VAN HORNE GOLD EXPLORATION INC.

REPORT ON THE GEOLOGY

OF THE

BONANZA - REDEEMER PROPERTY

DRYDEN AREA

ONTARIO

JANUARY, 1984

T. S. JOLLIFFE
GEOLOGIST

2.6679

TABLE OF CONTENTS

INTRODUCTION

Detailed geological mapping, prospecting and sampling were carried out from June 27th to September 19th, 1983, on a group of twenty-eight claims straddling the south boundary of Van Horne Township, Kenora Mining District, northwestern Ontario. The results are described in this report and a proposal is made for additional exploration work on the property.

PROPERTY

The Bonanza - Redeemer Property comprises twenty-eight contiguous mining claims, totalling approximately 1,120 acres. Twenty-four of the claims are located in Concession I, Lots 5, 6, 7, 8 and 9, Van Horne Township and the remaining four claims are in the adjoining unsurveyed area immediately to the south of the township boundary.

The claim numbers are as follows:

K 533304 to 533308 ..... 5 claims
K 533385 to 533394 ..... 10 claims
K 558584 to 558591 ..... 8 claims
K 558594 to 558598 ..... 5 claims

All claims were recorded on June 24th, 1980. The property is owned by Van Horne Gold Exploration Inc.

LOCATION, ACCESS, TRANSPORTATION AND SERVICES

The property is located about four miles SSW of Dryden, which

LIES MIDWAY BETWEEN THUNDER BAY, ONTARIO AND WINNIPEG, MANITOBA. BOTH THE MAIN TRANS-CONTINENTAL LINE OF THE CANADIAN PACIFIC RAILWAY AND THE TRANS-CANADA HIGHWAY (#17) PASS THROUGH DRYDEN. THE RECENTLY COMPLETED HIGHWAY #502 CONNECTS THE TOWN WITH FORT FRANCES, ONTARIO, AND INTERNATIONAL FALLS, MINNESOTA.

THE PROPERTY IS READILY ACCESSIBLE FROM DRYDEN BY FOLLOWING HIGHWAY #594 (3.9 MILES) AND HIGHWAY #502 (2.0 MILES), THEN AN ALL-WEATHER FARM ROAD (1.8 MILES) AND AN OLD BUSH ROAD (1.6 MILES). THE PROPERTY IS ALSO DIRECTLY ACCESSIBLE BY WATER VIA WABIGOON LAKE.

DRYDEN IS SERVICED BY DAILY NORDAIR JET FLIGHTS FROM WINNIPEG, THUNDER BAY AND TORONTO. THERE ARE ALSO DAILY CPR PASSENGER AND FREIGHT TRAINS AND A GREYHOUND BUS SERVICE. LOCAL CHARTER SERVICES CAN PROVIDE FIXED-WING AIRCRAFT AND HELICOPTERS.

DRYDEN HAS A POPULATION OF 6,500 AND IS THE REGIONAL CENTRE FOR THE AREA. THE MAIN INDUSTRY IS GREAT LAKES FOREST PRODUCTS LTD., WHICH HAS RECENTLY COMPLETED A MAJOR MODERNIZATION AND EXPANSION PROGRAMME. TOURISM IS A SECOND IMPORTANT INDUSTRY AND A WIDE RANGE OF RECREATIONAL FACILITIES IS AVAILABLE.

CLIMATE, TOPOGRAPHY, VEGETATION

AVERAGE MAXIMUM AND MINIMUM TEMPERATURES RANGE FROM 24.5°C AND 12.8°C IN JULY TO -13.6°C AND -24.4°C IN JANUARY. ANNUAL PRECIPITATION AVERAGES 27.4 IN., OF WHICH 20.7 IN. IS RAINFALL. AVERAGE ANNUAL SUNSHINE IS 2,050 HOURS.

LOCAL RELIEF, WHILE PROBABLY NOT IN EXCESS OF 150 FEET, IS QUITE VARIABLE. BEDROCK IS GENERALLY WELL-EXPOSED, ESPECIALLY ALONG EAST-WEST RIDGES WHICH BROADLY REFLECT LITHOLOGICAL TRENDS. THE DIRECTION OF ICE MOVEMENT INDICATED BY GLACIAL STRIAE IS ABOUT 225°.

THE AREA IS COVERED BY SPRUCE, POPLAR, JACKPINE AND BIRCH, WITH A THICK UNDERGROWTH OF TAG ALDERS. MOST OF THE OUTCROPS HAVE A HEAVY LICHEN OR MOSS COVER WHICH MASKS TEXTURAL FEATURES AND OBSCURES GEOLOGICAL CONTACTS.

PREVIOUS WORK[1]

A NUMBER OF GOLD-BEARING QUARTZ VEINS WERE FOUND AND WORKED ON THE PROPERTY DURING THE EARLY YEARS OF THIS CENTURY. EXTENSIVE PITTING AND TRENCHING WERE CARRIED OUT AND SEVERAL SHAFTS WERE SUNK, WITH LIMITED PRODUCTION FROM THE BONANZA MINE AND THE REDEEMER MINE.

THE VEINS PROVED TO BE UNECONOMIC AT THE TIME AND BY 1926 ALL WORK HAD STOPPED. THE LAND WAS HELD INACTIVE UNDER MINERAL PATENTS UNTIL ACQUIRED BY THE PRESENT OWNERS IN 1980.

MORE RECENT EXPLORATION ACTIVITIES HAVE INCLUDED 5,441 FEET OF DIAMOND DRILLING IN THE IMMEDIATE VICINITY OF THE BONANZA AND REDEEMER SHAFTS IN 1980 (KIDD, 1981A) AND MAGNETOMETER AND VLF-EM SURVEYS OVER MUCH OF THE PROPERTY IN 1981 (KIDD, 1981B).

---

[1] FOR A DETAILED AND COMPREHENSIVE REVIEW OF PREVIOUS WORK, SEE "REPORT ON GOLD PROPERTY, VAN HORNE TOWNSHIP, DISTRICT OF KENORA, ONTARIO", H.J. HODGE, JULY 28TH, 1980.

The earliest geological maps of the area were made by McInnes (1902) and Thomson (1917). The only detailed mapping (scale: 1"=200') on the property was carried out by Bruce (1925) in the vicinity of the Bonanza and Redeemer mines (south 1/2, Lot 7, Conc. I, Van Horne Township). The most recent and comprehensive map and report on Van Horne Township and surrounding area were done by Satterly (1941).

Numerous old pits, trenches and mine shafts were found during the 1983 mapping programme. Most of the mine shafts could be identified from the early descriptions but there remains some doubt about the Drake Mine and the Good Luck Mine. The No. 3 Shaft of the League Mine is probably located between Claim K533385 and Claim K533389, on trend with the other shafts of the League Mine.

The location and number of old pits and trenches on the property suggest that the early surface prospecting work was quite thorough.

GENERAL GEOLOGY

The property lies within the western part of the Wabigoon Sub-province of the Superior Province in the Canadian Shield (Trowell et al., 1980). The Wabigoon belt is composed mainly of volcanic rocks with some sedimentary rocks, intruded by large granitoid batholiths, subvolcanic plutons and mafic intrusions.

Three miles to the north of the property is the east-west trending Wabigoon Fault, a major structure characterized by intense shearing and carbonatization of the adjacent volcanic rocks (Satterly,

1941). The fault is interpreted to be the north boundary of the Wabigoon Subprovince (Blackburn, 1980). The clastic sedimentary and granitoid rocks further to the north belong to the English River Subprovince.

Locally, the Wabigoon volcanic rocks have been subdivided into three units (Trowell et al., 1980). The basal Eagle Lake Volcanics to the south are composed of mafic flows. The rocks on the Bonanza-Redeemer Property are part of the Lower Wabigoon Volcanics, a mixed sequence of felsic to mafic pyroclastics and flows. To the north, the Upper Wabigoon Volcanics are composed of mafic flows.

Radiometric dating studies on the Lower Wabigoon Volcanics (Davis et al., 1982) indicate that deposition occurred over a period probably in excess of 8 Ma, with a minimum age of about 2,735 Ma. A similar age was obtained for the Atikwa Batholith, a large complex of granitoid rocks less than two miles to the south of the property. The volcanism which produced the Lower Wabigoon Volcanics may therefore be related to the plutonic activity associated with batholith emplacement.

PROPERTY GEOLOGY

The Bonanza - Redeemer Property is underlain by a complex sequence of slightly metamorphosed mafic to felsic volcanic flows and pyroclastics, cut by several mafic to felsic intrusive bodies and numerous dykes (Map No. 1). The volcanic rocks trend generally east-west with steep dips to the north. Tops face to the north.

ROCK TYPES:

Mafic to intermediate flows are predominant in the southern half of the area. They are generally fine-grained and light- to dark-grey or greenish-grey in colour. In hand specimen most of the flows appear to be andesitic but specific gravity measurements (Satterly, 1941) indicate that the composition is more mafic. Most of the flows are massive or amygdaloidal. Amygdules are elogated to spherical with long axes typically less than 1/2 inch, although sizes greater than one inch have been observed in a few localities. The fillings are usually composed of quartz or calcite. Pillwed flows are common near the southwest corner of the property and close to the base line in the centre of the property. They probably have a much more wide-spread distribution but are obscured by the heavy lichen cover. In long dimension, pillows are commonly 3 feet or larger. Selvages are generally less than one inch wide. Pillows are typically flattened and do not provide conclusive evidence for tops determinations. Autoclastic brecciated flows are common in the areas south of the Bonanza Mine and north of the Lost Mine. Breccia fragments are medium-sized (<2 inches) and elongated parallel to lithilogical contacts. In most localities, textural features are masked by moss and lichen, making it very difficult to differentiate these breccias from intercalated pyroclastic volcanics. Pyrite is a minor accessory mineral in many of the mafic to intermediate flows. Pyrrhotite may also be present.

Felsic to intermediate flows are abundant in the northern half of the area, where they tend to form prominent hills. Unaltered flows generally weather white to cream and have a light grey colour on

FRESH SURFACES. MANY OF THE FLOWS HAVE BEEN AFFECTED BY VARIOUS DEGREES OF IRON CARBONATE ALTERATION AND WEATHER TO A MAUVE OR RUSTY BROWN COLOUR. MOST OF THE FLOWS ARE VERY FINE-GRAINED, ALTHOUGH SOME HAVE MEDIUM-GRAINED PHENOCRYSTS OF FELDSPAR AND QUARTZ, AND ARE HARD TO DISTINGUISH FROM QUARTZ-FELDSPAR INTRUSIVES. CHERTY VARIETIES ARE PRESENT IN A FEW LOCALITIES, SUCH AS THE AREA TO THE NORTHWEST OF THE LEAGUE MINE. THESE ROCKS ARE DARK GREY TO ALMOST BLACK IN COLOUR, WITH FAINT, THIN LAMINATIONS AND MAY ACTUALLY BE CHEMICAL PRECIPITATES. THE MAJORITY OF THE FELSIC TO INTERMEDIATE FLOWS ARE MASSIVE BUT AUTOCLASTIC FLOW BRECCIAS ARE ALSO PRESENT, ESPECIALLY IN THE AREA OF THE LEAGUE MINE. FRAGMENTS ARE USUALLY COARSE-SIZED (>2 INCHES) AND SUB-ROUNDED.

PYROCLASTIC VOLCANIC ROCKS ARE ABUNDANT THROUGHOUT THE AREA. MOST COMMON ARE LAPILLI-TUFFS COMPOSED OF FELSIC TO INTERMEDIATE FRAGMENTS IN A MORE MAFIC MATRIX. TYPICALLY, FRAGMENTS ARE 1/4" TO 1" IN DIAMETER, SUB-ROUNDED TO SUB-ANGULAR, AND ELONGATED PARALLEL TO THE BEDDING/FOLIATION. THE MAJORITY OF THE LAPILLI-TUFFS ARE MATRIX-SUPPORTED BUT FRAGMENT-SUPPORTED FELSIC LAPILLI-TUFFS BECOME INCREASINGLY COMMON TO THE NORTH. WITH A DECREASE IN THE NUMBER OF FRAGMENTS, THE LAPILLI-TUFFS GRADE TO RELATIVELY MASSIVE AND HOMOGENEOUS TUFFS. MAFIC TO INTERMEDIATE TUFFS AND FELSIC TUFFS ARE ALSO COMMON IN THIN HORIZONS INTERCALATED WITH FLOWS OF SIMILAR COMPOSITION. MANY OF THE TUFFS ARE VERY FINE-GRAINED AND CAN BE MISTAKEN FOR FLOWS. MOST OF THE TUFFS DO NOT APPEAR TO BE WELL-STRATIFIED BUT TEXTURAL FEATURES MAY BE OBSCURED BY THE HEAVY LICHEN COVER. PYROCLASTIC BRECCIAS ARE MUCH LESS COMMON THAN LAPILLI-TUFFS AND TUFFS, ALTHOUGH MOST OF THE

LAPILLI-TUFFS CONTAIN A FEW BRECCIA FRAGMENTS. BRECCIA FRAGMENTS SHOW A WIDE RANGE IN SIZE BUT THEY ARE GENERALLY LESS THAN 6" IN DIAMETER AND RARELY MORE THAN 1' IN DIAMETER. MOST FRAGMENTS ARE ANGULAR TO SUB-ROUNDED AND FELSIC IN COMPOSITION. LIKE THE LAPILLI-TUFFS, THE BRECCIAS COMMONLY HAVE A MAFIC TO INTERMEDIATE MATRIX. FRAGMENT-SUPPORTED BRECCIAS ARE PROBABLY IN THE MAJORITY.

INTERMEDIATE TO MAFIC INTRUSIVE ROCKS ARE FOR THE MOST PART RESTRICTED TO AN EAST-WEST TRENDING BELT THROUGH THE SOUTHERN PART OF THE AREA. ALTHOUGH CROSS-CUTTING RELATIONSHIPS CAN BE SEEN IN A FEW LOCALITIES, THESE ROCKS ARE GENERALLY CONFORMABLE AND ARE INTERPRETED TO BE MAJOR SILLS. HOWEVER IT IS POSSIBLE THAT SOME OF THE FINER-GRAINED ROCKS COULD BE MASSIVE MAFIC FLOWS. MOST HAVE A COMPOSITION EQUIVALENT TO DIORITE OR POSSIBLY GABBRO, WITH ABOUT 50% MAFIC MINERALS AND MINOR (< 5%) QUARTZ AS A COMMON ACCESSORY MINERAL. PARTICULARLY TO THE EAST, THEY TEND TO BE CHLORITE- AND CARBONATE-RICH, DUE TO EXTENSIVE METAMORPHIC RECRYSTALLIZATION. THEY ARE GENERALLY MEDIUM-GRAINED BORDERING ON FINE-GRAINED, WITH AN EQUIGRANULAR, ALLOTRIOMORPHIC TEXTURE, AND HAVE A CHARACTERISTIC MASSIVE, HOMOGENEOUS APPEARANCE IN OUTCROP. ON FRESH SURFACES THEY ARE DARKISH-GREY TO GREENISH-GREY IN COLOUR. A MINOR GABBRO INTRUSION IS ASSOCIATED WITH PORPHYRITIC GRANITE IN THE SOUTHEAST PART OF THE PROPERTY. THE ROCK IS DARK GREY AND MEDIUM- TO COARSE-GRAINED, WITH A SLIGHTLY PORHYRITIC, HYPIDIOMORPHIC TEXTURE. IT APPEARS TO BE RELATIVELY UNAFFECTED BY METAMORPHIC ALTERATION AND IS PROBABLY ASSOCIATED WITH LATE FELSIC INTRUSIVE ACTIVITY RATHER THAN THE INTRUSION OF THE DIORITE SILLS.

A LIGHT PINKISH-GREY PORPHYRITIC GRANITE INTRUSIVE IS PRESENT IN THE SOUTHEASTERN PART OF THE AREA. THE ROCK HAS A FINE-GRAINED, ANHEDRAL GROUNDMASS WITH MINOR MEDIUM-GRAINED, SUBHEDRAL QUARTZ AND FELDSPAR PHENOCRYSTS. MAFIC MINERALS (HORNEBLENDE, MINOR BIOTITE) CONSTITUTE LESS THAN 15% OF THE WHOLE. THE GRANITE IS PROBABLY A HIGH-LEVEL INTRUSION GENETICALLY RELATED TO THE QUARTZ-FELDPAR PORPHYRY DYKES IN THE AREA. SEVERAL SMALL FELSIC TO INTERMEDIATE INTRUSIVES OCCUR IN THE WESTERN HALF OF THE PROPERTY. TO THE SOUTHWEST THE INTRUSIVES ARE PALE GREY, VERY FINE-GRAINED AND MASSIVE, WITH THE COMPOSITION OF A GRANODIORITE. TO THE NORTHWEST THE INTRUSIVES ARE MEDIUM-GRAINED AND RANGE IN COMPOSITION FROM GRANODIORITE TO DIORITE.

THE VOLCANIC ROCKS ARE CUT BY NUMEROUS, PREDOMINANTLY SOUTHEAST- AND EAST-TRENDING DYKES AND SILLS. THE MAJORITY ARE GREY TO DARK GREY, FINE-GRAINED, AND INTERMEDIATE TO MAFIC IN COMPOSITION, WITH A POSSIBLE GENETIC RELATIONSHIP TO THE LARGE DIORITE SILLS. SOME OF THE MORE MAFIC DYKES HAVE RECRYSTALLIZED MAFIC PHENOCRYSTS AND ARE PROBABLY ALTERED LAMPROPHYRES (BRUCE, 1925). A FEW FINE-GRAINED PERIDOTITE DYKES ARE ALSO PRESENT. IN AREAS OF HEAVY LICHEN COVER IT IS GENERALLY HARD TO DISTINGUISH THE MINOR INTERMEDIATE TO MAFIC SILLS AND DYKES FROM VOLCANIC ROCKS WITH A SIMILAR COMPOSITION AND THEY ARE PROBABLY MUCH MORE ABUNDANT THAN IS SHOWN ON THE MAP. THE YOUNGEST ROCKS IN THE AREA ARE THE COMMON QUARTZ-FELDSPAR PORPHYRY DYKES AND SILLS AND MINOR FELSITE DYKES. THEY ARE LIGHT PINK TO PINKISH-GREY ON BOTH FRESH AND WEATHERED SURFACES, WITH A VERY FINE-GRAINED GROUNDMASS AND GENERALLY LESS THAN 20% MEDIUM-GRAINED PHENOCRYSTS OF QUARTZ AND FELDSPAR IN VARIOUS PROPORTIONS. IN

A NUMBER OF AREAS CONFORMABLE PORPHYRIES WITH A LOW PERCENTAGE OF PHENOCRYSTS ARE DIFFICULT TO DISTINGUISH FROM THE FELSIC FLOWS.

STRUCTURE:

BEDDING ORIENTATIONS AND FLOW CONTACTS IN THE VOLCANICS SHOW AN OVERALL EAST-WEST TREND, WITH DIPS TO THE NORTH GENERALLY GREATER THAN 70°. EVIDENCE OF TOPS DIRECTION (PILLOW SHAPES, GRADED BEDDING) IS INCONCLUSIVE BUT DOES NOT CONTRADICT REGIONAL DETERMINATIONS THAT TOPS FACE TO THE NORTH (SATTERLY, 1941).

NUMEROUS SHEAR ZONES OCCUR ON THE PROPERTY, SEVERAL WITH ASSOCIATED QUARTZ VEINS AND CARBONATE ALTERATION, AND SOME WITH GOLD MINERALIZATION. THEIR GENERAL EAST-WEST TREND IS PARALLEL TO THE MAJOR WABIGOON FAULT LESS THAN 3 MILES TO THE NORTH. A NUMBER OF THE SHEAR ZONES HAVE SUB-HORIZONTAL SLICKENSIDES INDICATIVE OF STRIKE-SLIP MOVEMENT BUT THE AMOUNT OF FAULT DISPLACEMENT IS HARD TO DETERMINE BECAUSE THEY DO NOT CLEARLY CROSS-CUT THE VOLCANICS. TO THE WEST OF THE BONANZA SHAFT, A SOUTHEAST-TRENDING QUARTZ-FELDSPAR PORPHYRY DYKE IS CUT BY THE BONANZA VEIN AND APPEARS TO HAVE A DEXTRAL OFFSET OF ABOUT 50 FEET. AS MIGHT BE EXPECTED, SHEAR ZONES SHOW AN AFFINITY FOR THE MORE BRITTLE ROCKS, PARTICULARLY THE FELSIC FLOWS, AND THE CONTACTS BETWEEN ROCKS OF CONTRASTING COMPETENCE, ESPECIALLY THE BORDERS OF INTERMEDIATE TO MAFIC DYKES.

SOME OF THE MORE CHLORITIC ROCKS, PARTICULARLY THE LARGE DIORITE SILLS, HAVE A SLIGHT EAST-WEST FOLIATION. ALTHOUGH THIS MATCHES THE ORIENTATION OF THE SHEAR ZONES, IT IS PROBABLY THE

PRODUCT OF EARLIER RECRYSTALLIZATION AND DEFORMATION DURING REGIONAL METAMORPHISM. THE SHEAR ZONES ALSO CUT RELATIVELY UNDEFORMED LATE FELSIC TO INTERMEDIATE INTRUSIVES. EARLY DEFORMATION MAY HAVE HAD A CONSIDERABLE EFFECT ON THE ORIENTATION OF PYROCLASTIC AND FLOW BRECCIA FRAGMENTS.

THE ROCKS IN THE AREA SHOW ALMOST NO EVIDENCE OF FOLDING, EVEN ON A SMALL SCALE.

METAMORPHISM AND ALTERATION:

THE AREA HAS UNDERGONE REGIONAL LOW GRADE GREENSCHIST FACIES METAMORPHISM. THE MORE MAFIC ROCKS HAVE BEEN EXTENSIVELY RECRYSTALLIZED TO A CHLORITE- AND CALCITE-RICH MINERAL ASSEMBLAGE AND SOME SERICITE ALTERATION OF THE FELDSPARS HAS OCCURRED IN THE FELSIC ROCKS.

A MODERATE DEGREE OF CARBONATE (ANKERITE) ALTERATION IS PRESENT IN THE ROCKS ON THE NORTHERN HALF OF THE PROPERTY, MAINLY IN THE FELSIC FLOWS, LATE FELSIC TO INTERMEDIATE INTRUSIVES AND SOME OF THE MORE FELSIC, FRAGMENT-SUPPORTED PYROCLASTICS. CARBONATE ALTERATION IS ALSO ASSOCIATED WITH MANY OF THE SHEAR ZONES AND QUARTZ-CARBONATE VEINS. THE CARBONATE MAY HAVE MIGRATED FROM THE MAFIC ROCKS DURING THE PERIOD OF METAMORPHIC RECRYSTALLIZATION. HOWEVER THE ASSOCIATION WITH BRITTLE ROCKS, SHEAR ZONES AND THE WABIGOON FAULT SUGGESTS THAT THE CARBONATE WAS INTRODUCED DURING LATE STAGE REGIONAL SHEAR FRACTURING AND THE EMPLACEMENT OF QUARTZ-CARBONATE VEINS.

GEOPHYSICAL INTERPRETATION

THE RESULTS OF THE GEOPHYSICAL SURVEYS (KIDD, 1981B) CAN BE RE-ASSESSED IN LIGHT OF THE EVIDENCE COLLECTED DURING THE MAPPING PROGRAMME.

A LARGE NUMBER OF CONDUCTORS WERE DELINEATED IN THE VLF-EM SURVEY. WITHOUT EXCEPTION, THESE WERE FOUND TO BE IN OVERBURDEN COVERED AREAS, GENERALLY OFF THE EDGE OF OUTCROP HILLS AND IN LOW, SWAMPY VALLEYS. THEY CAN THEREFORE BE EXPLAINED IN TERMS OF TOPOGRAPHIC EFFECTS AND OVERBURDEN CONDUCTIVITY.

THIS RESULT IS NOT SURPRISING, SINCE NO EVIDENCE OF POSSIBLE CONDUCTORS WAS OBSERVED IN THE FIELD. PYRITE IS A FAIRLY COMMON MINOR ACCESSORY MINERAL IN SEVERAL ROCK TYPES, PARTICULARLY THE MAFIC FLOWS, BUT IT IS NORMALLY DISSEMINATED IN CONCENTRATIONS BELOW 1%. SULPHIDES ARE PRESENT IN MANY OF THE GOLD-BEARING QUARTZ-CARBONATE VEINS BUT AGAIN DISSEMINATED AND IN CONCENTRATIONS BELOW 5%. SHEAR ZONES APPEAR TO BE RELATIVELY TIGHT AND IMPERMEABLE. HOWEVER, THESE FACTS DO NOT PRECLUDE THE POSSIBILITY THAT CONDUCTORS IN LOW-LYING AREAS OFF THE EDGE OF OUTCROP CLIFFS COULD COINCIDE WITH MAJOR SHEAR ZONES CONTAINING GOLD QUARTZ VEINS. THE GENERAL EAST- WEST CONDUCTOR TRENDS ARE COMPATIBLE WITH THIS POSSIBILITY.

THE MAGNETOMETER SURVEY RESULTS PROVED HELPFUL IN CONFIRMING OVERALL STRUCTURAL AND LITHOLOGICAL TRENDS. HOWEVER MOST OF THE ROCK TYPES HAVE A VARIABLE MAGNETITE AND PYRRHOTITE CONTENT AND LACK A CONSISTENTLY DISTINCTIVE MAGNETIC SIGNATURE. THE PICTURE IS

COMPLICATED BY THE PRESENCE OF NUMEROUS MAGNETIC INTERMEDIATE TO MAFIC DYKES AND SILLS WITH TRENDS SIMILAR TO THE HOST ROCKS.

SAMPLING

199 SAMPLES WERE COLLECTED FOR GOLD ASSAY DURING THE MAPPING PROGRAMME. LARGE SAMPLES (>3LB.) WERE OBTAINED WHEREVER POSSIBLE. THE MAJORITY WERE SELECTIVE GRAB SAMPLES, TAKEN WITH THE AIM OF ENSURING THAT NO GOLD-BEARING MATERIAL WOULD BE OVERLOOKED. SULPHIDES, CARBONATE AND IRON OXIDES WERE CONSIDERED FAVOURABLE INDICATORS OF GOLD MINERALIZATION. REPRESENTATIVE GRAB SAMPLES OR PANEL SAMPLES WERE TAKEN IN AREAS OF KNOWN MINERALIZATION — MAJOR PITS, TRENCHES AND MINE SHAFT ROCK DUMPS — OR WHERE THERE WAS NO INHOMOGENEITY IN THE SAMPLED MATERIAL.

THE SAMPLES WERE ASSAYED BY CUSTOM FIRE ASSAYING, COCHENOUR, ONTARIO.

SAMPLING RESULTS ARE SHOWN ON MAP 2 AND COMPLETE SAMPLE DESCRIPTIONS ARE GIVEN IN THE APPENDIX AT THE END OF THIS REPORT.

ECONOMIC GEOLOGY

THE IMMEDIATE VICINITY OF THE BONANZA MINE HAS BEEN PREVIOUSLY INVESTIGATED BY HODGE (1980) AND KIDD (1981A), WHO FOUND GOLD VALUES OF POTENTIAL ECONOMIC INTEREST, SUPPORTING THE RESULTS FROM EARLY UNDERGROUND DEVELOPMENT AND PRODUCTION. MAPPING AND SAMPLING DURING THE PRESENT EXPLORATION PROGRAMME PROVIDE INDICATIONS THAT THE

Bonanza vein is part of vein / shear zone system extending laterally over the width of the property.

Directly on strike with the Bonanza vein, about 3,600 feet to the west near the edge of the property, is a 700 feet long trench and two shafts, the Good Luck Mine and the Drake (?) Mine, which have been sunk on a narrow (<3') quartz (-carbonate) vein occupying a shear zone. Visible gold was found in the rock dump at the Good Luck Shaft and a representative sample (9176) of the dump material assayed 0.12 oz. Au/ton. A similar sample (9181) from the dump at the Drake Shaft assayed 0.20 oz. Au/ton, while a third sample (9172) at the east end of the trench assayed trace Au/ton. There appears to be at least some development of subsidiary shear zones in the adjacent rocks (sample 9173: 0.29 oz. Au/ton over 1').

Closer to the Bonanza Mine, a sample (9159) from a 40" wide quartz-carbonate vein (very probably the Bonanza vein) exposed in a large pit assayed 0.02 oz. Au/ton. About 80 feet to the south is a sub-parallel quartz-carbonate vein and shear zone which may be part of the same fracture/vein system. Of three samples taken from exposures in pits, two (9156, 9158) assayed trace and one (9160) assayed 0.07 oz. Au/ton. The vein is generally less than 3' wide.

To the east of the Bonanza Shaft, a number of vein / shear zone exposures occur over a strike length of about 2,900 feet. The vein(s) are again quite narrow (<3' wide) and only one sample contained gold (9097: 0.14 oz. Au/ton). Samples from an associated narrow vein (9093, 9094, 9098) assayed between trace and 0.14 oz. Au/ton.

Excerp from ARIS 1984 #23280

APPROXIMATELY 200 FEET SOUTH OF THESE VEINS IS A PARALLEL-TRENDING SHEAR ZONE CONTAINING QUARTZ (-CARBONATE) VEINS AND VEINLETS. THE ZONE IS EXPOSED OVER A STRIKE LENGTH OF ABOUT 700 FEET IN A SERIES OF MAJOR TRENCHES AND TWO SHAFTS, KNOWN AS THE LOST MINE. AVAILABLE EXPOSURES INDICATE THAT THE WIDTH OF THE SHEAR ZONE IS GENERALLY LESS THAN 3 FEET. SAMPLES TAKEN ALONG THE ZONE (9089, 9090, 9095, 9096) ASSAYED FROM 0.10 TO 0.20 OZ. AU/TON. AN ASSOCIATED VEIN WITH AN IRREGULAR WIDTH AND TREND IS EXPOSED IN SHALLOW PITS TO THE NOTH OF THE EASTERN LOST MINE SHAFT. A SAMPLE FROM THIS VEIN (9091) ASSAYED TRACE.

THE LOST MINE SHEAR ZONE IS AT THE EDGE OF A SHARP DROP-OFF TO A LOW, OVERBURDEN COVERED VALLEY TO THE SOUTH. THE DROP-OFF CAN BE EXPLAINED IN TERMS OF A CHANGE IN LITHOLOGY TO MORE MAFIC, LESS RESISTANT VOLCANICS BUT IT DOES RAISE THE POSSIBLITY THAT AN UNEXPOSED FAULT COULD BE PRESENT.

TO THE EAST OF THE LOST MINE THE GROUND IS OVERBURDEN COVERED AND POSSIBLE EXTENSIONS OF THE SHEAR ZONE IN THIS AREA REMAIN UNEXPLORED. THE GROUND TO THE WEST IS ALSO LARGELY OVERBURDEN COVERED BUT TWO VEIN EXPOSURES SOUTHEAST AND SOUTHWEST OF THE BONANZA MINE MAY BE EASTWARD EXTENSIONS OF THE LOST MINE SHEAR ZONE OR RELATED UNEXPOSED ZONES TO THE SOUTH OF THE LOST MINE. ONE OF THE EXPOSURES (IN A PIT AT GRID LOCATION: 340W, 805N) IS A NARROW (<2' WIDE) SHEAR ZONE CONTAINING ABOUT 30% QUARTZ-CARBONATE VEINS AND VEINLETS. A SAMPLE OF THE VEIN MATERIAL (9128) ASSAYED 0.06 OZ. AU/TON. THE SECOND VEIN IS INTERMITTENTLY EXPOSED OVER A STRIKE LENGTH OF ABOUT

350 FEET. TOWARD THE EAST END THE QUARTZ (-CARBONATE) VEIN IS NARROW (<1' WIDE) AND CONTAINS MINOR MALACHITE COATINGS (AFTER CHALCOPYRITE?). TWO SAMPLES FROM THIS AREA (9155, 9180) ASSAYED 0.88 AND 0.32 OZ. Au/TON. FARTHER TO THE WEST, THE VEIN LIES BENEATH A 6' WIDE, 80' LONG WATER-FILLED TRENCH. A SAMPLE FROM THE TRENCH DUMP (9162) ASSAYED 0.01 OZ. Au/TON. A FINAL SAMPLE (9163) TAKEN FROM A PARTIAL EXPOSURE OF THE VEIN IN A PIT TO THE WEST OF THE TRENCH ASSAYED TRACE. ANY ADDITIONAL POSSIBLE EXTENSIONS OF THE LOST MINE VEIN / SHEAR ZONE LIE BENEATH THE LAKE AND THE OVERBURDEN COVER SOUTH OF THE DRAKE MINE.

THE REDEEMER MINE WAS PREVIOUSLY INVESTIGATED BY HODGE (1980) AND KIDD (1981A), WHO OBTAINED GENERALLY LOW ASSAYS (<0.10 OZ. Au/TON) FROM SURFACE SAMPLING AND DIAMOND DRILLING IN THE IMMEDIATE VICINITY OF THE SHAFT. DURING THE PRESENT EXPLORATION PROGRAMME, SURFACE SAMPLES OF THE VEIN (9106, 9108, 9125) WERE TAKEN TO THE EAST AND TO THE WEST OF THE SHAFT AREA. ALL SAMPLES ASSAYED TRACE. THE VEIN IS FAIRLY NARROW (<3'WIDE) AND PROBABLY OCCUPIES A SHEAR ZONE. THERE IS LITTLE OUTCROP FARTHER AWAY FROM THE SHAFT AND AMPLE ROOM FOR MAJOR LATERAL UNEXPOSED EXTENSIONS TO THE VEIN. GOLD VALUES WERE OBTAINED FROM SAMPLES (9052, 9170) OF TWO VEINS WHICH CONCEIVABLY MAY BE LINKED TO THE REDEEMER VEIN.

AN OLD MINE SHAFT AND ASSOCIATED TRENCHES AND PITS ARE LOCATED JUST SOUTH OF THE SOUTH BOUNDARY OF VAN HORNE TOWNSHIP ON CLAIM K. 558588. THIS APPEARS TO BE MINING LOCATION S.V. 372 (THOMSON, 1917, P. 186). THE WORK WAS CARRIED OUT "IN A FAHLBAND OR SCHISTOSE

VEIN ABOUT 20 FEET WIDE...WELLMINERALIZED WITH PYRITE, CHALCOPYRITE, GALENA AND A LITTLE SPHALERITE" (O.B.M., VOL. XXII, PT. 1, 1913). THE SHAFT WAS SUNK TO A DEPTH OF 60 FEET AND TWO MILL TESTS OF THE MINERALIZATION WERE MADE IN 1913 AND 1914 (THOMPSON, 1917, P.186).

THE SHAFT IS WATER-FILLED BELOW ABOUT THE 25 FOOT LEVEL BUT THE OPENING TO A DRIFT LEADING EAST CAN BE SEEN JUST ABOVE THE WATER. THE SHAFT WAS SUNK ON AN APPROXIMATELY 4 FOOT WIDE LIMONITIC, SERICITIC SHEAR ZONE WITH QUARTZ-CARBONATE VEINLETS AND 1% TO 5% DISSEMINATED AND STRINGER PYRITE. THE HOST ROCK IS A NARROW BAND OF FELSIC FLOW OR TUFF IN A DIORITE INTRUSIVE (MASSIVE FLOW?). A SULPHIDE-RICH SAMPLE (9134) OF VEIN MATERIAL FROM THE SHAFT DUMP ASSAYED 0.02 OZ. AU/TON. TWO SAMPLES (9133, 9139) OF THE SHEAR ZONE WITH LESS ABUNDANT PYRITE AND QUARTZ-CARBONATE VEINLETS FROM PARTIAL EXPOSURES IN TRENCHES AND PITS TO THE WEST ASSAYED 0.18 AND 0.04 OZ. AU/TON. OUTCROP EXPOSURE TO THE EAST AND TO THE WEST IS POOR AND THERE IS ROOM FOR MAJOR UNEXPOSED LATERAL EXTENSIONS TO THE SHEAR ZONE.

ABOUT 1,000 FEET NORTH OF THE LOST MINE ARE TWO SHAFTS WHICH FORM PART OF THE OLD LEAGUE MINE. THE SHAFT TO THE EAST (PROBABLY NO. 1 SHAFT) DOES NOT HAVE A CLEAR EXPOSURE OF THE VEIN BUT TWO REPRESENTATIVE SAMPLES (9142, 9177) OF QUARTZ-CARBONATE VEIN MATERIAL WERE TAKEN FROM THE SHAFT ROCK DUMP; THESE ASSAYED TRACE AND 0.04 OZ. AU/TON. THE SHAFT TO THE WEST (PROBABLY NO. 2 SHAFT) WAS SUNK ON AN APPROXIMATELY 4 FOOT WIDE SHEAR ZONE AND QUARTZ-CARBONATE VEIN. A REPRESENTATIVE SAMPLE FROM THE SHAFT DUMP (9105) ASSAYED TRACE AU/TON. FARTHER TO THE WEST, THREE SAMPLES WERE TAKEN (9110, 9111, 9113; ASSAYS TRACE TO 0.06 OZ. AU/TON), BUT EXPOSURES WERE POOR AND

THE SAMPLES PROBABLY DO NOT REPRESENT COMPLETE CROSS-SECTIONS OF THE VEIN AND SHEAR ZONE.

No. 3 Shaft of the League Mine was not found within the area of the mapping grid, despite a thorough search. Old reports (O.B.M., 1917) mention that it is located near Larson Bay, so it is probably between Claim K. 533385 and Claim K. 533389, on trend with the No. 3 Shaft and the No. 2 Shaft. Possible lateral extensions of the League vein in the intervening overburden covered area remain unexplored. To the west, the Ideal Mine is approximately on trend with the League vein. However, in the absence of information on vein exposures and mineralization in the large intervening area, the link can only be considered a very speculative possibility.

The Ideal Mine Shaft was reportedly sunk between two veins uncovered by surface trenching (O.B.M., 1906). It is hard to certain which are the veins of interest because exposures are not clear and the immediate shaft area is covered by the rock dump. Unlike any of the other mines, the host rock is a granodiorite to diorite intrusive cut by a quartz-feldspar porphyry dyke, both somewhat carbonatized. Two samples of quartz-carbonate vein material were collected from the shaft dump, a representative sample (9186: trace Au/ton) and a 'high grade' sample (9187: 0.12 oz. Au/ton). Quartz veins and shear zones from poor exposures in a number of nearby trenches and pits were also sampled (9184, 9165, 9188, 9189, 9194)and all except one (9184: 0.02 oz. Au/ton) assayed trace. The results are not encouraging but it is unlikely that surface exposures provide a complete

PICTURE OF THE ECONOMIC POTENTIAL.

INTERESTING RESULTS WERE OBTAINED FROM SAMPLING IN A TRENCH ABOUT 1,250 FEET WEST OF THE IDEAL MINE. THE TRENCH EXPOSES AN APPROXIMATELY 10 FOOT WIDE, STRONGLY CARBONATIZED SHEAR ZONE CONTAINING 5 TO 10% QUARTZ-CARBONATE VEINS AND VEINLETS. A SAMPLE OF THE SHEAR ZONE (9197) ASSAYED 0.25 OZ. AU/TON. A SAMPLE OF THE QUARTZ-CARBONATE VEINS (9196) ASSAYED 0.01 OZ. AU/TON. THERE IS A SMALL POSSIBILITY THAT THE SHEAR ZONE MAY BE AN EXTENSION OF THE MINERALIZED ZONE AT THE IDEAL MINE.

A SHAFT LOCATED JUST TO THE WEST OF THE PROPERTY ON THE BUSH ROAD TO GUY LAKE MAY BE ON THE REPORTED SOUTH VEIN OF THE GOOD LUCK MINE (O.B.M., 1911, 1912, 1913). THE EAST-WEST TRENDING QUARTZ-CARBONATE VEIN IS LESS THAN 2 FEET WIDE. A SAMPLE FROM THE SHAFT DUMP (9171) ASSAYED 0.31 OZ. AU/TON. THE SHEAR ZONE AND QUARTZ-CARBONATE VEINLETS POORLY EXPOSED IN A WATER-FILLED PIT ON TREND ABOUT 950 FEET TO THE EAST MAY BE AN EXTENSION OF THE SOUTHERN GOOD LUCK VEIN. A SAMPLE OF THE VEIN MATERIAL (9169 — NOT REPRESENTATIVE OF THE WHOLE SHEAR ZONE) ASSAYED 0.02 OZ. AU/TON. THERE IS ROOM FOR A FURTHER EASTWARD EXTENSION OF THE VEIN / SHEAR ZONE BENEATH THE OVERBURDEN COVER ALONG THE GUY LAKE ROAD. A SLIGHTLY SHEARED QUARTZ-FELDSPAR PROPHYRY DYKE WITH MINOR IRREGULAR QUARTZ VEINS (9141: 0.02 OZ. AU/TON) IS ROUGHLY ON TREND, FARTHER TO THE EAST.

ONE ADDITIONAL SAMPLING RESULT MAY BE OF INTEREST. A SAMPLE (9199) TAKEN FROM A SHEARED QUARTZ-FELDSPAR PORPHYRY DYKE (SILL?) IN THE NORTHWEST CORNER OF THE PROPERTY ASSAYED 0.02 OZ. AU/TON.

THE DYKE IS HEAVILY IRON STAINED (AFTER CARBONATE?) AND CONTAINS COMMON DISSEMINATED PYRITE. THERE ARE SEVERAL SIMILAR PORPHYRY DYKES NEARBY AND ADDITIONAL PROSPECTING AND SAMPLING IN THE AREA COULD PROVE WORTHWHILE.

CONCLUSIONS

THE PRESENT EXPLORATION PROGRAMME HAS CONFIRMED THE PRESENCE OF WIDELY DISTRIBUTED GOLD MINERALIZATION ON THE BONANZA - REDEEMER PROPERTY. GOLD IS TYPICALLY FOUND IN EAST-WEST TRENDING QUARTZ-CARBONATE VEINS AND SHEAR ZONES WHICH MAY BE RELATED TO THE WABIGOON FAULT TO THE NORTH. ON A MORE LOCAL SCALE, THE VEINS AND SHEAR ZONES APPEAR TO OCCUR PREFERENTIALLY IN MORE BRITTLE ROCKS[1] AND ALONG THE CONTACTS BETWEEN ROCKS OF CONTRASTING COMPETENCY.

LITTLE EVIDENCE OF DISSEMINATED WALLROCK MINERALIZATION WAS FOUND BUT THERE ARE SOME INDICATIONS THAT MULTIPLE VEIN / SHEAR ZONE SYSTEMS COULD BE PRESENT. SUCH SYSTEMS MIGHT BE AMENABLE TO BULK MINING OPERATIONS.

THE MAPPING AND SAMPLING RESULTS HAVE DEMONSTRATED THAT THERE IS A FAVOURABLE POTENTIAL FOR LATERAL EXTENSIONS TO THE KNOWN GOLD-BEARING VEINS AND SHEAR ZONES. WHILE MOST OF THE EXPOSED MINERALIZED ZONES ARE NARROW AND HAVE RELATIVELY LOW GRADES, WIDER ZONES AND HIGHER GRADES DO OCCUR. CONSIDERING THE HIGH PROPORTION OF OVERBURDEN

---

[1] VEINS AND SHEAR ZONES MAY SIMPLY BE BETTER EXPOSED IN MORE RESISTANT ROCKS.

COVER ON TREND WITH THE KNOWN GOLD-BEARING VEINS AND SHEAR ZONES, IT SHOULD NOT BE ASSUMED THAT AVAILABLE BEDROCK EXPOSURES ARE REPRESENTATIVE OF THE ECONOMIC POTENTIAL.

IT IS CONCLUDED THAT ADDITIONAL EXPLORATION WORK IS JUSTIFIED TO INVESTIGATE POSSIBLE LATERAL EXTENSIONS OF THE KNOWN MINERALIZED ZONES.

PROPOSED EXPLORATION PROGRAMME

1. PROSPECTING AND SAMPLING. A THOROUGH SURFACE EXAMINATION SHOULD BE CARRIED OUT ALONG THE TREND OF ALL KNOWN MINERALIZED ZONES. THE AREA AROUND THE QUARTZ-FELDSPAR DYKES IN THE NORTHWEST CORNER OF THE PROPERTY SHOULD ALSO BE INVESTIGATED.

2. I.P. SURVEY. THE SURVEY SHOULD BE CARRIED OUT IN OVERBURDEN COVERED AREAS ON TREND WITH THE KNOWN MINERALIZED ZONES. IT MAY BE POSSIBLE TO DELINEATE THE MINOR DISSEMINATED SULPHIDE CONCENTRATIONS ASSOCIATED WITH MOST OF THE GOLD-BEARING VEINS AND SHEAR ZONES.

3. GEOCHEMICAL SAMPLING. A) ORIENTATION SURVEY. THE PRESENCE OF OF KNOWN MINERALIZATION PROVIDES AN UNUSUALLY GOOD OPPORTUNITY TO DETERMINE WHETHER GEOCHEMICAL METHODS CAN BE USED TO ADVANTAGE. SAMPLING SHOULD BE CARRIED OUT IN UNCONTAMINATED AREAS AS CLOSE AS POSSIBLE TO KNOWN MINERALIZED ZONES. SOILS, HUMUS AND BASAL TILLS SHOULD ALL BE INVESTIGATED BUT ROCK GEOCHEMISTRY IS UNLIKELY TO ADD TO THE INFORMATION ALREADY

FROM PROSPECTING AND MAPPING. IN ADDITION TO GOLD, THE ANALYSIS SHOULD INCLUDE COPPER, ZINC AND LEAD, BECAUSE SULPHIDES OF THESE ELEMENTS ARE ASSOCIATED WITH GOLD MINERALIZATION. A SMALL SAMPLING INTERVAL, SAY 25 FEET, SHOULD BE USED TO ENSURE THAT THE ZONE OF INFLUENCE OF INDIVIDUAL SAMPLES CAN BE DETERMINED.

B) SYSTEMATIC SAMPLING. (OPTIONAL)

IF WORTHWHILE RESULTS ARE OBTAINED FROM THE ORIENTATION SURVEY, SYSTEMATIC SAMPLING SHOULD BE CARRIED OUT IN FAVOURABLE OVERBURDEN COVERED AREAS.

4. TRENCHING. (OPTIONAL) IF THE ABOVE PROGRAMME RESULTS IN FAVOURABLE INDICATIONS OF A BURIED MINERALIZED ZONE IT MAY BE WORTHWHILE TO USE TRENCHING TO EXPOSE AND SAMPLE THE ZONE. HOWEVER, BEDROCK TOPOGRAPHY IS QUITE VARIABLE IN MOST AREAS AND HEAVY OVERBURDEN COVER MAY BE ENCOUNTERED.

5. DIAMOND DRILLING. (OPTIONAL) SOME DIAMOND DRILLING IS LIKELY TO BE REQUIRED TO FOLLOW UP FAVOURABLE RESULTS FROM TRENCHING OR THE GEOPHYSICAL AND GEOCHEMICAL SURVEYS. HOWEVER, IT MAY PROVE TO BE IMPOSSIBLE TO DETECT BURIED MINERALIZATION BY INDIRECT METHODS, IN WHICH CASE CONSIDERATION SHOULD BE GIVEN TO SOME LIMITED EXPLORATORY DIAMOND DRILLING ACROSS THE MOST FAVOURABLE POSSIBLE EXTENSIONS OF KNOWN MINERALIZED ZONES.

T.S. Jolliffe

January, 1984

H.J. Hodge, P. Eng.

REFERENCES

Blackburn, C. E. (1980): "Towards a mobilist tectonic model for part of the Archean of northwestern Ontario," Geoscience Canada, vol. 7, pp. 64-72.

Bruce, E. L. (1925): "Gold deposits of Kenora and Rainy River Districts," Ont. Dept. Mines, vol. 34, pp. 39-42, and Map No. 34h.

Davis, D. W., Blackburn, C. E., and Krogh, T. E. (1982): "Zircon U-Pb ages from the Wabigoon-Manitou Lakes region, Wabigoon Subprovince, northwest Ontario," Canadian Journal of Earth Sciences, vol. 19, pp. 254-266.

Dryden Tourist Guide, 1983.

Hodge, H. J. (1980): "Report on gold property, Van Horne Township, District of Kenora, Ontario," H. J. Hodge and Associates, 23p.

Kidd, R. (1981a): "Report on diamond drilling program," Van Horne Gold Exploration Inc., 14p.

_____ (1981b): "Report on geophysical surveys," Van Horne Gold Exploration Inc., 8p.

McInnes, W. (1902): "Map No. 720, District of Rainy River (Manitou Lake Sheet)," Geol. Surv. Can.

Ontario Bureau of Mines (1906): Annual Report, vol. 15.

Parsons, A. L. (1911): "Gold fields of Lake of the Woods, Manitou and Dryden," Ont. Bur. Mines, vol. 20, pt. 1.

_____ (1912): "Gold fields of Lake of the Woods, Manitou and Dryden," Ont. Bur. Mines, vol. 21, pt. 1.

_____ (1913): "The Lake of the Woods and other areas," Ont. Bur. Mines, vol. 22, pt. 1.

Satterly, J. (1941): "Geology of the Dryden-Wabigoon area," Ont. Dept. Mines, vol. 50, pt. 2, 67p., and Map No. 50e.

Thomson, E. (1917): "Dryden gold area," Ont. Bur. Mines, vol. 26.

Trowell, N. F., Blackburn, C. E., and Edwards, G. R. (1980): "Preliminary geological synthesis of the Savant Lake - Crow Lake metavolcanic-metasedimentary belt, northwestern Ontario, and its bearing upon mineral exploration," Ontario Geol. Surv., Misc. Paper 89.

APPENDIX

SURFACE SAMPLING RESULTS[1], BONANZA-REDEEMER PROPERTY

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description[2]
9001	4800E/0225S	Tr.	Qtz vein (0.3" wide) within 1' wide zone (101°/V) -sugary; no visible mineralization
9002	5200E/0850S	Tr.	Intermediate dyke (109°/V) (<3"wide) -interstitial carbonate; minor disseminated py
9003	5250E/0900S	Tr.	Intermediate dyke (>5" wide) -interstitial carbonate
9004	5260E/0900S	Tr.	Intermediate to mafic dyke (1' wide) -minor disseminated py
9005	5200E/1060S	Tr.	Qtz vein (0-3" wide) (152°/49°W) -very minor fine-grained cpy (?)
9006	5200E/1060S	Tr.	Mafic dyke (1" wide) (089°/70°N)) -possible flow (amygdules?); fine-grained magnetite
9007	4900E/1280S	Tr.	Qtz vein (2"wide) (017°/47°W) -no visible mineralization
9008	4870E/1280S	Tr.	Felsic tuff (104°/80°N) -fissile (shear?);limonitic; fine-grained sulphide
9009	5040E/0960S	Tr.	Qtz vein (3"-4"wide) (174°/20°E) -smoky; carbonate; chlorite; magnetite; minor f.g. sulphide
9010	4850E/1170S	Tr.	Qtz vein (0-3"wide) (156°/70°W) -no visible mineralization
9011	4750E/1240S	Tr.	Qtz vein (variable width <3') in shear zone -no visible mineralization
9012	4750E/1240S	Tr.	Shear zone (approx 6'-9' wide) (094°/V) -siliceous; hematite

[1] Grab samples unless otherwise stated.

[2] Abbreviations:

Tr.	=	trace	py	=	pyrite
(070°/30°S)	=	strike & dip	cpy	=	chalcopyrite
V	=	vertical	aspy	=	arsenopyrite
qtz	=	quartz	po	=	pyrrhotite
dissem.	=	disseminated			
carb	=	carbonate			
Fe Oxide	=	Iron Oxide			

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9013	4620E/1210S	Tr.	Felsite dyke (2"-3"wide) (082°/V) -slightly porphyritic; minor carbonate; very minor py
9014	4630E/1270S	Tr.	Qtz vein (2'-3'wide) (159°/29°W) -minor hematite coatings
9015	4715E/1360S	Tr.	Qtz vein (1'wide) -no visible mineralization
9016	4200E/1030S	Tr.	Qtz vein (<1"wide) (044°/35°SE) -chlorite; carbonate; no visible mineralization
9017	3920E/0370S	Tr.	Shear zone (3"wide) (084°/V) -in intermediate to felsic flow; very minor fine-grained sulphide; carbonate 'eyes'.
9018	3770E/0940S	Tr.	Qtz vein (1"-2"wide) (150°/31°SW) -no visible mineralization
9019	3780E/1030S	Tr.	Qtz vein (shallow dip) -no visible mineralization
9020	3730E/1015S	Tr.	Shear zone (1'wide) (135°/81°SW) -in intermediate to felsic lapilli tuff; no visible min.
9021	3460E/0850S	Tr.	Intermediate dyke (3½'wide) (094°/87°N) -very minor disseminated pyrite
9022	3460E/0850S	Tr.	Shear zone (>2½') (074°/81°N) -chloritic; some limonite coatings
9023	3560E/0840N	Tr.	Qtz vein (0-3"wide) (157°/24°NE) -minor dissem. pyrite (+arsenopyrite?); limonite; hematite
9024	3560E/0840N	Tr.	Qtz vein (<½") (174°/74°W) -minor pyrite; limonite; hematite
9025	3560E/0840N	Tr.	Qtz vein (<2"wide) -arcuate lens trending 014°/ shallow dip; hematite and limonite staining
9026	3560E/0840N	Tr.	Qtz vein (0-2"wide) (001°/68°W) -minor pyrite; hematite and limonite staining

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9027	3560E/0840N	Tr.	Wallrock (same outcrop as qtz veins above) -intermediate to felsic flow and tuff; phyllitic; carb; siliceous alteration (?); minor dissem. py; limonitic fracture coatings
9028	3355E/1155S	Tr.	Felsite dyke (>7'wide) (094°/V) -slightly porphyritic; minor disseminated pyrite
9029	3400E/1270S	Tr.	Mafic dyke (1½'wide) (087°/78°N) -possible flow; minor disseminated pyrite
9030	3220E/1135S	Tr.	Qtz vein (3"wide) (115°/V(?)) -small exposure in trench; minor Fe oxides
9031	3175E/1110S	Tr.	Qtz veins (0-3"wide) (112°/V) -within (1'-2'wide) shear zone exposed in trench -minor limonite patches & coatings
9032	3175E/1110S	Tr.	Shear zone -minor dissem. sulphide -with qtz veins (separate sample. see above)
9033	3230E/0870S	Tr.	Qtz veins (019°/23°E) -Chlorite; no visible mineralization
9034	2900E/0870N	Tr.	Intermediate flow -carbonate; common dissem. pyrite; Fe oxide patches
9035	2935E/0880N	Tr.	Qtz vein (0-4") (091°/48°N) -chlorite; common Fe oxides
9036	2930E/0880N	Tr.	Peridotite(?) dyke (>12'wide) (contact 102°/78°S) -minor disseminated pyrite
9037	3120E/0830N	Tr.	Felsic Flow -heavily fractured with qtz veinlets (089°/74°N) -dissem. pyrite & Fe Oxide patches

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9038	2915E/0730N	Tr.	Qtz porphyry dyke (029°/V) (4'wide) -Fe Oxide patches
9039	2930E/0735N	Tr.	Felsic Flow -heavily fractured, with common qtz veinlets (<¼")
9040	2920E/0725N	Tr.	Mafic dyke -cuts felsic flow and qtz porphyry above -minor disseminated pyrite
9041	4200E/2320N	Tr.	Qtz veins (1"-3"wide) (072°/40°N) -no visible mineralization
9042	4400E/2180N	Tr.	Qtz veins (1"-5"wide) (115°/ 45°N) -chlorite; no visible mineralization
9043	4395E/2510N	Tr.	Qtz lens (1'wide) (115°) -minor py, cpy(:); strong hematite stain
9044	4615E/2460N	Tr.	Qtz veins -make up 60% of 5' wide shear zone (see below) -limonite
9045	4615E/2460N	Tr.	Shear zone (5'wide) (106°/83°S) -sheared felsic tuff with qtz veinlets -Fe oxides
9046	4580E/2260N	Tr.	Qtz pod (3'diameter) -possible breccia zone -tourmaline
9047	4585E/2260N	Tr.	Qtz vein (2"-6"wide) (177°/82°E) -minor hematite coatings
9048	3770E/1110N	Tr.	Carbonate - qtz vein (<1"wide) -from dump beside water-filled pit -in sheared felsic tuff (?)
9049	3620E/1640N	Tr.	Shear zone (3"wide) (098°/79°N) -with minor qtz, Fe oxides
9050	3200E/1700N	Tr.	Qtz vein (2"-3"wide) (117°/30°N) -no visible mineralization
9051	2800E/1250N	Tr.	Qtz vein (<3") (009°/51°W) -no visible mineralization

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9052	2200E/0630S	0.03	Qtz veins -in 8' wide shear zone (084°/V) -minor limonite
9053	2185E/1770S	Tr.	Felsic breccia fragments -in lapilli tuff -with f.g dissem. sulphide (cpy?)
9054	2185E/1770S	Tr.	Qtz vein or lens -irregular trend and width -no visible mineralization
9055	2200E/1820S	Tr.	Intermediate dyke (16'wide) (099°/80°N) -minor f.g dissem. pyrite
9056	2200E/1845S	Tr.	Qtz vein (4"wide) (146°/66°SW) -cuts dyke (see below) -strong hematite and limonte staining
9057	2200E/1845S	Tr.	Mafic dyke (2" wide) (109°/V) -f.g sulphide coatings (py.cpy(?))
9058	2190E/2150S	Tr.	Shear zone (8'wide) with qtz veins (103°/86°N) -in old pit
9059		Tr.	-2' panel samples N-S (#9058-#9061)
9060		Tr.	-9058: heavily sheared; some qtz; minor py (+aspy:)
9061		Tr.	-9059: minor shearing; minor qtz minor limonite -9060: as above -9061: heavily sheared, with qtz veins; minor py, limonite -on contact qtz. feldspar porphyry with mafic flow -samples 9058 + 9061 contain both porphyry and flow -samples 9059 + 9060 are porphyry
9062	2300E/2155S	Tr.	Qtz vein (3"-12") (172°/60°E) -in qtz-feldspar porphyry -minor chlorite, Fe oxide staining
9063	2360E/2225S	Tr.	Qtz vein (>3"wide) (E.W trend?) -poorly exposed; small outcrop leading east from trench -minor Fe oxide staining

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9064	2360E/2225S	Tr.	Qtz-feldspar porphyry -fractured; silicification; sheared (?); Fe oxide staining
9065	2400E/2770S	Tr.	Felsic tuff -well fractured; Fe oxides & minor py on fractures
9066	2400E/2770S	Tr.	Qtz veins (<4"wide) -several trends, including 154°/50°W; flat-dipping in part -limonite staining
9067	1940E/1000S	Tr.	Qtz vein/lens -on edge of mafic dyke (see below) -minor chlorite
9068	1940E/1000S	Tr.	Mafic dyke (3'wide) (099°/?) -no visible mineralization
9069	2000E/1050S	Tr.	Felsic (to intermediate) intrusive -slightly porphyritic (feldspar ± qtz) -no visible mineralization
9070	1995E/1120S	Tr.	Qtz vein (½"-1") (169°/60°W) -chlorite -Fe oxides
9071	1990E/1315S	Tr.	Intermediate to mafic intrusive -minor disseminated py, po
9072	2000E/1500S	Tr.	Qtz pods & lenses -in qtz-feldspar porphyry -no visible mineralization
9073	1985E/1700S	Tr.	Qtz vein (155°/39°W) -no visible mineralization
9074	2580E/1180N	Tr.	Intermediate to felsic flow -well fractured (sheared?); Fe oxide coatings
9075	2520E/1290N	Tr.	Intermediate to felsic flow and qtz veinlets (<½") -2' wide zone (085°/70°N) with several qtz veinlets -flow well fractured; Fe oxide coatings
9076	2590E/1850N	Tr.	Qtz vein (3"wide) (162°/36°W) -no visible mineralization
9077	2405E/1220N	Tr.	Intermediate Tuff -heavy Fe-oxide staining

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9078	2400E/1835N	Tr.	Intermediate dyke (099°) (25'wide) -minor Fe oxide spotting
9079	2420E/1910N	Tr.	Intermediate dyke (124°) (35'wide) -minor Fe oxide spotting
9080	2265E/1260N	Tr.	Qtz vein (3"-4"wide) (003°/35°W) -no visible mineralization
9081	2220E/2505N	Tr.	Shear zone (5'wide) (087°/80°N) -with minor qtz veining in felsic flow -in pit (8' deep) -Fe oxide staining
9082	1970E/2125N	Tr.	Shear zone (<3'wide) (092°/80°S) -with qtz veins (0.5" - 24"wide) -Fe oxide staining
9083	1800E/0360S	Tr.	Qtz vein (3"wide) (162°/55°W) -no visible mineralization
9084	1910E/0530S	Tr.	Mafic dyke (6'wide) (104°/V?) -minor disseminated pyrite
9085	1800E/2100S	Tr.	Shear zone and qtz-calcite vein (3'wide) (097°/73°N) -no visible mineralization -in trench
9086	1800E/2100S	0.06	As above - grab sample from trench dump -Fe oxide staining; very minor pyrite
9087	1700E/0940N	Tr.	Shear zone (4'wide) and qtz veins (<3") (086°/?) -in felsic tuff in trench - minor Fe oxide staining
9088	1660E/2210N	Tr.	Qtz vein (4"wide) (094°/35°S) -Fe oxide staining
9089	1600E/0730N	0.18	Shear zone (<3'wide) (088°/80°N) -in major trench near shaft for Lost Mine -with some qtz veining (<30%) and minor carbonate -pyrite disseminated and in stringers (<5%)
9090	1530E/0730N	0.15	Qtz vein -grab sample from shaft dump (Lost mine) -minor carbonate, minor disseminated pyrite

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9091	1535E/0765N 1555E/0765N 1590E/0770N	Tr	Qtz vein (2" to 4" wide) (E-W) -exposed in pits -chlorite, very minor carbonate and disseм. pyrite
9092	1540E/0940N	Tr	Shear zone (4' wide) (087°/80°N) -in felsic flow -strong hematite staining, minor pyrite
9093	1535E/0975N	0.14	Qtz vein and shear zone (<14" wide) (099°/80°N) -minor carbonate -minor disseminated pyrite, some limonite
9094	1210E/1080N	Tr	Qtz - carbonate vein (16" to 20" wide) (090°/70°N) -tourmaline, minor disseminated pyrite
9095	1200E/0800N	0.20	Shear zone (2' wide) and Qtz vein (3" to 6" wide) (097°/75°N) -in major trench associated with Lost Mine -minor carbonate, very minor disseminated pyrite -limonitic
9096	1005E/0835N	0.10	Qtz vein -grab sample from rubble in trench (N-S) -chlorite, minor carbonate; Fe Oxides, very minor py
9097	665E/1060N	0.14	Qtz vein and shear zone (2" to 10" wide) (090°/81°N) -carbonate -common blebs of chalcopyrite; minor malachite, chrysocolla and pyrite; very minor molybdenite; Fe Oxide staining
9098	630E/1200N	0.02	Qtz vein (<3" wide) (101°/V) -West of 2'x 4' E-W trending trench -tourmaline, carbonate, Fe Oxides and minor disseм. pyrite

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9099	600E/1525N	Tr.	Felsic flow -7' wide E-W trending zone with heavy Fe oxide staining -very minor carbonate, disseminated pyrate
9100	600E/1510N	Tr.	Felsic flow -5'wide E-W trending zone -carbonate alteration, Fe oxide staining -minor disseminated pyrite
9101	675E/1675N	Tr.	Felsic flow and Tuff -grab sample from large outcrop area -carbonate, Fe oxide staining -minor disseminated pyrite
9102	600E/1750N	Tr.	Mafic dyke (35' wide) (099°/V?) -chlorite, carbonate; foliated -very minor disseminated pyrite
9103	1000E/1975N	Tr.	Qtz veins and lenses (<10"wide) in E-W intermediate to mafic dyke -no visible mineralization
9104	1000E/1975N	Tr.	Intermediate to mafic dyke (10' wide) E-W trending -some carbonate alteration -very minor dissem. sulphide (pyrrhotite?)
9105	850E/1950N	Tr.	Qtz vein rubble from shaft dump (League Mine) -5% carbonate (calcite, Ankerite) -minor tourmaline; minor (<1%) pyrite
9106	420E/0520S	Tr.	Qtz vein (<18"wide) (089°/V) -chlorite, carbonate; common Fe oxides -minor pyrite; (probably Redeemer vein)
9107	245E/175S	Tr.	Qtz vein (2" to2' (pods)wide) (016°/33°E) -chlorite; no visible mineralization

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9108	250E-300E/ 0500S	Tr.	Qtz vein (2" to 18" wide) (091°/80°N) -some carbonate, chlorite, Fe oxides -very minor pyrite (probably Redeemer vein)
9109	300E/1557N-1575N	Tr.	Felsic to intermediate flow -zone of strong Fe oxide staining (102°/86°N) -moderately magnetic; minor disseм. pyrite
9110	675E/2005N	0.06	Qtz vein (14"wide) (094°/82°N) -limonitic (probably League Vein)
9111	675E/2005N	Tr.	Shear zone (8"wide) (094°/82°N) -minor qtz veining; very limonitic -may be sheared intermediate dyke -adjacent to #9110 to the south
9112	750E/2000N	Tr.	Intermediate dyke (?) (18" exposed width) -minor qtz veinlets -some carbonate alteration -minor pyrite
9113	750E/2000N	0.06	Brecciated felsic flow -with stockwork of qtz veinlets (<2" wide) -carbonate alteration, Fe oxides -port of shear zone?
9114	4000E/2090N	Tr.	Felsic flow -cherty (sediment?) -thin carbonate veinlets, Fe oxides; very minor py
9115	035W/1120N	Tr.	Qtz veins (<10"wide) (097°/79°N) -in shear zone (see #9116) -muscovite, some carbonate -abundant limonite patches and coatings; no visible sulphides
9116	035W/1120N	Tr.	Shear zone (30" to 36") (097°/79°N) -30% to 40%, qtz veins (sampled separately) -some carbonate, limonite; no visible sulphides

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9117	035W/1120N	Tr.	Intermediate to Mafic Dyke (4'wide) -adjacent and parellel to shear zone to south -limonite, carbonate, qtz stringers; no visible sulphides
9118	000/1585N	Tr.	Felsic to Intermediate flow ->10' wide (089°/?) -strong Fe oxide staining, patches -sheared, foliated
9119	085W/080N	Tr.	Shear zone (3' to 6'wide) (114°/?) -in brecciated felsic flow -carbonate alteration -Fe oxide stained; minor disseminated pyrite
9120	000/0320S	0.07	Tailings Dump -pale-buff grey, fine sand/silt
9121	000/0200S	Tr.	As above
9122	000/0230S	Tr.	As above
9123	000/0260S	0.05	As above
9124	000/0290S	0.07	As above
9125	000/0458S	Tr.	Shear zone (3'wide) (091°/?) ->75% qtz(-carb) veins -chlorite, limonite; no visible sulphides -probably Redeemer Vein
9126	250W/0210N	Tr.	Shear zone (2'wide) (099°/V) -in felsic flow -carbonate alteration, Fe oxide staining; no visible sulphides
9127	200W/0103N	Tr.	Shear zone (18"wide) (109°/80°S) -in felsic tuff -carbonate alteration; stong Fe oxide staining; no visible sulphides
9128	340W/0805N	0.06	Qtz veins (<½" to6") in Shear Zone (18" - 24"wide) (092°/87°N) -most of sample from veins (30%) of shear zone -in intermediate flow -carbonate, chlorite; minor pyrite cubes

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9129	320W/0780N	Tr.	Qtz veins (<1" to 16") -trends SSE to S eg. 163°/62°SW -discontinuous, irregular -filling tension fractures in felsic flow? -some Fe oxide staining; no visible sulphides
9130	700W/1215N	Tr.	Qtz veins (½" to 6") (shallow dip?) -<20% of shear zone (see #9131 below) -minor chlorite, carbonate; no visible sulphides
9131	700W/1215N	Tr.	Shear zone (3' exposed width) (099°/V) - qtz veins (#9130 above) and stringers -chlorite seams, carbonate; minor limonite -adjacent to (and in part, including?) intermediate dyke -Bonanza Vein?
9132	820W/0700N	Tr.	Qtz veins (<18") -irregular veins, lenses and pods (predominently flat dipping) -chlorite, minor carbonate; very minor pyrite
9133	900W/1395S	0.18	Shear Zone (079°/80°S) -2' wide (4'wide at shaft 25' to east) -in felsic flow; in trench -limonitic; very minor fine-grained pyrite(?)
9134	860W/1385S	0.02	Qtz - Carbonate Veins and Stringers -'high grade' sample from shaft dump -in sheared felsic flow (tuff?) -1% to 5% fine-grained pyrite disseminated and in stringers
9135	700W/2710S	Tr.	Qtz vein (1" to6") (099°/81°N) -minor chlorite; no visible mineralization

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9136	700W/2710S	Tr	Qtz vein (8" to 18") (044°/44°SE) -Joins or intersects #9135 -Chlorite; Fe Oxide staining
9137	1000W/080S	Tr	Felsic flow -Cherty; minor chlorite seams -Minor dissem. pyrite, pyrrhotite
9138	975W/0970S	Tr	Qtz veins -Irregular pods, lenses and veins in quartz-feldspar porphyry -Chlorite, minor Fe Oxide staining
9139	975W/1405S	0.04	Shear zone (4' wide)(084°/V) -Infelsic flow (tuff ?) in small pit -Carbonate-qtz stringers;limonite Fine grained dissemenated pyrite
9140	975W/2715S	Tr	Shear zone (18"wide) 097°/84°N) -In intermediate to felsic (lapilli) tuff with adjacent intermediate dyke -Limonite
9141	1420W/0750N	0.02	Qtz-feldspar porphyry -Slightly sheared (077°/80°S) with minor qtz veins -Limonitic, minor carbonate; common cubes of pyrite
9142	1700E/1665N	Tr	Qtz-carbonate vein -Sample from shaft dump -League mine (#1 shaft ?) -Very minor dissem. pyrite
9143	2740E/3345N	Tr	Qtz vein (101°/58°N) (1'wide) -Minor carbonate, Fe Oxiide staining -A few clusters of pyrite cubes
9144	1080W/0250S	Tr	Intermediate dyke (10"wide) (091°/V) -Part of shear zone (see #9145) -Carbonate alteration, Fe Oxide staining -Very minor fine-grained dissem. sulphide
9145	1080W/0250S	Tr	Qtz vein (10"wide) -Part of shear zone; on border of dyke -Continuation of qtz vein in pit 45' to the west (see #9146) -Chlorite, carbonate;no visible sulphides

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9146	1125W/0240S	Tr	Shear zone (2'wide) -in water-filled pit -60% qtz veins, includes 10" intermediate dyke -in felsic flow -'high grade' sample from dump material -Strong Fe Oxide staining; dissem. pyrite
9147	1605W/0255N	0.07	Peridotite(?) -fine-grained sulphide and magnetite
9148	1895W/0125N	Tr	Shear zone (1'wide) (105°/V) -in felsic flow -strong Fe Oxide staining; very minor dissem. pyrite
9149	1800W/0100N	Tr	Shear zone (5'wide) (118°/80°N) -in felsic flow; strong Fe Oxide staining
9150	1800W/095N	Tr	Qtz vein (<1') -irregular, lensoid -chlorite; no visible sulphides -in mafic to intermediate dyke adjacent to shear zone (#9149)
9151	1780W/1655S	Tr	Qtz vein (16"to 24"wide)(102°/82°N) -chlorite, carbonate; no visible sulphides
9152	1685W/0980N	Tr	Qtz veins (½"to 3"wide) in felsic flow -several irregular qtz veins (onetrend:134°/80°N) -limonitic shears (087°/62°S) in felsic flow -most of sample from qtz veins
9153	1810W/0985N	Tr	Qtz vein -poorly exposed, irregular-trending vein in intermediate dyke (084°/?)
9154	1800W/1115N	Tr	Qtz vein (2"to>2') (112°/?) -small pit dug on vein -Fe Oxide staining

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9155	1845W/1070N	0.88	Qtz Vein (2" to 12") (099°/80°N) -adjacent to limonitic intermediate dyke -wallrock felsic flow with disseminated pyrite, minor carbonate -common pyrite; cpy? -in trench?
9156	1700W/1250N	Tr.	Qtz Vein (2" to 10" wide) (102°/92°N) -probably along fault plane in sheared felsic flow -limonite, minor carbonate; disseminated pyrite
9157	1710W/1290N	Tr.	Shear Zone (>2') (111°/80°N) -in felsic flow with associated intermediate dyke -carbonate alteration; Fe oxide staining
9158	1850W/1300N	Tr.	Qtz Vein (>3' wide) -in pit -may be extension of #9156 -chlorite, carbonate, minor tourmaline -some Fe oxide patches; minor pyrite
9159	1980W/1415N	0.02	Qtz Vein (<40" wide) (092°/80°N) -in pit (Bonanza Vein?) -carbonate, limonite, common pyrite
9160	1965W/1320N	0.07	Qtz Vein (109°/84°N) and Sheared Felsic Flow (2'wide) -some carbonate; limonite; common pyrite
9161	1975W/1180N	Tr.	Qtz Veins (½" to 20") (104°/80°N) -several qtz veins in 10'wide intermediate dyke and felsic flow (exposed width of zone 20') -some carbonate; limonitic

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9162	2000W/1100N	0.01	Qtz Vein (099°/80°N) -in waterfilled 80' long, 6' wide trench -sample from trench dump -probably on contact between intermediate dyke and felsic flow -Fe oxide staining and patches some carbonate -finegrained disseminated pyrite
9163	2145W/1125N	Tr.	Qtz Vein (1' to 2' exposed width) (104°/77°N) -probable continuation of #9162 -in intermediate dyke -some carbonate, limonitic patches, bands -minor pyrite
9164	2050W/025N	Tr.	Qtz Vein (099°/86°N) -poorly exposed in trench -sample taken from dump -Fe oxide patches and staining
9165	2205W/045N	Tr.	Qtz Vein (089°/082°N) (1'wide) -in shear zone (1' to 2'wide) on contact with intermediate dyke -continuation of #9164 -in pit -chlorite; minor Fe oxide staining; minor pyrite
9166	1850W/0240S	Tr.	Qtz Vein (18" exposed width) -insufficient exposure to get trend -some chlorite; no visible mineralization
9167	2850W/1315S	Tr.	Qtz Vein (>3'wide) (099°/:) -some chlorite; no visible mineralization
9168	3245W/065S	Tr.	Shear Zone (1' to 2' wide) (077°/V) in felsic flow (?) adjacent to intermediate dyke -moderate to strong Fe oxide staining -minor disseminated pyrite

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9169	3445W/0875N	0.02	Qtz Veins (5%) in shear zone (8' exposed width) (092°/73°N) -at waterfilled pit -several thin qtz veins (<1") in intermediate flow with minor (18") qtz feldspar porphyry -couldn't get representative sample, so took qtz veins from pit and dump -carbonate, chlorite; Fe oxide; minor disseminated sulphide
9170	3800W/030S	0.16	Qtz Vein (3" to 4" wide) (096°/V) -in trench 235' long -chlorite, minor carbonate; Fe oxide staining -minor dissem. pyrite
9171	4385W/0980N	0.31	Qtz Vein (<2'wide) (087°/78°N) -sample from shaft dump (south vein Good Luck Claim?) -some chlorite, tourmaline, carbonate; minor muscovite -clusters of pyrite cubes
9172	4710W/1925N	Tr.	Qtz Vein (1" wide) (095°/68°N) -in trench leading to (Good Luck?) shaft 250' to west -minor tourmaline; limonite -minor disseminated pyrite
9173	4910W/1960N	0.29	Shear Zone (1"wide) (095°/83°N) -in felsic to intermediate lapilli tuff with minor qtz veinlets adjacent to intermediate dyke -carbonate limonite, minor disseminated pyrite
9174	4800W/2165N	0.04	Qtz Vein (8"wide) (106°/77°N) -in Shear Zone (see below) -abundant carbonate; limonite, muscovite
9175	4800W/2165N	0.03	Shear Zone -28"wide, including qtz vein (see below) -in intermediate dyke with qtz carbonate stringers -with disseminated pyrite cubes

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9176	4975W/1965N	0.12	Qtz Vein (>1'wide) (098°/84°N) -sample taken from shaft dump -Good Luck mine? -carbonate, tourmaline, chrome mica -minor disseminated pyrite -a specimen from dump contained a speck of visible gold (not included with sample)
9177	1700E/1665N	0.04	Qtz Vein -sample from shaft dump League Mine (#1 Shaft?) -carbonate, limonite, muscovite, chlorite' minor tourmaline -minor pyrite; very minor sphalesite(?)
9178	1845W/1070N	Tr.	Felsic Flow -adjacent to qtz vein previously sampled (#9155 0.88 oz/ton) -carbonate alternation; minor disseminated pyrite
9179	1845W/1070N	Tr.	Intermediate dyke -adjacent to qtz vein previously sampled (#9155) -(<1'wide) -carbonate alteration; very limonitic
9180	1845W/1070N	0.32	Qtz Vein previously sampled in place (#9155) -malachite bearing qtz vein samples selected from trench dump -muscovite, carbonate -pyrite, malachite (+chalcocite?) coatings (after chalcopyrite?)
9181	5425W/2012N	0.20	Qtz Vein -sample from shaft dump (Drake Mine ? on strike with Good Luck Mine to east) -some carbonate, chlorite; minor disseminated pyrite
9182	6410W2950N	0.01	Intermediate flow -adjacent to contact (113°/83°N) with qtz-feldspar porphyry -carbonate alteration; abundant pyrite cubes

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9183	4200W/3075N	Tr.	Shear Zone (6'wide) (091°/85°N) -chlorite-sericite schist (intermediate tuff?) -carbonate alteration; limonitic
9184	4110W/3055N	0.02	Qtz Veins (<2'wide over 4'wide zone) (101°/81°S) -lensoid, variable trend -chlorite, carbonate limonite -a few aggregates of chalcopyrite blebs with associated malachite; very minor disseminated pyrite
9185	4115W/2988N	Tr.	Qtz Veins (<20" wide) -lensoid, variable trends (079°/64°N to 146°/NE) -minor tourmaline, carbonate, chlorite
9186	4150W/2955N	Tr.	Qtz Veins -representative sample from shaft dump (Ideal Mine) -tourmaline, carbonate
9187	4150W/2955N	0.12	Qtz Veins -'high grade' sample from shaft dump (Ideal Mine) -tourmaline, carbonate more abundant -minor pyrite aggregates
9188	4195W/2975N	Tr.	Qtz Vein (2'wide) (123°/80°N) -variable trend (leading to Ideal Mine Shaft?) -minor muscovite, tourmaline, carbonate -some limonite
9189	4245W/3025N	Tr.	Diorite -finegrained (dyke?) -common disseminated pyrite -sampled dump from trench
9190	5800W/3820N	Tr.	Qtz float -probably from hill immediately to east -chlorite, some muscovite, carbonate -some Fe oxide patches

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9191	5765W/3710N	Tr.	Diorite (Granodiorite?) -minor carbonate alteration -minor disseminated pyrite and chalcopyrite
9192	5200W/3420N	Tr.	Shear Zone (7'wide) (093°/86°S) -chlorite sericite schist (intermediate flow?) -strong carbonate alteration Fe oxides
9193	4450W/3400N	Tr.	Shear zone (7'wide) (085°/V) -chlorite sericite schist with minor qtz veinlets -strong carbonate alteration, Fe oxides
9194	4315W/2915N	Tr.	Shear Zone (118°/?) -poorly exposed in trench -with minor qtz veining -at contact between qtz-feldspar porphyry and intermediate flow (dyke?) -strong carbonate alteration, Fe oxides -minor disseminated pyrite
9195	4215W/2830N	Tr.	Qtz Vein/Pod -width and trend uncertain; may not be in place -tourmaline; some carbonate, chlorite; limonitic -minor pyrite
9196	5555W/3255N	0.01	Qtz veins (<2'wide, avg 2") (123°/76°N) -5% to 10% of 10' wide Shear Zone (see below) -sample taken from trench dump (in part) -carbonate, limonite; minor chlorite, tourmaline -minor disseminated pyrite (+ chalcopyrite?)

APPENDIX

Sample Number	Grid Co-ordinates	Assay (oz. Au/ton)	Description
9197	5555W/3255N	0.25	Shear Zone (see above) -talc-sericite schist (felsic to intermediate tuff?) -includes minor qtz veinlets -strong carbonate alteration, Fe oxides -minor disseminated pyrite
9198	5600W/3110N	0.02	Shear Zone (4' exposed width) (096°/V) -intermediate dyke or flow -minor qtz veinlets -strong carbonate alteration, Fe oxides
9199	5200W/3730N	0.02	Qtz-feldspar porphyry -foliated, sheared (EW) -strong Fe oxide staining (after carbonate?) -disseminated pyrite

900

Mining Lands Section **File No** 2.6680

Control Sheet

TYPE OF SURVEY

____ **GEOPHYSICAL**

__✓__ **GEOLOGICAL**

__✓__ **GEOCHEMICAL**

____ **EXPENDITURE**

MINING LANDS COMMENTS:

lgd. L.D.

D. Hurst

Signature of Assessor

July 23/84

Date

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

2.6680

The Mining Act

#103-84

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s)	Township or Area
Geological	CONTACT BAY M.2737 Van Horne Twp. M-2053

Claim Holder(s)	Prospector's Licence No.
Van Horne Gold Exploration Inc.	T-1054

Address: 700-11 Adelaide St. West, Toronto, Ontario M5H 1L9

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
Geocanex Ltd.	27 06 83 (Day Mo. Yr.) 19 09 83 (Day Mo. Yr.)	

Name and Address of Author (of Geo-Technical report): T.S. Jolliffe, 68 Collingwood St., Kingston, Ontario K7L 3X4

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	40
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
K	533304	
	533305	
	533306	
	533307	
	533308	
	533385	
	533386	
	533387	
	533388	
	533389	
	533390	
	533391	
	533392	
	533393	
	533394	
	558584	
	558585	
	558586	
	558587	
	558588	
	558589	
	558590	
	558591	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
K	558594	
	558595	
	558596	
	558597	
	558598	

RECEIVED
APR 30 1984
MINING LANDS SECTION

KENORA MINING DIV
RECEIVED
APR 18 1984
AM 7 8 9 10 11 12 1 2 3 4 5 6 8 PM

See Revised Statement

533304

Total number of mining claims covered by this report of work: 28

Expenditures (excludes power stripping)

Type of Work Performed:

Performed on Claim(s):

Calculation of Expenditure Days Credits

Total Expenditures $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
1120	Apr. 18/84	
	Date Approved as Recorded	Branch Director

Date	Recorded Holder or Agent (Signature)
09-04-84	

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

1984 08 16

Your File: 103-84
Our File: 2.6680

Mrs. Mary Ellen Lemay
Mining Recorder (Acting
Ministry of Natural Resources
808 Robertson Street
Box 5080
Kenora, Ontario
P9N 3X9

Dear Madam:

RE: Notice of Intent dated July 24, 1984
Geological Survey on Mining Claims
K 533304 et al in the Township of
Van Horne

The assessment work credits, as listed with the above-mentioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-4888

S. Hurst:mc

cc: VanHorne Gold Exploration Inc
Suite 700
11 Adelaide Street West
Toronto, Ontario M5H 1L9

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Resident Geologist
Kenora, Ontario

Ministry of Natural Resources
Ontario

Technical Assessment Work Credits

File 2.6680

Date 1984 07 24

Mining Recorder's Report of Work No. 103-84

Recorded Holder: VAN HORNE GOLD EXPLORATION INC

Township or Area: VAN HORNE TOWNSHIPS

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	K 533304 to 307 inclusive 533385 533387 to 391 inclusive 533394 558584 to 591 inclusive 558594 to 598 inclusive
Electromagnetic _____ days	
Magnetometer _____ days	
Radiometric _____ days	
Induced polarization _____ days	
Other _____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological 40 days	
Geochemical _____ days	
Man days ☐ Airborne ☐	
Special provision ☐ Ground ☐	
☐ Credits have been reduced because of partial coverage of claims.	
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

30 DAYS CREDIT	20 DAYS CREDIT	10 DAYS CREDIT
K 533308-86	K 533393	K 533392

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ Insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on

Ministry of Natural Resources

Ontario

Aug 8/84

1984 07 24

Your File: 103-84
Our File: 2.6680

Mrs. Mary Ellen Lemay
Mining Recorder (Acting)
Ministry of Natural Resources
808 Robertson Street
Box 5080
Kenora, Ontario
P9N 3X9

Dear Madam:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. R.J. Pichette at 416/965-4888.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3

S. Hurst:mc

Encls.

cc: Van Horne Gold Exploration Inc
Suite 700
11 Adelaide Street West
Toronto, Ontario
M5H 1L9

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

Ministry of Natural Resources

Ontario

Notice of Intent

for Technical Reports

1984 07 24

2.6680/103-84

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Land Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.

1984 05 09

Your File: 103-84
Our File: 2.6680

Mr. Wade Mathew
Mining Recorder
Ministry of Natural Resources
808 Robertson Street
Box 5160
Kenora, Ontario
P9N 3X9

Dear Sir:

We have received reports and maps for a Geological Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims K 533304 et al in the Township of Van Horne.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-6918

R. Pichette:sc

cc: Van Horne Gold Exploration Inc
700 - 11 Adelaide Street WEst
Toronto, Ontario
M5H 1L9

cc: Geocanex Limited
11 Adelaide Stveet W
Suite 700
Toronto, Ont
Attn: R. Gillick
H. Hodge.

IDEAL MINE

DRAKE MINE?

GOOD LUCK MINE

GOOD LUCK MINE?

BONANZA MINE

LEAGUE MINE

LOST MINE

REDEEMER MINE

Mining Location S.V. 312 ?

VAN HORNE TOWNSHIP

SAMPLING RESULTS*

Sample Number	Assay (oz Au/ton)	Grid Co-ordinates
9052	0·03	2200E 0630S
9086	0·06	1800E 2100S
9089	0·18	1600E 0730N
9090	0·15	1530E 0730N
9093	0·14	1535 E 0975N
9095	0·20	1200E 0800N
9096	0·10	1005E 0835N
9097	0·14	0665E 1060 N
9098	0·02	0630E 1200 N
9110	0·06	0675E 2005N
9113	0·06	0750E 2000N
9120	0·07	0000 0320S
9123	0·05	0000 0260S
9124	0·07	0000 0290S
9128	0·06	0340W 0805N
9133	0·18	0900W 1395S
9134	0·02	0860W 1385 S
9139	0·04	0975W 1405S
9141	0 02	1420W 0750S
9147	0·07	1605W 0255S
9155	0·88	1845W 1070N
9159	0·02	1980W 1415 N
9160	0·07	1965W 1320N
9162	0·01	2000W 1100N
9169	0·02	3445W 0875N
9170	0·16	3800W 0030S
9171	0·31	4385W 0980N
9173	0·29	4910W 1960 N
9174	0·04	4800W 2165N
9175	0·03	4800W 2165N
9176	0·12	4975W 1965N
9177	0·04	1700E 1665N
9180	0·32	1845W 1070N
9181	0·20	5425W 2012N
9182	0·01	6410W 2950N
9184	0·02	4110W 3055N
9187	0·12	4150W 2955N
9196	0·01	5555W 3255N
9197	0·25	5555W 3255N
9198	0·02	5600W 3110N
9199	0·02	5200W 3730N

* Includes only samples assaying greater than trace Au / ton, see report appendix for complete description of all (199) samples

Azt Mag 4·5°

SYMBOLS

- Cut and chained grid lines
- Claim line
- Survey post
- Township Line / Lot / Concession Line
- Bush road, grown-over bush road
- Abandoned cabins, Buildings foundations
- Swamp
- Intermittent stream
- Beaver dam
- Shoreline
- Sampling location; assay greater than trace Au/ton
- Quartz (-carbonate) veins; inclined, vertical, width in brackets
- Shear zone; inclined, vertical, width in brackets
- Dykes; inclined, vertical showing rock types and width
- Fractures; inclined, vertical, width in brackets
- Mine shaft, Rock dump
- Trench, Pit

qvf quartz vein float
qp quartz pod / lens
vg visible gold
cpy chalcopyrite
mal malachite
mo molybdenite
py pyrite
po pyrrhotite
mag magnetite
hm hematite
im limonite
FeO iron oxides
cb carbonate
trml tourmaline

GOLD MINERALIZATION
Known
Probable
Possible

BONANZA REDEEMER PROPERTY

0 MILES 1

H.M. HODGE — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

Van Horne Gold Exploration Inc.

BONANZA-REDEEMER PROPERTY

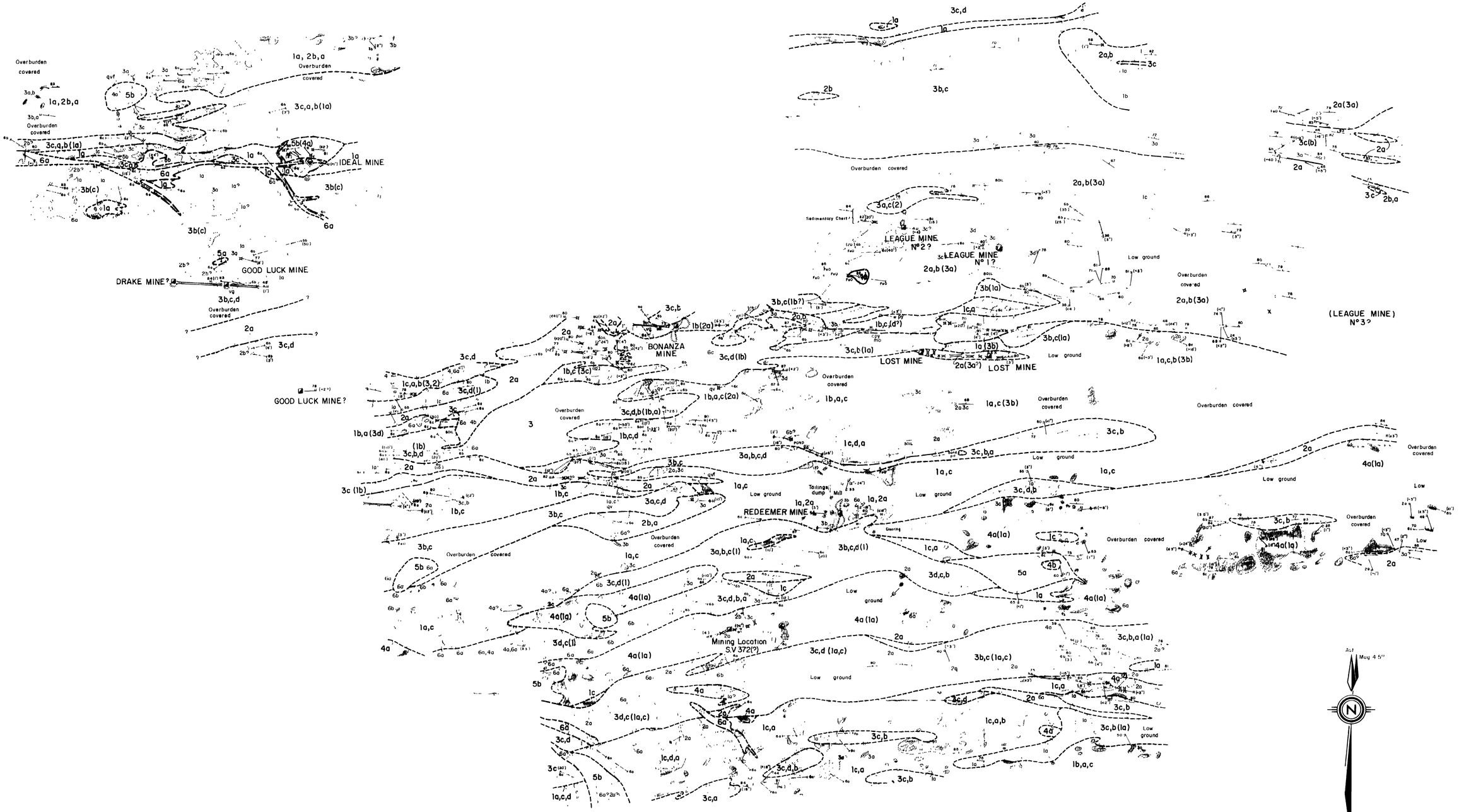
Van Horne Township, Ontario

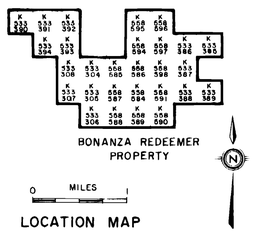
SAMPLING RESULTS

0 400 800 1200
SCALE IN FEET

GEOCANEX LTD
TORONTO, CANADA

BY: T.S Jollife
DATE: Dec. 1983
SCALE: 1" = 400'
DWG. No: 2





LOCATION MAP

ROCK TYPES

6 Minor Intrusive Rocks
- 6a Quartz-feldspar porphyry (and felsite) dykes
- 6b Diorite dykes
- 6c Basalt / diabase dykes
- 6d Peridotite dykes

5 Felsic Intrusive Rocks
- 5a Porphyritic granite
- 5b Granodiorite

Intermediate to Mafic Intrusive Rocks
- 4a Diorite
- 4b Gabbro

3 Pyroclastic Volcanic Rocks
- 3a Felsic tuff
- 3b Mafic to intermediate tuff
- 3c Lapilli tuff
- 3d Breccia

2 Felsic to Intermediate Volcanic Rocks
- 2a Massive flows
- 2b Brecciated flows

Mafic to Intermediate Volcanic Rocks
- 1a Massive flows
- 1b Brecciated flows
- 1c Amygdaloidal flows
- 1d Pillowed flows

SYMBOLS

- Cut and chained grid lines
- Claim line
- Survey post
- Township Line / Lot / Concession Line
- Bush road, grown-over bush road
- Abandoned cabins, Buildings foundations
- Swamp
- Intermittent stream
- Beaver dam
- Shoreline
- Bedding, inclined, angle uncertain, vertical, overturned
- Foliation, inclined, angle uncertain, unknown, vertical
- Quartz (-carbonate) veins; inclined, vertical, width in brackets
- Shear zone; inclined, vertical, width in brackets
- Dykes, inclined, vertical showing rock types and width
- Fractures, inclined, vertical, (with iron oxide staining)
- Glacial striae
- Geological contacts; defined, approx., interpreted
- 2a(3)1b Rock types, predominant, secondary / intercalated, local
- Areas of bedrock outcrop
- Mine shaft, Rock dump
- Trench, Pit

qvf quartz vein float
qp quartz pod / lens
qv quartz vein - orientation uncertain
FeO iron oxide staining / spotting

vg visible gold
cpy chalcopyrite
mo molybdenite
py pyrite

Adj Mag 4.5°

REGISTERED PROFESSIONAL ENGINEER M. J. HODGE PROVINCE OF ONTARIO

Van Horne Gold Exploration Inc.

BONANZA-REDEEMER PROPERTY

Van Horne Township, Ontario

GEOLOGICAL MAP

0 400 800 1200
SCALE IN FEET

GEOCANEX

GEOCANEX LTD
TORONTO, CANADA

BY: T S Jolliffe
DATE: Dec. 1983
SCALE: 1" = 400'
DWG. No: 1

2660