: Minesite LOGGED BY J.L.Kirwan DATE Jan. 30, 1986

FOOTAGE	PRELIMINARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING	Footage	OzAu/T
20	ALTERATION ZONE: Crenulated, layered to laminated, brecciated, grey to greenish grey Quartz-Feldspar-Carbonate-chlorite rock, perhaps derived (in the laminated sections) from argillites. Banding at 60-80° to core axis.	45-50	.002
		55-60	.002
	68-73: Porcellanite breccia: bleached, silicified; fine veinlets of black material cutting laminae	73-78	.002
		151-161	.002
	20-26: Several quartz veins, 1-3" in size at 10-50° to core axis	161-166	.002
	36-38: the same	171-176	.005
	41: QV ¼"	176-181	.002
	54-60: Zone containing quartz veins.	199-203	.005
	below 73': More massive material, possibly derived from intermediate volcanic, for example, andesite at 91 feet.		
	79-118: Gradual change from dominantly grey colored to green material with well-developed laminations at 60-75° to core axis.		
	104: Pyrite seam, ¼"		
	116-118: A few quartz veins		
	130-132: Silicified zone with blurred 1" QV in core		
	137: ½" QV at 60° to ca		
	142: 1" QV at 15°		
	150½: ½" QV at 50°		
	167: ½" U-shaped QV		
	by 183: Laminations (av. angle = 70°) give way to chaotic banding		
	197: 1" QV		
	201-208: Severe alteration, silicification, quartz veins		
	214: 3" Quartz carbonate vein		
	220 onwards: Local silicifiaation; crosscutting thin black veinlets.		
242	METASEDIMENTS: Green-laminated alteration zone grades into grey material, otherwise identical. Probably meta-argillite.		

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HUNTER MINE HOLE NUMBER: H-7

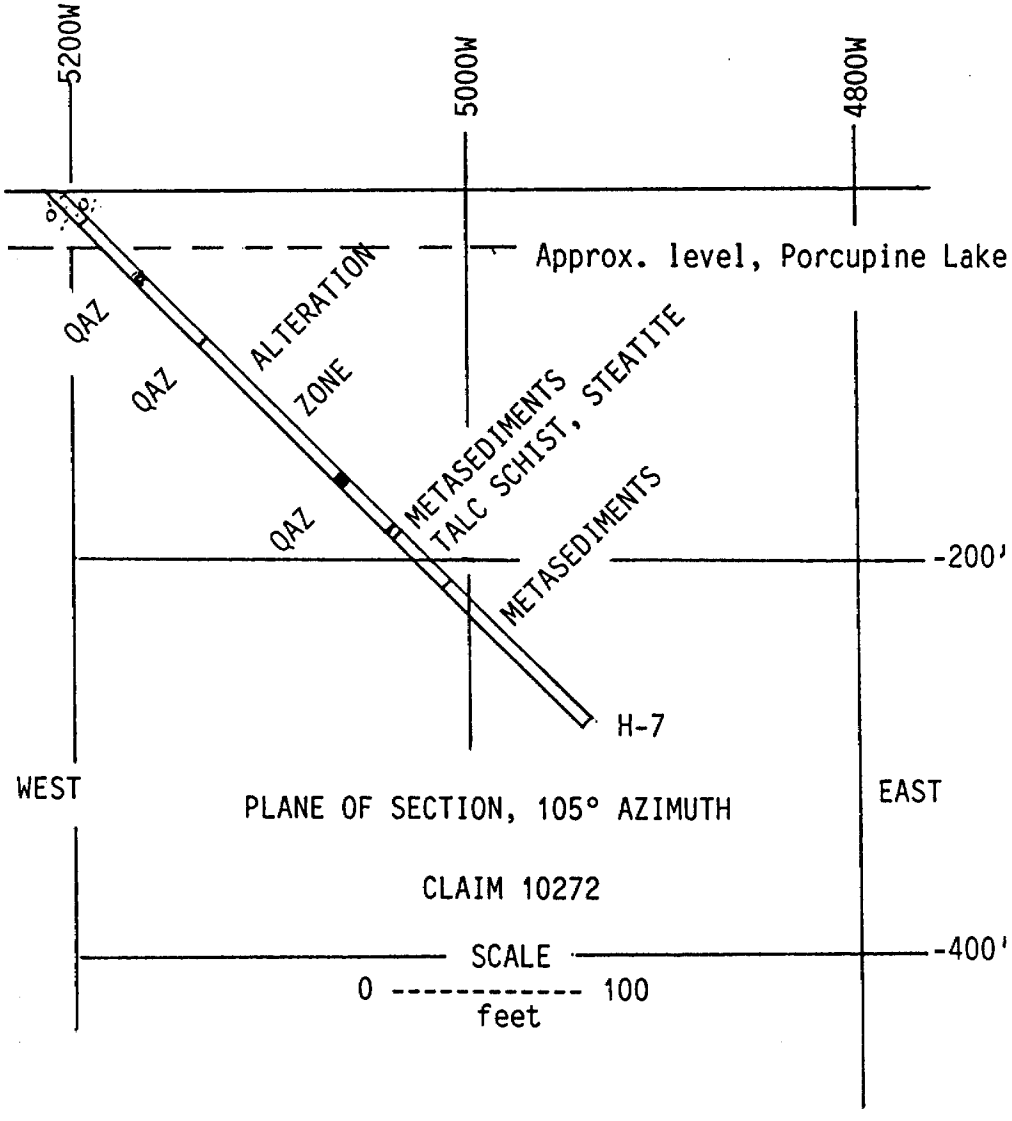
FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
248	TALC SCHIST-STEATITE: In gradational contact with metasediments: the layering becomes selectively more talcose, but visually the rock is still the same, laminated grey to black metasediment with layering at 40-80°			
	by 263' the rock becomes massive steatite			
280	METASEDIMENTS: Grey to black laminated material (argillite) banded at 40-50° to core axis. at 288-290, 294-296, and at 299-300 and elsewhere are light colored (bleached and silicified?) zones.			
	by 300' banding is at 75-85° to core axis			
	after 336' rocks become more massive, lighter in color, clastic (Greywacke) layering is at 50° to ca			
378	END OF HOLE			

John L. Kirwan
February 4, 1986

ASSAYS derived from split core taken in 4 to 5 foot sections between 20 and 208 feet. All returned values of NIL except those plotted above. Date added May 5, 1986.

LOCATION: On 1975 Geophysical Grid, 5+85S 4+70W

DIAMOND DRILL HOLE H-7



QAZ= Quartz-bearing zone or zone of severe alteration

GEOLOGICAL SECTION
ALONG DDH H-7
HUNTER MINE PROPERTY
WABIGOON RESOURCES LIMITED
WHITNEY TOWNSHIP, ONTARIO

Scale, 100 feet equals 1 inch.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER H-8
GRID REFERENCE 13+00N, 1+00W 1985 GRID
TOWNSHIP WHITNEY CLAIM 14052
AZIMUTH 105° DIP ANGLE -45°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: None
CORE SIZE AQ & BQ Cas. CORE STORED AT: LOGGED BY J.L.Kirwan DATE Nov 15, 1985

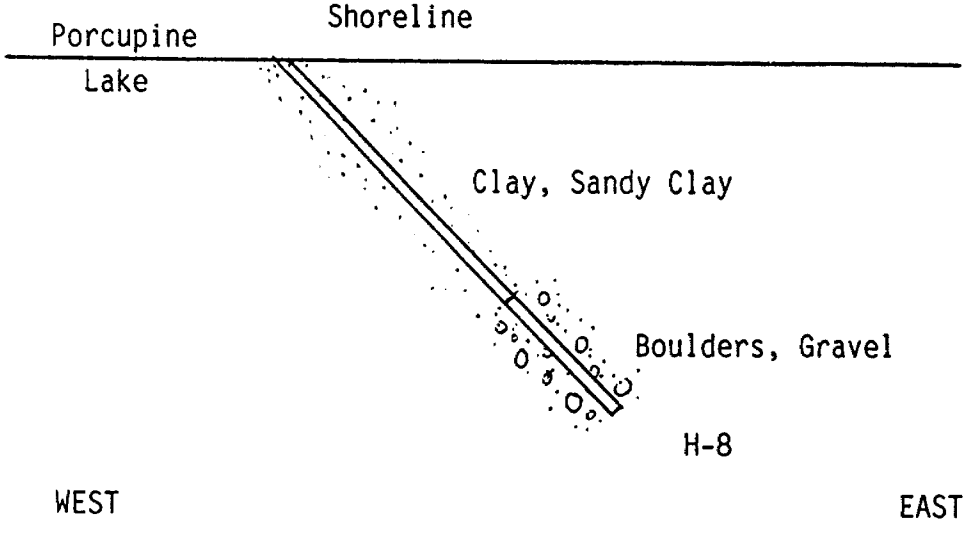
FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING - The casing penetrated 246 feet of overburden consisting of clay for the first 170 feet, followed by boulders up to 2 feet in size and consisting of pink granite, basic lava, and one small cobble of fossiliferous limestone. The boulders ranged in size up to 20 inches, commonly in the 12 to 18 inch class.			
	- The casing, which started as N, was tapered through B to A. At 246 feet it was found to be too difficult to continue without danger of breaking the casing.			
246	END OF HOLE			
	HOLE LOCATION: At edge of Bannerman Park in the Town of Porcupine at the edge of Porcupine Lake. This point is approximately 275 feet south and 100 feet west of the NE corner point of Lot 10, Concession III, Whitney Township, Ontario.			

John Kirwan

John L. Kirwan
January 28, 1986

LOCATION: On shore of Porcupine Lake at Bannerman Park, Porcupine;
Approx. 275'S and 100'W of NE corner of Lot 10, Con. III, Whitney Township, Ont.
On 1985 Geophysical Grid, 13+00N, 1+00W

DIAMOND DRILL HOLE H-8



PLANE OF SECTION, 105° Azimuth
VIEW: North

CLAIM ; 14052

SCALE
0 ⊢----------⊣ 100
feet.

GEOLOGICAL SECTION
ALONG DDH H-8
HUNTER MINE PROPERTY,
WABIGOON RESOURCES LIMITED,
WHITNEY TOWNSHIP, ONTARIO

SCALE: 100 Feet = 1 Inch

DATE: Of Drill Hole, November 8-15, 1985, Logged November 15, 1985

Earth Resource Associates
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DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY: HUNTER
HOLE NUMBER: S-9
GRID REFERENCE: 670' East, 540' North of Number 8 Post of L.A. HR1009
TOWNSHIP: WHITNEY
AZIMUTH: 105° DIP ANGLE: -50°

DRILLING COMPANY: NOREX FOREMAN: A.GAGNON DIP TESTS: 150'=-49°; 300'=58½°; 456'=53°; 484'=51°; 624'=50°; 750'=55°
CORE SIZE: BQ CORE STORED AT: HUNTER MINESITE LOGGED BY: J.L.Kirwan DATE: Feb. 4-8, 1986

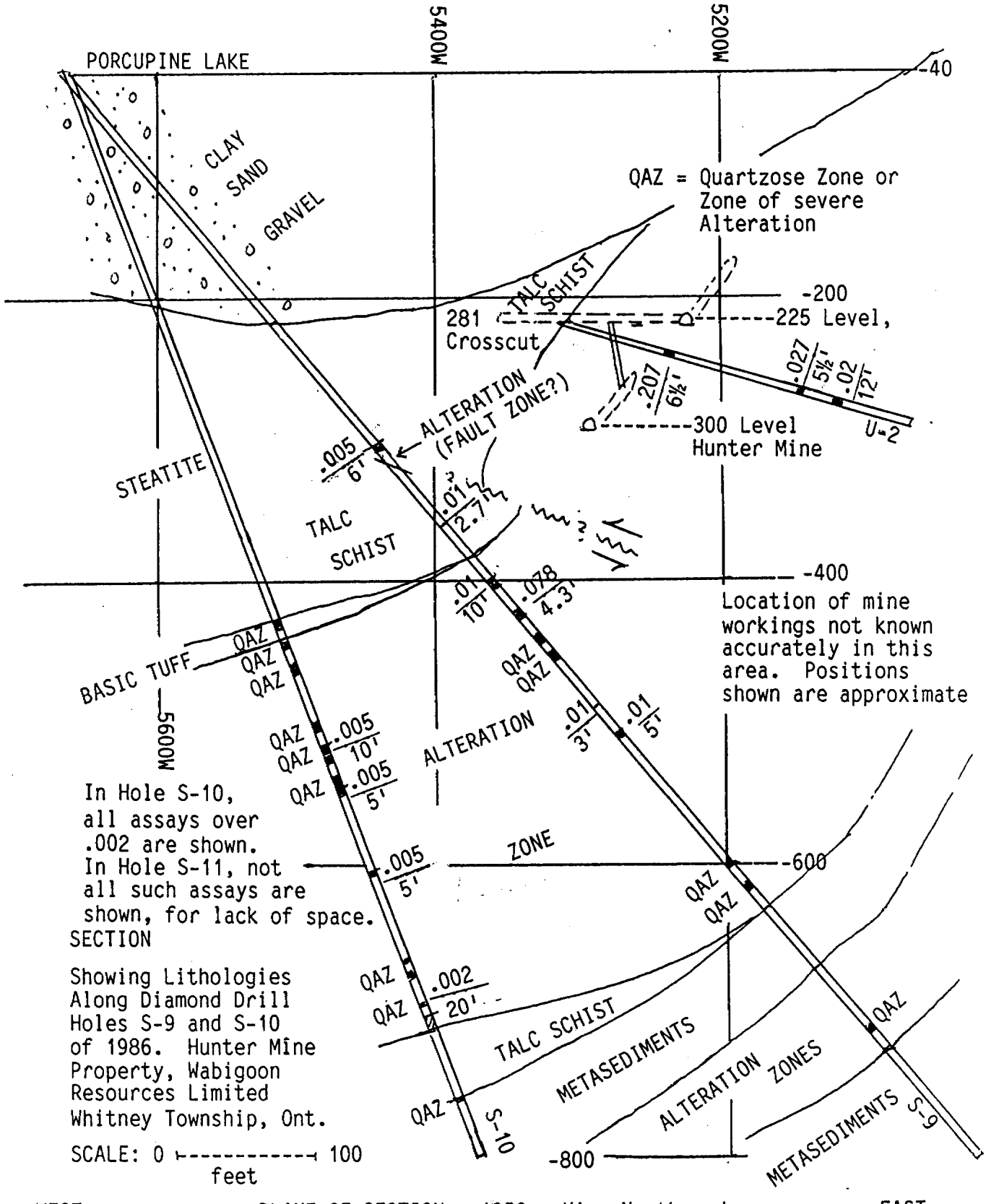
FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS OzAu/T
0	CASING		
227	STEATITE-TALC SCHIST; Dark green blocky, sheared (at 20° to core axis) with massive and brecciated sections; layering at 35° to ca at 300'; layering at 75° after 305'; bottom contact at 75° to ca		
340	ALTERATION ZONE: (Talc)-Ankerite-Sericite-Quartz Schist with occas. epidote, chlorite or fuschite zones. Bottom contact at about 30° to ca. This is not typical of the usual "Alteration Zone" but more like a brecciated zone (fault?)	340-346	.005
		346-353	.001
351	STEATITE becoming TALC SCHIST towards bottom. Quartz Breccia, 380-387'	415.3-418	.01
460	ALTERATION ZONE: as above, layered at 50-70° to core axis	418-429½	.002
	QAZ: Quartz Vein Systems, silicification, at 515-522; 527-539 (porphyritic); 724-726; 732-735'; 751-759; 771-773.	429½-435	.005
		435-440.2	.002
785	METASEDIMENTS: Dark grey semi massive argillite layered at 75° to core axis.	461-470.7	.012
813	ALTERATION ZONE- Intermittant 813-899; bleached & silicified locally (855-866).	478-483.7	.003
	QAZ: 879-885	483.7-489	.04
		489-494.3	.078
899	METASEDIMENTS- Dominantly black argillite to 928' then grey greywacke, banded at 70° to core axis but crenulated so that the banding varies from 0-80°.	518.8-522	.002
		526-527	.003
997	END OF HOLE	528-532.7	.002
	ASSAYS: 340-353'; 415-440'; 447-688'; 781-795'; 893-906'; below 605'= NIL or Tr.	550-567	.003
		577-580	.010
	Preliminary Log by J.L.Kirwan on the dates indicated; additional logging, and sampling, by Arden Brooks.	580-582	.005
		596-600	.005
		600-605	.01

J.L.Kirwan

LOCATION: See Sketch

DIAMOND DRILL HOLES S-9, S-10
U-1, U-2

CLAIM HR1009



SECTION

Showing Lithologies Along Diamond Drill Holes S-9 and S-10 of 1986. Hunter Mine Property, Wabigoon Resources Limited Whitney Township, Ont.

SCALE: 0 ⊢----------⊣ 100 feet

WEST PLANE OF SECTION = 105°; View Northward EAST

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER
HOLE NUMBER S-10
GRID REFERENCE 670'E, 540'N No. 3 Post
TOWNSHIP WHITNEY CLAIM of HR1009
AZIMUTH 105° DIP ANGLE -70°

DRILLING COMPANY NOREX FOREMAN A.GAGNON DIP TESTS: 150'=-70°; 300'=-70°; 450'=-77°; 825=-83°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE Feb. 12-18 1986

FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING			Au Oz/t
172	STEATITE-TALC SCHIST:	Schistose to massive talc: dark green to grey-black, some carbonate layers; Schistosity at 30° to 50° to core axis, angle increasing downward.		
412	BASALT OR MAFIC TUFF:	Dark green semi massive fine grained & locally brecciated and with quartzose zones at 409-414 and 420-424'		
425	ALTERATION ZONE:	Sericitic Chlorite-Ankerite-Quartz Schist, banded & laminated at 45° to core axis. Chert layers at 502-515, 515 to 532. Porphyritic unit 650-654.		
		QAZ- Quartz Vein Systems and Quartzose layering or silicification at:		
		434-435'; 446-454'; 491-498'; 491-498; 511-515; 517-521'; 527-530';	505-515	.005
		588-599; 530-540'; 670-672'; 679-682'; 690-691; 701-702; Occas. QVs to 725'	535-540	.005
		ASSAYED: 505-570'; 588-609'; 655-665; 709-720 generally in 5'	540-545	.002
		sections, except 588-594, 714-716.	555-560	.002
802	METASEDIMENTS:	Argillite and greywacke, locally silicified; bedding at 65-70° to core axis	588-594	.005
737	TALC SCHIST:	Layered, crenulated, and massive varieties, locally mimicing argillite.	594-599	.002
		Layered at 65-80° to core axis.	655-660	.005
774	METASEDIMENTS:	Argillite to 780 at 65° to core axis grading to Greywacke by 806'	660-665	.002
		QAZ- Quartz Breccia, 786-787'	709-714	.002
815	END OF HOLE		715-720	.002
		Preliminary Log by J.L.Kirwan on dates indicated; additional logging by Derik McBride, who also sampled the core for assay in late February, 1986.		
		J.L.Kirwan		

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-11
GRID REFERENCE 550'East & 145' North of Number 3 Post of
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.GAGNON DIP TESTS: 227'=-53°; 450'=-54°; 687'=-54°; 767'=-55°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE Feb. 20-24, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING	Footage	Oz/Au/T	
225	STEATITE-TALC SCHIST: Dark green, aphanitic, sheared but locally massive talc and talc-carbonate unit, locally silicified (eg. 241-250'), Sheared at 0-65° to ca			
	Banded unit from 350-442' of layers of talc and carbonate at 50° to ca.			
442	ALTERATION ZONE: Chloritic Ankerite-Sericite-Schist with epidote and fuschite zones;	410.7-412.7	.005	
	Layering begins at 50° to core axis but gradually changes to 80° by 600'	477-482	.005	
	QAZ: Quartzose alteration, Quartz vein breccias, or quartz-rich zones:	485.5-486	.005	
	452'; 470-472'; 487-490'; 517-518'; 521-527'; 528-529';	492-500	.012	
	Porphyritic unit: 532-535½'	500-504	.005	
	QAZ: 633-643'; 660-672'; 679-688'; 714-717'; 720-728'	508-511	.01	
	Breccia or Porphyry: 733-735'	511-525	.005	
	Alteration weakens below 743': crenulated, but green color gives way to grey	533½-541½	.005	
760	TALC SCHIST: LOCALLY STEATITE: Contact at 80° to ca: layered, grey, locally massive.	580½-582	.005	
767	END OF HOLE	599-601	.005	
	ASSAYING of core, 410.7-417.8'; 459-673'; 679.5-684.5 and 720-734'.	604½-610	.005	
	All assays were .002 or higher; above values are limited to assays above .002	615-625	.005	
		638-645	.005	
	Above derived from a Preliminary Log made by J.L.Kirwan on the dates indicated. Assays derived from the detailed log made by Arden Brooks.	679½-684½	.005	
		721-722	.005	
		731.7-734	.005	
	John L. Kirwan			

PAP 8451

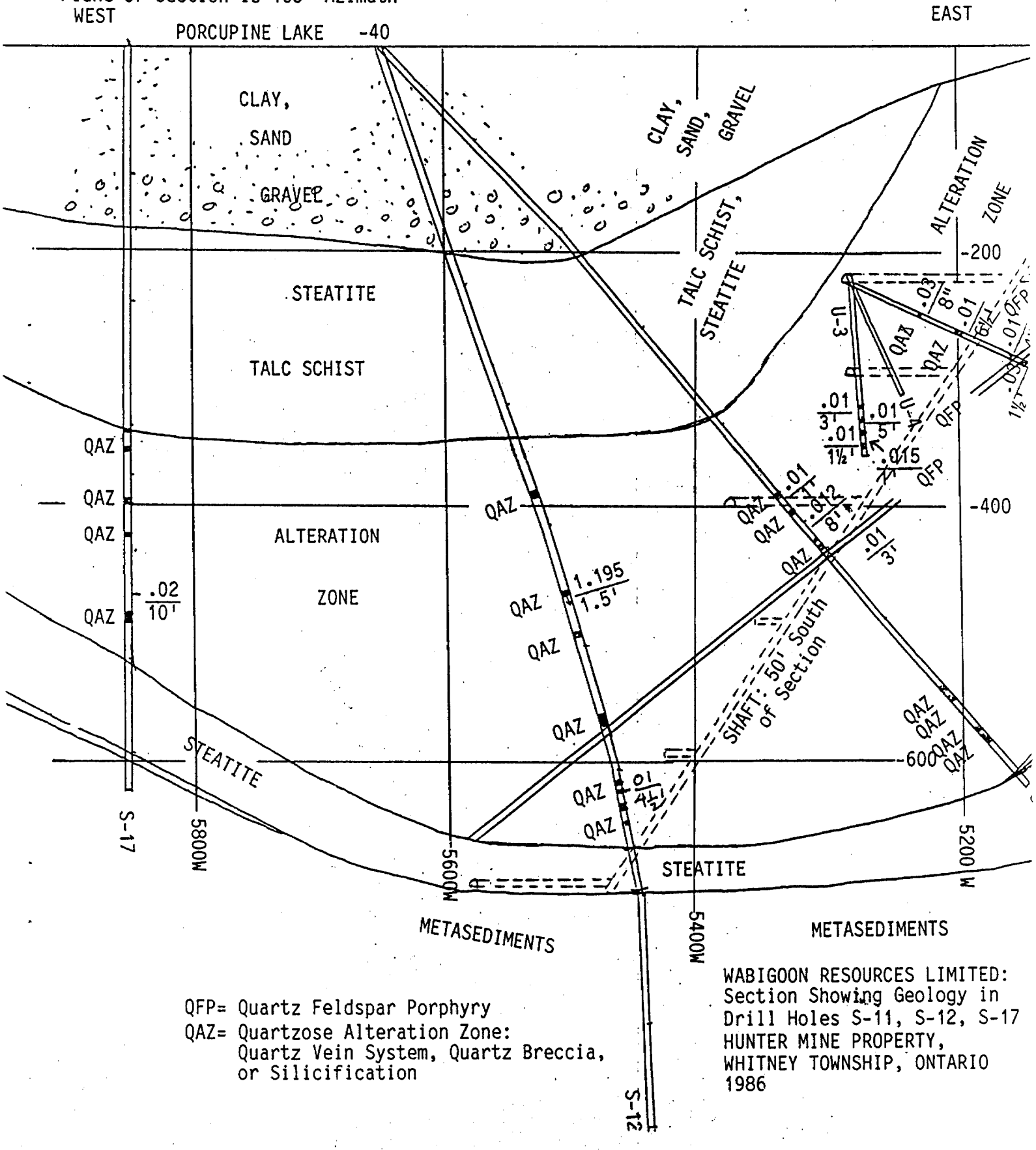
LOCATION: See Sketch;
Claim HR1009

DIAMOND DRILL HOLES S-11, S-12
S-17,
U-3, U-4, U-5

0 ---------- 100
feet

Plane of Section is 105° Azimuth

View Northward



QFP= Quartz Feldspar Porphyry
QAZ= Quartzose Alteration Zone:
Quartz Vein System, Quartz Breccia,
or Silicification

WABIGOON RESOURCES LIMITED:
Section Showing Geology in
Drill Holes S-11, S-12, S-17
HUNTER MINE PROPERTY,
WHITNEY TOWNSHIP, ONTARIO
1986

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-12
GRID REFERENCE 550' East & 145' North of Number 3 Post,
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -70°
PAJARI TEST at 877' gave azimuth of 178° assumed wrong.

DRILLING COMPANY NOREX FOREMAN A.GAGNON DIP TESTS: 150'=68°; 300'=70°; 442'=73°; 600'=75°; 877'=82°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE Feb.25- 28, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING	Footage	OzAu/T
171	STEATITE, TALC SCHIST, TALC-CARBONATE SCHIST: Dark Green to Black; layered or Sheared at 30-60° to core axis, commonly at 40° to ca; Layered towards bottom		
337	ALTERATION ZONE: Talcose in upper contact zone and locally thereafter. Green, well-banded Chlorite-Sericite-Ankerite Schist, 45° to ca at 360'; 60° by 550.		
	QAZ- Quartzose areas; Quartz Vein System; Quartz Breccia; Silicification: 370-374½; 467-471'; 487-493'; 566-578'; 590-594'; 602-604'; 607-610'; 620-622; 639-641.	455½-457	1.195
	Porphyry: 564-570'	515½-520	.01
658	TALC SCHIST, STEATITE BRECCIA; Steatite by 663; 684'= Talc Schist layered at 75° to ca		
694	METASEDIMENTS: Well-layered dark grey to black argillites becoming mixed argillite and Greywacke by 762'; numerous quartz veins (eg. 786', 791', 807-809', 833' and in zones from 835-840; 852-857, and at 866')		
882	END OF HOLE		
	ASSAYS: Core was split and assayed from 381.1-520'; 537.7-538'; 564.5-570.1'; 628.2-633.5' and 647-654' . All samples returned assay values of Trace, except the two shown above. Of these, the 1.195 ounces over 1½ feet represents the actual value of gold in the split core as the entire sample was consumed in making repeated (10) assays from which the average is 1.195. Values ranged from .4 to over 2 ounces.		
	This summary log is derived from the Preliminary Log made by J.L.Kirwan on the dates given. The samples and the assays came from the complete log made by Arden Brooks.		
	J.L.Kirwan		

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-13
GRID REFERENCE 610' East and 330' North of Number 3 Post
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.GAGNON DIP TESTS: 150'=50°, 300'=50°, 450'=54°, 550'=56°, 780'=55°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 1-3, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING	Footage	OzAu/T
208	STEATITE, TALC SCHIST: Dark Green with carbonate stringers and laminae; layered by 322' at 50° to core axis and a few quartz veins 354-362'; Layered series at 362', containing several quartz veins up to 4" wide at angles of 30-70° to ca.		
397	ALTERATION ZONE: Green, well-layered to laminated, crenulated and drag folded in places, chloritic sericite-ankerite schist with local silicified zones and quartz veins. Layering at 45° to core axis, 60° by 600', and steeper downwards.		
	QAZ: Quartzose zones: veins, breccias, silicification, at: 400-405'; 405-407' (chert); 412-417' (chert); 436-439 (cherty zone); 462-465'; 485-486'; 618-620'; 622-623'; 624-626'; 707-713'; 722-724'; 754-760'; 761-763'; brecciated 757-763'.	650½-655	.005
	PINK APLITE: 730-734' cut by vague quartz veins.		
	Green alteration gives way locally to grey after 689'.		
	Lower contact clean, at 50° to ca below quartz breccia.		
763	METASEDIMENTS: Weakly altered, silicified argillite with some streaky quartz zones, bedding at 80° to core axis.		
790	END OF HOLE		

TROPARI test at 780' indicates an azimuth of 359° which is unacceptable as a test since the layering in the core, the rock orientation in the mine, and the geophysical information combine to indicate that this bend did not take place.

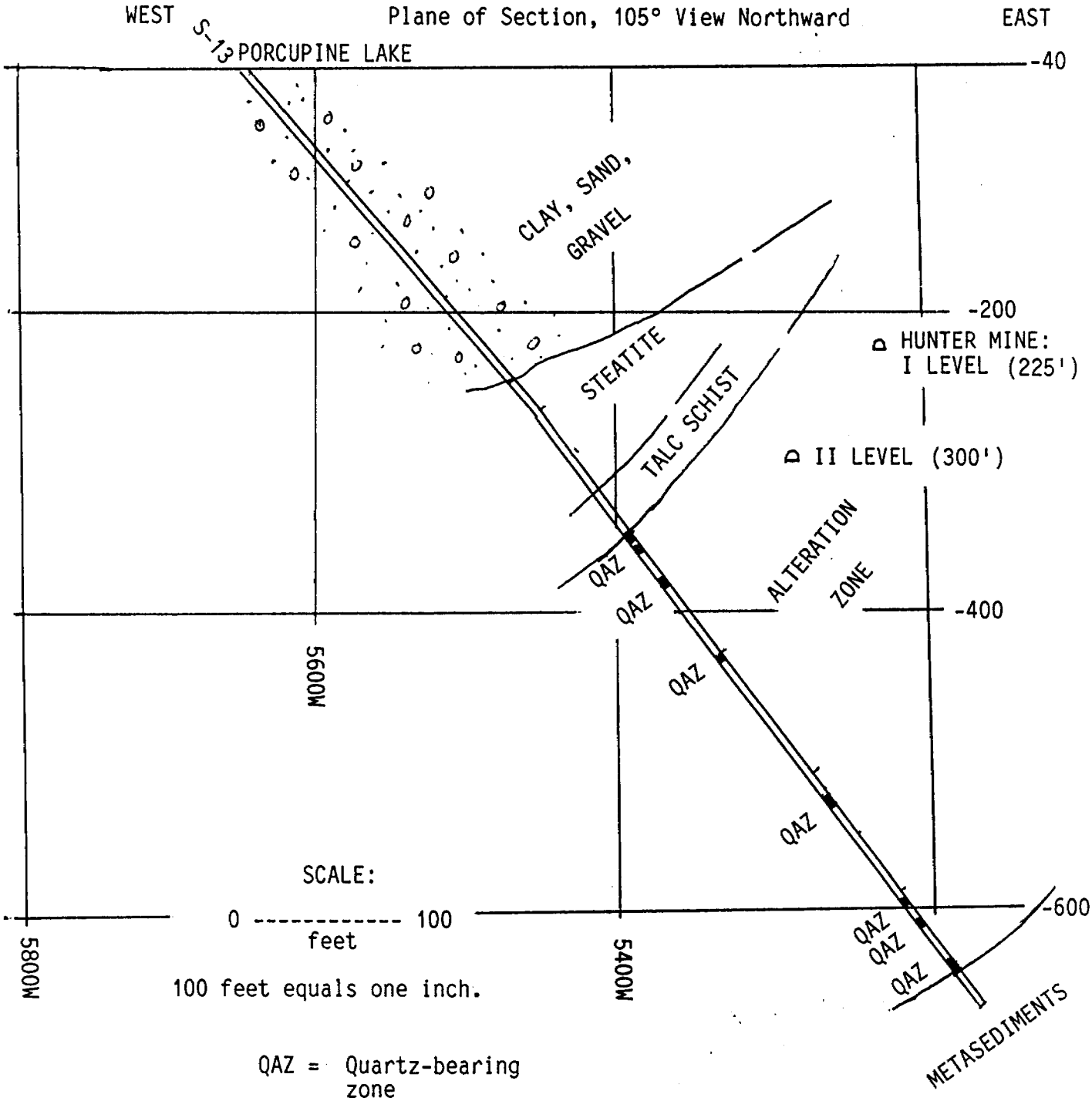
ASSAYS were obtained from sections from 354.2-368.6'; 398.3-419'; 435-452.5'; 494-689.1'; 711-714.5'; 728.6-735.4'; and 757.5-763'. All these returned a value of TRACE, except the one indicated. This log prepared from the preliminary log made by J.L.Kirwan on the dates indicated; the assays from the complete log made by Arden Brooks.

J.L.Kirwan

PAP 8451

LOCATION: See Sketch

DIAMOND DRILL HOLE S-13
CLAIM HR 1009



QAZ = Quartz-bearing zone

NOTE: Assayed from 354.2 to 368.6; 398.3 to 419; 435-452.5; 494-681.1; 711.5-713; 728.6-735.4 and 757.5 to 763. All values were trace except 650.5-655 which was 0.005 oz Au/t

WABIGOON RESOURCES LIMITED:
SECTION showing geology along Diamond Drill Hole S-13, Hunter Mine Property, Whitney Township, Ontario.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-14
GRID REFERENCE 630' East, 425' North of Number 3 Post,
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.GAGNON DIP TESTS: 150'= -47°; 300'= -50°; 500'= -52°; 700'= -52°; 807'= -52°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 5, 1986

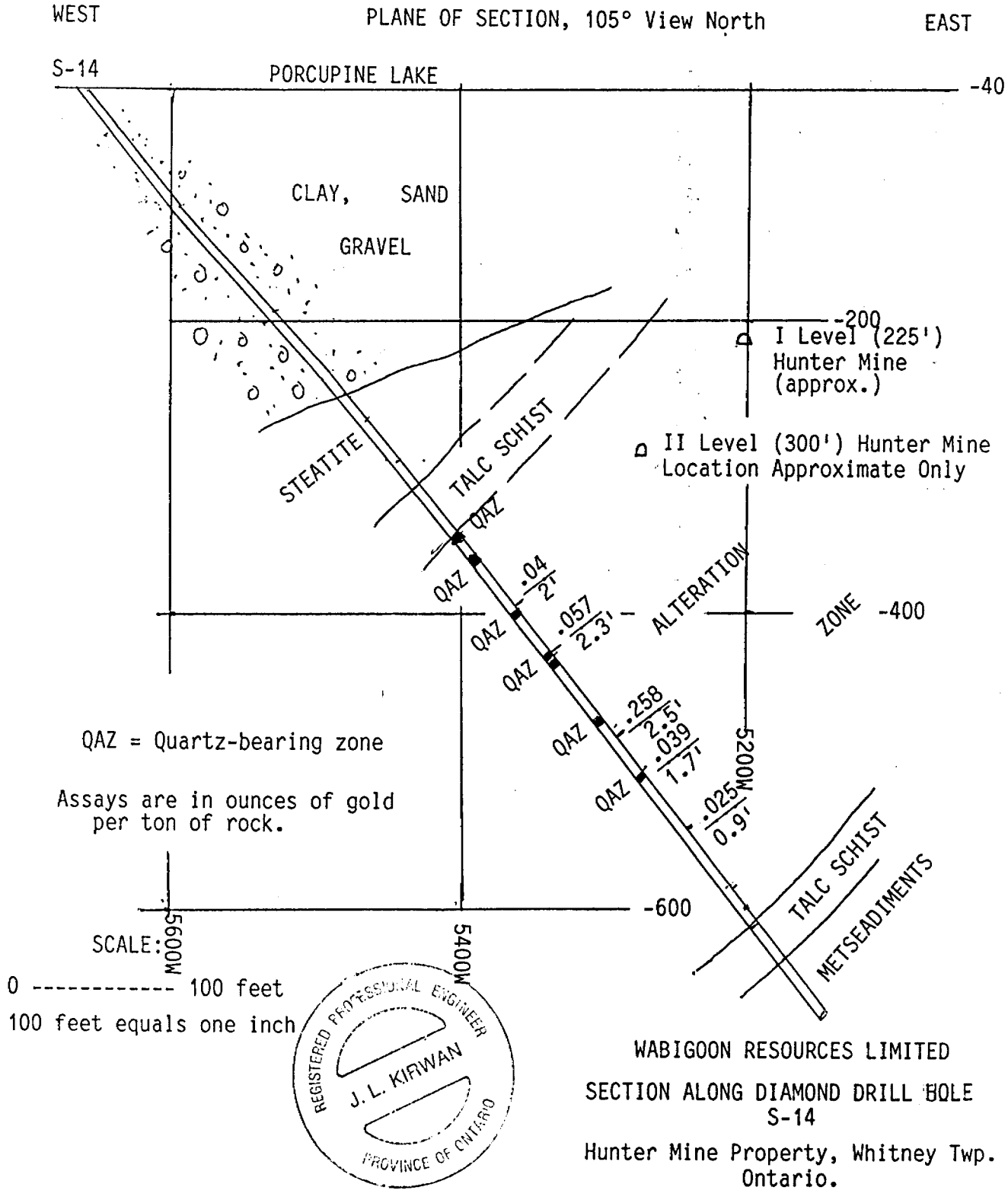
FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING		Footage	OzAu/T
270	STEATITE-TALC SCHIST: Brecciated, massive to schistose and layered with carbonate laminae (at 60° to core axis) beginning at 375', green to dark green.			
385'	ALTERATION ZONE: Talcose at beginning, light green layered and laminated schistose chloritic sericite-ankerite rock with epidote and fuschite content, local silicification, brecciation, quartz veining, and minor folding.		447.9-449.9	.040
	PORPHYRY: 426-430'; 505-515': Contacts at 60°/60° and between 555 and 563' at 80°/45°; 744-751.		493½-495.8	.057
	QAZ- Quartz vein systems; quartzoze zones; silicification at: 395-399'; 413-420; 460-466'; 498-500; 602-608';		574½-577	.258
			577-582	.004
			602.3-604	.039
	Layering at 55-65° at top of section gradually changing to 80° at bottom.		655.9-656.8	.025
735	TALC SCHIST: Layered, grey, with greenish zones, talc unit occasionally massive. Layering at 60-80° to core axis.		694-703½	.006
766	METASEDIMENTS: Banded grey argillite, locally graphitic, with greywacke. Much calcite alteration; sedimentary banding is at 85° to core axis.			
807	END OF HOLE			
	ASSAYS from split core were continuous, 386.5-399'; 413-449.9'; 488.1-537.5'; 552.7-613.1'; 622.7-658.8'; 684.5-703.5'. All values were TRACE except those given.			
	This log prepared from the Preliminary Log made by J.L.Kirwan on the dates given; Assays and some additional information are from the complete log made by Arden Brooks.			

REGISTERED PROFESSIONAL ENGINEER
KIRWAN
J.L.Kirwan
PROVINCE OF ONTARIO

LOCATION: See Sketch

DIAMOND DRILL HOLE S-14

Claim HR 1009



REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO

WABIGOON RESOURCES LIMITED

SECTION ALONG DIAMOND DRILL HOLE S-14

Hunter Mine Property, Whitney Twp. Ontario.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-15
GRID REFERENCE 700' East, 670' North of Number 3 Post,
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 150'=50°; 300'=50°; 450'=50°; 842'=41°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 14, 1986

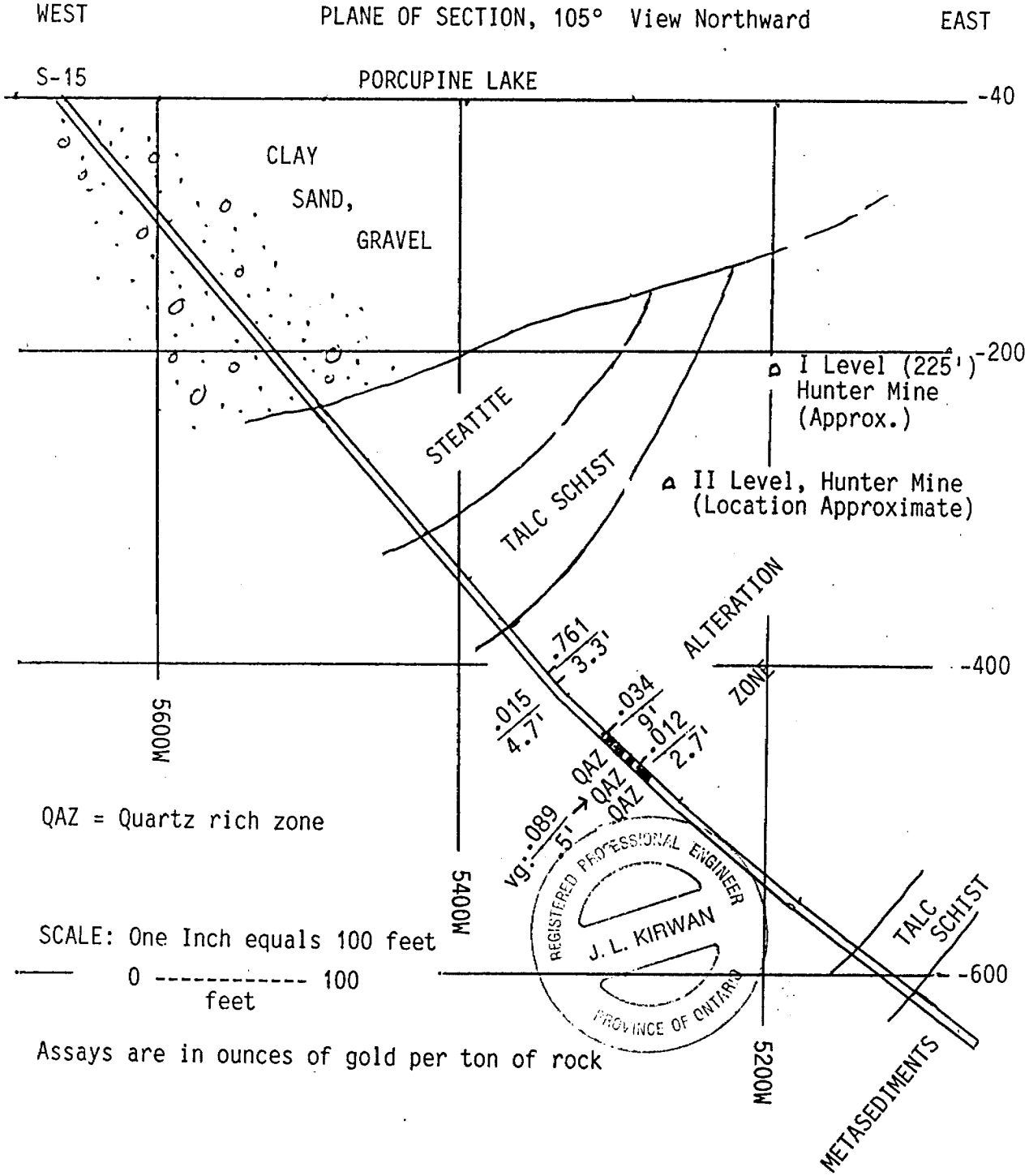
FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING		Footage	OzAu/T
256	STEATITE-TALC SCHIST- Dark green, massive to schistose, and layered with carbonate Laminae beginning at 356'; the early part of the section is laminated at 0-60°, the lower part (layered series) at 60° to the core axis. Strongly layered below 435'			
470'	ALTERATION ZONE: Greenish, layered, highly carbonatized and locally silicified chloritic sericite-ankerite schist with epidote and fuschite zones. In general, the layering and laminae range from 50° to 70°, increasing with depth. Quartzose Alteration Zones (QAZ) or breccias or silicification:		472-475.3	.761
			482.3-487	.016
			513-522	.034
	QAZ: 470-472'; 477-484; 487-489;493-500 (503-537= chloritic schist zone); 537-539; 542-547; 553-561; 561-566; 597-601; 610-617; 631-637;737-753; About 10% free quartz 780-783'.		565-568	.012
			667-672	.004
	VISIBLE GOLD: one fleck in ½" quartz vein at 562'; also vg at 472-475'.		694-695	.009
748	TALC SCHIST: Well-banded, contorted from 0-90° to ca. Greenish alteration below 760'.		717-720	.006
795	METASEDIMENTS: dark grey banded argillite and lighter grey greywacke, well-banded at 80° to core axis.			
847	END OF HOLE			
	Summary Log derived from the Preliminary Log by J.L.Kirwan made on the date indicated; Assays and some additional information from the complete log made by Arden Brooks.			

PROFESSIONAL ENGINEER J.L.Kirwan PROVINCE OF ONTARIO

LOCATION, See Sketch

DIAMOND DRILL HOLE S-15

Claim HR 1009



QAZ = Quartz rich zone

SCALE: One Inch equals 100 feet

0 ---------- 100 feet

Assays are in ounces of gold per ton of rock

REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO

WABIGOON RESOURCES LIMITED,

SECTION ALONG DIAMOND DRILL HOLE S-15

Hunter Mine Property, Whitney Twp., Ontario

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-16
GRID REFERENCE 860'East and 780'North of Number 3 Post
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN Alex. Gagnon DIP TESTS: 150'=50°; 300'=50°; 450'=52°; 600'=50° 750'=49°; 900'=48°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 9-12, 1986

FOOTAGE	SUMMARY LOG DESCRIPTION OF CORE	SAMPLE NUMBER Footage	ASSAYS OzAu/T	Av Ft.
0	CASING			
256	STEATITE-TALC SCHIST: Dominantly massive, but becomes layered by 308' at 45° to core axis			
318	ALTERATION ZONE: Talcose at start, otherwise locally siciceous, epidote- or fuschite-rich and highly carbonatized throughout; a chloritic sericite-ankerite schist; layering at 45-80° to core axis. At 661 the greenish rock gives way to a grey layered and laminated variety* Quartz-rich zones (QAZ) are commonly quartz breccias, quartz vein systems, or siliceous or silicified zones.	363.2-365	1.007	
		365-365.7	tr	.7136
		365.7-368½	.013	9'
		368½-372.2	1.299	
	QAZ: 336-353'; 389-393; 402-406; 409-411; 417-421; 595-602; 645-661. Basaltic unit: layered chloritic zone, 60° to ca. Kink banding, 733-737' in grey zone. VISIBLE GOLD at 364 & 501'	394½-402	.01	
		485.7-487.3	.007	
660	*TALC SCHIST: dark grey layered unit well-banded at 30-80° to core axis	497.3-499.3	.006	
720	METASEDIMENTS: Argillite; layering at 60° to ca: grey to black, with vertical or near vertical striations on bedding planes and several sets of cleavage. Coarser grained and lighter grey greywackes within sequence, increasing with depth.	500.7-505.2	.02	
922	END OF HOLE.			
	This hole was drilled an extra 200 feet so as to cut a diabase dike which occurs on surface and in the nearby areas of the old mine. Although the drill hole cut under both of these occurrances, the dike was not encountered.			
	Preliminary log by J.L.Kirwan on the dates indicated was used in this summary log except for the assay information and some other observations which were taken from the complete log of Arden Brooks. All assay values were TRACE except those given above. Assayed sections were: 327.5-373; 394.5-424; 480-541.7; 594.5-639; 645-661 and 719.4-767 feet.			

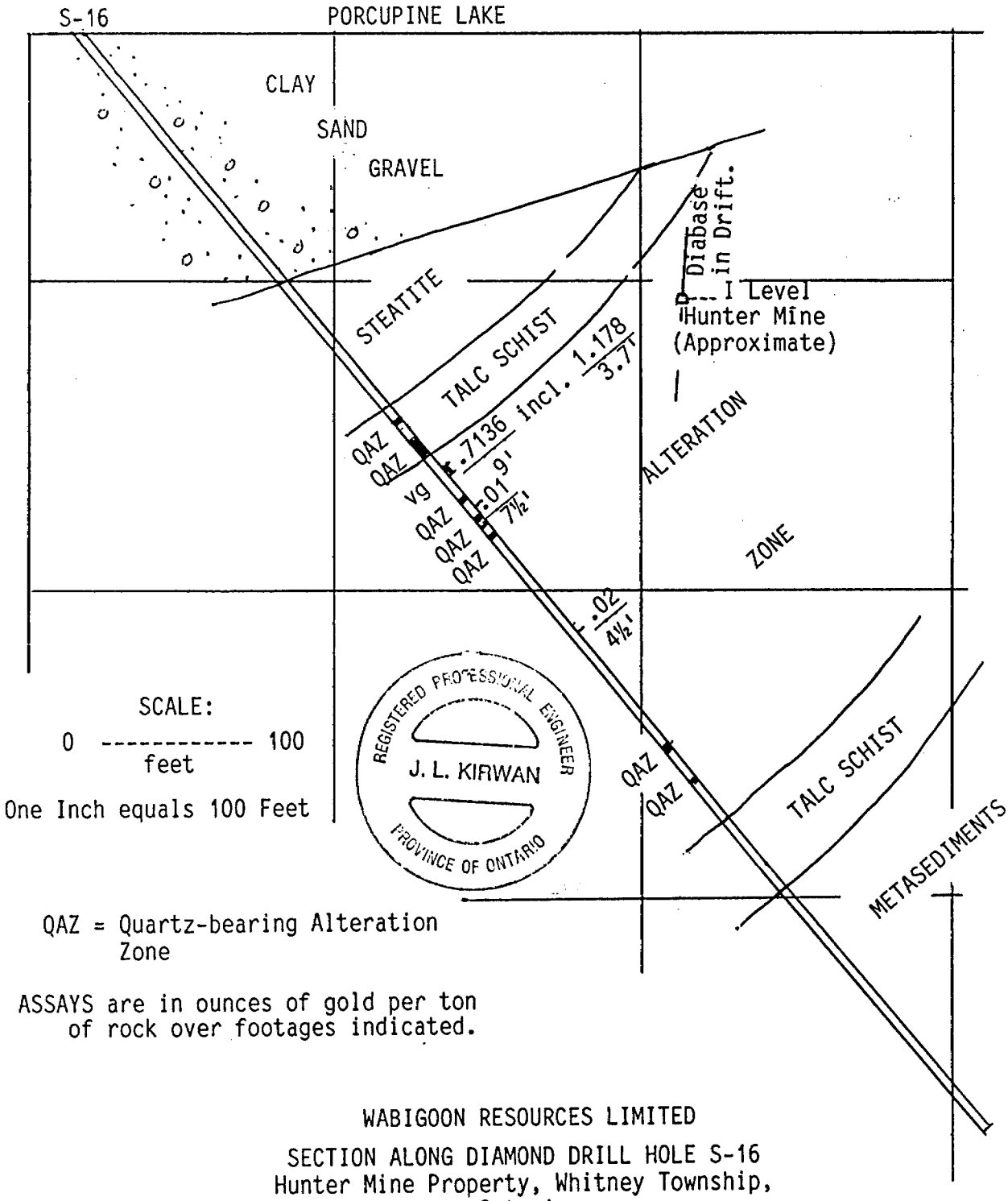
John L. Kirwan
PROVINCE OF ONTARIO

P.A.P. - 8451

LOCATION: See Sketch

DIAMOND DRILL HOLE S-16
CLAIM HR 1009

WEST Plane of Section, 105°: View North EAST



QAZ = Quartz-bearing Alteration Zone

ASSAYS are in ounces of gold per ton of rock over footages indicated.

WABIGOON RESOURCES LIMITED

SECTION ALONG DIAMOND DRILL HOLE S-16
Hunter Mine Property, Whitney Township,
Ontario

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-17
GRID REFERENCE 360' East, 185' North of Number 3 Post,
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH DIP ANGLE -90°

DRILLING COMPANY NOREX FOREMAN A. Gagnon DIP TESTS: 150'= -90°; 300'= -90°; 400' = -84°; 450'= -90°; 577' = -87°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 16, 1986

FOOTAGE	SUMMARY LOG DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING	Footage	AuOz/T	
147	STEATITE-TALC SCHIST: Dark green to black, massive to sheared with layering at 80° to core axis. 302-305: Quartz Vein System; 317-320: Quartz Vein System in basaltic zone.			
358	ALTERATION ZONE: Green to greenish grey layered and laminated carbonatized unit with zones of silicification, epidote and fuschite, locally talcose. A chloritic sericite-ankerite schist, layered and banded at 80° to core axis, the angle getting less with depth: by 450 it is 60° to core axis.	433-438	.017	
	QAZ: Quartzose zones: Quartz vein systems, Quartz breccia, Silicification: 358-362'; 384-387'; 447-457. Layering is 50° to ca at 417 to 430'	438-443	.023	
	PORPHYRY, poorly developed, 383-385'			
483	TALC SCHIST-STEATITE: Begins as massive zone becoming brecciated and weakly layered.			
520	ALTERATION ZONE: 65° to core axis, Chloritic and streaky grey, but otherwise typical green of the main zone			
587	METASEDIMENTS: Well-layered argillites with gradational contact with the above, which appears to be derived from them.			
597	END OF HOLE			

ASSAYS. The following sections were assayed: 318.5-319.5; 358.3-364.3; 378.3-451; 458.5-483'. All the results were TRACE in gold except those given above.

Summary log derived from the Preliminary Log of J.L.Kirwan made on March 16, 17, 1986, with assays and some additional information from the complete log of Arden Brooks.

REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
J.L.Kirwan
PROVINCE OF ONTARIO

P.A.P. - 8451

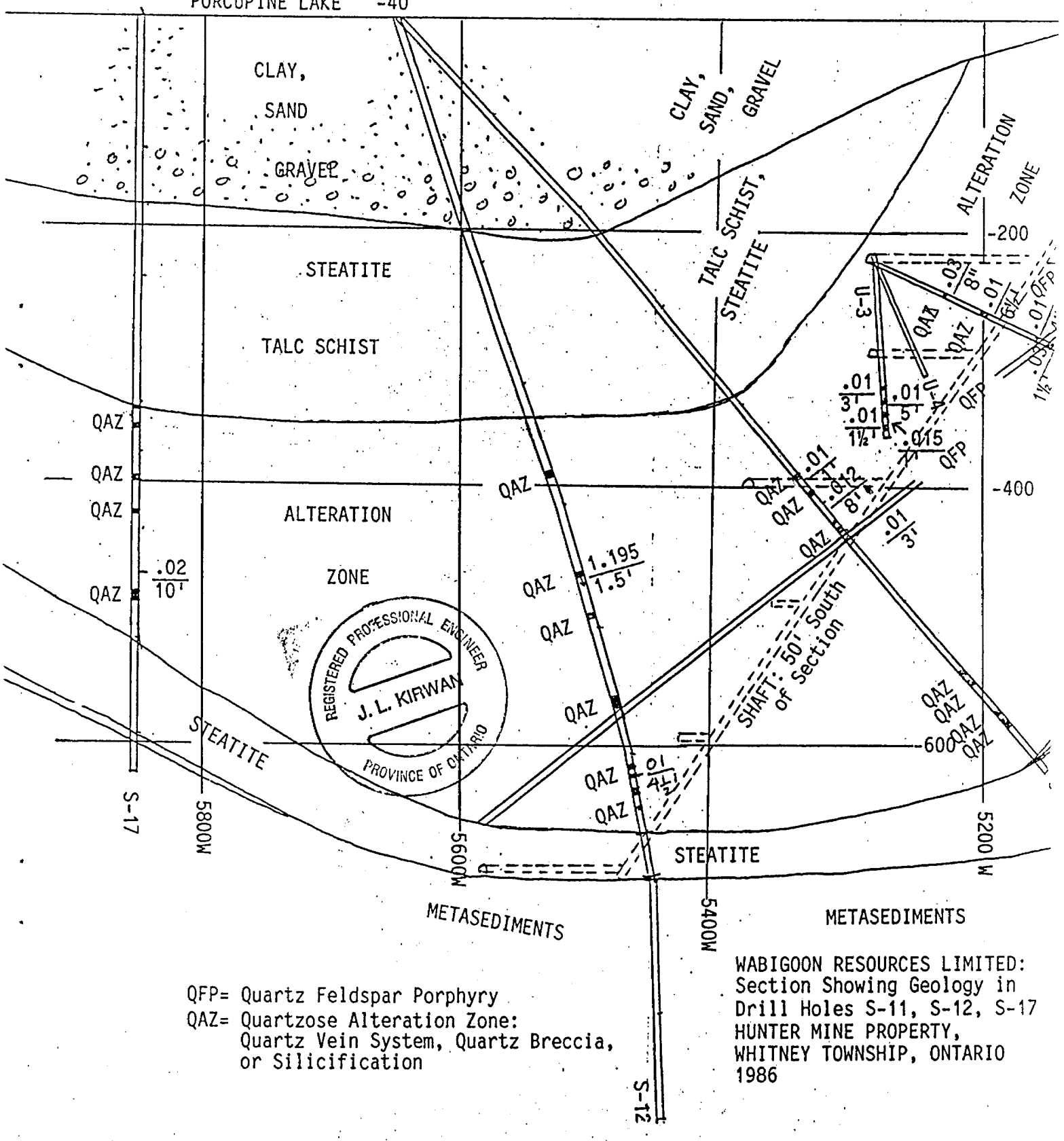
Claim HR1009

S-17,
U-3, U-4, U-5

0 ---------- 100
feet

Plane of Section is 105° Azimuth

View Northward



QFP= Quartz Feldspar Porphyry
QAZ= Quartzose Alteration Zone:
Quartz Vein System, Quartz Breccia,
or Silicification

WABIGOON RESOURCES LIMITED:
Section Showing Geology in
Drill Holes S-11, S-12, S-17
HUNTER MINE PROPERTY,
WHITNEY TOWNSHIP, ONTARIO
1986

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-18
GRID REFERENCE 800' East & 980' North of Number 3 Post
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 150'=49°; 300'=54°; 400'= 54°; 595'= 53° 700' = 56°
CORE SIZE BQ CORE STORED AT: MUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 24, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING	Footage	OzAu/T
205	STEATITE-TALC SCHIST: Black, sheared talc unit without layering. Shearing at 30° to core axis. Massive material begins at 377', breccia at 399; schistosity 40-60° at 465'.		
	PORPHYRY: 482-491; or siliceous zone with metacrysts.	481.6-482.6	.0265
491	ALTERATION ZONE: Layered to laminated and banded, light green zone with chloritic or silicified sections and local development of epidote, fuschite or pyrite. Sericite-Ankerite Schist.	481.6-487	.013
		487-492	.011
	QAZ= Quartzose zones, usually vein systems or breccias, but including silicification at: 517-519'; 528-529; 599-601; 610-613; 656-658; 715-720'	527-529.5	.012
	VISIBLE GOLD: Small fleck at 482'	607-610.7	.015
	Banding and laminae ranges from 60-90°, commonly 75° to core axis.		
747	TALC SCHIST-Steatite zone, well-layered to massive, the layers at 75° to core axis.		
777	END OF HOLE		

ASSAYS were obtained from the following zones: 479.6-494'; 515.6-532'; 587-589'; 597.5-618.5; 703.7-705.7; 739.5-749'. All returned values of TRACE except those shown above.

Summary log derived from the Preliminary Log made by J.L.Kirwan on the date shown. Assay data derived from the complete log made by Arden Brooks.

J. L. KIRWAN
John L. Kirwan
PROVINCE OF ONTARIO

LOCATION: See Sketch

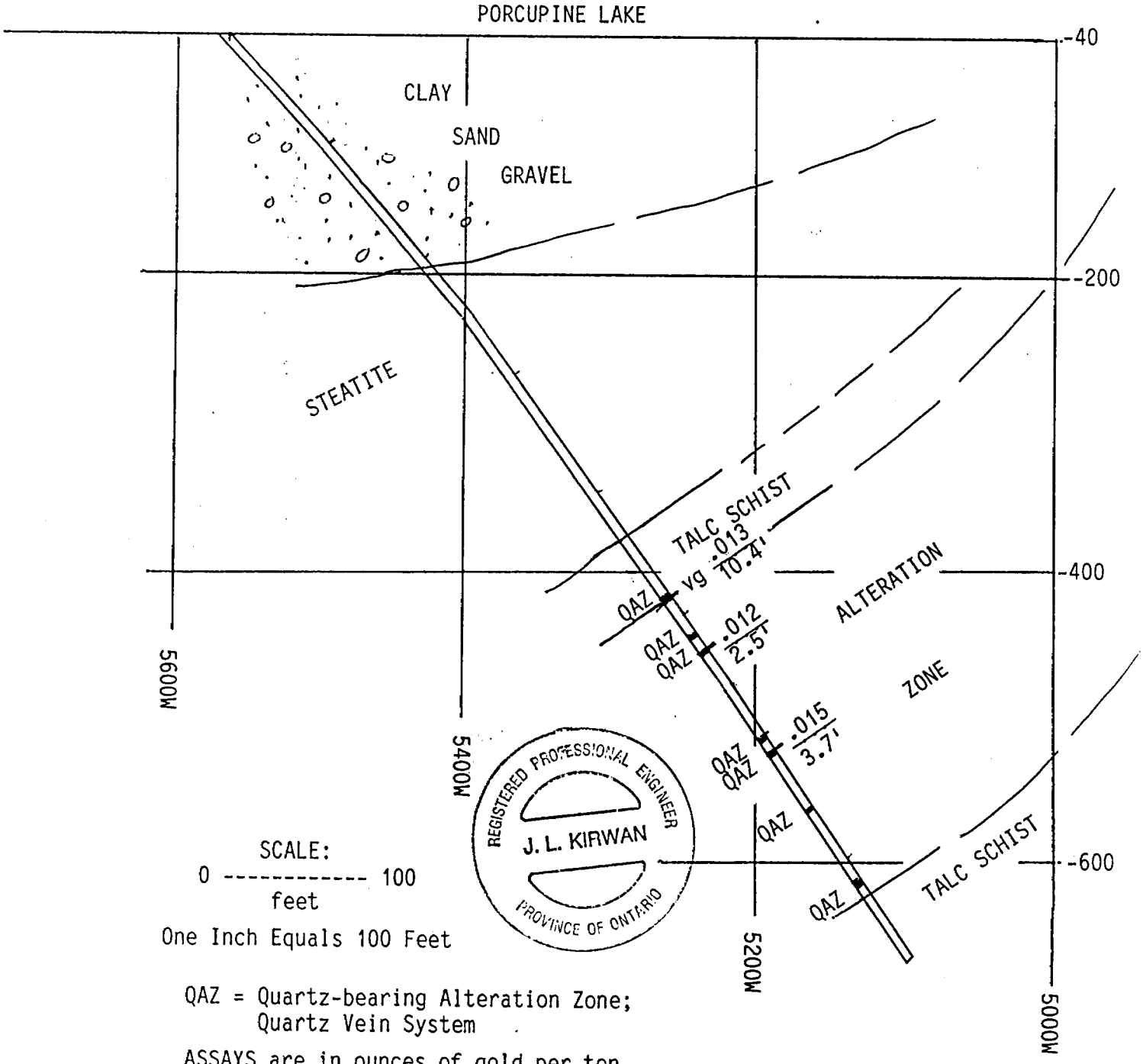
DIAMOND DRILL HOLE S-18

Claim HR 1009

WEST

Plane of Section, 105°: View Northward

EAST



REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO

SCALE:
0 ---------- 100
feet
One Inch Equals 100 Feet

QAZ = Quartz-bearing Alteration Zone; Quartz Vein System

ASSAYS are in ounces of gold per ton of rock over the footages given.

WABIGOON RESOURCES LIMITED

SECTION ALONG DIAMOND DRILL HOLE S-18

Hunter Mine Property, Whitney Township, Ontario

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-19
GRID REFERENCE 475' East and 155' South of Number 4 Post
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 150'=50°; 300'=51°; 450'=51°; 734'=53°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 26, 1986

FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
0	CASING		Footage	OzAu/T
197	STEATITE-TALC SCHIST and TALC BRECCIA: Dark green to medium green talc; layered zone with carbonate laminae at 330' with banding at 35-40° to core axis increasing to 50° by 345'. Quartz vein system, 360-363'.			
377	ALTERATION ZONE: Light green, layered and laminated, talcose at the beginning but more commonly chloritic, and locally silicified, fuschitic or epidote-bearing. Sericite-Ankerite schist, highly carbonatized throughout, layering at 40-50° to the core axis at the top, steepening to 70° by 550'. Lowermost 10' are grey colored, either metasedimentary rocks, less altered alteration zone, or both.		443.5-448 448-450.7 450.7-454 480.3-485 485-487 487-490.5 490.5-493.5	.014 .019 .006 .030 .007 .004 .005
	QAZ- Quartzose zones: quartz vein systems, quartz breccias, or silicification: 394-398'; 415-418'; 442-445'; 451-488'; 506-508'; 518-535'; 540-545'.			
587	STEATITE: Massive talc rock with fine carbonate.			
661	METASEDIMENTS: Grey, banded at 70° to core axis Argillites to 670', then Greywacke to 692. Argillites 692-707 and Greywacke to 734'.		499.5-504	.01
734	END OF HOLE			

ASSAYS were obtained for the following sections: 348.7-353.7'; 357-364.3'; 371.7-379.3; 394.5-401.5; 438-534; 541-563.5; and 707-734'. All returned TRACE in gold except those shown above.

Summary Log prepared from the Preliminary Log made by J.L.Kirwan on the date shown. Assay information from the complete log made by Arden Brooks.

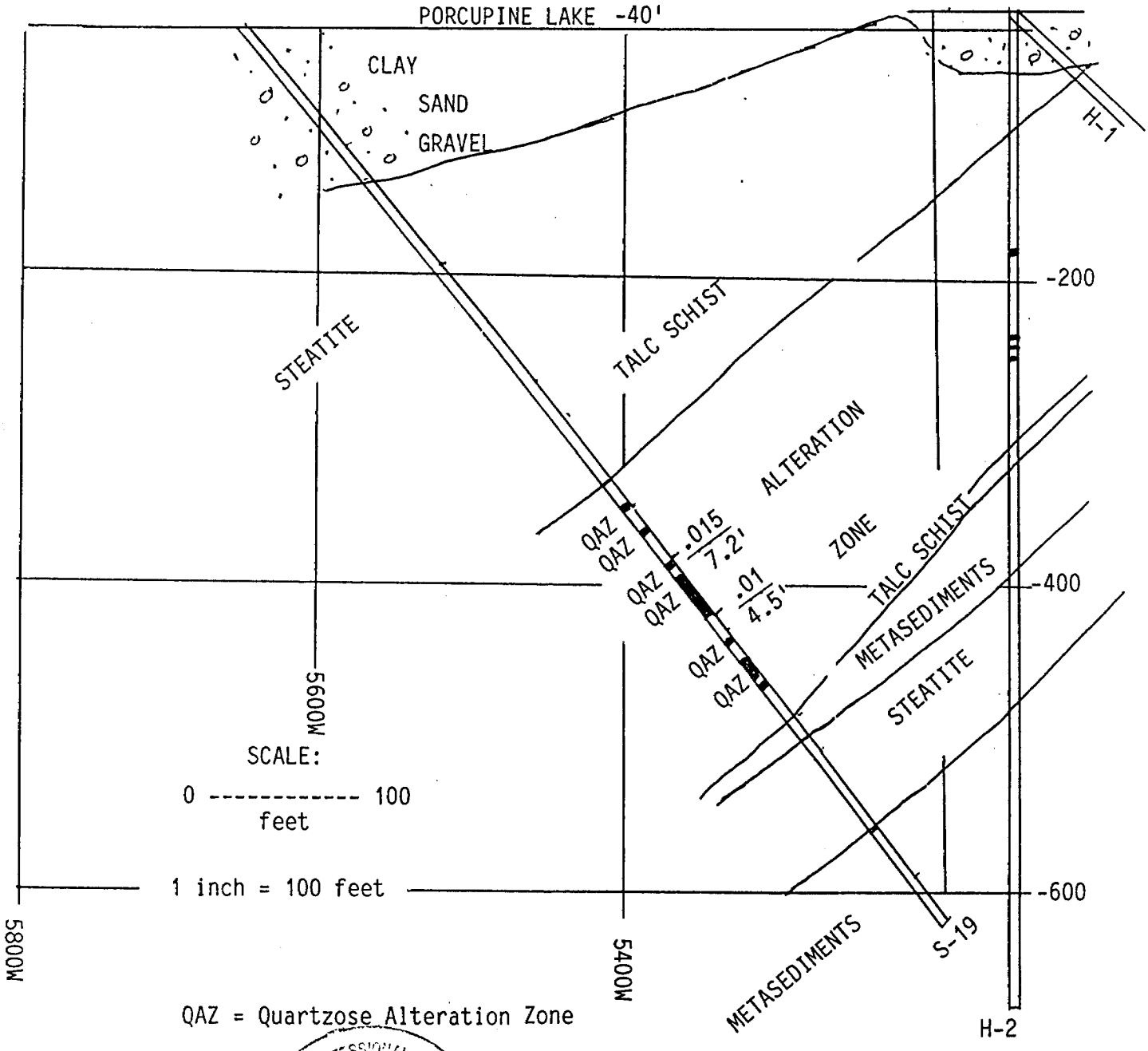
J.L. KIRWAN
J.L.Kirwan

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

LOCATION: See Sketch
CLAIM: 10272

DIAMOND DRILL HOLE S-19
ALSO H-2 & H-1 (Part)

WEST Plane of Section, 105°- View Northward EAST



QAZ = Quartzose Alteration Zone

REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO

WABIGOON RESOURCES LIMITED
SECTION THROUGH DIAMOND DRILL HOLE S-19
HUNTER MINE PROPERTY, WHITNEY TWP, ONT.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-20
GRID REFERENCE 580' East, and 230' North of Number 3 Post
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 200'=-53°; 400'=-53°; 630'=-54°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 26, 1986

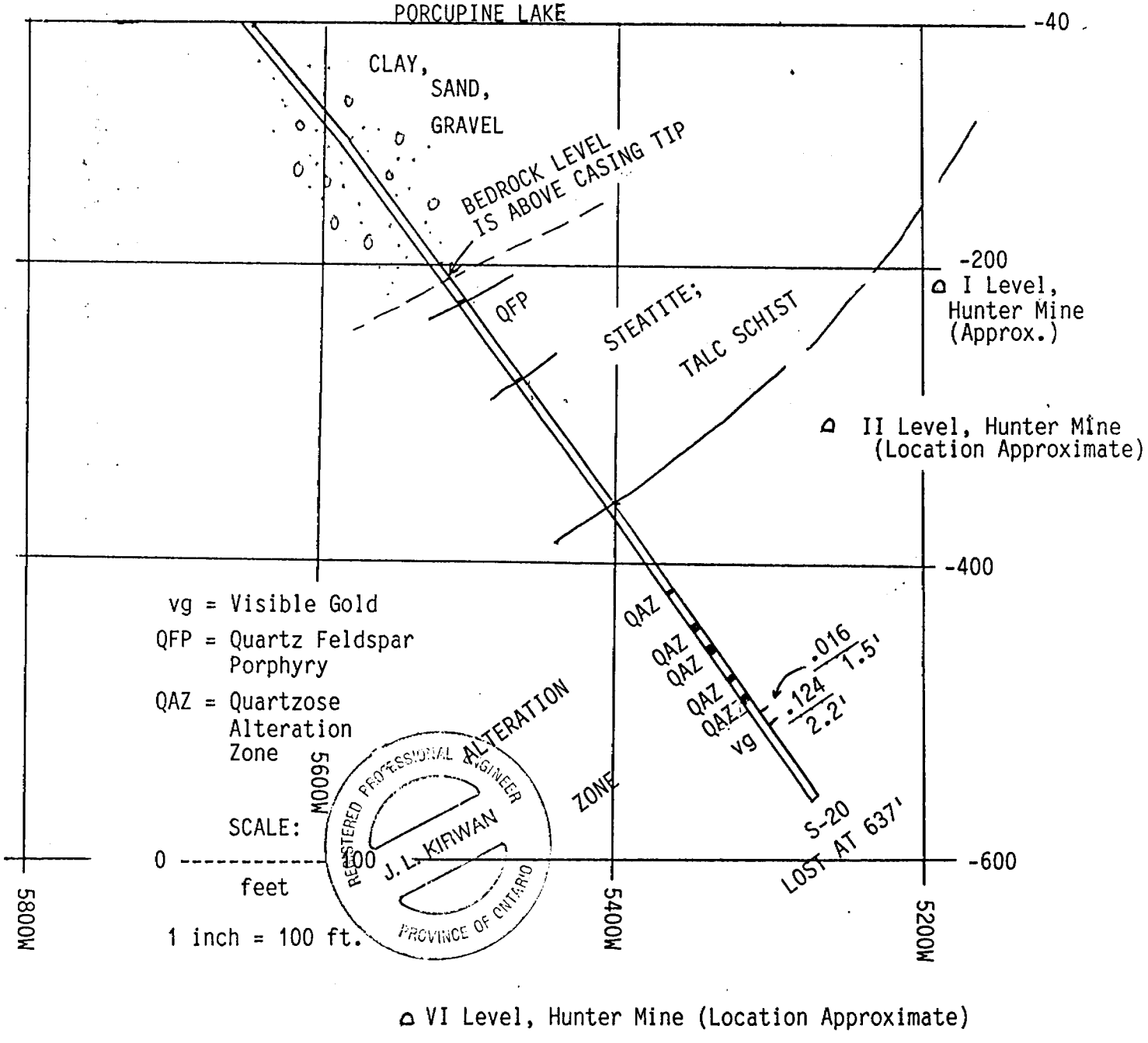
FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0		CASING	Footage	OzAu/T	
210		STEATITE: Massive soapstone, dark to medium green, layered, crenulated in rare areas, otherwise massive.			
227		QUARTZ FELDSPAR PORPHYRY: Grey, fine to medium grained, phenocrysts blurred and contacts gradational, approximately 60° to core axis.			
297		STEATITE-TALC CARBONATE SCHIST: Banding at 0-90° to core axis, commonly at 30°.			
351		ALTERATION ZONE: Green, talcose, locally brecciated, alteration zone as below, layered at 60° to core axis. Weak quartz vein system, 362-370'.			
375		TALC-CARBONATE BRECCIA: Jumble of fragments, layers, zones of the steatite-talc schist.			
400		ALTERATION ZONE: Begins as short cherty zone about 2' thick, then fine layering at 70-80° to core axis. The rock is a green chloritic (locally epidote- or fuschite-bearing) sericite-ankerite schist with good compositional layering.	577-578.5	.016	
	QAZ	Quartzose zones, usually breccias and quartz vein systems, but includes silicification at: 463-465'; 492-497'; 509-513'; 534-537'; 600-605'. Transitional material (ie. grey in color), 527-534'.	584.3-586½	.122	.128
		VISIBLE GOLD at 485': a very tiny fleck.			
637		END OF HOLE: the drill hole was lost owing to wedging and blocking of rods.			
		ASSAYS WERE OBTAINED from the following sections: 397.7-425.7'; 483.3-497.5; and 507-637 feet. All values were TRACE except those indicated above.			
		Summary Log derived from preliminary log made on the day indicated above. Assays were derived from the complete log made by Arden Brooks.			

J. KIRWAN
J.L.Kirwan
PROVINCE OF ONTARIO

DIAMOND DRILL HOLE S-20

LOCATION: See Sketch
CLAIM HR 1009

WEST Plane of Section, 105°- View Northward EAST



WABIGOON RESOURCES LIMITED
SECTION ALONG DIAMOND DRILL HOLE S-19
HUNTER MINE PROPERTY, WHITNEY TWP, ONT.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-21
GRID REFERENCE 390' East, 445' South of Number 4 Post
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A. Gagnon DIP TESTS: 200'=-52°; 400'=-51°; 557'=-55°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 26, 1986

FOOTAGE	SUMMARY LOG DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING			
136	STEATITE- Talc (carbonate) breccia (layered 180-204' at 30° to core axis). Layered talc-carbonate schist, 222-320', at 55° to core axis, becoming crenulated by 268 with a few quarts veins. Quartz Vein System, 296-304'.			
320	ALTERATION ZONE: Greenish grey (chlorite) sericite-ankerite schist, layered at 0-90° to core axis, commonly about 60°. QAZ- Quartzose zones, quartz vein breccia, vein system, or silicification: 347-350'; 357-359'; 6" chert layer at 381'. Transition from green to black (? Metasediments) at 422, by 440 back to green, then more talcose.			
472	TALC SCHIST, layered at 70° to core axis.			
487	ALTERATION ZONE as above, but talcose.			
548	METASEDIMENTS: Grey argillites and greywackes			
559	END OF HOLE			
	ASSAYS: Sections 348-350.5'; 380.5-382.5; and 406-412.7 split and assayed; all results are TRACE.			
	Summary log made by J.L.Kirwan from the preliminary log made on the date indicated. Assay values are from the complete log of Arden Brooks.			

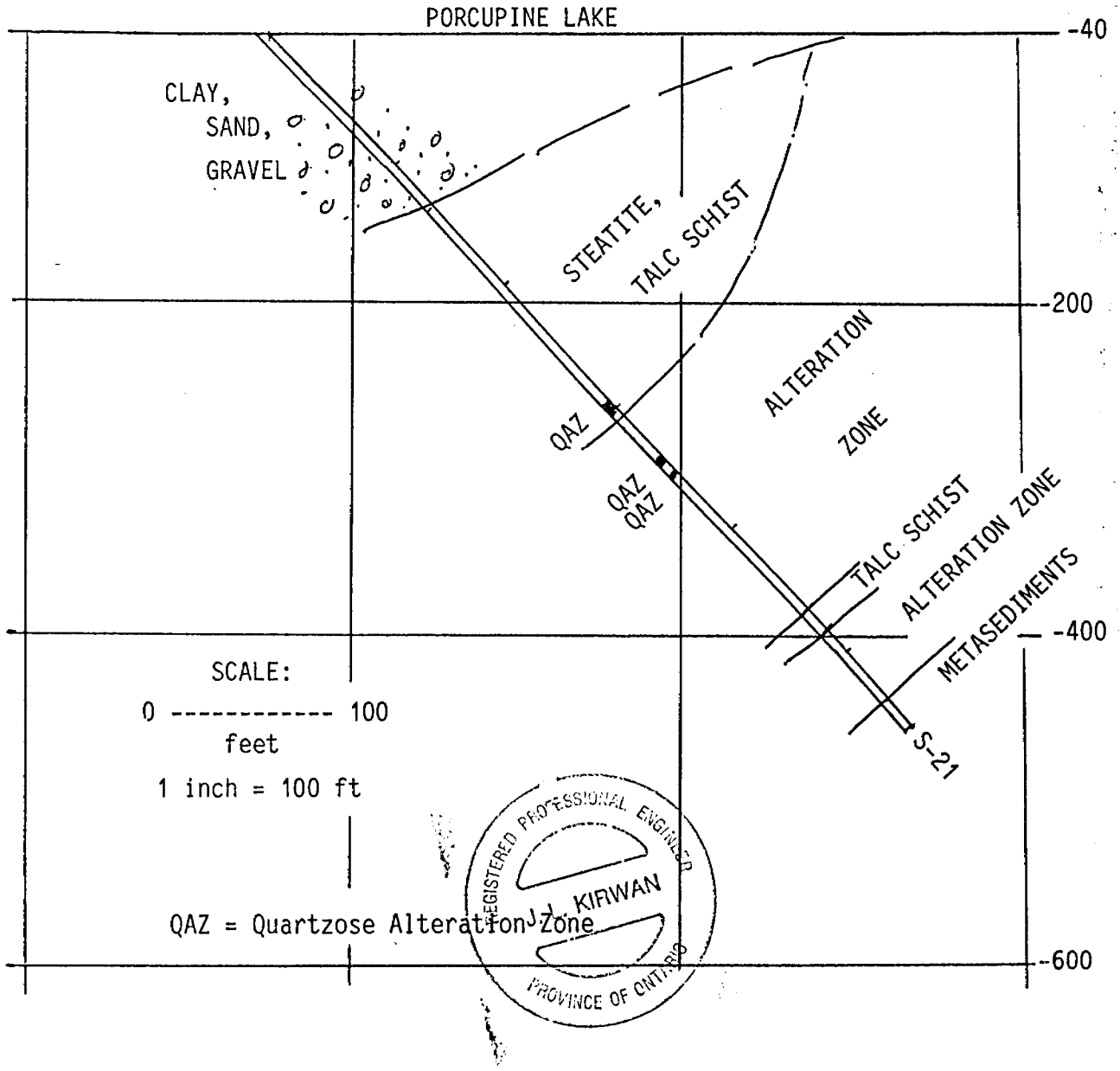
J.L.Kirwan
PROVINCE OF ONTARIO

LOCATION: See Sketch

CLAIM: 10272

DIAMOND DRILL HOLE S-21

WEST Plane of Section, 105°, View Northward EAST



REGISTERED PROFESSIONAL ENGINEER J. J. KIFIWAN PROVINCE OF ONTARIO

WABIGOON RESOURCES LIMITED

SECTION THROUGH DIAMOND DRILL HOLE S-21

HUNTER MINE PROPERTY, WHITNEY TOWNSHIP, ONTARIO

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG
WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-22
GRID REFERENCE 955'East, 1165' North of Number 3 Post
TOWNSHIP WHITNEY CLAIM HR1009
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 200'=-50°; 400'=-52°; 757'=-56°
CORE SIZE BQ to 500' then AQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 26-28, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS
		Footage	OzAu/T
0	CASING		
180	STEATITE-TALC SCHIST: Grey green to dark greenish or black massive assemblage of talc and carbonate; at 400' talc-carbonate layering begins with a core angle of 40°		
439	DIABASE: Aphanitic margins, fine-grained center, upper contact at 50°, lower at 10° to core axis. Lower contact with 3 foot "chert" or baked zone in surrounding rock.		
457	ALTERATION ZONE: Layered series of (talc) sericite-ankerite schist with minor chlorite, layering at 45° to core axis. CHERT layer, 464-467'.		
498	DIABASE: Both contacts at 45° to core axis.	666-669.5	.014
546	ALTERATION ZONE: Banded at 45° to core axis; a few 1" quartz veins. A weak quartz vein system between 591 and 594'.	669½-670½	.048
610	DIABASE: As above, contact at 60° to core axis.	670.5-675	Tr
641	ALTERATION ZONE: As above	675-680	Tr
721	TALC SCHIST: Layered to massive and brecciated, 60° to core axis.	680-685	.01
755	ALTERATION ZONE: Layering at 60° to core axis.	685-688	Trace
773	METASEDIMENTS: Grey, layered argillite with banding at 60° to core axis.	688-691	Trace
774	END OF HOLE	691-692	.024

ASSAYS were obtained from the following sections, those above 500' from split core, those below 500' requiring core consumption, 455.5-499.5; 544.5-612.6; 640.8-707.5 and 721-774 feet. All these returned values of TRACE except those listed above.

Summary log prepared from the preliminary log of J.L.Kirwan made on the dates shown; Assay data from the complete log of Arden Brooks.

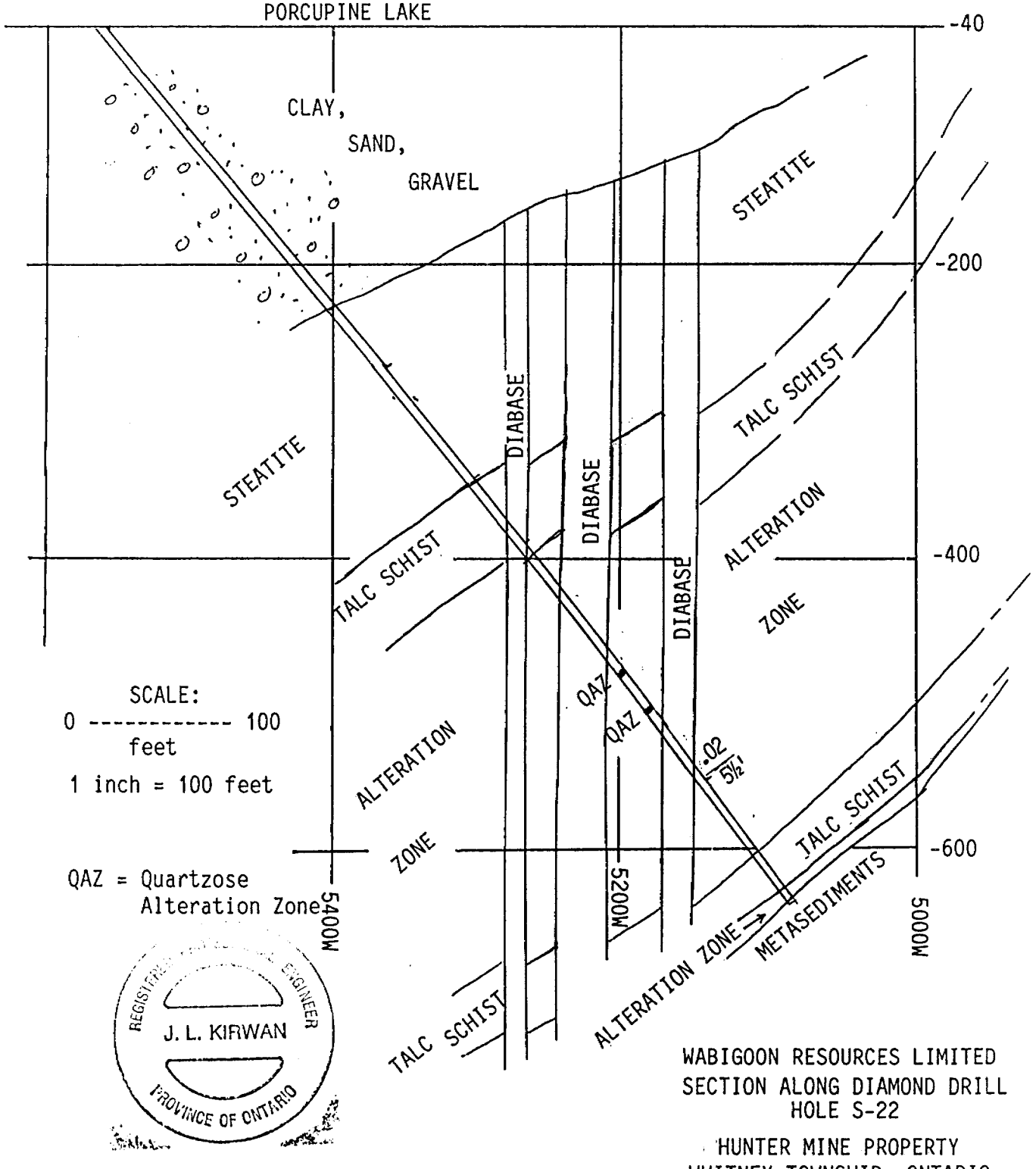
REGISTERED J.L. KIRWAN
J.L.Kirwan

LOCATION: See Sketch

CLAIM HR 1009

DIAMOND DRILL HOLE S-22

WEST — Plane of Section, 105° - View Northward — EAST



SCALE:

0 ---------- 100

feet

1 inch = 100 feet

QAZ = Quartzose Alteration Zone

REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO

WABIGOON RESOURCES LIMITED

SECTION ALONG DIAMOND DRILL HOLE S-22

HUNTER MINE PROPERTY

WHITNEY TOWNSHIP, ONTARIO

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY: HUNTER MINE
HOLE NUMBER: S-23
GRID REFERENCE: 265' East, 895' South of Number 4 Post
TOWNSHIP: WHITNEY CLAIM 10272
AZIMUTH: 105° DIP ANGLE -50°

DRILLING COMPANY: NOREX FOREMAN: A.Gagnon DIP TESTS: 200'=-50°; 397'=-49°
CORE SIZE: BQ CORE STORED AT: HUNTER MINESITE LOGGED BY: J.L.Kirwan DATE: March 30, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING			
106	ALTERATION ZONE: Light green, layered and laminated chloritic and occasionally epidote or fuschite bearing Sericite-Ankerite Schist. Layering is 30-50° to core axis which steepens to 60° by 200'.			
	QAZ- Quartz-bearing zones: Quartz Breccia, Silicification or Quartz Vein Systems: 116-118'; 123-132'; 134-137'; 139-145'; 165-181'. Various Quartz Veins at 156'; 163-164'; and at 196' 20-60° to core axis.			
282	TALC SCHIST: Layering varying from 10-90° to core axis. STEATITE begins at 302, massive and giving way by 326 to Talc Schist at 0° to core axis steepening to 45° by 345'.			
368	ALTERATION ZONE: As above, only the alteration as shown by the green color is weaker. Layering is at 55° to core axis.			
376	METASEDIMENTS: Black argillites, well banded at 60° to core axis. Numerous zones of quartz vein material, for example at 387 and 392'.			
397	END OF HOLE			
	ASSAYS were obtained from split core from: 117-146.3'; 154-211.3'; 269.5-274.5;and 365.6-397'. All assays from these sections were TRACE.			
	SUMMARY LOG prepared from the Preliminary Log made by J.L.Kirwan on the date given. Assay information came from the complete log of Arden Brooks.			

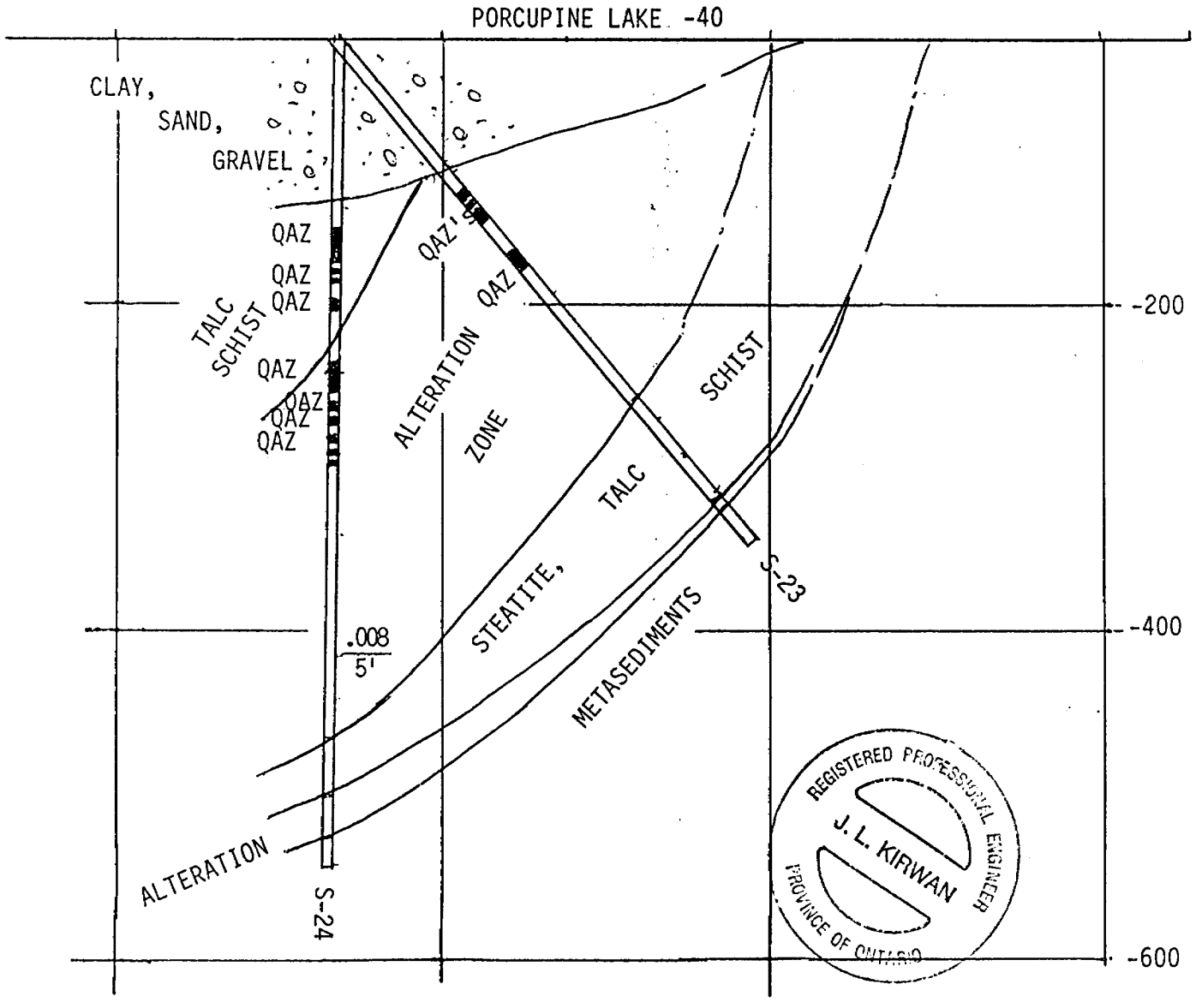
J.L.Kirwan

PAP 8451

LOCATION- See Sketch
CLAIM- 10272

DIAMOND DRILL HOLES S-23, S-24

WEST Plane of Section, 105°- View Northward EAST



SCALE:

0 ---------- 100
feet

100 feet equals 1 inch

QAZ = Quartzose Alteration Zone

WABIGOON RESOURCES LIMITED

SECTION through Diamond Drill Holes S-23, S-24

HUNTER MINE PROPERTY, WHITNEY TWP., Ontario.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-24
GRID REFERENCE 265' East, 895' South of Number 4 Post
TOWNSHIP WHITNEY CLAIM 10272
AZIMUTH DIP ANGLE -90°

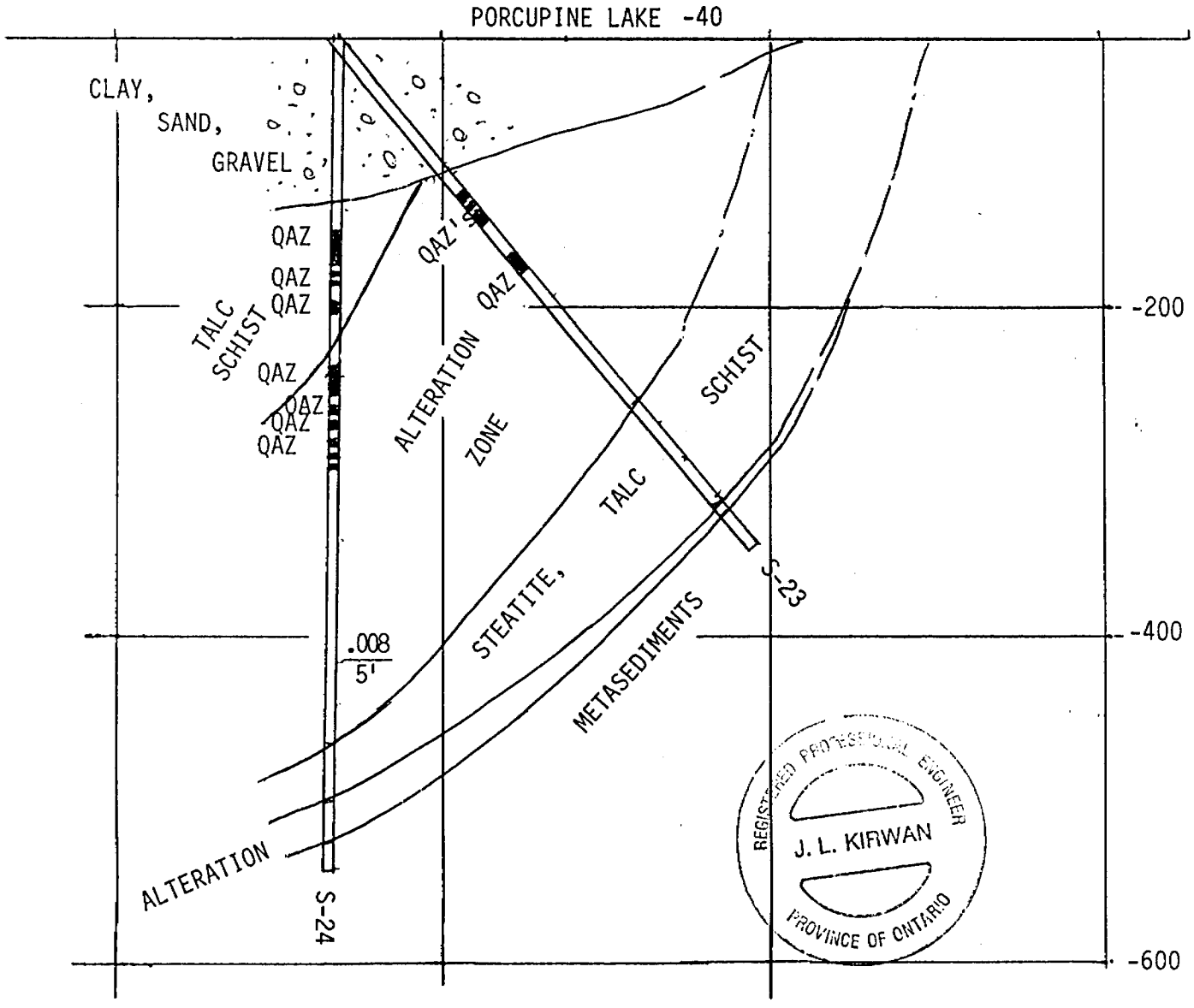
DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: At 200', -90°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE March 29-31, 1986

FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
			Footage	OzAu/T	
0	CASING				
98	TALC SCHIST: Well-banded at 50° to core axis; more contorted (0-40°) where more talcose: a talc-carbonate schist, banded, laminated and sheared.				
	QAZ- White quartz breccias and vein systems at: 111-125'; 136-138'; 140-142'; 155-164'; 187-192'.				
195'	ALTERATION ZONE: Begins talcose. a chloritic, occasionally epidote-bearing and fuschitic well layered and laminated, often crenulated Sericite-Ankerite Schist in general banded at 30° to core axis, becoming steeper with depth (80° at 368').				
	QAZ; 197-212'; 216-219'; 337-343'; 348-350'; 352-355'.				
	The Alteration is zoned, as in other holes, eg. light green 195-244'; dark green, 244-309'; grey, 309-350'; dark green, 380-424'.		381-386	.008	
424	TALC BRECCIA: STEATITE; occasional layering at 80° to core axis.				
460	ALTERATION ZONE: as above; layering at 80° to core axis.				
	QAZ; 463-466'				
	BLACK ARGILLITE ZONE, 467-470'.				
487	METASEDIMENTS: Well-layered black argillites grading to greywacke by 505'; layered at 60° to core axis.				
507	END OF HOLE				
	ASSAYS were obtained from split core from the following sections: 100-106'; 110.5-125'; 135.7-164'; 187-192'; 196-308.5'; 337-388'; 429.9-444.3; 461.5-487; and 503.3-507'. All assays returned a value of TRACE except the single item above.				
	Summary Log prepared from the Preliminary Log made by J.L.Kirwan on the dates indicated. The assay information came from the complete log of Arden Brooks.				
	J.L. Kirwan				

LOCATION- See Sketch
CLAIM- 10272

DIAMOND DRILL HOLES S-23, S-24

WEST Plane of Section, 105°- View Northward EAST



SCALE:

0 ---------- 100
feet

100 feet equals 1 inch

QAZ = Quartzose Alteration Zone

WABIGOON RESOURCES LIMITED

SECTION through Diamond Drill Holes S-23, S-24

HUNTER MINE PROPERTY, WHITNEY TWP., Ontario.

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

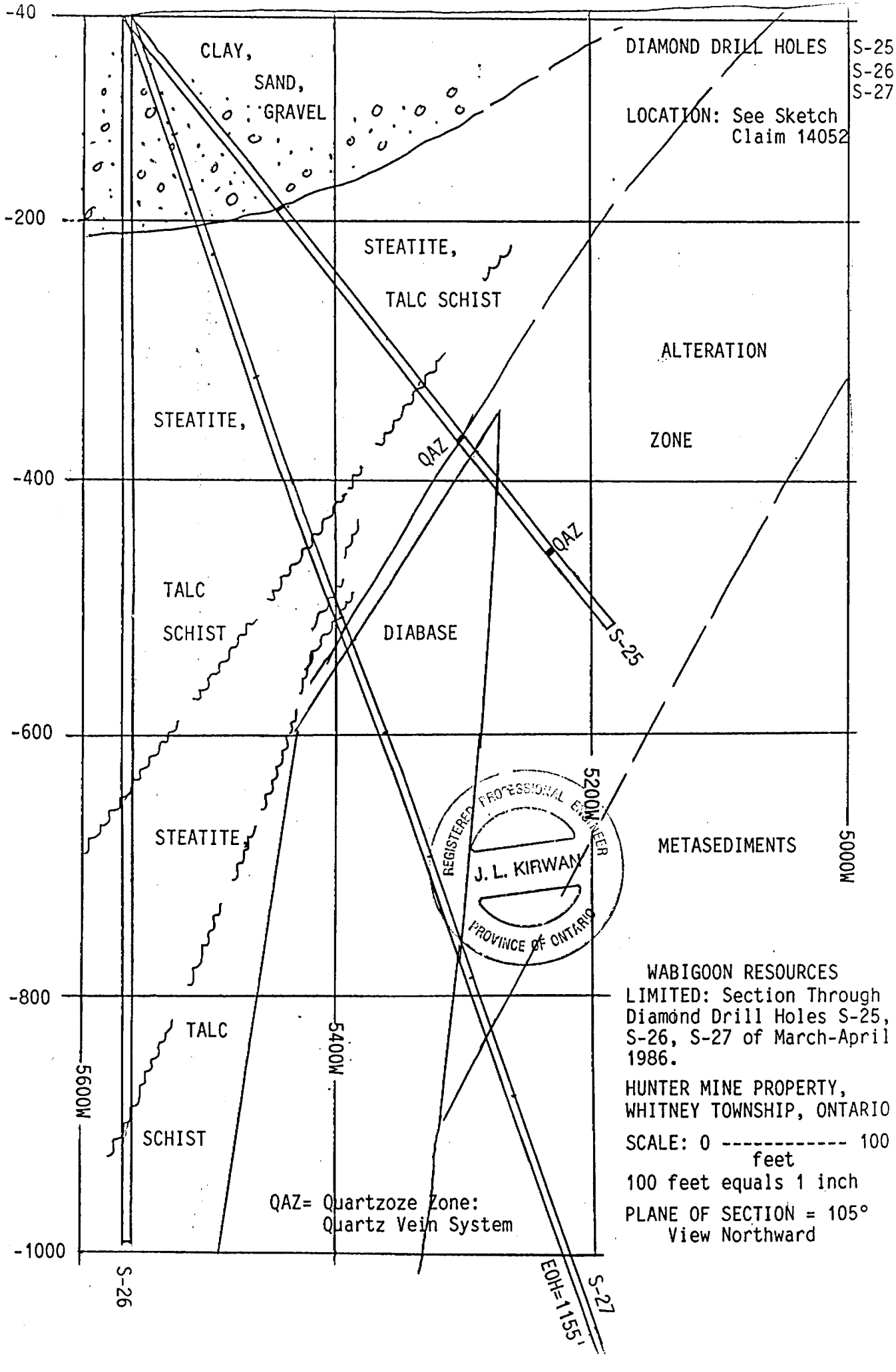
WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-25
GRID REFERENCE 1040' East, 240' North of Number 3 Post
TOWNSHIP WHITNEY CLAIM 14052
AZIMUTH 105° DIP ANGLE -50°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 200'= -51°; 400'= -49°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE April 4-6, 1986

FOOTAGE	SUMMARY LOG / DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING			
197	STEATITE: TALC SCHIST and Soapstone; dark green, sheared at 30° to core axis; the shearing being braided and undulatory with slickensides developed in the shear planes within 30° of the core axis.			
422	ALTERATION ZONE: Grey-Black, talcose especially at the beginning and layered at 60-70° to core axis. The transition to this Zone is abrupt and through a zone about 12" thick of finely layered talc and quartz which may be a fault plane. QAZ- Quartz Vein System, 422-424.			
439	DIABASE: Upper contact chilled, at 90° to core axis; lower contact undetermined. The diabase is fine-grained to medium-grained.			
464	ALTERATION ZONE, as above, grey, layered at 50-80° to core axis, 70° being commonest. QAZ; brecciated, 535-539'. By 500' the Zone has taken on the typical green alteration color.			
603	END OF HOLE The hole was lost due to wedging at 603', still in the Alteration Zone which is therefore not traversed. Moreover, if fault-related, the upper contact in the hole of this Zone may not be the top of the Alteration succession and the Zone may be incomplete upwards also. At 603' the hole made considerable gas and water, each blowing out the top for periods of 15 minutes, alternating. ASSAYS were obtained from split core from 324-328.7'; 421.5-441'; and 463.4-603'. All values returned assays of TRACE. Summary Log made from Preliminary Log by J.L.Kirwan made on the dates indicated. Assay material came from the complete log of Arden Brooks.			

REGISTERED PROFESSIONAL ENGINEER
J.L. KIRWAN
J.L.Kirwan


-40
-200
-400
-600
-800
-1000
CLAY,
SAND,
GRAVEL
DIAMOND DRILL HOLES
S-25
S-26
S-27
LOCATION: See Sketch
Claim 14052
STEATITE,
TALC SCHIST
ALTERATION
ZONE
STEATITE,
QAZ
QAZ
S-25
TALC
SCHIST
DIABASE
5200W
REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO
METASEDIMENTS
5000W
STEATITE,
TALC
SCHIST
5600W
5400W
S-26
EOH=1155'
S-27
QAZ= Quartzoze Zone:
Quartz Vein System
WABIGOON RESOURCES
LIMITED: Section Through
Diamond Drill Holes S-25,
S-26, S-27 of March-April
1986.
HUNTER MINE PROPERTY,
WHITNEY TOWNSHIP, ONTARIO
SCALE: 0 ---------- 100
feet
100 feet equals 1 inch
PLANE OF SECTION = 105°
View Northward

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

PROPERTY HUNTER MINE
HOLE NUMBER S-26
GRID REFERENCE 1040' East, 260' North of Number 3 Post
TOWNSHIP WHITNEY CLAIM 14052
AZIMUTH DIP ANGLE -90°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 200'=90°; 400'=88°; 600'=88°; 800'=88°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE April 1-8, 1986

FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0	CASING				
167'	STEATITE, TALC SCHIST, TALC-CARBONATE SCHIST. Nearly black, fine-grained, sheared body with zones of layering, brecciation, slickensiding. The core angles are generally very low, in the order of 10°, but angles up to 45° to core axis were noted (eg. at 910'). The slickensiding presents a coarsely undulatory pattern with a direction oriented generally along the core axis, as is the lineation within it. This material may represent parts of the fault planes of the Destor-Porcupine fault. At 937 feet there are a few quartz veins				
957	END OF HOLE				
		ASSAYS: three samples were taken from this hole, at 278-281 feet			
		Summary Log prepared from the preliminary logging by J.L.Kirwan on the dates indicated.			

REGISTERED PROFESSIONAL ENGINEER
J.L.KIRWAN
J.L.Kirwan
PROVINCE OF ONTARIO

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER S-27
GRID REFERENCE 1040' East, 260' North of Number 3 Post,
TOWNSHIP WHITNEY CLAIM 14052
AZIMUTH 105° DIP ANGLE -70°

DRILLING COMPANY NOREX FOREMAN A.Gagnon DIP TESTS: 400'=-69°; 600'=-70°; 800'=-69°; 1000'=-63°
CORE SIZE BQ CORE STORED AT: HUNTER MINESITE LOGGED BY J.L.Kirwan DATE April 22-23,1986

FOOTAGE	SUMMARY LOG	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
0		CASING			
176		STEATITE-TALC SCHIST: Highly variable, commonly massive to brecciated soapstone with clay fraction zones (faults?) at 380-382'; 428-430'; 432-434'; 437-440'; 442-444'; 462-467'; 483-490'. Layering, where present, is from 0-70° to core axis, but by 450' is in the 40-50° range.			
		507- Well-developed TALC-CARBONATE SCHIST, layered at 45° to core axis.			
520		DIABASE, fine-grained, upper contact at 70° to core axis			
765		TALC-CARBONATE SCHIST layered at 40° to core axis, with several 1-2" quartz veins near bottom.			
793		ALTERATION ZONE: Pale green with grey zones, layered, sericite-ankerite schist at 50-60° to core axis. At 817' there is kink banding at 55° crossed by cleavage in the opposite direction at 45°.			
840		METASEDIMENTARY ROCKS: Mostly greywacke with some argillite; begins at 840' with 6" zone of semi massive pyrrhotite-pyrite in black argillite; good dragfold at 915' (anticline to east) with general core angle after 900 at 30° to axis. Core angle decreases to 20-30° range by 1050'.			
1155		END OF HOLE			
		Above Summary Log prepared from the Preliminary Log of J.L.Kirwan made on the dates given.			

REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO
John L. Kirwan

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER U-1
GRID REFERENCE Underground, First Level, 281 X-Cut at Station 120
TOWNSHIP Whitney CLAIM HR 1009
AZIMUTH 122° DIP ANGLE -85°

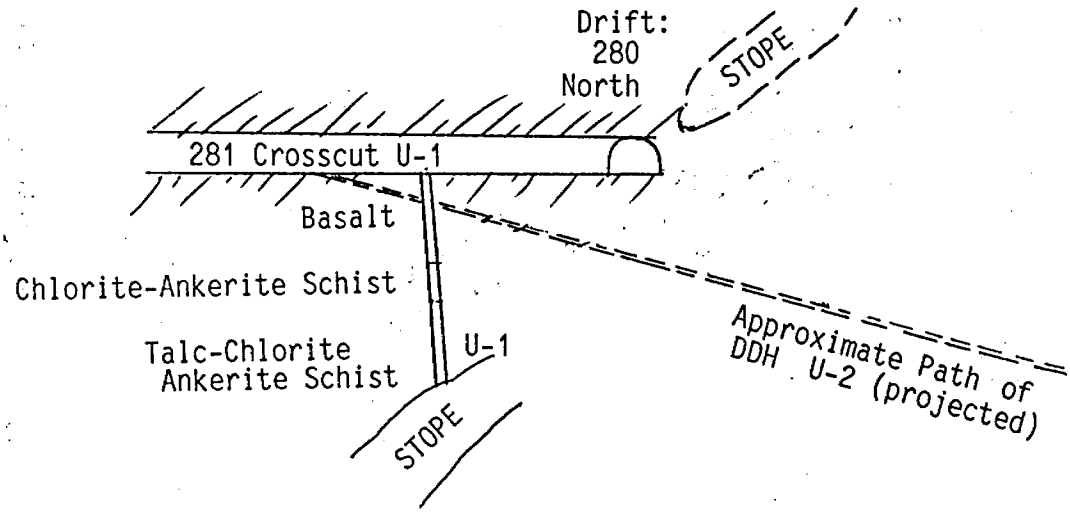
DRILLING COMPANY Morrissette FOREMAN C.M DIP TESTS:
CORE SIZE EXK CORE STORED AT: Consumed in Assay LOGGED BY Arden Brooks DATE Dec. 13, 1985

FOOTAGE	SUMMARY LOG — DESCRIPTION OF CORE — Summary prepared by J.L.Kirwan	SAMPLE NUMBER	ASSAYS	
0	CASING			
2	ALTERATION ZONE		Au	
	a. Metabasalt: dark green to black, intensely contorted & fractured with tight 'isoclinal' folding; silica and carbonate bands less than ¼" wide; 5.3-22': fine chlorite-filled fractures at 35-50° to core axis			
	22.7-23.3: Intermediate to mafic intrusive: medium to dark green at centre, fine grained pinkish grey chilled maegins; contacts at 55 & 75° to ca; about 1% dissem. pyrite.			
	17.3': ½" pyrite seam.	24.5-26	0.002	
23.3	b. Chlorite ankerite schist: weakly talcose, trace of pyrite, well banded at 75-85°			
	24.5-32': Silicified zone, 1% dissem. pyrite, 1" qtz str at 55° to ca at 24.5; 26.5, ¼" stringer with chalcopyrite			
	29.5-29.9: black, chlorite-rich section, ½% dissem. pyrite.			
	27.2-27.7: weakly brecciated silica vein, 1-2% dissem. pyrite			
	28.7-29.5: the same; 29.9-32': quartz-tourmaline veining (abt 60%) ½% dissem. pyrite. 31,25: unknown black matallic mineral with black streak, as wispy seams.			
32.0	c. Talc-chlorite-Ankerite Schist: medium green with dark talc-chlorite alteration, and light colored seams of ankerite and silica; shearing at 80-90°; trace of pyrite throughout.			
	33.6-33.8" 4" barren white quartz-ankerite-talc vein at 80-85° to ca	Entire hole assayed; Above assay is highest value returned: all others "trace".		
	34.5-38.1': silica vein, weakly brecciates, minor py; contacts 85°/55°.			
	38.75-39': Buff mineral forming vein at 75° to ca, chilled margins. Same at 40.2 (½"); 42 (1") and 42.5-42.8.			
	40.5-43': talc-filled fractures at 80° to ca in S-folds (between fracts.			
	43.25-43.9: Quartz-ankerite-talc vein at 75°/35° to ca			
	43.9-45': talc filled fractures at 35-50° to ca.			
56.0	END OF HOLE Stope breakthrough.			

J.L. KIRWAN

LOCATION: 281 Crosscut, First Level (-225 feet), at station 128, Hunter Mine, Claim HR1009, Whitney Township, Ontario

DIAMOND DRILL HOLE U-1

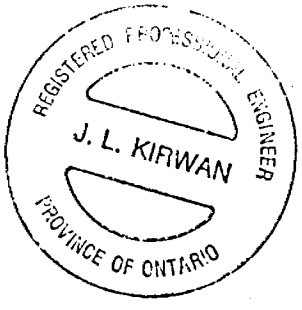


WEST PLANE OF SECTION, 122° AZIMUTH EAST

SCALE:

0 ---------- 50
Feet

50 feet to 1 inch



GEOLOGICAL SECTION
ALONG DDH U-1,
HUNTER MINE PROPERTY,
WABIGOON RESOURCES LIMITED,
WHITNEY TOWNSHIP, ONTARIO

DATE OF DRILL HOLE, DECEMBER, 1985
LOGGED BY ARDEN BROOKS

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER U-2
GRID REFERENCE Underground, First Level, 281 X-Cut at Station 129
TOWNSHIP Whitney CLAIM HR1009
AZIMUTH 105° DIP ANGLE -15°

DRILLING COMPANY Morrissette FOREMAN C.A. DIP TESTS:
CORE SIZE EXK CORE STORED AT: Consumed in Assay LOGGED BY Arden Brooks DATE January 13. 1986

FOOTAGE	SUMMARY LOG — DESCRIPTION OF CORE — Summary Prepared by J.L.Kirwan	SAMPLE NUMBER	ASSAYS	
0	CASING			
0	ALTERATION ZONE:	Footage	Au oz/t	
	a. Basalt (Ultramafic?): massive to weakly sheared, dark green; shearing at 65° to core axis. Talcose with weak ankerite veinlets parallel to schistos. Trace pyrite			
	0.5-2.5' : Lost core			
	11.7-12' : Silica vein, contacts at 25°/65°; weakly silicified to 14'			
	19.1-34.5'; 36.1-37.9; 42.2-43.3': Silicified zones cut by calcite, 45° to ca			
49.3	b. Talc-Chlorite-Ankerite Schist: Medium green with dark talc-chlorite alteration & lighter zones of ankerite and silica; Shearing at 0-90° (folding); talc-filled fractures at 0-25° to ca.			
	56.75-60': silica-rich zone as irregular veinlets & stringers of quartz.			
67.25	b. Ankerite-Chlorite Schist: Very finely banded light grey-green with ankerite-chlorite-talc. Moderate shearing at 70-80° to core axis. Some talc cross veinlets.			
	68.3-69.2': 1" brown quartz vein at 25° to ca; 72.9-73.4: Quartz Breccia 55°;			
	74.2': 1" quartz stringer; 20°; 75.25-75.8': 3" & 1" white quartz stringers.	72.5-74	0.16	
	76.5': 2" brown quartz stringers in fragmented zone	74-75	0.04	
	76.75-77': Grey-white quartz vein at 60°; 78.25-79': Qtz Vein at 70°/50° ca.	75-76	0.03	
	79-86': Silicified; ½% pyrite; 83.3: Weak brecciation, 6"	76-76.5	0.01	
	86-87': Quartz-tourmaline vein at 40° to ca; about ½% disseminated pyrite	76.5-78¼	0.403	reassay
	88.25-88.8': brown QV at 25°; 88092': Silicified; 92.6-96': QV @ 60° to ca	78¼-79	0.421	reassay
	96-99': Lost Core	79-81	0.002	
	101.25-104.5': Quartz ankerite breccia; 105.1': 1" QV @ 35° to ca.			
110	d. Talc-Chlorite-Ankerite Schist; as above, some sections 90% talc; sheared at 50° to ca.			
	110.8': 2" quartz-talc stringer; 115-115.3': 2" brown QV (speck vg?)			
	115-115.6: silicified zone; 115.6-117.3: a few white QV ½" wide. Sh.60° ca.			
124.5	e. Chlorite-Sericite Schist: finely banded medium grey silica-ankerite rock @ 70° to ca			
	127.8': 2" silicified zone at 65°; 130.2-131.3: Quartz tourmaline breccia.			
	131.3-131.6': about 7% fuschite on shear planes.			

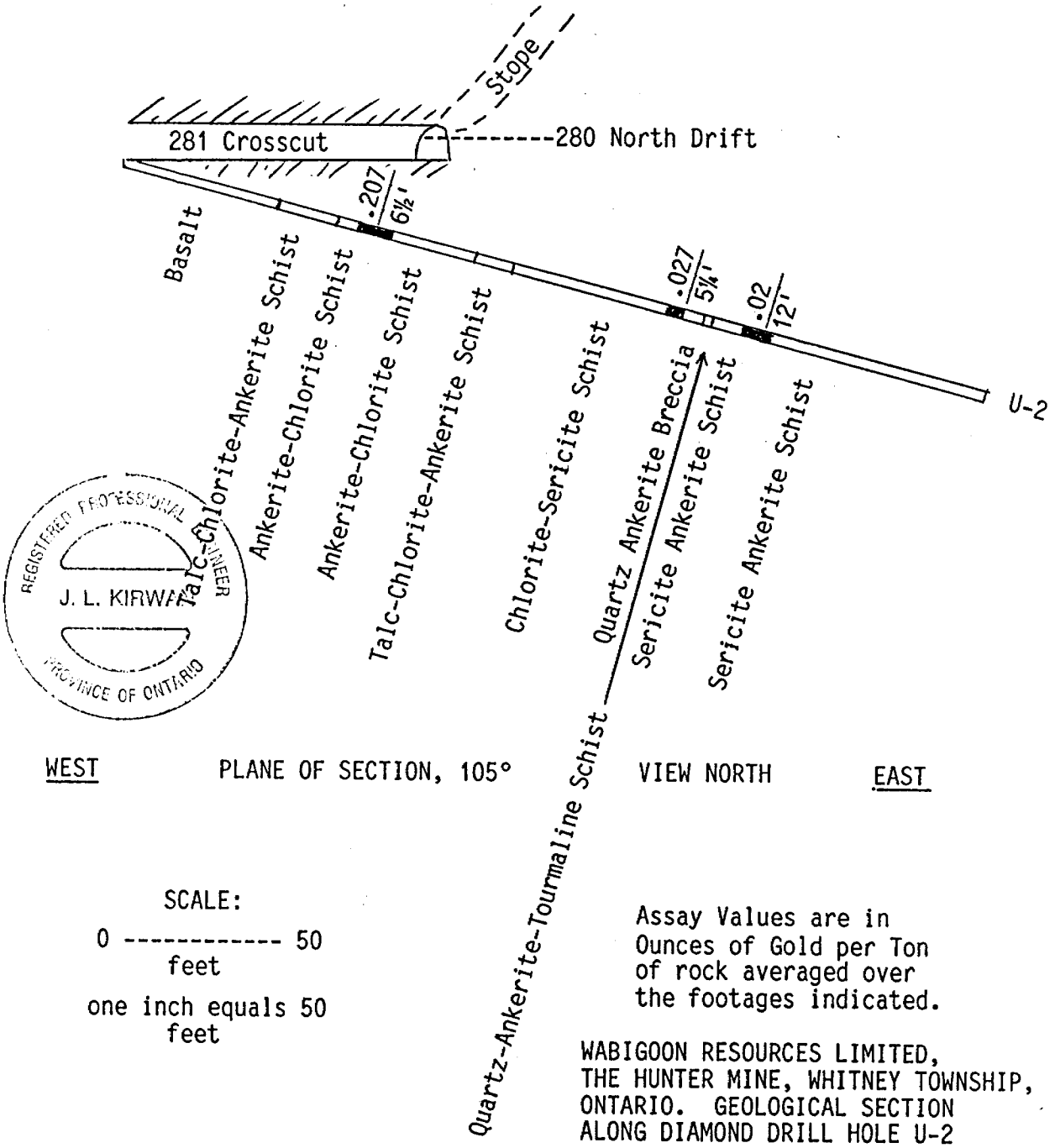
EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HOLE NUMBER: U-2

FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
	148-148.8': Bleached, silicified, 3% disseminated pyrite			
	162-166.5': Bleached, silicified, pyritized. 163.6': Chert, 65° ca			
	163.75': ½" grey quartz stringer, 5% pyrite; 164-165.1': 70% quartz-	166½-168½	.005	
	feldspar stringers in schistosity, ½% dissem. pyrite	168½-169¼	nil	
	168.5-169.25': Bleached, silicified, pyritized; 169.25-174.5:	169¼-171	.03	
	weak silicification; 172.6-173.4': intense silicificat-	171-172	.05	
	ion; 174-174.4: weaker silicification (ground core)	172-173½	.01	
174.5	f. Quartz-Ankerite Breccia: light medium brown intensely brecciated and altered with	173½-174½	.02	
	ankerite and silica and in-filled with black tourmaline seams.			
	Contacts at 55°/80°, quartz filling near top and bottom ends.			
	176-179.25': Quartz-Feldspar-Tourmaline Breccia, intensely silic-			
	ified & brecciated, no pyrite, about 5% chlorite.			
185.5	g. Quartz-Ankerite-Tourmaline Schist: Finely banded dark brown ankerite/quartz laminae;			
	contacts at 65-85° (schistosity).			
188	h. Sericite-Ankerite Schist: Silicification, sericitization and chloritization as laminae			
	at 70° to core axis. Overall yellow-green-brown color. A little	192-192½	.025	
	fuschite on upper contact together with about 1% brown tourmaline.	192½-196	.015	
	192.2':2" Quartz stringer with pyrite on contacts	196-201	.02	
	193-196': about 1% fuschite on shear planes; 107.8': 1" chert	201-204	.03	
	211.5; 215.75': 1" quartz stringers, trace of pyrite	204-206	lost	core
	246-251': Lost core	206-207½	.005	
251	END OF HOLE			
		231-236	.04	

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

LOCATION: Underground, Hunter Mine,
First Level, in 281 Crosscut
at station 129.
Mining Claim HR1006

DIAMOND DRILL HOLE U-2



REGISTERED PROFESSIONAL ENGINEER
J. L. KIRWAN
PROVINCE OF ONTARIO

WEST PLANE OF SECTION, 105° VIEW NORTH EAST

SCALE:

0 ---------- 50
feet

one inch equals 50
feet

Assay Values are in
Ounces of Gold per Ton
of rock averaged over
the footages indicated.

WABIGOON RESOURCES LIMITED,
THE HUNTER MINE, WHITNEY TOWNSHIP,
ONTARIO. GEOLOGICAL SECTION
ALONG DIAMOND DRILL HOLE U-2
OF DECEMBER, 1985 AS LOGGED BY
ARDEN BROOKS

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER U-3
GRID REFERENCE Underground, First Level, 283 X-Cut at Station 135
TOWNSHIP Whitney CLAIM HR1009
AZIMUTH 105° DIP ANGLE -85°

DRILLING COMPANY Morrissette FOREMAN C.A. DIP TESTS:
CORE SIZE EXK CORE STORED AT Consumed in Assay LOGGED BY Arden Brooks DATE January 15, 1986

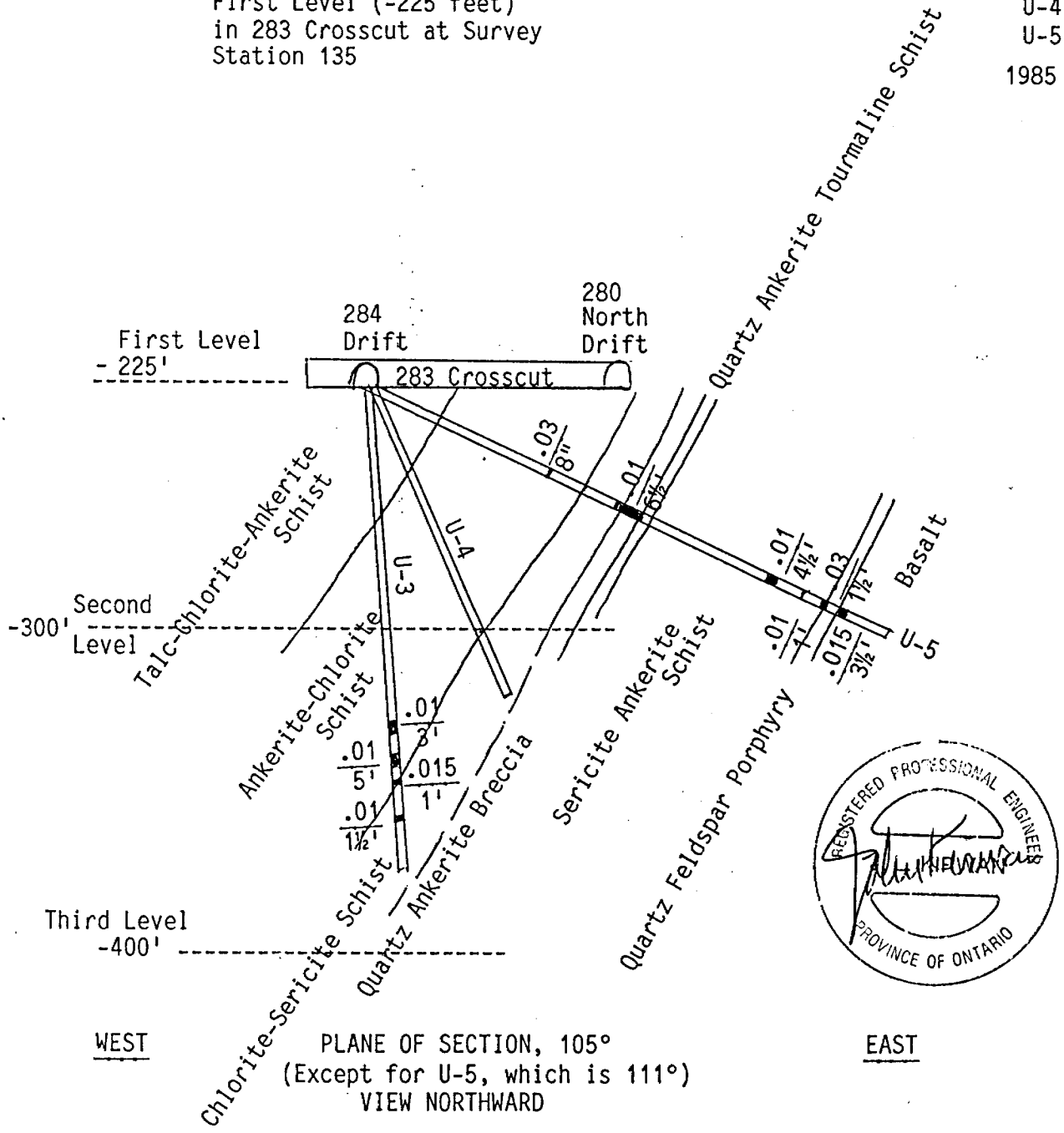
FOOTAGE	SUMMARY LOG — DESCRIPTION OF CORE — Summary Prepared by J.L.Kirwan	SAMPLE NUMBER	ASSAYS
		Footage:	Oz Au/ton
0	Casing		
3	ALTERATION ZONE:		
	a. Talc-Chlorite-Ankerite Schist: Medium green with dark talc-chlorite alteration & lighter zones of ankerite and silica; contorted shearing at 45-75° to core axis. Trace of pyrite. Fractures at 35-65° with talc fillings.		
	3-4": Silicified zone; 1% pyrite; 4-5': silicified schist, talc in planes;		
	20.3-20.6': Quartz-feldspar vein with contacts at 80°/45° to core axis.		
	22.2-25': Silicified; 33-35': Irreg. quartz stringers to 25% of rock		
37	b. Ankerite-Chlorite Schist: Laminated, light grey-green rock with ankerite-chlorite talc layering at 70° to core axis flattening to 0-5° below 72'.		
	38.9': ½" reddish brown intrusive with chilled margins;		
	42.5-43.5': Irregular quartz stringers making up to 25% of rock.		
	49.9': 1.5" "Brooksite"- monomineralic reddish brown aphanitic intrusive.		
	51.2": 2" white Quartz Vein; 63.5-64': silicified section with quartz clots.	103-106	0.01
	67.5-68.5': Irreg. quartz stringers to 25% of rock; 73': dissem. pyrite.		
	Below 87': quartz content increases as silica banding. 93.5': 1" QV	113-118	0.01
	95.25-96.5': Quartz Ankerite Breccia. 97.5-100': "Alligatorite" @ 25° to ca.		
	100.5-96': Brown quartz vein, ground sections; 123-123.5': fragmental, 4% py		
123.5	c. Chlorite-Sericite Schist: Finely banded medium grey silica-ankerite rock; trace py.	123-124	0.015
	124-128': Bleached zone; 128-131': silicified, fuschitic, banded @ 25° to ca		
	133.5-135': weakly silicified; 137-141.5': pyritic (under 1.5% py) 40° ca	133½-135	0.01
	147-147.8': Quartz-Tourmaline Breccia, contacts at 30°/25°, dark grey-brown.		
148	End of Hole		Entire hole assayed, all other values are below 0.01 Oz Au/ton

REGISTERED PROFESSIONAL ENGINEER
J. Kirwan
PROVINCE OF ONTARIO

PAP - 8451

LOCATION: Underground at Hunter Mine, First Level (-225 feet) in 283 Crosscut at Survey Station 135

DIAMOND DRILL HOLES U-3 U-4 U-5 1985



REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

WEST

PLANE OF SECTION, 105°
(Except for U-5, which is 111°)
VIEW NORTHWARD

EAST

SCALE:

0 ---------- 50
feet
50 feet equals 1 inch

WABIGOON RESOURCES LIMITED
THE HUNTER MINE, WHITNEY TOWNSHIP, ONTARIO
GEOLOGICAL SECTION ALONG DIAMOND DRILL HOLES U-3, U-5 & U-5
OF DECEMBER, 1985, AS LOGGED BY ARDEN BROOKS

Assay Values are in Ounces of Gold per ton over footages Indicated

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER U-4
GRID REFERENCE Underground, First Level 283 Crosscut @ Stn. 135
TOWNSHIP Whitney CLAIM HR1009
AZIMUTH 105° DIP ANGLE -65°

DRILLING COMPANY Morrissette FOREMAN C.A. DIP TESTS:
CORE SIZE EXK CORE STORED AT: Consumed in Assay LOGGED BY Arden Brooks DATE January 16, 1986

FOOTAGE	SUMMARY LOG — DESCRIPTION OF CORE — Summary Prepared by J.L.Kirwan	SAMPLE NUMBER	ASSAYS	
0	Casing			
2	ALTERATION ZONE:			
	a. Talc-Chlorite-Ankerite Schist: Medium green with dark talc-chlorite alteration and lighter zones of ankerite and silica; shearing at 70° to ca; ankerite-rich and talc-rich seams present.			
	5.4-6': Silicified, contacts at 60°/ground. 10.5': local pyrite crystals.			
	22.2-22.3; 23.5-23.8': QV's; 26-31.5': siliceousness & brecciation incr.			
31.5	b. Ankerite-Chlorite Schist: Laminated, light grey-green rock with ankerite-chlorite-talc layering at 55° to core axis; some talcose cross fractures @ 20-40°			
	35.8-38'; 39-41': Quartz-Feldspar stringers X-cutting banding at 5-40°			
	42.7': 1" "Brooksite" (aphanitic, buff-colored, weakly banded rock).			
	45.8': The same; 41.2-49.5': Schist increases in talc content.			
	49.5-52.8': Silicified and with late quartz stringers.			
	52.9-53.7': Siliceous intrusive: 65% Qtz, 15% ankerite, over 10% feldspar.			
	53.7-67.3': Rock is more siliceous; Qtz. Strs. at 58.4, 60.6, 60.8-61'.			
	62.1-66.6': occas. narrow QV; 66.6-67.2': flat qtz-felds str., ½".			
	71-75': Zone of Qtz-Felds stringers at various angles, less than 6" wide.			
	74-74.5': Quartz Ankerite Breccia; 78-84': banding 0-20° ca; qtz-fs strs.			
84	c. Chlorite Schist: Banded, medium dark green zone with minor quartz-ankerite-sericite seams; weak shearing at 35° to ca steepening to 65°; local bleaching.			
	85.5': 1" QV @ 35° to ca trace pyrite; 88.5-90.5': fuschite-rich zone (up to 5% along shear planes), and some brown qtz strs at 25-35°.			
	90.5-94': silicified stringer zone: brown quartz; bleaching; 3% diss. pyrite.			
	94-98.5: Occasional quartz stringer under 1"; local bleaching, trace pyrite.			
	99.6-100.6': Bleached, 1% dissem. pyrite, 1 ¼" quartz stringer; Extremely crenulated, but average is 65° to core axis.			
103	End of Hole.			

PAP - 8451

Earth Resource Associates
P.O. BOX 2150, TIMMINS, ONTARIO, P4N 7X8 CANADA

DIAMOND DRILL LOG

WABIGOON RESOURCES LIMITED

PROPERTY HUNTER MINE
HOLE NUMBER U-5
GRID REFERENCE Underground, First Level, 283 X-Cut at Station 135
TOWNSHIP Whitney CLAIM HR1009
AZIMUTH 111° DIP ANGLE -25°

DRILLING COMPANY Morrissette FOREMAN C.A. DIP TESTS:
CORE SIZE EXK CORE STORED AT: Consumed in Assay LOGGED BY Arden Brooks DATE January 17, 1986

FOOTAGE	SUMMARY LOG — DESCRIPTION OF CORE — Summary Prepared by J.L.Kirwan	SAMPLE NUMBER	ASSAYS	
0	Casing	Footage	Au Oz Au/	ton
2	ALTERATION ZONE:			
	a. Talc-Chlorite-Ankerite Schist: Medium green with dark talc-chlorite alteration and lighter zones of ankerite and silica; shearing at 40-80° to core axis. 2.8': local dissem. pyrite; 3-9': Quartz Vein Zone (40% Qtz) with stringers and veins up to 8"; 21-22': The same.			
22.5	b. Ankerite-Chlorite Schist: Laminated, light grey-green rock with ankerite-chlorite-talc layering at 70-80° to core axis. 26.8': ½" "Brooksite" buff unit. Additional layers at 34, each ½" thick. 41.5-51': Talc-filled cross fractures at 0-25° to ca. 40.1-40.3': silicified; similarly at 45.6-48 and 54.5-57' 57-59.75': Silicified Schist; 59.9-60.5': Silica Vein 60.5-63.5: contorted banding, quartz stringers under 1" (15%) 63.5-63.8': Brown Quartz vein, ground contacts; 64-65': Lost Core 65-67': silicified, pyritized, bleached; 68-72': talc veinlets @ 0° to ca	59.75-60.5		0.03
72.5	c. Chlorite-Sericite Schist: Banded, medium dark green zone with minor quartz-ankerite-sericite seams, banded at 70° to core axis; trace of dissem. pyrite. 72.8-78.2': Fuschite-rich zone; 73.3': brown silica band at 55° to ca 80.2': ½" grey quartz vein. 82.75-83.75': Quartz-Feldspar-Tourmaline vein at 65°/55° to ca. 84-87': silicified.	80.5-82.75 82.75-84 84-87		0.012 0.01 0.01
87.8	d. Quartz Ankerite Breccia. Light medium brown intensely brecciated and altered with ankerite and silica and in-filled with black tourmaline seams. Overall 45% quartz breccia filling. Quartz Zones at 87.8-89.5 & 90.5-91.5.			
91.75	e. Quartz Ankerite-Tourmaline Schist: Finely banded dark brown ankerite/quartz layers at 65° to core axis. Overall yellow-brown green color. 93.5-94.1': Fragmental section.			

EARTH RESOURCE ASSOCIATES: DIAMOND DRILL LOG. PROPERTY: HUNTER , HOLE NUMBER: U-

FOOTAGE	DESCRIPTION OF CORE	SAMPLE NUMBER	ASSAYS	
94.1	g. Sericite Ankerite Schist: Silicification, sericitization and chloritization as laminae at 65° to core axis. Intensely sheared 94.1-101' 94.1-95.3': abt 1% fuschite, 1% pyrite, brown quartz stringers 116-156': local intense sericitization with fuschite also present. 119.5-121.6': Quartz Stringer Zone, trace pyrite, fuschite 122.1: speck of chalcopyrite in 1" quartz stringer 144.3-147.3: Quartz Stringer Zone; black chlorite seams common. 154.5-155.5': Lost Core	134.5-139		0.01
		146-147		0.01
		152-153.5		0.03
156.1	h. Quartz Feldspar Porphyry: Contacts at 80°/35° to core axis. Dark grey with small quartz eyes.	160-163.3		0.015
160.	i. Basalt: Medium grey-green fine to medium grained, finely banded at 80° to core axis. Occasional primary flow features displayed. 160-163.3': Flow top Breccia with 1% disseminated pyrite. 171.4-173.2': 173.4-176.3: chilled, laminated and weakly sheared sections with minor tourmaline, parallel with schistosity which is at 80° to core axis. Occasional thin, weak, quartz stringers.			
178	End of Hole.			

REGISTERED PROFESSIONAL ENGINEER
J.L. KIRWAN
PROVINCE OF ONTARIO