REPORT OF MECHANICAL STRIPPING AND TRENCHING

prepared by

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Prospectors

2005 12 02

Eby Township

HIGHWAY ELEVEN ("40-ACRES") PROPERTY

Patented claim: L-18958

Unpatented claims: 1205843, 1214382, 1214385

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S U M M A R Y

Early in December 2005, Denis Chartre and Roger Dufresne, Prospectors, marked out a new area to be stripped 115.7 metres due west of the tree-line where Ben Berger led an O. G. S. field trip for industry in the Fall of 2003.

At Stop 3 on Highway Eleven near "40 acres" road (claim #1205843) Ben explained that this rock is a clinopyroxenite, part of the Otto Stock with malachite staining along fractures. Ben explained to the group that he collected a grab sample of this material in 2001 that assayed 170 ppb Au, 164 ppb Pd, 55 ppb Pt, 12 ppm Ag, 68 ppm Ni and 6830 ppm Cu. "These numbers are high for this type of rock" says Ben; I suggest to you that there is potential for this type of mineralization in this area. Ben continues by saying that there is more potential for this type of mineralization along the eastern contact of the Otto Stock. (See annex "I-3")

The final draft of Projet Unit 00-010 Geology of Eby and Otto Townships, District of Timiskaming by L. Pigeon and B. R. Berger was obtained from the Ministry "Web Site" SECTION 7, SUMMARY OF FIELD WORK AND OTHER ACTIVITIES 2003, ONTARIO GEOLOGICAL SURVEY, OPEN FILE REPORT 6120, PAGE 7-1 TO 7-8. (See Annex "C-1")

GENERAL GEOLOGY

Eby and Otto townships are underlain by Neoarchean ultramafic, mafic, intermediate and felsic metavolcanic rocks and alkalic extrusive flows with Neoarchean clastic and chemical metasedimentary rocks. These rocks are intruded by Archean felsic rocks of the Round Lake batholith, ultramafic, mafic and felsic alkalic rocks of the Otto stock and Matachewan diabase dikes. (See Annex ("C-1"))

Alkalic matavolcanic rocks are interbedded with clastic metasedimentary rocks correlated with the Timiskaming assemblage and occur south and east of Kenogami Lake in Eby Township. The alkalic rocks are composed of aphanitic, fine grained and amphibole and/or feldspar porphyritic flows, flow breccia, related subvolcanic dikes and sills.

S U M M A R Y (continued)

Mr. B. R. Berger and L. Pigeon suggest that the mafic to ultramafic rocks related to the Otto Stock offer interesting prospects for nickel-copper and platinum group elements (PGE) mineralization.

In early December, 2005, Mr. Martin Crema, armed with a 416 International 4W-Drive Backhoe-Loader (1988 edition), completed the required stripping. The area was mapped and nine samples were taken. Most of the surface rock of this outcrop was exposed because of the moss and root structure was held together by the early frost.

We thank David Guindon, District Geologist Kirkland Lake Region for his assistance in describing the rock-samples that were taken. The samples were a Biotite, Amphibolite with black micas.

The assay results speak for themselves. (See Annex "B-1")

The purpose of the stripping was to expose the structure described by B. Berger, Geologist O.G.S., on the west side of the Highway 11 right-of-way.

Details of the stripping and the taking of samples is shown at Annex "C-3".

Our conclusion and our recommendation for this property is that more exposure of the structure is required; and more samples taken.

Description of Property

The Chartre-Dufresne Eby Township HIGHWAY ELEVEN ("40 ACRES") PROPERTY consists of one patented claim: (L-18958) and 3 unpatented claims: (1205843, 1214382, 1214385 outlined in green). These claims are described as the North West 1/4 of the South 1/2 Lot 1 Con IV, the North East 1/4 of the South 1/2 of Lot 1 Con IV, the South East 1/4 of the South 1/2 of Lot 1 Con IV and the South West 1/4 of the South 1/2 of Lot 1 Con IV, respectively. (See Annexes "A")

LOCATION

The Chartre-Dufresne Eby Township HIGHWAY ELEVEN ("40 ACRES") PROPERTY is located about eleven miles (17.6 K) west of Kirkland Lake and 2 miles south-easterly along Highway 11 where this same highway traverses Lot 1 Con IV in Eby Township. This Property is also located in the Larder Lake Mining Division in the District of Temiskaming. The TransCanada natural gas pipeline crosses the South West 1/4 of the South 1/2 Lot 1 Con IV in Eby Township.

GENERAL GEOLOGY

Howard Lovell reported (in Summary of Field Work, 1967 by the Geological Branch, Miscellaneous Paper 11 p. 64 and p. 65) all bedrock in Eby Township is Precambrian. From oldest to youngest, the rocks are Keewatin-type mafic and felsic flows, tuffs, agglomerates, and iron formation; amphibolite gneiss; Timiskaming-type felsic intrusive rocks; Matachewan-type mafic intrusive dikes, and Cobalt sedimentary rocks. Some of the area formerly mapped as "greenstone" is rhyolite tuff.

Howard Lovell reported (in Geology of the Eby and Otto Area District of Timiskaming 1972, by the Ontario Department of Mines and Northern Affairs Geological Report 99) the map-area (Map 2239) is in the "Abitibi" belt (Goodwin 1966) of Precambrian volcanic, sedimentary, and intrusive rocks that extend from southwest of Timmins, Ontario, to Chibougamau, Quebec. There are representatives in the map-area (Map 2239) of every major division of rocks of the Precambrian stratigraphic column for the northern part of northeastern Ontario. Keewatin-type metavolcanic rocks

GENERAL GEOLOGY (continued)

underlie about two-thirds of Eby Township and one-quarter of Otto Township. They range in composition from basalt to rhyolite, and in metamorphic grade from lower greenschist facies to almandine-amphibolite facies.

L. S. Jensen and F. F. Langford reported (in Geology and Petrogenesis of the Archean Abitibi Belt in the Kirkland Lake Area 1985 by the Ontario Geological Survey, Miscellaneous Paper 123. The Kirkland Lake area is underlain by Archean volcanic, sedimentary, and intrusive rocks which are part of the Abitibi Greenstone Belt (approx. 800km long and 240 km wide). In places, the belt is cut by swarms of the north-trending Matachewan dikes. In the southern part of the Kirkland Lake area, the Archean rocks are unconformably overlain by Proterozoic sedimentary rocks of the Cobalt Group. Several diabase dikes of Keweenawan age cut all the above rocks. Also, in the Kirkland Lake area, the volcanic rocks of the Abitibi Greenstone Belt are preserved in a synclinorium located between the Lake Abitibi Batholith and the Round Lake Batholith. The axis of the synclinorium occurs midway between the 2 batholiths and plunges to the east. The northern and southern limbs of the synclinorium are cut by 2 large east-striking fault zones: the Destor - Porcupine Fault Zone, and the Kirkland Lake - Larder Lake Fault Zone, respectively.

STRUCTURAL GEOLOGY

Howard Lovell continues by saying (page 65 Misc. paper #11) that the Keewatin-type rocks form a northwest-plunging synclinorium has been re-folded. The younger syncline strikes northeast, approximately parallel to the belt of Timiskaming-type rocks.

Strong faults and lineaments strike northwest and northeast. The most important northeast-striking feature is the Larder Lake fault zone, which extends through the northern part of Eby township.

Howard Lovell continues by saying (page 15 Geological Report #99) the Archean metavolcanics and metasediments are folded steeply, with attitudes conforming roughly to the nearest contacts of the Round Lake Batholith and the Otto Stock.

ECONOMIC GEOLOGY

Howard Lovell continues by saying (page 65 Misc. Paper 11) that iron formation is present as long narrow zones interbedded with tuff and agglomerate of rhyolitic, dacitic, and andesitic composition. Much of the iron formation consists of banded magnetite and chert, some areas of which cause high aeromatic anomalies. Also present are large zones of pyrite-pyrrhotite-magnetite iron formation containing low percentages of copper and nickel. The greatest known concentrations of sulphides are in concession III, lots 1, 2, 3, and 4, and in concession IV, lots 1 and 2.

Exploration for gold should be concentrated in the two northern concessions, in syenite, trachyte, and carbonate rocks.

Howard Lovell continues by saying (page 16 Geological Report 99) that three facies of iron formation are present in the map-area (Map 2239): magnetite-chert, graphite-pyrite-pyrrhotite, and carbonate. Most of the exploration for gold has been concentrated in syenite, trachyte, and carbonate rocks along the Larder lake Fault, so most of the carbonate rocks have not been thoroughly explored. He recommends: surface prospecting, soil and bedrock geochemistry, and greater use of geology during interpretation of geophysical work; this would provide more rewarding drill targets.

Howard Lovell reported (in Annual Report of the Regional and Resident Geologists 1974, Miscellaneous Paper 60, 1975) that most of the gold probably originated from ultramafic rocks, syenitic rocks and clastic and chemically precipitated sedimentary rocks, most of which built up from the sea bottom to form an island arc. The principal host rocks of the gold mineralization are:

a) syenite and trachyte (some of the trachyte is tuffaceous), and related porphyritic rocks;
b) low grade Algoma-type iron formation of the sulphide and carbonate facies, with some of the carbonate rocks having a spatial and possibly genetic relationship to ultramafic rocks; and
c) Timiskaming-type metasediments, which additionally form the bulk of the country rocks.

ECONOMIC GEOLOGY (continued)

T. L. Wells, Engineer with Erie Canadian Mines reported in 1938 that gold was found on claim L-17404 (North East 1/4 of North 1/2 Lot 5 Con V) (1/2 mile North of Chartre-Dufresne Eby Property #1) in a quartz stringer. Two samples yielded 2.74 oz/ton Au and 0.06 oz/ton Au, respectively.
This information is also reported in Mineral Resources and Mining Properties in the Kirkland Lake-Larder Lake Area in the Ontario Department of Mines Mineral Resources 1964 Circular #3 on page 72.

Gold was also discovered on the Baldwin Consolidated Mines Property in the Northeastern corner of Eby Township. G. L. Holbrooke reported that several small but rich gold ore-bodies lying in the zone are associated with the more easily fractured syenite rocks. The only gold values of economic importance found on the property to date occur where the N. 20 degrees East set of faults cut the vein system. (See Ontario Department of Mines Vol. LVII, Part I, 1948 (Special note from Annual Report for the Kirkland Lake Resident Geologist's District 1992 and Ontario Geological Survey Miscellaneous Paper 161 81 tons of ore were milled yielding 43 oz of gold and 81 oz of Silver at a average grade of 0.531 oz Au/t.

It has been reported that there were favourable environments for gold in the Kirkland Lake-Larder Lake Camp. In the Larder Lake sector, gold mineralization is associated with carbonatized ultramafic rocks along the Larder Lake Fault, whereas around Kirkland Lake gold mineralization occurs in sheared syenitic intrusions, trachytic flows and sedimentary rocks along the Kirkland Lake Fault. The Larder Lake Fault zone can be traced across the camp where it generally marks the boundary between the Temiskaming sediments and Larder Lake Group. This same structure continues below the cover of Cobalt Group sedimentary rocks along the Kirkland Lake Fault. Carbonatized komatiitic ultramafic and mafic levels would be expected along this whole area immediately south of the Larder Lake Fault. Also, there are subsidiary faults that parallel the major structure.

ECONOMIC GEOLOGY (continued)

L. S. Jensen reported (page 119 Ontario Geological Survey Miscellaneous Paper 126 1985) that gold mineralization in the area mainly occurs in the Larder Lake and Temiskaming Groups. The gold mineralization closely follows the stratigraphy of the sedimentary rocks. Secondary and tertiary concentration of the gold is likely to have occurred in volcanic rocks which incorporated sedimentary material, and in quartz-carbonate veins, syenitic intrusions, in fractures and alteration zones.

L. S. Jensen continues by saying that in the Temiskaming Group, the gold in the Kirkland Lake camp occurs in quartz-filled fractures and alteration zones associated with the Kirkland Lake 'Break' and in the feldspar porphyries which cut the Timiskaming Group trachytes and sedimentary rocks.

LOCAL GEOLOGY

L. S. Jensen reported in Genesis of Archean, Volcanic Hosted Gold Deposits 1980 (in the Ontario Geological Survey Miscellaneous Paper 97) that the dominant feature of the Kirkland Lake-Larder Lake area is the major fault system that appears to extend from Matachewan in the west through Noranda towards Val d'Or. In many places this fault system is obscured by only slight displacement of the younger Proterozoic rocks. The older the rocks, the greater is the displacement. This suggests that the fault system has been active since the initial deposition of volcanic and sedimentary rocks in the area without a doubt this same fault system has influenced the deposition of these rocks and their alteration along its length. Gold mineralization is found in several rock types: gold-bearing ultramafic intrusions, laval flows (komatiites), debris flows, felsic tuff, chert, iron formation, carbonaceous sedimentary rocks, argillite, conglomerate, porphyritic intrusions and granitic intrusions. The range of mineralization is much greater than that associated with massive suphide deposits. L. S. Jensen continues by saying that gold exploration should be concentrated near major fault zones which mark the tectonic boundary between volcanic piles or between volcanic piles and gneissic terrains which have sedimentary aprons.

LOCAL GEOLOGY (continued)

W. S. Savage in Mineral resources and Mining Properties in the Kirkland Lake-Larder Lake Area (Mineral Resources Circular No. 3 (See Annex "H - 13C") reported that the formations of economic interest belong to the earlier Precambrian era: volcanics, sediments and intrusives. The Break is a strong wide carbonized shear zone, characterized by the presence of green mica and quartz stockworks. The Break or its branches appear to have had some influence on the localization of most of the ore bodies. From the southern part of Teck township the Break has been traced southwestward to where it is overlain by the later Cobalt series in Eby Township. The amount of displacement along the Break could be hundreds of feet or in miles says W. S. Savage. The Keewatin and Timiskaming series were then invaded by Algoman intrusives: stocks, dikes, irregular-shaped bodies of granite to diorite or lamprophyre. In Teck Township the most important of the intrusives are the syenite, augite syenite and syenite porphyry.

W. S. Savage continues by saying that following the emplacement of the intrusives, hot circulating solutions produced carbonate replacements along pre-existing faulted zones. This carbonatization was followed by the faulting which opened up channelways for the later solutions that produced the gold-bearing veins in the Kirland Lake camp. The Kirkland Lake Fault branches away from the Larder Lake Break in the vicinity of Kenogami Lake. Minor faults which branch off the "MAIN BREAK' have been important sources of ore.

HISTORY

1924 - Walter Little staked 3 claims (L-14098, SW 1/4 N 1/2 Lot 3 Con IV; L-14099, SE 1/4 N 1/2 Lot 4 Con IV, L-16679, SW 1/4 N 1/2 Lot 4 Con IV) in Eby Township. These claims were patented between April, 1930 and May, 1933. 200 man-days of labour was performed on each of these claims.

1935 - V. Jordan for Erie Canadian Mines reported that, re: Walters Claims in Eby Township (L-17402, L-17403, L-17404, L-19129, L-16740, L-9846, L-9848, L-17715 and L-16750, located in lot 5 Con 5 and Con 6) some gold (Au $6.00 per ton) was found in a 30" quartz

vein also carrying iron sulphides and molybdenite on claim L-17402. M.D.I. says that quartz vein is nearest the SE-end of Kenogami Lake.

1935 - W. S. Dyer reported in Ontario Department of Mines Vol. XLIV, Part II, 1935 Geology of the Matachewan-Kenogami Area that the Keewatin greenstones and Timiskaming sediments extend eastward from the Matachewan area through the townships of Holmes, Flavelle, Burt, and Eby, to the Kirkland Lake area. Numerous stocks and dikes of igneous rocks of varied type, including red syenite porphyry, pink syenite, and dark-grey diorite, cut through the greenstones in various places, and coarse-grained granites are found on the flanks of the syncline. Such an assemblage of rocks constitutes in general good prospecting territory, especially when the territory lies between such important gold camps as Kirkland Lake and Matachewan.

1938 - A. Johnson reported work on three claims (# 18845, SE 1/4 of S 1/2 of Lot 3 Con 4; # 24935, NW 1/4 of N 1/2 Lot Con 3; # 18506, NE 1/4 of N 1/2 of Lot 3 Con 3) in Eby Twp. Gold was found in pits and trenches (0.1 to 0.3 oz. Au/ton).
M.D.I. says that other minerals available are quartz and pyrite.

1938 - Erie Canadian Mines reported on a group of 5 claims (Mundy Group: L-12980, L-15640, L-14992, L-14989 and L-15641 located 1 1/2 miles south of Kenogami Lake, described by H. L. Lovell as the NE 1/4 of N 1/2 of lot 11 Con IV. Stripping and trenching was done. Results reported were trace, $0.40 and $0.80 cents worth of gold per ton (gold at about $35 U.S. per ounce).
M.D.I. says other minerals available are quartz and pyrite.

1939 - D. K. Burke representing Sylvanite Gold Mines, Limited reported that, re: Rogick-Elliot-Clark group of claims (claims 18837, 18227, 8803) located in the NW 1/4 of the south 1/2 Lot 5 Con 6 and NE 1/4 of the south 1/2 Lot 5 Con 6 and NW 1/4 of the south 1/2 Lot 4 Con 6, respectively in Eby Twp., a feldspar-porphyry dyke containing quartz streaks with some showing visible gold in a 40 ft trench. M.D.I. says that other minerals available are quartz and pyrite.

1941 - Sylvanite Gold Mines Ltd. reported on claims located in Lot 2 Con IV and V in Eby Township. In a 10' to 20' quartz vein, part of a shear zone on claim # 32352 (NE 1/4 N 1/2 Lot 2 Con IV) samples indicated trace to $0.80 worth of gold per ton.

1944 - J. A. Lumsden reported that claims L-17609 and L-17610 located in the NW 1/4 of the south 1/2 Lot 4 Con 5 and the NE 1/4 of the south 1/2 Lot 4 Con 5, respectively in Eby Twp. have a 40 ft prospector's shaft in the southwest corner where $5.00 gold was found. M.D.I. says that other minerals available are quartz and pyrite.

1944 - W. S. Savage, Resident Geologist, reported re: Todora Kirkland Prospecting Syndicate (9 unpatented and 2 patented claims: 52417, 52418, 52419, 52426 in the S 1/4 of lots 1 and 2 Con VI Eby Twp.; 52430, 52427, 52428, 52429, 16010, 9465 in the N of Lot 1 Con V and one claim in Otto Twp: 39855 in the SW 1/4 of the N 1/2 of lot 12 Con V). Old pits and trenches were found. Cpy, Mo and Au was found in quartz, up to 13.39 Cu

1945 - G. L. Holbrooke for the Sylvanite Gold Mines, Limited reported on the Sylvanite Eby Claims: 9 claims (L-42150, L-42151, L-42152, L-42153, L-42154, L-42155, L-42156, L-42157, L-42158 in lots 7 and 8 Con V) such claims are underlain by a series of Keewatin greenstone lava flows cut by occasional sheer zones. Sylvanite found trace up to 0.023 oz. Au/ton in trenches.

1945 - G. L. Holbrooke for Sylvanite Gold Mines, Limited reported on the Rosa Brown Claim # L-17990 located in the NW 1\4 of N 1/2 of Lot 1 Con 6 in Eby Township. He reported that the greenstone contact of the area crosses the northern part of this claim. Several quartz veins and numerous quartz stringer zones were also found in the carbonate areas.
M.D.I. says Quartz and pyrite are also found.

1946 - G. L. Holbrooke reported for Baldwin Consolidated Mines Limited re: property located in the Northeast corner of Eby Township (All of N 1/2 lot 2 Con VI, NW 1/4 N 1/2 Lot 1 Con VI, NW 1/4 N 1/2 Lot 3 Con VI). Surface trenching and 12,000 feet of surface and underground drilling were performed. The lavas to the south exibit definite evidence of broad folding and some faulting. The main contact itself trends east-west across the N 1/2 of Lot 2 Con VI and NW 1/4 of Lot 1 Con VI. In this area the main contact is strongly sheared and altered over widths of 30' to 200'. A 50' wide zone of intense carbonization and silification is cut by later quartz-filled fractures. Several small but rich gold ore-bodies lying in the zone are associated with the more easily fractured syenite rocks. M.D.I. says shaft is located in the NE corner of the township.

1948 - G. L. Holbrooke's report is repeated with the addition of information re: cross-veins that show a general north-south trending direction.

1950 - R. E. Jones for Preston East Dome Mines, Limited reported on a 4 claim group (L-54861, L-54862, L-54863 and L-54864 located in N 1/2 of lot 8 Con III of Eby Twp. He found narrow mineralized shears: one of these shears contains gold values (no assay values are reported). M.D.I. says other minerals available are quartz and pyrite.

1952 - Dominion Gulf Company completed: line cutting, a ground magnetometer survey and a geological survey on 13 claims (L-57598-L57610) located in lots 7, 8, 9, 10, 11, Concession 5 in Eby Twp. C. G. MacIntosh found evidence of faulting and weak shearing. J. H. Ratcliffe in his interpretation of the ground magnetometer survey found a magnetic anomaly (diabase dike) striking northeasterly; faulting in three main directions is identified: northeast, northwest and north.

1663 - W. S. Savage reported re: Kelly Kirkland Mines Limited Property located in Eby Township (Northeast 1/4 of the North 1/2 Lot one Con VI, claim L-16423) that an east-west trending ridge of syenite porphyry is located south of the Larder Lake Break. Gold was found on this ridge of syenite porphyry.

1963 - W. S. Savage reported in Mineral Resources and Mining Properties in the Kirkland Lake-Larder Lake Area (Mineral Resources Circular No. 3). W. S. Savage, Resident Geologist, Ontario Department of Mines, Kirkland Lake. He says that his experience gained from widespread exploration throughout the Kirkland Lake-Larder Lake gold belt has shown that ore bodies have a closer relationship to structures than rock types. Ore is found in all rock types of the camp with the exception of a few late diabase dikes.

1965 - Keevil Mining Limited completed work in NW 1/4 of the N 1/2 of Lot 3 Con III and S 1/2 of Lot 4 Con III in Eby Township. Work consisted of geological, magnetometer, and vertical loop surveys and diamond drilling. 4 strong conductors and 4 weak conductors were found. The strong anomalies have excellent magnetic correlation. Drilling found iron sulphides and 0.005 oz Au/ton in sludge.
M.D.I. says copper, zinc, pyrite, pyrrhotite, magnetite and chlorite are also found.

1966 - H. D. McLeod reported on the magnetometer survey on claims L-90284, L-90285, L-90286 and L-90287 (Taylor Gold Mines Ltd.) located in the NW 1/4 of S 1/2 Lot 3 Con 5 and the NE 1/4 of the South 1/2 Lot 3 Con 5 and the SE 1/4 of the N 1/2 of Lot 3 Con 5 and NE 1/4 of N 1/2 of Lot 3 Con 5 respectively in Eby Twp where East-West trending high magnetic anomalies were outlined.

1969 - M. Fishkin reported on a block of claims (213461, 102051, 102108, 102149, 101998, 1022052, 102107, 102148, 102050, 101999, 102106 and 102150 in lot 2 Con III, Con IV and Con V) located in Eby Twp. Diamond drilling was performed on claim 213461 and and claim 102106. Quartz, epidote and pyrite with a little chalcopyrite and sphalerite were detected.

1981 - John Britton reported for Noranda Exploration Company re: an electromagnetic and magnetometer survey completed on a group of 7 unpatented claims which covers the N 1/2 of Lot 2 Con III and S 1/2 of Lot 2 Con IV except the Northwest 1/4 of South 1/2 Lot 2 Con IV. Conductors B-B, C-C and D-D should be carefully prospected. Conductor A-A is close to an old pit in which there was pyrite and pyrrhotite with a low copper content.

1983 - S. J. Carmichael reported for Hemlo Reef Resources on work performed on 57 mining claims and 16 optioned patents located Lots 5-11 Con IV and Con V in the northwest quarter of Eby Township. The purpose of the work was to delineate a possible zone of sediments which may be conductive to syngenetic gold mineralization. The work consisted of geological mapping and a proton magnetometer survey. Mineralization occurs in quartz and quartz\carbonate veins in basalt, interflow pyritic cherty sediments and in carbonates. The best gold values (0.08 oz /ton Au) occur in cherty banded pyritic mudstones on the hanging wall of the northern sedimentary sequence.

1985 - S. J. Carmichael reported on the Eby Township Gold Property, Larder Lake Mining Division of Mary Ellen Resources (58 contiguous unpatented and 25 patented claims). The work consisted of ground magnetometer, V.L.F., geological and selected humus geochemical surveys. The claim block is located in north-west Eby Township, concessions 4 and 5, lots 5-11. Gold was found in quartz veins, stringers, high iron tholeiitic basalt, iron formation, possible carbonate horizon, quartz-sulfide mineralization. Volcanics and interflow sediments of the Larder Lake Group occupy the northeast quarter of the property and offer the highest potential to host economical gold deposits. Interflow units include green fuchsite-rich chemical carbonates, magnetite-hematite iron formation and pyritic cherts.

1985 - Mary Greer for A. H. Perron completed a geological survey, a geophysical and mag survey on three claims (739256, 799559 and 799560; SW 1/4 of S 1/2 Lot 4 Con V, SE 1/4 of S 1/2 Lot 4 Con V and NE 1/4 of N 1/2 of Lot 4 Con IV, respectively) in Eby Twp. A north east west conductor may be associated with a magnetic anomaly crossing the property. Old trenches were found.

1988 - J. R. Lawton and I. D. Trinder for Butte Canyon Resources Inc. completed geological mapping, lithogeochemical sampling program, VLF and horizontal loop electromagnetic surveys on 31 claims (in lots 1, 2 and 3 Con III, Con IV and Con V in Eby Township). The highest gold value returned was 81 ppb Au (trace to 0.002 oz. /ton) which, while slightly anomalous, is not significant. Platinum-palladium analytical results are quite interesting and indicate a couple of anomalous zones. The HLE Survey indicates several parallel conductive trends having very high conductivity characteristics, suggesting cross-faulting.

1988 - S. J. Carmichael reported for Mary Ellen Resources on claims L-980369 and L-980368 in Eby Twp. (NW 1/4 of N 1/2 Lot 3 Con V and NE 1/4 of N 1/2 Lot 3 Con V) A V.L.F. survey, trench work and sampling were completed on the property. A week anomaly was detected. Trenching indicated that anomally is a north-east trending fault.

1990 - S. J. Carmichael reported on the work performed on the Eby Township claim group held by F. Rivard (15 claims: L-735598, L-738544, L-738545, L-738546, L-735597, L-735596, L-735464, L-842693, L-980065, L-980067, L-891900, L-980069, L-980066, L-891905, L-980068 located in lots 1, 2 and 3 Con III and Con IV). Two holes were drilled for a total of 1016.5 ft. Anomalous gold was discovered in association with bleaching of the syenite, perhaps related to shearing. Some selected stripping was performed.

1992 - Nick Regas, Geologist spent 26 days prospecting on the Eby West Property (128 ha. N 1/2 Lot 8 and 9 Con III) where a 50-metre wide shear zone was discovered. Several quartz veins and alteration zones yielded low grade gold (best 298 Ppb's). After 7 days of prospecting on the Eby-East Property (S 1/2 Lot 2 Con V, N W 1/4 and N E 1/4 of N 1/2 Lot 2 Con IV) some intensely silified cherty rocks in intermediate to mafic volcanics and gabbros were found on a road cut. Low grade gold was found. (Best assay 19ppb's)

1992 - W. Benham and K. Barron of Battle Mountain (Canada) Inc. reported re: Vigrass Lake Property located in Teck, Otto, Eby and Grenfell Townships. Geological mapping, stripping, channel sampling and drilling were completed. The property is underlain by Timiskaming Group trachytic volcanics and sediments and Larder Lake Group mafic to ultramafic volcanics with interbedded graphitic sediments. The larder Lake and Blanche River Fault Zones cross the property. Sub-parallel and splay faults, altered pyritic syenites, volcanics and sediments associated with these structures are present on the property.

1992 - J. Roth of Stratagex Ltd. reported on behalf of Battle Mountain (Canada) Inc. re: magnetic and HLEM Surveys on the Vigrass Lake Property (see above) that the structural regime is dominated by a network of faults and / or shear zones trending east-west to east-northeast, comparable to those recognized as important in controlling known gold mineralization.

1994 - D. Robinson completed geological mapping, magnetic total field-gradient survey and MaxMin survey on two claim groups in Eby Twp. The SE Group represents 6 claim units (# 1186976 - NW 1/4 of S 1/2 Lot 2 Con V and NE 1/4 of S 1/2 Lot 3 Con V, # 1200893 - S 1/2 of S 1/2 Lot 2 Con V, # 1200894 - N 1/2 of N 1/2 Lot 2 Con IV). Two strong alteration zones were identified in the north half of the SE Group. These two zones appear to have an east northeast trend.

2001 B. R. Berger, Geologist in the Precambrian Geological Section O.G.S., D. Guindon, District Geologist Kirkland Lake Region O. G. S. and G. Grabowski, District Geologist Kirkland Lake Region O. G. S. reported in ONTARIO GEOLOGICAL SURVEY Open File Report 6070 (Summary of Field Work and Other Activities 2001, Project Unit 10), that a Geological Reconnaissance along Highway 66, from Matachewan to Swastika had begun.

The purpose of this multi-year project is to re-map and improve the geological database.

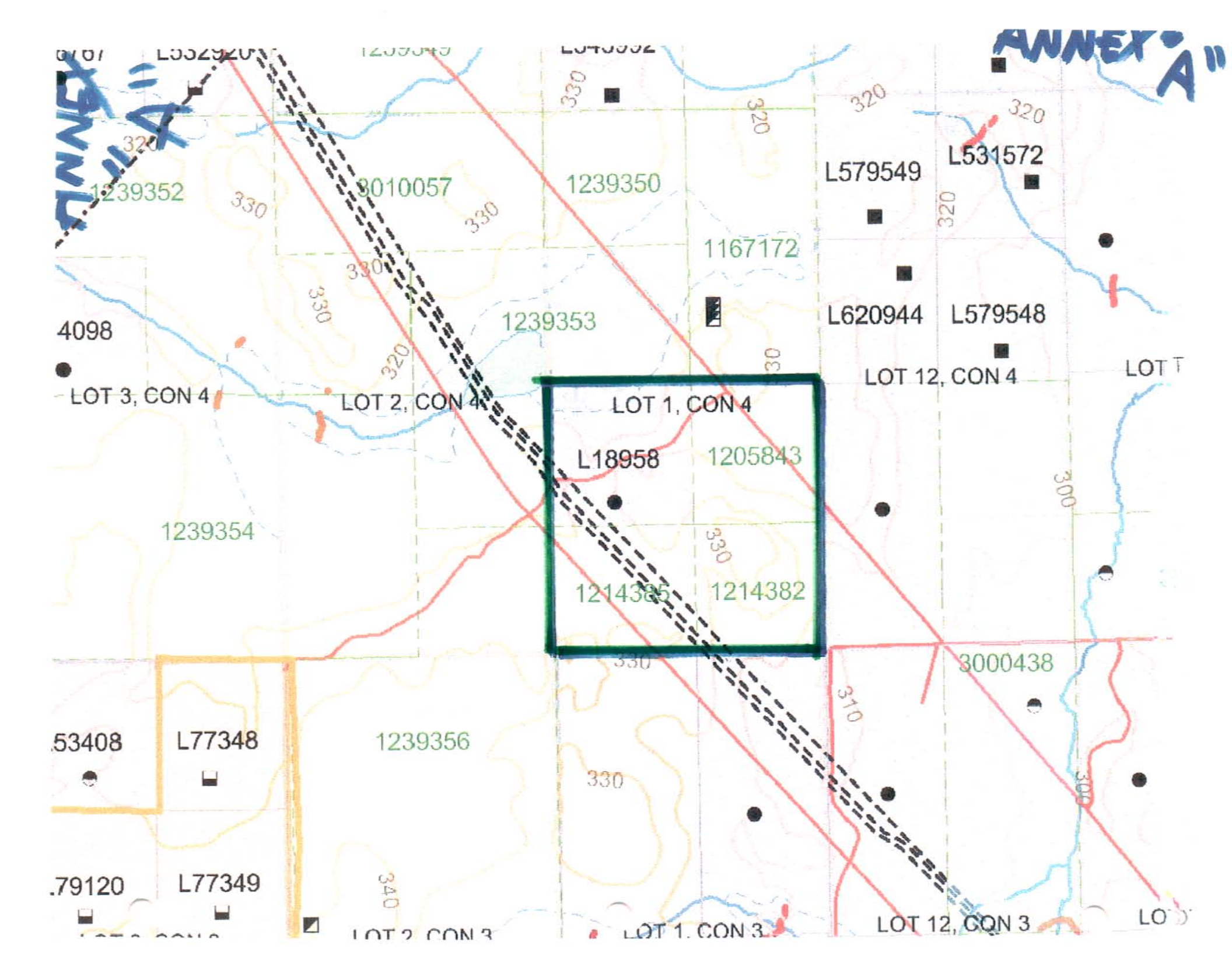
B. R. Berger reports that the Otto Stock, in Otto and Eby townships is characterized by nepheline-bearing syenite, quartz syenite and includes previously unrecognized mafic and ultramafic alkalic gabbro, hornblendite and lamprophyre phases.

Also Ben tells us that in the southern part of the map area, calc-alkaline felsic intrusions (gneiss, tonalite, quartz monzonite and granodiorite) are found. The mafic and ultramafic phases of the alkalic intrusions are commonly enriched in platinum group elements (PGE) and the hornblendite, alkalic gabbro and lamprophyre of the Otto Stock are potential host rocks of this type of mineralization.

Sample 01-BRB-019 taken on claim #1205843, along Highway 11, showed values in Au, Pd, Pt and Cu. (See Annex "I-1")

2002 Roger Dufresne, Denis Chartre and Paul Chartre visited the property, in early May 2002, after the snow melt, and took our own samples on each side of Highway Eleven on claim #1205843. (See invoice and assays at annex "B-1") Best assays are 0.024 oz/ton Au, 5380 ppm Cu, 219 ppb Pd.

2004 Denis Chartre and Roger Dufresne, prospectors, assisted by Paul Chartre completed and reported on mechanical stripping and trenching, 40 metres west of the highway right-of-way. Dave Guindon, District Geologist Kirkland Lake Region O. G. S. described the samples for us but no values were found. The ore zone appeared to have dipped so sharply to the west that our excavation and stripping did not reach it.


ANNEX "A"
L579549
L531572
1239352
3010057
1239350
1167172
L620944
L579548
4098
1239353
LOT 3, CON 4
LOT 2, CON 4
LOT 1, CON 4
LOT 12, CON 4
L18958
1205843
1239354
1214385
1214382
3000438
53408
L77348
1239356
79120
L77349
LOT 2, CON 3
LOT 1, CON 3
LOT 12, CON 3

N

lot-05

lot-04

lot-03

lot-02

lot-01

EBY TOWNSHIP

OTTO TOWNSHIP

HIGHWAY-11

conc. V

1214384

1225485

1

1186492

4

16679

2

3

14099

14098

DECEMBER 01, 2005 STRIPPED AREA

5

6

18958

7

1205843

R. 31321

1214385

1214382

conc. IV

highway 66

CLAIM MAP

CHARTRE - DUFRESNE PROPERTY

2005 STRIPPING PROJECT

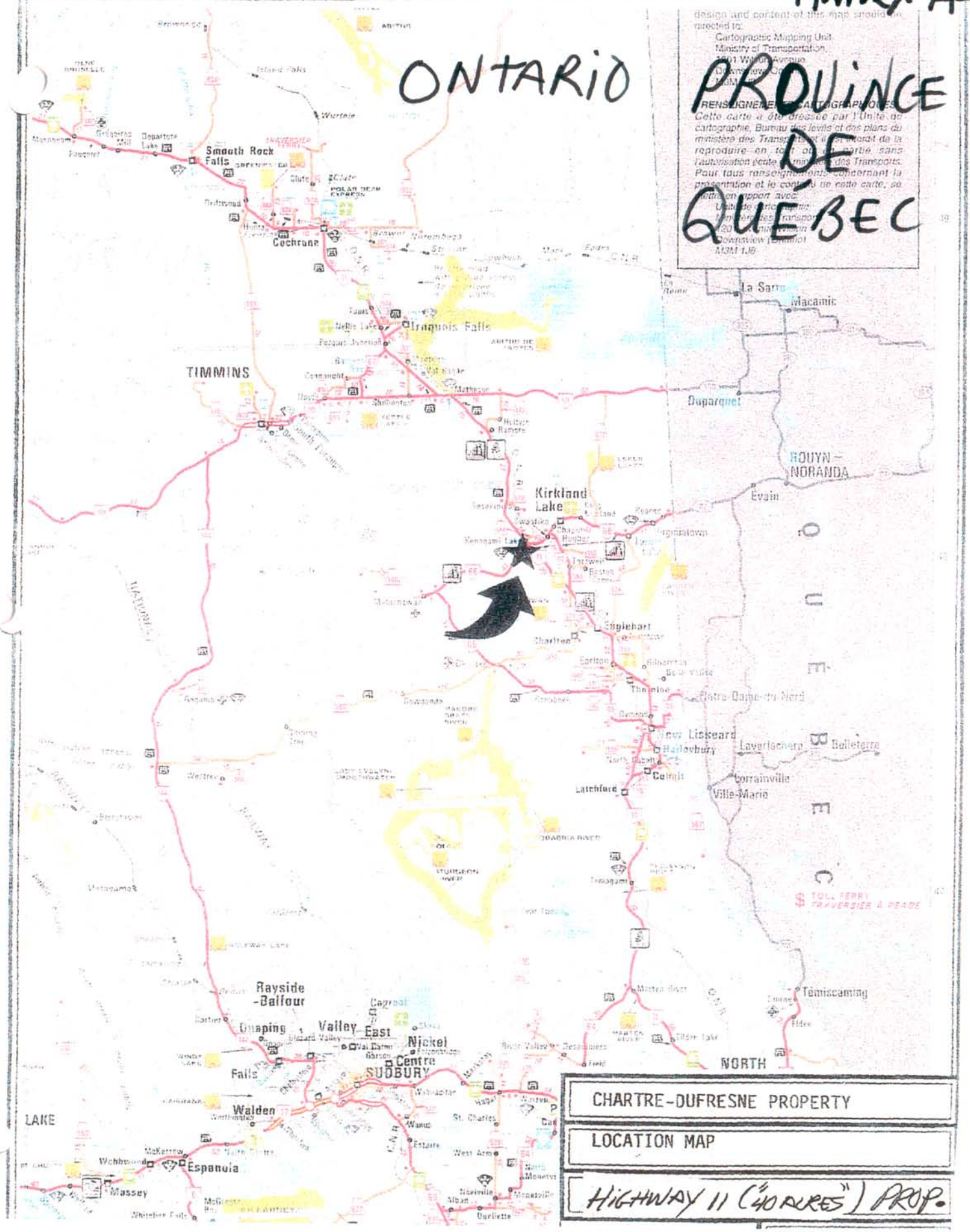
EBY TOWNSHIP

DECEMBER 01, 2005

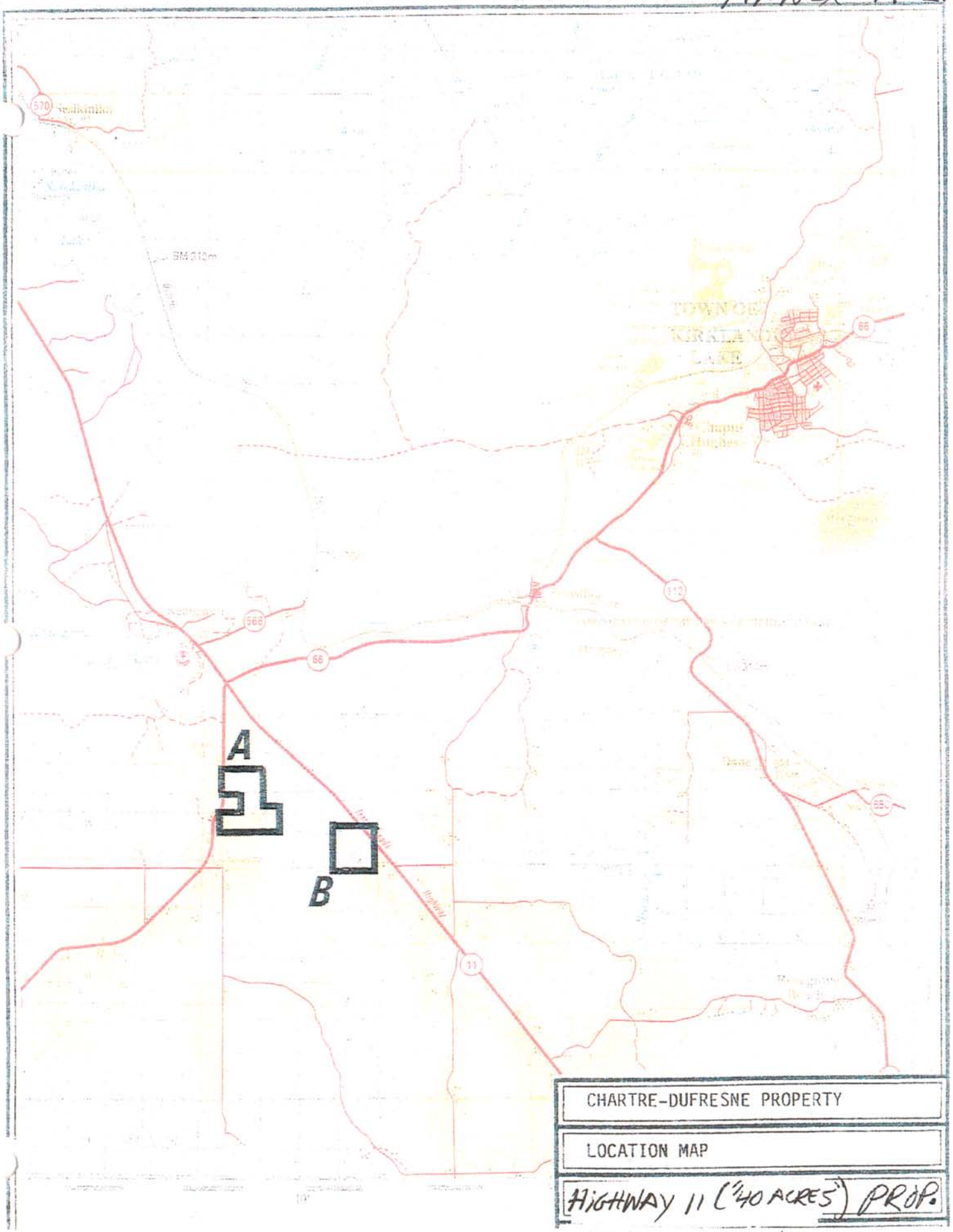
1 : 12 500

SERVICES EXPLORATION ENR.
765 BOUL. QUEBEC, ROUYN-NORANDA, QUEBEC, J9X-7A8
Tel. 819-797-0863 FAX 819-797-1846
SANS FRAIS/TOLL FREE
Tel. 1-800-567-6053 FAX 1-800-561-1846

ANNEX A-2


ONTARIO
PROVINCE DE QUEBEC
Smooth Rock Falls
Cochrane
TIMMINS
Iroquois Falls
Kirkland Lake
Englehart
Latchford
New Liskeard
Haileybury
Cobalt
Rouyn-Noranda
Evain
Duparquet
La Sarre
Macamic
Témiscaming
Rayside-Balfour
Chelmsford
Valley East
Nickel Centre
SUDBURY
Walden
Espanola
Massey
LAKE
NORTH
CHARTRE-DUFRESNE PROPERTY
LOCATION MAP
HIGHWAY 11 ("40 ACRES") PROP.

ANNEX "A-2A"


570
Wolkinkin
SM 312m
TOWN OF
KIRKLAND
LAKE
66
112
568
66
A
B
11
CHARTRE-DUFRESNE PROPERTY
LOCATION MAP
HIGHWAY 11 ("40 ACRES") PROP.
E BY TOWNSHIP

ANNEX "A-3"

Ontario

Ministry of Northern Development and Mines

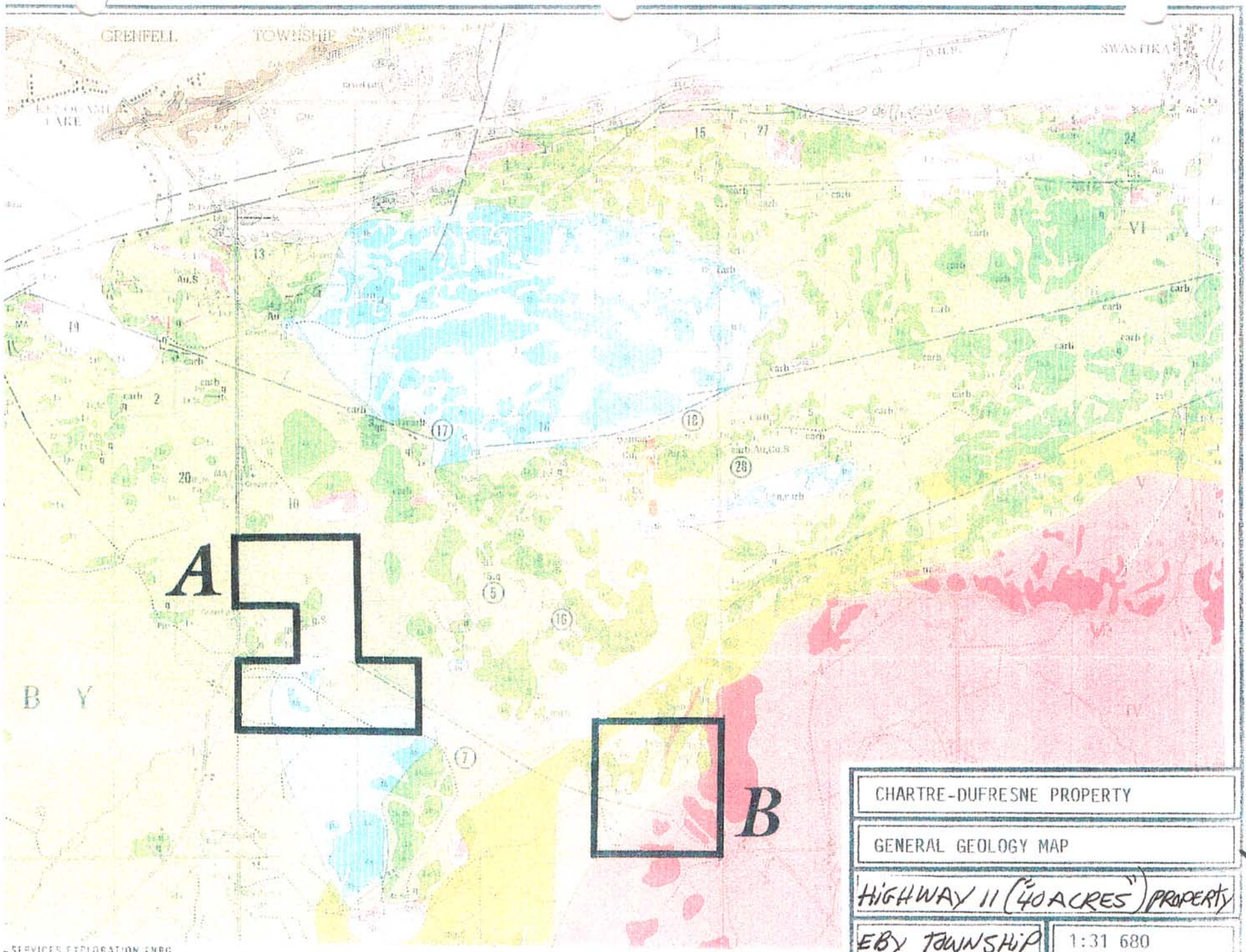
Tuesday, October 18th, 2005

Mining Claim Client Reports

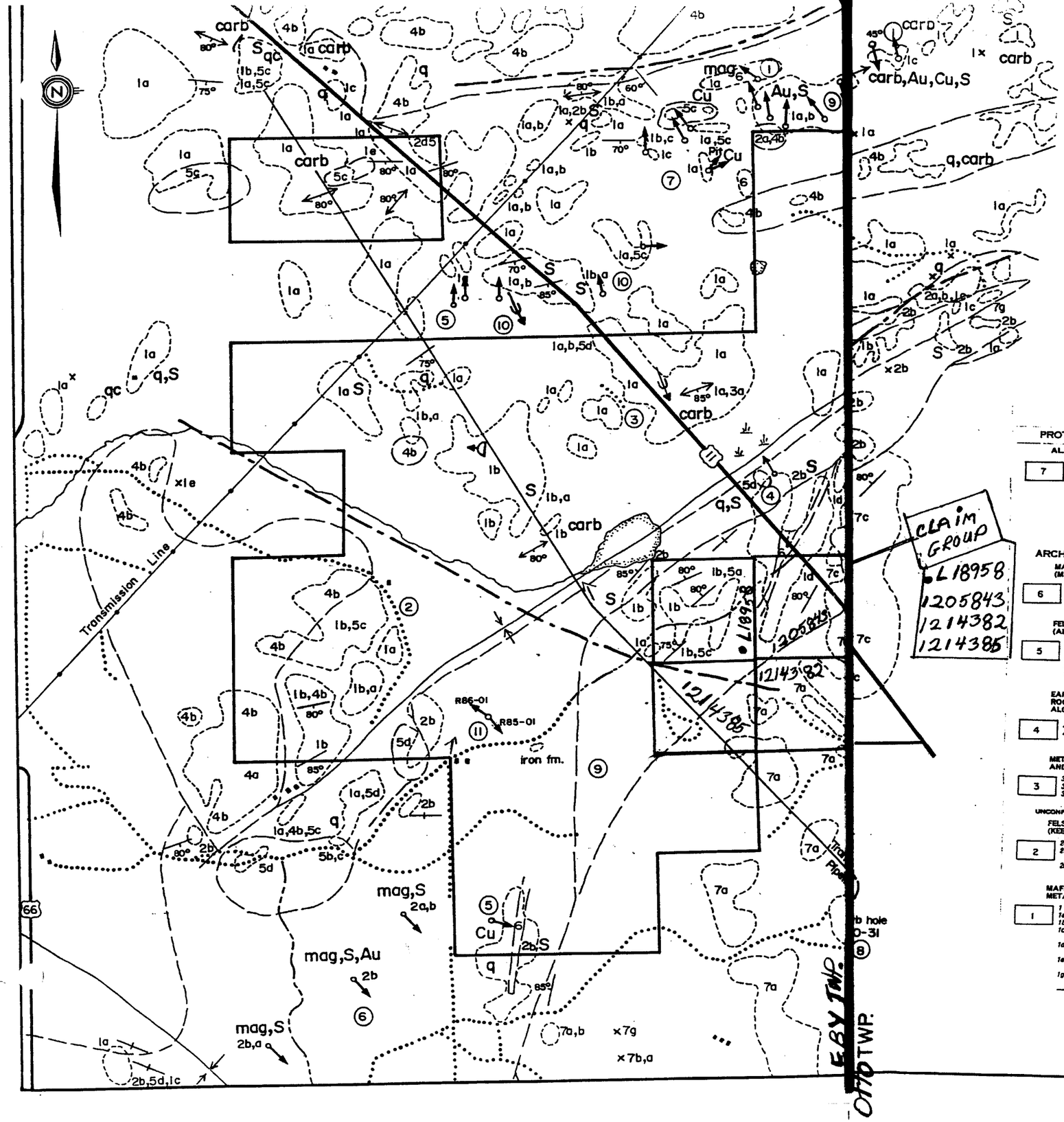
| Main Menu | Back |

LARDER LAKE Mining Division - 127749 - DUFRESNE, ROGER J.

Township/Area	Claim Number	Recording Date	Claim Due Date	Status	Percent Option	Work Required	Total Applied	Total Reserve	Claim Bank
[redacted]									
EBY	1186492	1997-Nov-25	2008-Nov-25	A	100 %	$ 400	$ 3,600	$ 3,511	$ 0
EBY	1205843	1998-Apr-28	2006-Apr-28	A	100 %	$ 102	$ 2,698	$ 0	$ 0
EBY	1214382	1998-Apr-28	2006-Apr-28	A	100 %	$ 102	$ 2,698	$ 0	$ 0
EBY	1214384	1997-Nov-25	2008-Nov-25	A	100 %	$ 400	$ 3,600	$ 0	$ 0
EBY	1214385	1998-Apr-28	2006-Apr-28	A	100 %	$ 101	$ 2,699	$ 0	$ 0
EBY	1225485	1997-Nov-25	2008-Nov-25	A	100 %	$ 400	$ 3,600	$ 6,824	$ 0


GRENFELL
TOWNSHIP
A
B
B Y
CHARTRE-DUFRESNE PROPERTY
GENERAL GEOLOGY MAP
HIGHWAY 11 ("40 ACRES") PROPERTY
EBY TOWNSHIP
1:31 680
SERVICES EXPLORATION ENRG

ANNEX "A-44"



EXPLORATION HISTORY

No.	Date	Property/Prospector Name	Type of Exploration	Significant Results
(1)	1930-48	Todora Kirkland/ Macassa	geol., 11 ddhs, 121 ft. shaft	Cpy, Mo, Au in qtz., up to 13.39% Cu
(2)	1938	A. Johnson	3 pits	up to 0.1 to 0.3 oz. Au/ton
(3)	1945	Sylvanite	trenches	trace to 0.023 oz. Au/ton
(4)	1955-57	Mr. Ahola	2 shafts, trenches, 1 ddh	up to 0.2 oz. Au/ton in tuff and qtz. veins
(5)	1965-69	M. Fishkin	3 ddhs	cpy + abund. py, cpy in south hole
(6)	1965-66	Keevil	geol., mag, EM, 3 ddhs	8 conductors, iron fm with 15%-80% sulphides 0.005 oz. Au/ton in sludge
(7)	1978-80	P. Harrington	5 ddhs	-
(8)	1980	KLIP	1 OVB hole	3,200 ppb Au in basal till
(9)	1980	Noranda	mag and EM, 1 ddh	3 short, strong conductors, up to 0.016 oz. Au/ton over 1 m
(10)	1980-84	J. Reed	geol., mag, EM, 3 ddhs	0.005 oz. Au/ton in grab, up to 0.01 oz. Au/ton over 1.5 m in core
(11)	1984-86	F. Rivard	trenching, 2 ddhs	up to 0.04 oz. Au/ton in grabs

2.31327

LEGEND

PROTEROZOIC

ALKALIC INTRUSIVE ROCKS

7 — 7a Coarse-grained syenite, syenite porphyry, pegmatite.
7b Mafic syenite, syenite contaminated by country rocks.
7c Medium-grained syenite, aplite dikes.

INTRUSIVE CONTACT

ARCHEAN

MAFIC INTRUSIVE ROCKS (MATACHEWAN OR NIPISSING)

6 — 6 Diabase.

INTRUSIVE CONTACT

FELSIC INTRUSIVE ROCKS (ALGOMAN)

5 — 5a Granite, porphyritic granite, granodiorite.
5b Granodiorite gneiss.
5c Syenite and trachyte.
5d Mafic syenite and mafic trachyte.

INTRUSIVE CONTACT

EARLY MAFIC AND ULTRAMAFIC ROCKS (HAILEYBURIAN, EARLY ALGOMAN, AND KEEWATIN)

4 — 4a Serpentinite, peridotite.
4b Gabbro, diorite.

INTRUSIVE CONTACT

METASEDIMENTS (TIMISKAMING AND KEEWATIN)

3 — 3a Conglomerate.
3b Quartzite, greywacke.
3c Tuff, agglomerate, minor amounts of trachyte agglomerate, breccia.

UNCONFORMITY AND INTERBEDDING

FELSIC METAVOLCANICS (KEEWATIN)

2 — 2a Rhyolite, dacite.
2b Iron formation, silicic tuff, agglomerate.
2c Dacite porphyry, amygdaloidal and spherulitic dacite.

MAFIC METAVOLCANICS AND METASEDIMENTS

1 — 1 Unsubdivided mafic volcanics.
1a Basalt, andesite.
1b Chlontic mafic tuff, agglomerate.
1c Altered (bleached, carbonatized) volcanic and sedimentary rocks.
1d Amphibolite, garnet-epidote amphibolite, amphibolite gneiss.
1e Andesite porphyry, amygdaloidal and spherulitic dacite.
1g Biotite-garnet-pyroxene amphibolite.

SYMBOLS

- Glacial striae.
- Area of bedrock outcrop.
- Bedding, top unknown; (inclined, vertical).
- Lava flow; top (arrow) from pillows shape and packing.
- Schistosity; (horizontal, inclined, vertical).
- Gneissosity, (horizontal, inclined, vertical).
- Geological boundary, observed.
- Geological boundary, position interpreted.
- Fault; (observed, assumed). Spot indicates down throw side, arrows indicate horizontal movement.
- Lineament.
- Drag folds with plunge.
- Anticline, syncline, with plunge.
- Drill hole; (vertical, inclined).
- Vein, vein network. Width in inches.
- Shaft; depth in feet.
- Motor road. Provincial highway number encircled where applicable.
- Other road.
- Trail, portage or winter road.
- Building.

0 1/4 1/2 Mile

0 500 Metres

1 inch = 1/4 mile

FIGURE 5

PROPERTY GEOLOGY AND EXPLORATION

(After OGS Map 2239)

ANNEX "B-1"

Swastika Laboratories Ltd.
P.O. Box 10, 1 Cameron Ave.,
Swastika,Ontario P0K 1T0
Tel:(705) 642-3244
Fax:(705) 642-3300
E-Mail:swaslab@nt.net

Invoice

DATE	INVOICE #
12/21/2005	8630

PAID

To:

R. DUFRESNE
14 WRIGHT-HARGREAVES AVE
KIRKLAND LAKE, ONTARIO
P2N 1B2

P.O. NO.	TERMS	PROJECT #
	30 DAYS	

QTY	DESCRIPTION	CERT#	RATE	AMOUNT
9	Au Pt Pd	5W-3146-RA1	18.00	162.00T
9	Sample Prep		3.50	31.50T
	Business Number: RT8830223			

	GST	13.55
TOTAL		**$207.05**

Swastika Laboratories Ltd

Established 1928

Assaying - Consulting - Representation

Assay Certificate

5W-3146-RA1

Company: **ROGER DUFRESNE**

Date: DEC-12-05

Project:

Attn: R. Dufresne

We hereby certify the following Assay of 9 Rock samples submitted DEC-06-05 by .

Sample Number	Au g/tonne	Pt g/tonne	Pd g/tonne
A	Nil	<0.005	<0.005
B	Nil	<0.005	<0.005
C	Nil	<0.005	<0.005
D	Nil	<0.005	<0.005
E	Nil	<0.005	<0.005
F	Nil	<0.005	<0.005
G	Nil	<0.005	<0.005
H	Nil	<0.005	<0.005
I	0.01	<0.005	<0.005

Certified by Denis Chartrand

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

ANNEX
"C-111

7. Project Unit 00-010. Geology of Eby and Otto Townships, District of Timiskaming

L. Pigeon[1] and B.R. Berger[2]

[1]Department of Earth Sciences, University of Ottawa and Ottawa–Carleton Geoscience Centre, Ottawa
[2]Precambrian Geoscience Section, Ontario Geological Survey

INTRODUCTION

Eby and Otto townships were mapped at a scale of 1:20 000 during the 2003 field season as a part of a multi-year project covering parts of 7 townships west of Kirkland Lake (Berger 2001; Berger and Leblanc 2002; Figure 7.1). The map area is approximately 180 km^2 and was mapped to improve the geological database and provide an impetus for mineral exploration. The town of Kenogami is located on Highway 11 in the north-central part of Eby Township and is approximately 15 km west of Kirkland Lake. Previous mapping by Dyer (1935) and Lovell (1972) identified the major rock types, structures and mineral occurrences; however, recognition of komatiites and the application of modern plate tectonic theory requires the re-evaluation of the area. Furthermore, the close proximity of the 2 townships to the Kirkland Lake gold camp emphasizes the need to advance our knowledge of the geology of the area. Technological improvements in geophysics and geographic information systems (GIS) were valuable tools used to fulfil this goal.

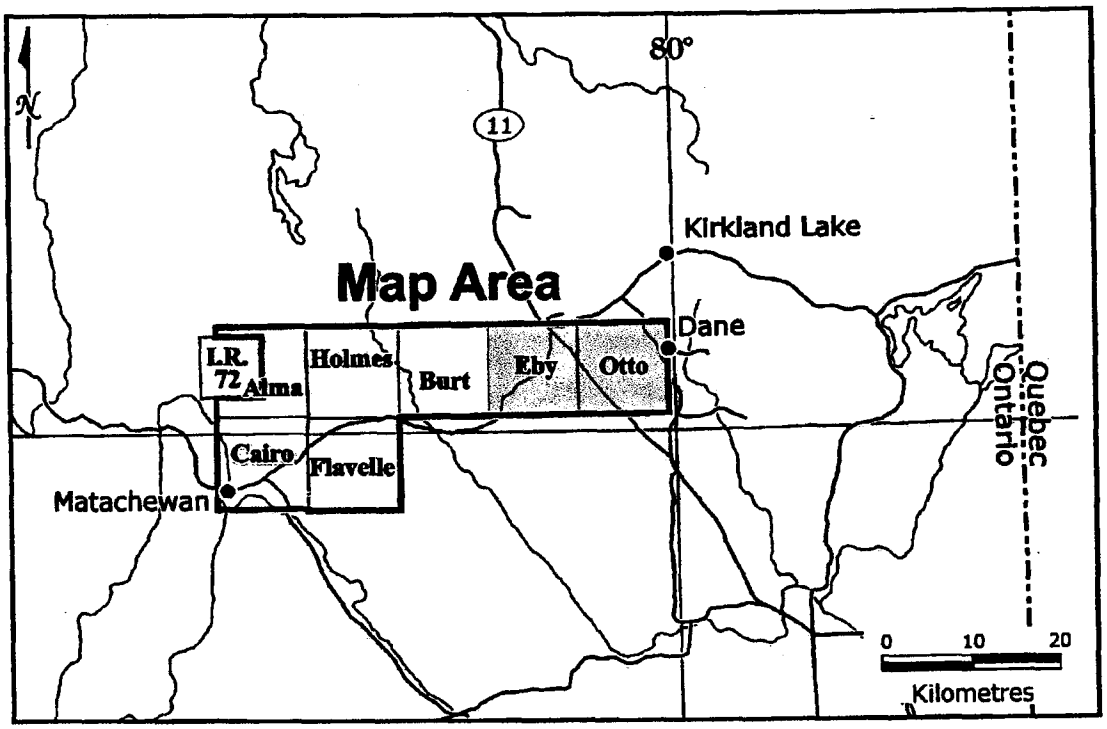


Figure 7.1. General location map for Eby and Otto townships.

Summary of Field Work and Other Activities 2003,
Ontario Geological Survey, Open File Report 6120, p.7-1 to 7-8.

© *Queen's Printer for Ontario, 2003*

GENERAL GEOLOGY

Eby and Otto townships are underlain by Neoarchean ultramafic, mafic, intermediate and felsic metavolcanic rocks, related intrusive rocks, Neoarchean clastic and chemical metasedimentary rocks and alkalic extrusive flows (Figure 7.2). These rocks are intruded by Archean felsic rocks of the Round Lake batholith, ultramafic, mafic and felsic alkalic rocks of the Otto stock and Paleoproterozoic diabase dikes of the Matachewan and possibly the Pressiac swarms (Osmani 1991). Clastic metasedimentary rocks correlated with the Proterozoic Gowganda Formation of the Cobalt Group of the Huronian Supergroup unconformably overlie the Archean rocks and Paleoproterozoic dikes of the Matachewan swarm. The western extension of the Larder–Cadillac deformation zone, a regional-scale structure spatially associated with gold mineralization extends through the north part of the map area.. The mapping helped to delineate and characterize the many structural components of the deformation zone and related structures.

Neoarchean Rocks

Ultramafic metavolcanic rocks occur south of Highway 66 in the northwest corner of Otto Township in the vicinity of Vigrass and Otto lakes (*see* Figure 7.2). The dark green to black weathering rocks are fine-grained, usually soft and may display randomly oriented and radiating or dendritic-like spinifex. The randomly oriented spinifex are composed of thin pyroxene and/or olivine blades that rarely exceed 15 mm in length, whereas, the radiating spinifex commonly have blades exceeding 50 mm in length. Other varieties of ultramafic flows include massive, pillowed, polysutured and flow breccia units.

Mafic metavolcanic rocks underlie much of Eby Township and the north part of Otto Township (*see* Figure 7.2). The majority of mafic metavolcanic rocks are dark green, massive, fine- to medium-grained rocks that are commonly recrystallized. Pillowed, variolitic and amygdaloidal flows are locally present. Most mafic metavolcanic rocks display low magnetic susceptibility; however, some magnetite-bearing units occur locally and are useful stratigraphic markers. Weak to intense pervasive carbonate alteration affects mafic metavolcanic rocks in the vicinity of the Larder–Cadillac deformation zone, west and south of Vigrass Lake and in the noses of regional folds. Gold may be present where green mica and sulphide minerals accompany carbonate alteration.

Felsic metavolcanic tuff, lapilli tuff and rare flows are interlayered with clastic metasedimentary rocks, and banded chert-magnetite iron formation in a narrow unit that crosses the central part of the map area (*see* Figure 7.2). The felsic rocks are fine grained, white to light pinkish grey on weathered surfaces and grey to dark grey on fresh surfaces. North and east of the Otto stock, extensive recrystallization makes identification of the protolith uncertain and rocks mapped as felsic metavolcanic may be chert or siliceous clastic metasedimentary rocks.

Finely laminated to thinly bedded magnetite and chert "iron formation" occurs interlayered with the felsic metavolcanic rocks described above. These units rarely exceed 2 m in thickness and are composed of 2 mm to 20 cm thick black magnetite beds separated by 1 cm to 30 cm thick white to grey chert beds. In northeast Otto Township, light brown garnet comprises up to 10% of the iron formation and indicates that rocks in this area attained higher amphibolite metamorphic grades. This type of iron formation extends to the Adams Mine, east of the map area, and is similar to sulphide-magnetite iron formation in Flavelle and Cairo townships west of the map area (Berger and Leblanc 2002).

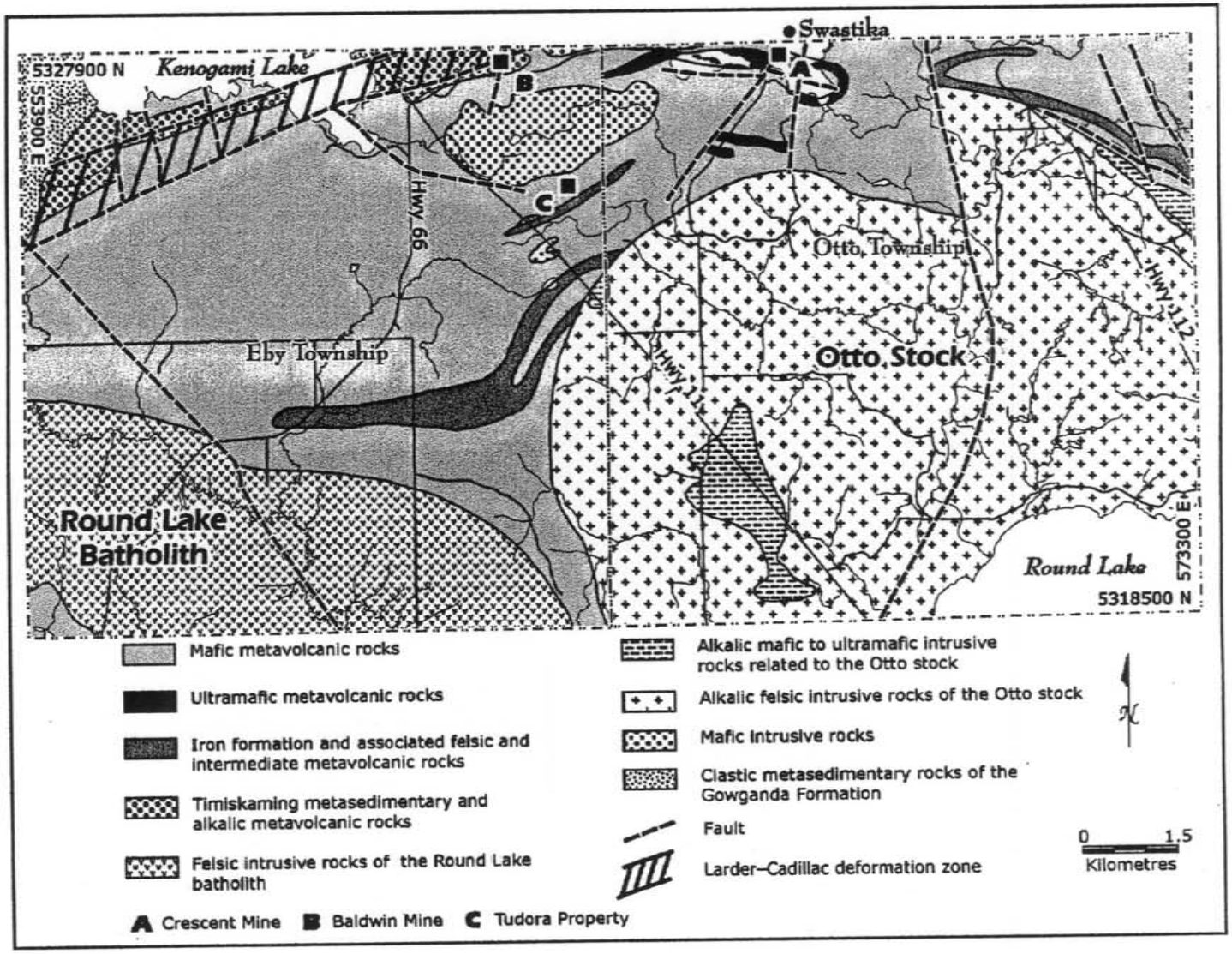


Figure 7.2. General geology of Eby and Otto townships.

Jasper-chert iron formation occurs interlayered with mafic metavolcanic flows in a few places in central Otto and northern Eby townships. This type of iron formation is commonly discontinuous and always narrow (less than 1 m thick). Its regional extent is unknown.

Alkalic metavolcanic rocks are interbedded with clastic metasedimentary rocks correlated with the Timiskaming assemblage and occur south and east of Kenogami Lake in Eby Township. The alkalic rocks are composed of aphanitic, fine-grained and amphibole and/or feldspar porphyritic flows, flow breccia, related subvolcanic dikes and sills. The rocks are light pink to reddish brown or deep earthy red and commonly display elevated magnetic susceptibilities. Specular hematite and magnetite are common accessory minerals.

Clast-supported polymictic conglomerate, fine-grained massive and cross-bedded sandstone and rare argillite are correlated with the Timiskaming assemblage in north Eby Township. Clasts in the conglomerate units are subangular to rounded and vary in size from 5 to 30 cm with an average size of about 6 cm. Several clast populations that include syenite, foid-bearing trachyte, quartz-feldspar porphyry intrusions, mafic metavolcanic, jasper, sulphide and mudstone/siltstone were identified. The matrix is usually dark green quartz and feldspar sand. The conglomerates are interbedded with narrow sandstone units and finely laminated wacke and argillite units. Primary structures are poorly preserved south of Kenogami Lake where the rocks are highly strained and sheared.

Small mafic intrusions, plugs, sills and dikes occur throughout the field area. The largest is located in northeast Eby Township and covers about 2 km^2. The intrusion is mostly composed of medium- to coarse-grained equigranular, weakly foliated gabbro, quartz gabbro and leucogabbro. The rock is light grey on weathered surface and dark green on fresh surface. In some cases, the rock is amphibole porphyritic with subhedral to euhedral rectangular phenocrysts that can reach up to 15 mm long. These rocks generally have low magnetic susceptibility.

Intermediate and felsic dikes, composed of quartz-feldspar porphyry, feldspar porphyry, intruded the metavolcanic and metasedimentary rocks throughout the map area. These dikes rarely exceed 1 m in width and are discontinuous along strike. Quartz-feldspar porphyry dikes are rare and contain 10 to 15%, 4 to 6 mm long subhedral to euhedral feldspar phenocrysts and about 5%, 3 to 5 mm long anhedral quartz phenocrysts. The feldspar porphyritic dikes contain about 30%, light pink, 3 to 4 mm long subhedral feldspar phenocrysts. The groundmass is composed of about 10 to 15% dark green subhedral to euhedral amphibole and light pink feldspar.

Neoarchean felsic intrusive rocks of the Round Lake batholith occur in southwest Eby Township. Grey to pink, medium- to coarse-grained, quartz and/or feldspar porphyritic, amphibole-bearing granodiorite is most common. The rock is massive to weakly foliated and is characterized by a low to moderate magnetic susceptibility. Tonalitic metatexite, diatexite and various types of gneiss are minor rock types in the map area, but are more abundant west of the map area. Harrap and Helmstaedt (1992) discuss the different phases and mechanism of intrusion of the Round Lake batholith in more detail.

The Otto stock occupies most of Otto Township and a small portion of eastern Eby Township. The intrusion contains numerous rock types, which display a wide range of compositions and textures; however, most of the intrusion is composed of medium- to coarse-grained, commonly alkali-feldspar (AF) porphyritic syenite. This light pink weathering rock commonly contains euhedral, tabular AF megacrysts up to 7 cm in length. Green to dark green amphibole is the major mafic mineral (5 to 15%) and biotite is rare. A medium-grained light pink inclusion-rich AF syenite unit is widespread in the east, south and southwest parts of the intrusion. The inclusions are dark green, rounded and commonly display a massive core that is surrounded by radiating fibrous amphibole crystals and a mica rim (Photo 7.1). The origin of these inclusions is uncertain, but they may represent an immiscible mafic to ultramafic liquid

trapped in the syenite. Other felsic rocks that occur within the stock include light pink amphibole-bearing, medium-grained quartz-syenite and alkaline granite, which are both slightly AF porphyritic. An amphibole-rich AF megacrystic syenite commonly displaying a trachytic texture is interpreted to be magmatic in origin and was observed near the western contact of the intrusion. This rock is composed of 50 to 60% euhedral tabular feldspar megacrysts, which commonly display concentric zoning and Carlsbad twinning. The groundmass is primarily composed of dark green anhedral amphibole and anhedral to subhedral alkali-feldspar.

Rocks previously mapped as biotite-garnet-pyroxene amphibolite (Lovell 1972) are here interpreted to be mafic and ultramafic phases of the Otto stock and are best exposed along Highway 11 (*see* Figure 7.2). Dark grey to black, medium-grained, equigranular, mica-bearing alkalic gabbro to melagabbro is most common. The rock contains numerous mafic and ultramafic inclusions similar to those in the AF syenite as well as numerous country rock and rare gneissic xenoliths. In places, the mica content exceeds 50% of the rock and resembles lamprophyre observed in dikes throughout the map area. Cumulate-textured, coarse-grained, hornblendite also occurs along Highway 11 and is composed of 80 to 90% dark green to black subhedral to euhedral, 1 to 3 cm, amphibole crystals commonly with mica cores. Other mafic and ultramafic rock types observed in the Otto stock include clinopyroxenite, alkalic diorite and pegmatitic gabbro. Mafic and ultramafic rocks were also observed along the eastern and northern contacts of the Otto stock (*see* Figure 7.2).

Lamprophyre dikes are ubiquitous in the map area. Three types were observed. Amphibole-mica phyric and alkali feldspar-mica phyric dikes are localized within and near to the Otto stock. These dikes are generally narrow (less than 3 m wide), discontinuous along strike and rarely contain xenoliths. Dikes that contain 50% or more mica and abundant groundmass carbonate are numerous and occur throughout the map area. These lamprophyre dikes commonly contain xenoliths of country rock and syenite similar to that observed in the Otto stock.

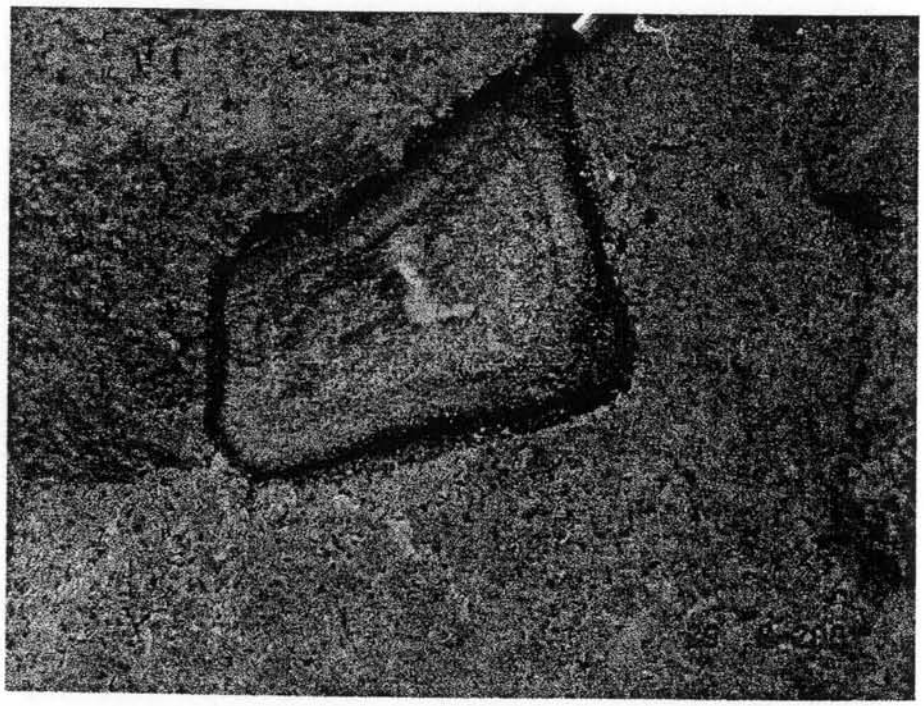


Photo 7.1. Mafic to ultramafic inclusion in the Otto stock alkali-feldspar syenite. The inclusion consists of a massive core surrounded by fibrous amphibole with a dark mica rim. Inclusion is approximately 8 cm in diameter.

Proterozoic Rocks

Numerous diabase dikes correlated with the Paleoproterozoic Matachewan swarm intruded all Archean rocks in the map area (Osmani 1991). Two types of dikes are recognized: plagioclase phyric dikes with phenocryst abundance greater than 1% and plagioclase aphyric dikes. Both types display moderate to high magnetic susceptibility. Lovell (1972) reported that diabase dikes that are correlated with either the Nipissing or Keweenawan swarm intruded the Otto stock and parts of the Timiskaming assemblage south of Kenogami Lake. These dikes resemble the Matachewan swarm, but display consistently lower magnetic susceptibility.

Clastic metasedimentary rocks correlated with the Gowganda Formation of the Cobalt Group of the Proterozoic Huronian Supergroup unconformably overlie all Archean rocks. They are well exposed in northern Eby Township along Highway 11 at Kenogami where polymictic conglomerate is interbedded with sandstone. The conglomerate is clast supported and contains granitic boulders up to 60 cm in diameter. Smaller clasts of mafic volcanic rocks, spinifex-textured ultramafic volcanic rocks, amphibole-rich tonalitic rocks, jasper and magnetite-chert are also present. The Gowganda Formation displays low-grade metamorphism and almost no deformation, which distinguishes it from Timiskaming assemblage rocks in the map area.

STRUCTURE AND METAMORPHISM

The map area is structurally complex and has undergone deformation in the Archean, the Proterozoic and most likely the Paleozoic (Lovell and Caine 1970).

Archean deformation is characterized by multiple phases of shearing, faulting and folding. The east-northeast-striking Larder–Cadillac deformation zone is the most prominent structural feature in the northern part of the map area. The deformation zone is marked by intensely schistose rock along the south shore of Kenogami Lake, at several locations south of the lake and in discrete faults along Highway 66 in Otto Township. Mineral lineations, slickenlines and "stepping" document complex sinistral and dextral movements, but generally show south-side-up vertical movement on fault planes. A S_1 foliation strikes 065 to 080° in the deformation zone and is consistently overprinted by a S_2 foliation that strikes 055 to 035°. North-northeast- and northwest-striking faults cross and locally offset the main trace of the deformation zone. Gold mineralization is localized near these cross faults at the Baldwin and Crescent mines (*see* Figure 7.2).

Folding is complex. Regional-scale fold axes are subparallel to S_1 in Otto and central Eby townships and are northwest-striking in north Eby Township. Fold axes appear to be offset by the late cross faults and are deflected around the contacts of the Otto stock. Gold and base metal mineralization is preferentially sited in the noses of some of these folds.

The Amikougami fault is a major north-striking structure that sinistrally offsets the north contact of the Otto stock by 2 km and separates different phases of the stock. The majority of undersaturated felsic alkalic rocks occur east of the fault, whereas, quartz-bearing alkalic rocks are most abundant west of the fault. Like many similarly oriented faults elsewhere in the Abitibi greenstone belt, the authors believe that the Amikougami fault is an Archean structure that was reactivated during the Proterozoic and possibly during the Paleozoic rift valley event (Berger 2002; Lovell and Caine 1970). Locally, a spaced foliation occurs in members of the Gowganda Formation parallel to foliation in the underlying Archean rocks and indicates Proterozoic reactivation (Powell and Hodgson 1992).

Regional greenschist-grade metamorphic mineral assemblages is characterized by epidote, chlorite and albite in mafic metavolcanic rocks. However, these rocks are extensively recrystallized adjacent to the Round Lake batholith and the Otto stock. Epidote stringers, feldspar porphyroblasts, garnet and secondary amphibole are common in mafic metavolcanic rocks and, locally, partial melting was attained as evidenced by quartz-feldspar stringers. The contact thermal halo around the Otto stock extends up to 1 km in width and rarely biotite occurs in intermediate and mafic metavolcanic rocks, indicative of widespread metasomatism. The thermal halo associated with the Round Lake batholith is up to 300 m wide. Numerous feldspar porphyritic tonalite dikes are intruded along foliation planes and locally extend the thermal aureole up to 500 m from the contact of the batholith.

Epidote, chlorite and rare biotite in sandstone and argillite indicate that the Gowganda Formation was subjected to low-grade metamorphism possibly related to some of the diabase dikes in the map area.

RECOMMENDATIONS FOR EXPLORATION

Gold has been the main target of exploration in the map area. Like most gold occurrences in the Kirkland Lake area, gold deposits in Eby and Otto townships are spatially associated with the Larder–Cadillac deformation zone. The past-producing Crescent Mine, located on the northwest shore of Otto Lake, and the past-producing Baldwin Mine, located in the northeast corner of Eby Township, had limited production (Lovell 1972). Gold occurs in quartz veins in proximity to northeast-striking faults at both deposits. Explorationists should look for similar environments, especially where these faults cross the Larder–Cadillac deformation zone. Gold mineralization also occurs south of the main deformation zone and appears to be focussed at the nose of tight regional-scale folds (e.g., the Tudora property in Eby Township). The mafic to ultramafic rocks related to the Otto stock offer interesting prospects for nickel-copper and platinum group elements (PGE) mineralization. Copper, gold and elevated PGE values were obtained from samples of malachite-bearing hornblendite collected along a roadcut on Highway 11 (Berger 2001). These rocks display some similarities to xenolith-rich ultramafic units and heterolithic breccias in the Wawa area that are known to contain diamonds (Stott, Wilson and Grabowski 2002). Further exploration work on these rocks is highly recommended.

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ANNEX "C-2"

MARTIN

L.

P.O. BOX 1206
KIRKLAND LAKE, ONTARIO P2N 3P2
Pho

SOLD BY | DATE DEC 01/05

NAME R DUFRESNE

ADDRESS PROSPECTOR

CASH	C.O.D.	CHARGE	ON ACCT.	

6 HOURS OF POWER STRIPPING WITH BACKHOE CAT 416 @ 50.00	300	00
GST		
SUB-TOTAL		
PST		
TOTAL	300	00

INSTRUCTIONS:

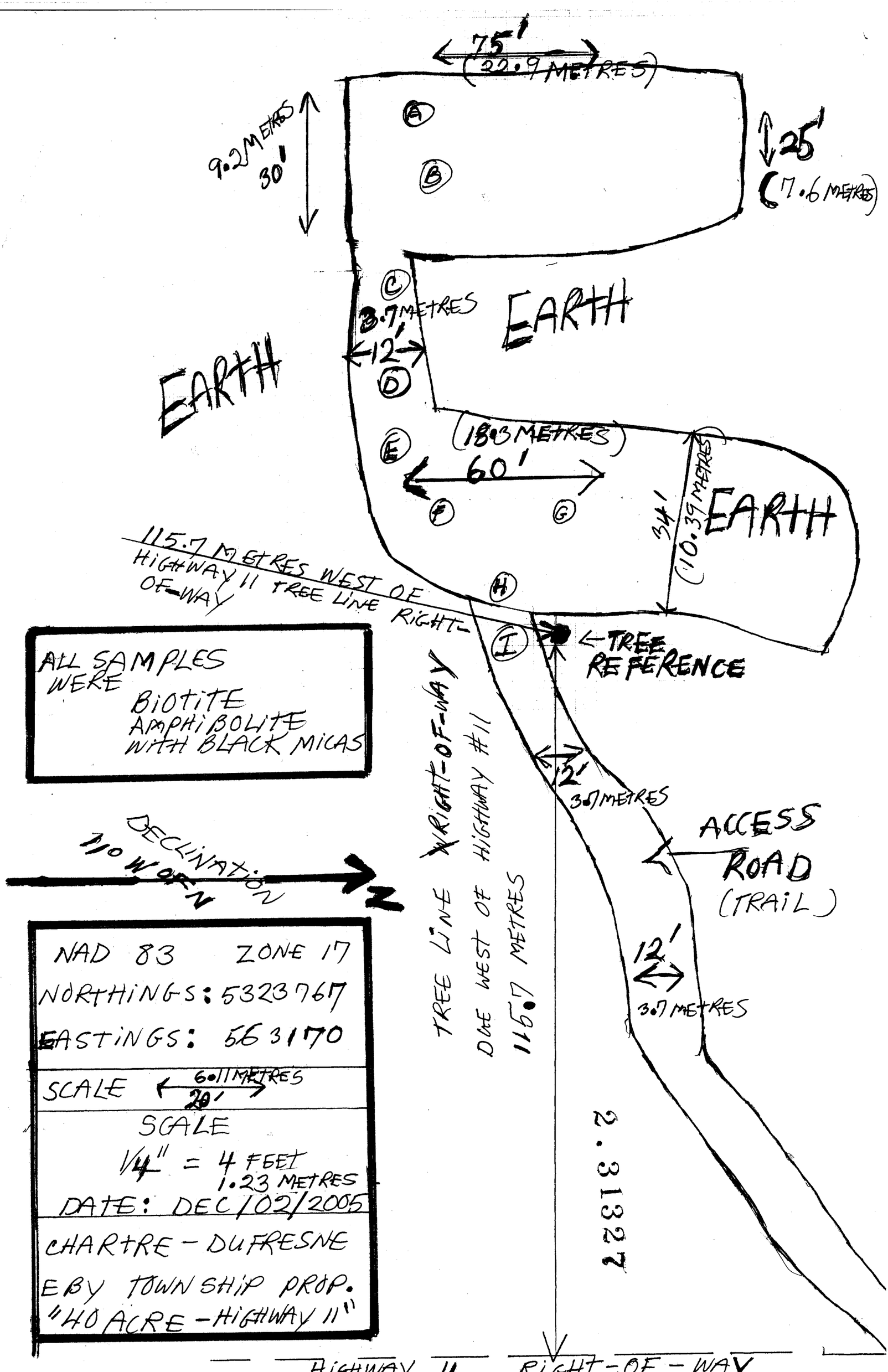
Paid

All claims and returned goods MUST be accompanied by this bill

RECEIVED BY

No 0803

Thank You


75'
(22.9 METRES)
9.2 METRES
30'
25'
(7.6 METRES)
A
B
C
D
E
F
G
H
I
3.7 METRES
12'
EARTH
EARTH
(18.3 METRES)
60'
34'
(10.39 METRES)
EARTH
115.7 METRES WEST OF HIGHWAY 11 TREE LINE RIGHT-OF-WAY
TREE REFERENCE
ALL SAMPLES WERE
BIOTITE
AMPHIBOLITE
WITH BLACK MICAS
DECLINATION 11° W OF N
N
TREE LINE RIGHT-OF-WAY
ONE WEST OF HIGHWAY #11
115.7 METRES
12'
3.7 METRES
ACCESS ROAD
(TRAIL)
12'
3.7 METRES
2.31327
NAD 83 ZONE 17
NORTHINGS: 5323767
EASTINGS: 563170
SCALE 6.11 METRES
20'
SCALE
1/4" = 4 FEET
1.23 METRES
DATE: DEC/02/2005
CHARTRE - DUFRESNE
EBY TOWNSHIP PROP.
"40 ACRE - HIGHWAY 11"
HIGHWAY 11 RIGHT-OF-WAY

ANNEX "I-1"

Ontario

ONTARIO GEOLOGICAL SURVEY

Open File Report 6070

Summary of Field Work and Other Activities 2001

edited by

C.L. Baker, R.I. Kelly and J.R. Parker

2001

Parts of this publication may be quoted if credit is given. It is recommended that reference to articles in this publication be made in the following form:

Bajc, A., Leney, S., Evers, S., van Haaften, S. and Ernsting, J. 2001. A seamless Quaternary geology map of southern Ontario; *in* Summary of Field Work and Other Activities 2001, Ontario Geological Survey, Open File Report 6070, p.33-1 to 33-5.

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10. Project Unit 000-10. Geological Reconnaissance along Highway 66, from Matachewan to Swastika

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INTRODUCTION

A multi-year project designed to re-map and improve the geological database along Highway 66 west of Kirkland Lake was started this year (Figure 10.1). Previous mapping by Moore (1966) and Lovell (1967, 1972) outlined the major metavolcanic, metasedimentary and plutonic units. These authors mapped prior to recognition of komatiites and modern plate tectonic theory, which necessitates re-evaluation of these map areas. Jensen (1990) provided detailed data for Burt, Holmes and parts of Eby, Flavelle and Gross townships, but there are several "boundary" faults with earlier mapping that require resolution.

The map area is underlain by Neoarchean ultramafic, mafic, intermediate and felsic metavolcanic rocks, related synvolcanic intrusive rocks, clastic and chemical metasedimentary rocks. Alkalic metavolcanic rocks underlie parts of Holmes and Flavelle townships and are spatially associated with possible co-magmatic alkalic intrusions and Timiskaming assemblage metasedimentary rocks. Syenite intrusions include the Otto and Cairo stocks, as well as several smaller dikes and intrusions throughout the area. The Otto Stock, in Otto and Eby townships, is characterized by nepheline-bearing syenite, quartz syenite and includes previously unrecognized mafic and ultramafic alkalic gabbro, hornblendite and lamprophyre phases. The Cairo Stock is composed of equigranular to porphyritic syenite and quartz syenite; mafic and ultramafic phases are not known. Calc-alkaline felsic intrusions include gneiss, tonalite, quartz monzonite and granodiorite of the Round Lake batholith in the southern part of the map area. Dioritic gneiss, quartz monzonite and granodiorite of the Watabeag batholith underlie the northern parts of Holmes and Burt townships. Paleoproterozoic Matachewan swarm dikes intrude all Neoarchean rocks in the area and are composed of plagioclase porphyritic and aphyric diabase. Paleoproterozoic sedimentary rocks of the Cobalt Group unconformably overlie the Neoarchean rocks and are composed of conglomerate, argillite and sandstone.

This summer's reconnaissance was designed to identify geological problems that will be resolved by future mapping. Among the more significant efforts will be revision of the Neoarchean stratigraphy, including separation of komatiitic rocks in the area. The stratigraphy will be correlated with tectonic assemblages erected by Ayer et al. (1999), with emphasis on contact relationships between the units. The relationship between the alkalic metavolcanic and Timiskaming assemblage metasedimentary rocks will be established and material for geochronology (using zircons) will be collected. A synthesis of the geochemistry for each assemblage will be completed using analyses from previous mapping supplemented with material collected by the author. There are inconsistencies among the various earlier mapping efforts as to the location and names of the major structures in the area. Future mapping will attempt to resolve the nature and location of the structural features in the area with attention to the relationship of gold mineralization to the Larder–Cadillac deformation zone and related fault systems. Numerous north-northwest-striking faults, the most prominent being the Cross Lake fault, crosscut the geology. These are most likely Archean structures that were reactivated during the Paleoproterozoic as numerous Matachewan dikes intruded these structures. Post Proterozoic reactivation of structures is indicated in a few places where Cobalt Group sedimentary rocks are tilted and display penetrative north-

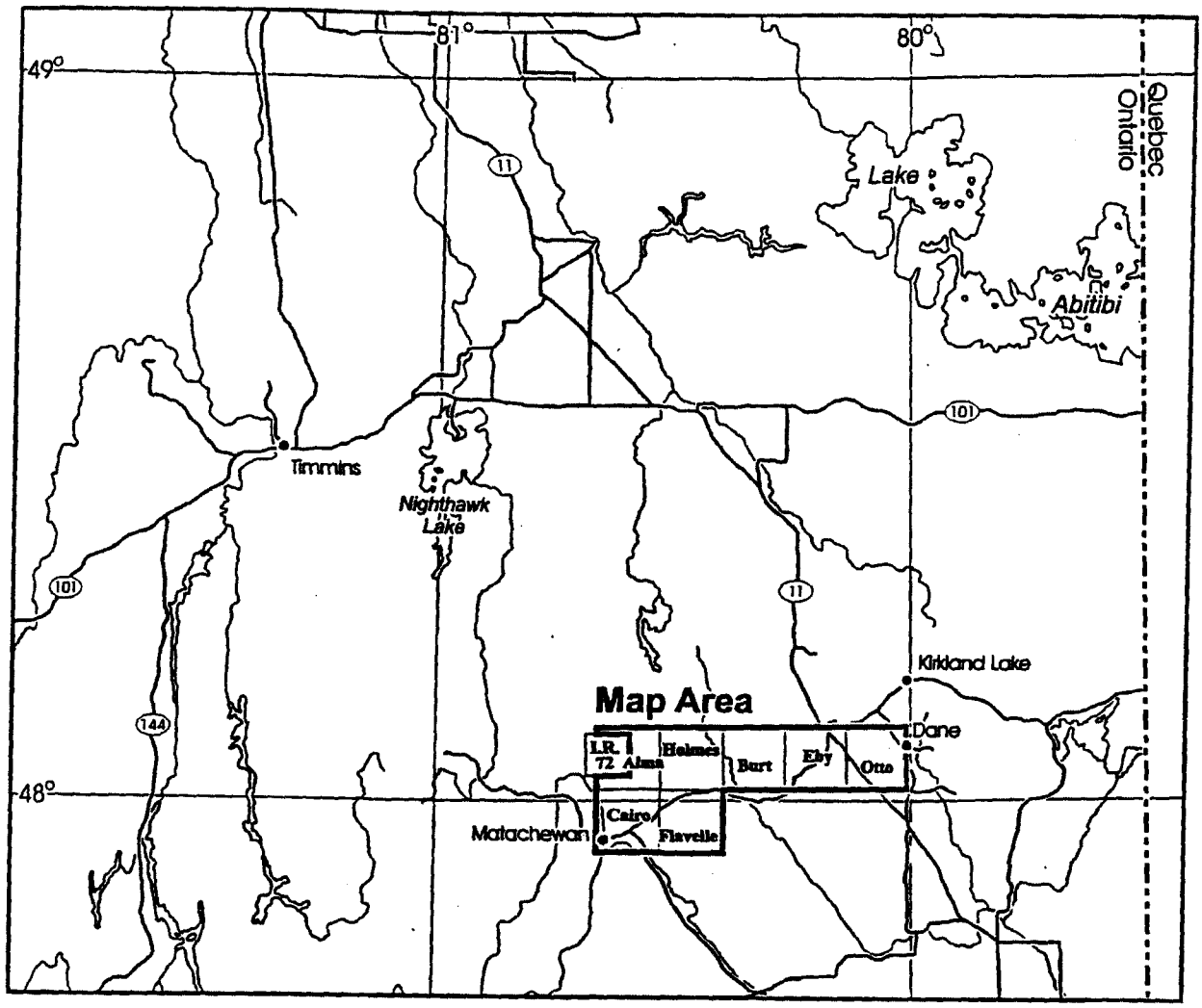


Figure 10.1. Location map for the area of the Highway 66 reconnaissance project.

striking foliation. This deformation has apparently also reactivated the Larder–Cadillac deformation zone in Burt Township (G. Meyer, Resident Geologist, Kirkland Lake, personal communication, June 2001) and future mapping will locate and document the nature of this deformation.

Paleoproterozoic sedimentary rocks of the Huronian Supergroup occur in parts of Burt, Holmes, Flavelle and Cairo townships. Previous mapping correlated all these rocks with the Gowganda Formation of the Cobalt Group. The author observed sandstone–arkose units up to 10 m thick in central Burt Township, which is inconsistent with the typical Gowganda Formation members as described by Johns (1985). It is probable that members of the overlying Lorrain Formation occur in the map area.

The Consolidated Matachewan and Young–Davidson mines exploited gold mineralization in Powell Township west of the map area. Consequently, gold has been the most sought after mineral in the Highway 66 area. Barite and fluorite veins within the Cairo Stock occur at Browning Lake and regional till sampling data indicate anomalous barium and barite elsewhere in the map area (Bajc 1997). Rock samples collected for the Ontario Treasure Hunt rock properties project indicates komatiitic metavolcanic rocks occur in Alma Township (Deschamps 2000). These rocks are potential hosts to copper-nickel sulphide mineralization. The mafic and ultramafic phases of the alkalic intrusions are commonly enriched in platinum group elements (PGE) and the hornblendite, alkalic gabbro and lamprophyre of the Otto Stock are potential host rocks for this type of mineralization.

Mineralized and representative rock samples collected during this reconnaissance were submitted to the Geoscience Laboratories in Sudbury for analysis. Table 10.1 presents assay data results. Anomalous gold, palladium and platinum values were detected a selected chip sample (01-BRB-019) collected across 50 cm of malachite-stained lamprophyre and/or hornblendite along a roadcut on Highway 11 in Otto Township. This rock was previously mapped as "greenstone" and indicates that re-mapping of the Otto Stock is necessary and that ultramafic phases of the stock are potential hosts for PGE mineralization.

Table 10.1. Assay results for project 000-10.

Sample No.	Rock Type	UTM		Township	Au (ppb)	Pd (ppb)	Pt (ppb)	Ag (ppm)	Cu (ppm)	Ni (ppm)
		Easting	Northing							
01-BRB-006a	hornblendite	573171	5324800	Otto	<5	<8	<8	2	<1	67
01-BRB-006b	hornblendite	573171	5324800	Otto	<5	9.16	<8	NA	NA	NA
01-BRB-015	barite + fluorite	530660	5316972	Cairo	<5	<8	<8	<1	11	6
01-BRB-016	alkali basalt	538571	5317953	Holmes	<5	<8	<8	NA	NA	NA
01-BRB-018	trachyte	538245	5320725	Holmes	13.57	<8	<8	NA	NA	NA
01-BRB-019	hornblendite	563378	5323813	Otto	169.8	164.16	54.68	12	6830	68
01-BRB-020	intermediate alkali flow	564062	5327921	Eby	<5	<8	<8	NA	NA	NA

N.A., not analyzed; UTM coordinates: zone 17, NAD 83 datum

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ANNEX "I-3"

STOP 3 – Another look at the Otto Stock (PGE, Au, Cu potential)

Proceed north on Highway 11 to the "40 acres" road and park vehicles. We will examine the outcrop to the south first.

This rock is a clinopyroxenite, part of the Otto Stock, extent unknown. Notice the malachite staining along fractures. I collected a grab sample of this material in 2001 that assayed 170 ppb Au, 164 ppb Pd, 55 ppb Pt, 12 ppm Ag, 68 ppm Ni and 6830 ppm Cu. These numbers are high for this type of rock and suggests that there is potential for more mineralization in this area. I think that there is more potential for this type of mineralization along the eastern contact of the Otto Stock and to the best of my knowledge there is limited testing of these phases in the Lebel Stock.

As a secondary treat at the outcrop nearer the "40 acres" road we can see the contact between syenite gneiss of the Otto Stock and the greenstone. The contact is abrupt wherever I've seen it but there is an intense metamorphic halo up to 800 to 1000m around the stock. Note the epidote –feldspar +-garnet streaks (calc-silicate alteration) in the greenstone and the general "baked" look of the rock. This thermal aureole has really buggared the rocks around the stock and I've had several problems trying to "see" through the effect to figure out what the rocktypes.