# GM 44154

Reverse circulation overburden drilling and heavy mineral geochemical sampling, lac Blouin south property

# COMOX RESOURCES LIMITED

## NORTHERN ABITIBI MINING CORP. AND GOLDEN RULE RESOURCES LTD. OPTION

## LAC BLOUIN SOUTH PROPERTY

## SENNEVILLE AND VASSAN TOWNSHIPS, QUEBEC

# REVERSE CIRCULATION OVERBURDEN DRILLING AND HEAVY MINERAL GEOCHEMICAL SAMPLING

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# 1. SUMMARY

The report details the results of a 14-hole reverse circulation overburden drilling/heavy mineral geochemical sampling program that was conducted by Comox Resources Limited on its optioned Lac Blouin South property near Val d'Or, Quebec. The drilling focussed on three gold targets: (1) a heavy mineral anomaly previously reported from a Geological Survey of Canada drill hole; (2) VLF-indicated shear zones in the regionally favourable contact of the Bourlamaque granitoid batholith; and (3) VLF - indicated shear zones proximal to a 1930's gold showing.

The drill area is underlain by Archean metavolcanic rocks of the Dubuisson Formation, Lower Malartic Group, and by the coeval Bourlamaque Batholith. The rocks intersected in drilling are intermediate to predominantly mafic volcanics, graywacke and the marginal dioritic phase of the batholith. Metamorphic grade is sub-greenschist in the volcanics and greenschist in the batholith. The VLF shear zones in the batholith were confirmed by the drilling but are not hydrothermally altered. Gold, arsenic, copper and zinc levels are low but graywacke in Hole 01 contains a few veinlets of potentially significant chalcopyrite/sphalerite mineralization.

Overburden depth in the drill holes averaged 25.0 metres and drill operating costs averaged $54.10/metre ($16.30/foot). All preserved Quaternary strata are of Late Wisconsinan age. Chibougamau/Matheson Till forms a thin veneer over bedrock and is overlain by thick glaciofluvial sediments of the Mattagami Esker and/or by glaciolacustrine sediments of Lake Ojibway II. The till has been completely eroded from a one km wide scour channel under the esker axis.

The drilling showed that the GSC gold anomaly is a spurious one caused by the nugget effect. Thirteen new nugget anomalies were identified with most resulting from low grade concentrations of placer gold in the Mattagami Esker. No significant gold dispersion trains were encountered and the gold potential of the target areas appears to be low. Follow-up investigations are warranted only near Hole 01 where two deeply buried, untested VLF conductors that occur proximal to the chalcopyrite/sphalerite-bearing graywacke may be caused by massive sulphide mineralization.

# 2. INTRODUCTION

## 2.1 Project Outline

From October 23 to 27, 1986, Comox Resources Limited conducted a program of reverse circulation overburden drilling and heavy mineral geochemical sampling on its Lac Blouin South property in the Abitibi greenstone belt near Val d'Or, Quebec (Fig. 1, 2, 3). The objectives of the drilling were threefold:

1. To determine the significance of a 35,000 ppb heavy mineral gold anomaly reported by the Geological Survey of Canada (DiLabio, 1983) from Hole ME-04 of an earlier 1972 reverse circulation drilling program.

2. To search for dispersion indicative of gold mineralization of the classical Val d'Or type along the northeastern margin of the Bourlamaque granodiorite batholith east of Lac Blouin.

3. To search for dispersion indicative of significant gold mineralization in proximity to VLF conductors and an old trenched showing (Lundberg, 1937) in volcanic rocks west of Lac Blouin.

Fifteen holes were planned and fourteen were drilled (Plan 1, in pocket). Hole 01 was drilled at the site of GSC Hole ME-04. Holes 02 to 09 were drilled on the granodiorite contact east of Lac Blouin and Holes 10 to 14 were drilled to test the VLF targets west of Lac Blouin. Hole 05 was abandoned in overburden. All other holes reached and sampled bedrock.

Comox contracted Heath and Sherwood Drilling of Kirkland Lake, Ontario, to perform the drilling and Overburden Drilling Management Limited (ODM) of Nepean, Ontario to manage the program. Geologist S. Averill prepared the program budget and hole layout. Geologist D. Holmes and geotechnician K. Strank spotted, logged (Appendix A) and sampled the drill holes and supervised the drilling.

One hundred and two overburden samples and thirteen bedrock samples were collected (Table 1). Heavy mineral concentrates (Appendix B) were prepared from the overburden samples at ODM's laboratories in Rouyn, Quebec and Nepean, Ontario, using the procedures illustrated in Fig. 4. Gold particles sighted during processing were measured to determine their individual contributions to the overall gold content of the concentrates (Table 2 and Appendix C) and were classified according to their distance of glacial transport (Fig. 5).

The bedrock chip samples were logged under the binocular (Appendix D) and their lithologies were related to the established Archean stratigraphy (Plan 1; Fig. 6). The bedrock samples and the 3/4 splits of the heavy mineral concentrates were analyzed for gold, arsenic, copper and zinc (Appendix E, F). Anomalies were interpreted (Plan 3) in relation to the Quaternary (Fig. 7, 8) and Archean (Plan 1) stratigraphy.

This report documents the above work and discusses results of significance. It has been reviewed by Jens E. Hansen, a Professional Engineer registered in the Province of Quebec, who has considerable previous work experience on the property.

## 2.2 Principles of Deep Overburden Geochemistry in Glaciated Terrain

During the Pleistocene epoch of the Quaternary period, the crowns of all ore bodies that subcropped beneath the continental ice sheets of North America were eroded and dispersed down-ice in the glacial debris. The dispersion mechanisms were systematic (Averill, 1978) and the resulting ore "trains" in the overburden are generally long, thin and narrow and most importantly are several hundred times larger than the parent ore bodies. These large trains can be used very effectively to locate the remaining roots of the ore bodies.

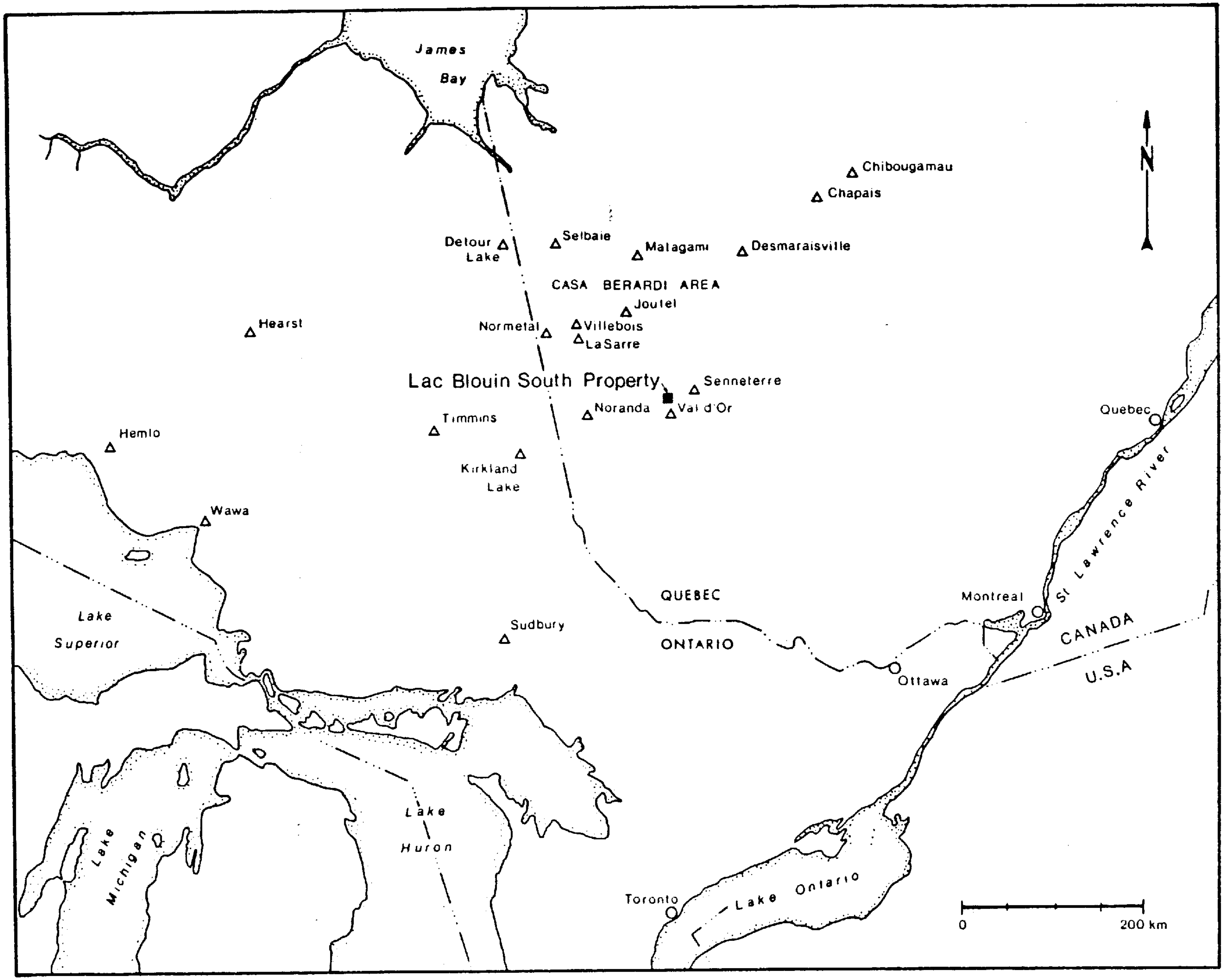

Figure 1 - Lac Blouin South Property Location Map

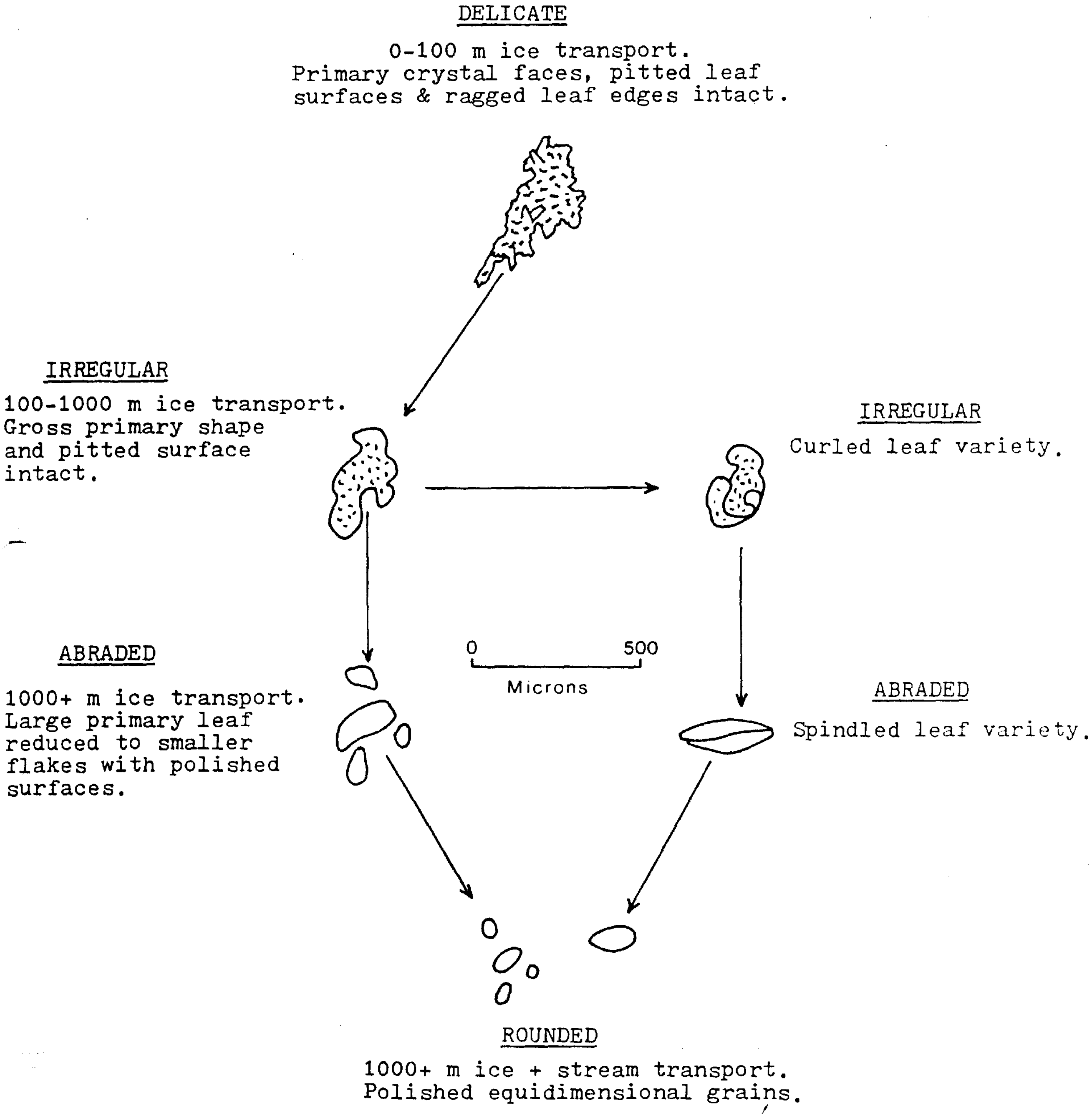

Figure 5 - Effects of Glacial Transport on Gold Particle Size and Shape (Developed by Overburden Drilling Management Ltd.)

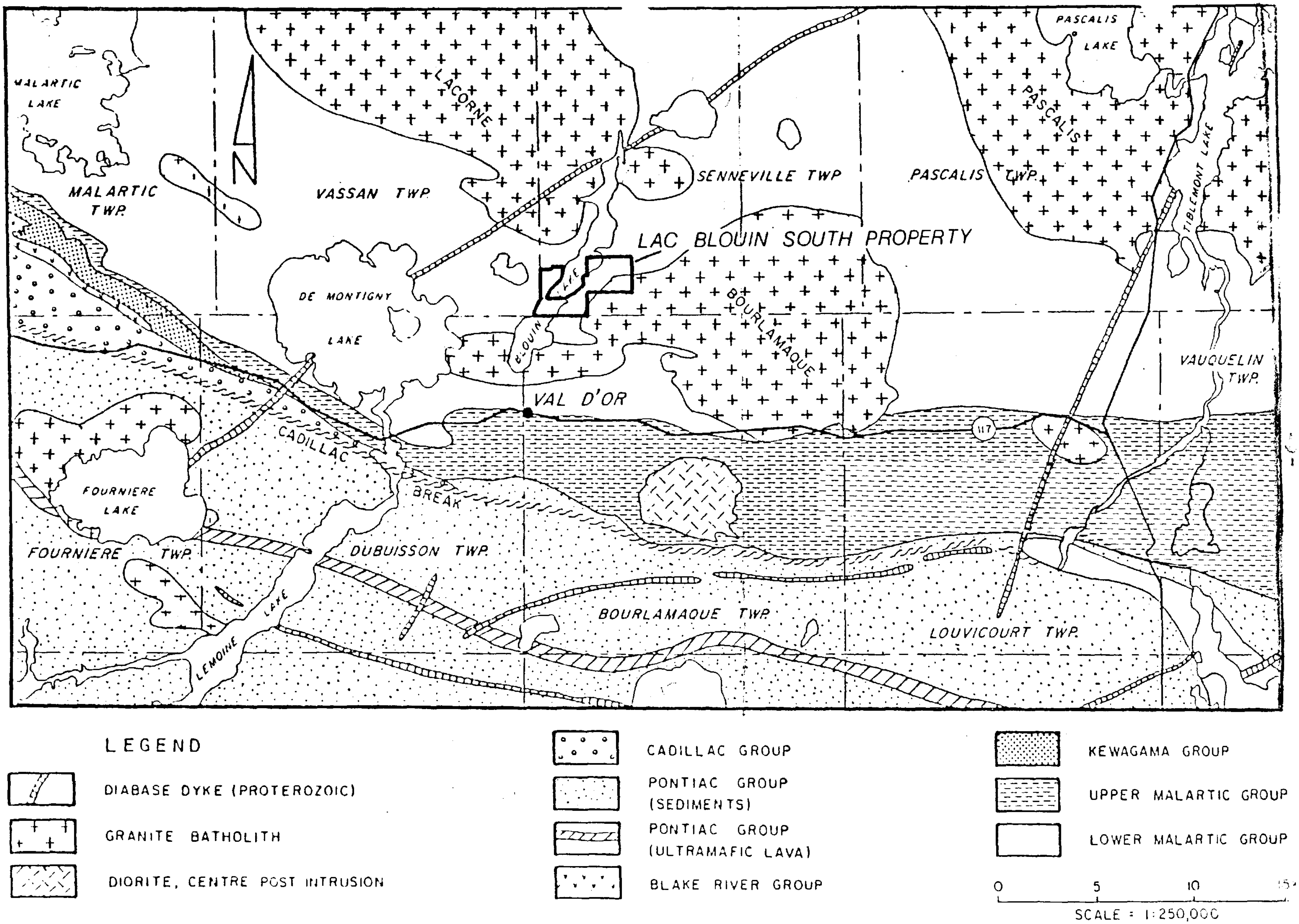

Figure 6 - Regional Bedrock Stratigraphy

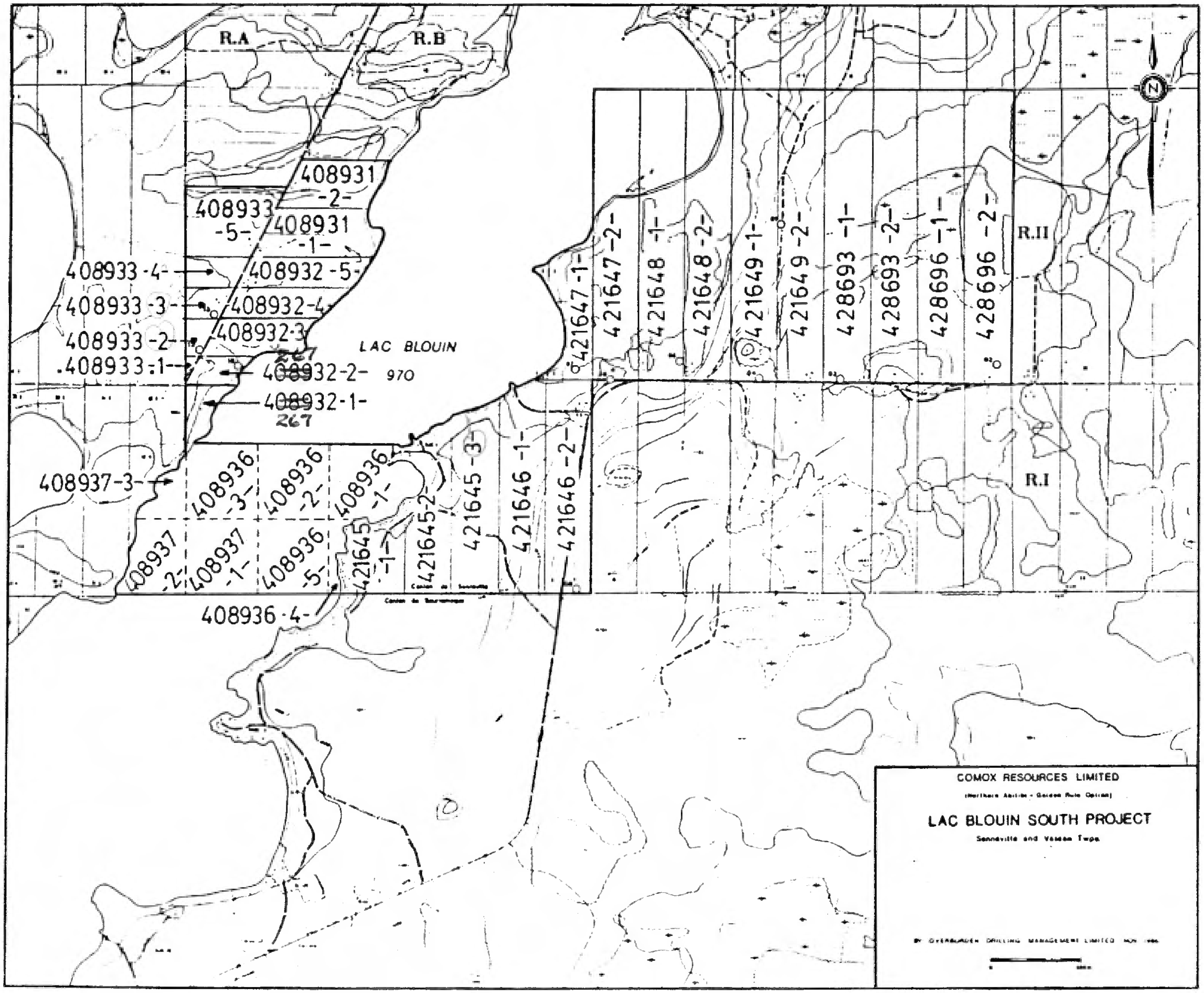

Figure 3 - Claim Map

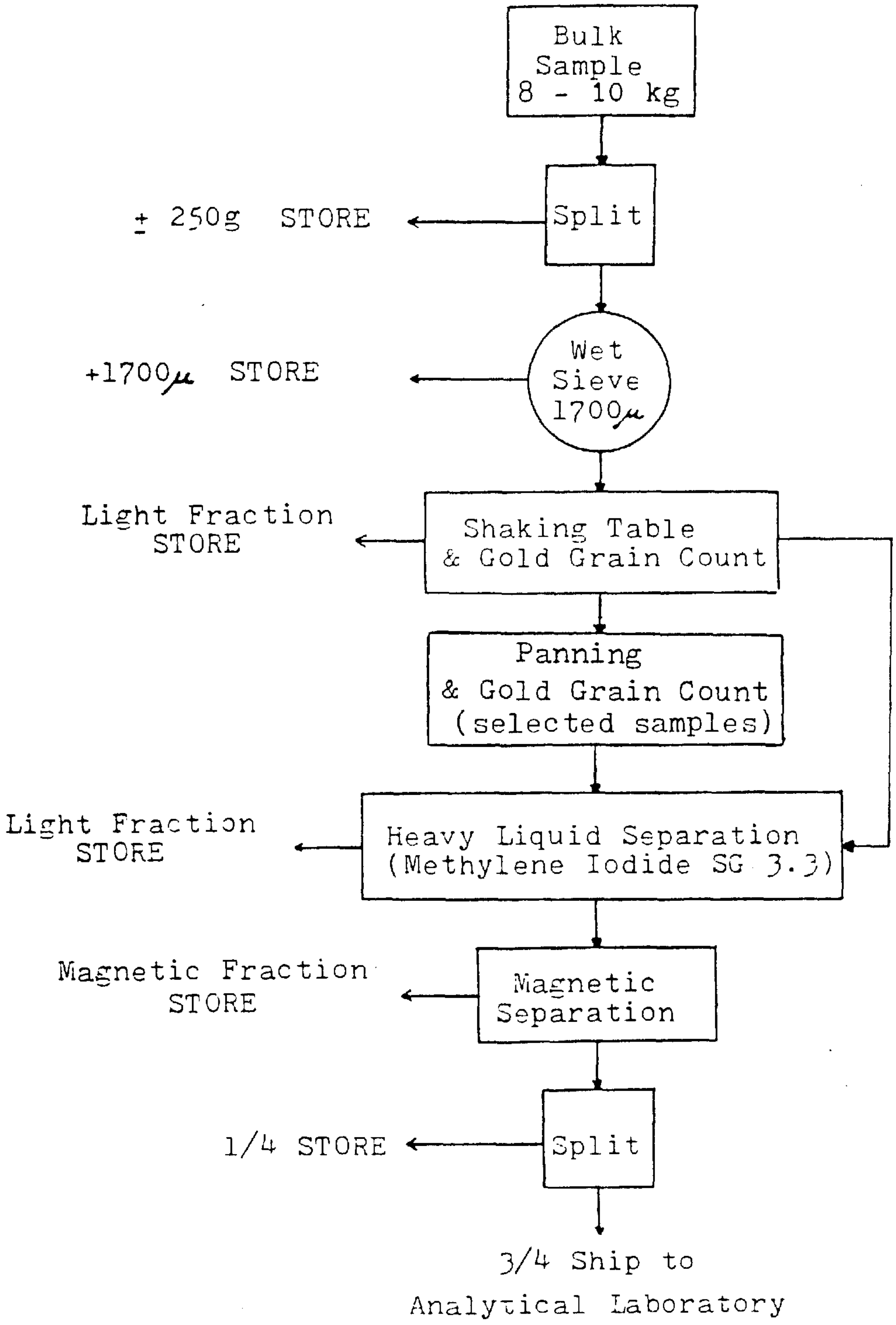

Figure 4 - Sample Processing Flow Sheet

# Microfilm

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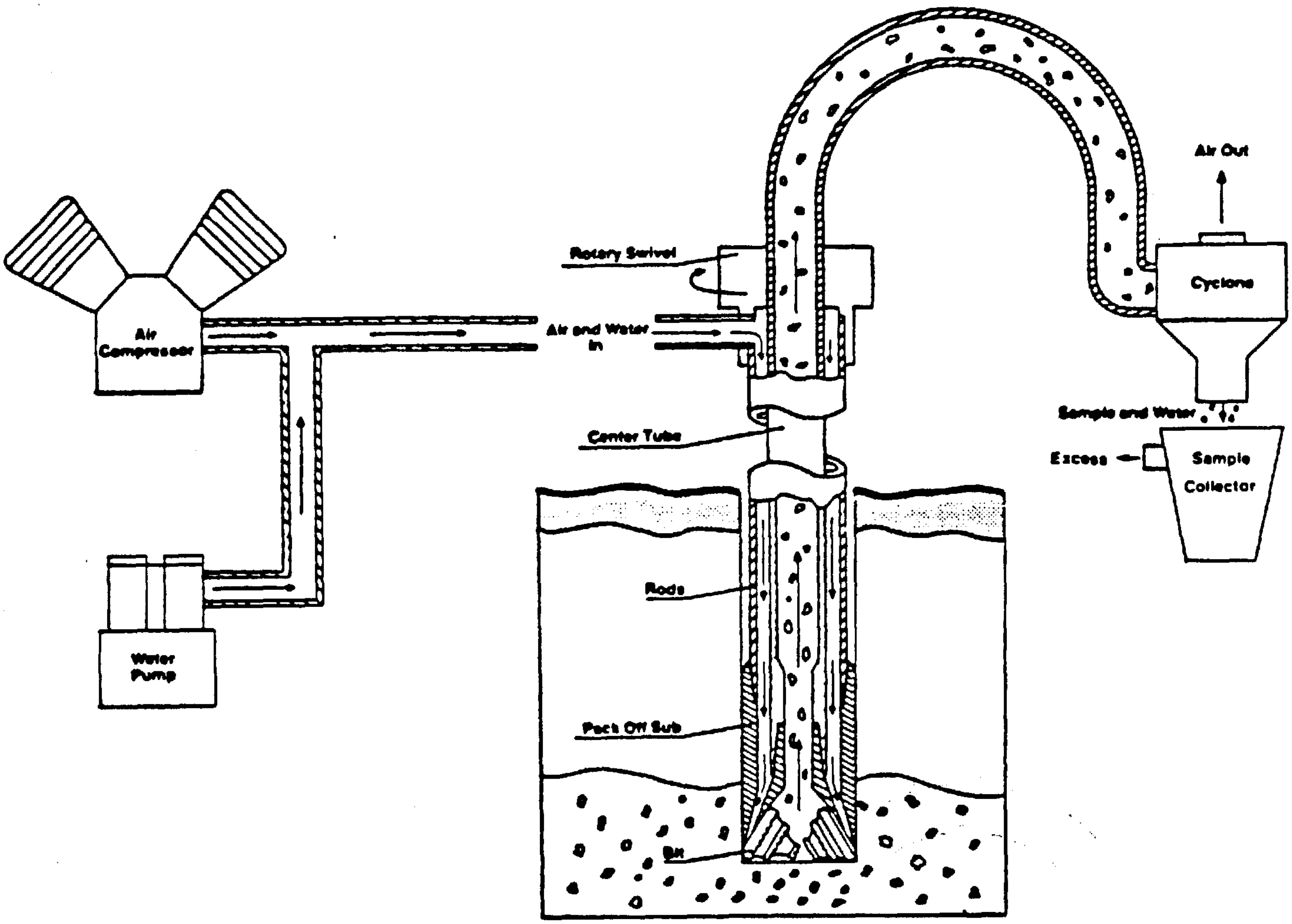


Figure 9 - Schematic of a Typical Reverse Circulation Drilling System

| Hole Number | Claim Number | Metres Drilled | | Hole Depth (metres) | Samples Collected | |
|---|---|---|---|---|---|---|
| | | Overburden | Bedrock | | Overburden | Bedrock |
| CX-86- 01 | 421649-2 | 34.7 | 1.5 | 36.2 | 11 | 1 |
| 02 | 428696-2 | 20.4 | 1.6 | 22.0 | 1 | 1 |
| 03 | 428693-1 | 9.4 | 1.6 | 11.0 | 2 | 1 |
| 04 | 421649-1 | 18.1 | 1.5 | 19.6 | 4 | 1 |
| 05 | 421648-1 | 70.0 | Nil | 70.0 | 29 | 0 |
| 06 | 421647-2 | 45.6 | 1.6 | 47.2 | 18 | 1 |
| 07 | 421647-1 | 16.0 | 1.0 | 17.0 | 1 | 1 |
| 08 | 421646-2 | 42.0 | 1.5 | 43.5 | 14 | 1 |
| 09 | 421645-3 | 41.4 | 1.1 | 42.5 | 12 | 1 |
| 10 | 408932-2 | 10.9 | 1.6 | 12.5 | 3 | 1 |
| 11 | 408932-3 | 9.0 | 1.1 | 10.1 | 2 | 1 |
| 12 | 408933-2 | 6.2 | 1.6 | 7.8 | 1 | 1 |
| 13 | 408933-3 | 16.7 | 1.6 | 18.3 | 3 | 1 |
| 14 | 408932-4 | 10.1 | 1.5 | 11.6 | 1 | 1 |
| | TOTALS | 350.5 | 18.0 | 369.3 | 102 | 13 |

Table 1 - Drilling Statistics

| Size Classification | Flake Diameter (microns) | ppb Au |
|---|---|---|
| Very Fine | 50 | 10 |
| " | 100 | 100 |
| Fine | 150 | 330 |
| " | 200 | 760 |
| Medium | 300 | 2,400 |
| " | 400 | 5,400 |
| " | 500 | 10,000 |
| Coarse | 600 | 16,200 |
| " | 700 | 24,000 |
| " | 800 | 33,300 |
| " | 900 | 43,700 |
| " | 1,000 | 55,000 |
| Very Coarse | 1,000+ | 55,000+ |

Table 2 - Geochemical Contribution of One Gold Grain to a Fifteen Gram Sample

| Permit | Claim | Township | Range | Lot | Hectares | Anniversary Date |
|---|---|---|---|---|---|---|
| 428696 | 1 | Senneville | II | 17 | 40 | March 22, 1987 |
| 428696 | 2 | Senneville | II | 18 | 40 | March 22, 1987 |
| 428693 | 1 | Senneville | II | 15 | 40 | March 22, 1987 |
| 428693 | 2 | Senneville | II | 16 | 40 | March 22, 1987 |
| 421649 | 1 | Senneville | II | 13 | 40 | March 21, 1987 |
| 421649 | 2 | Senneville | II | 14 | 40 | March 21, 1987 |
| 421648 | 1 | Senneville | II | 11 | 40 | March 21, 1987 |
| 421648 | 2 | Senneville | II | 12 | 40 | March 21, 1987 |
| 421647 | 1 | Senneville | II | 9 | 14 | March 21, 1987 |
| 421647 | 2 | Senneville | II | 10 | 40 | March 21, 1987 |
| 421646 | 1 | Senneville | I | 8 | 28 | March 20, 1987 |
| 421646 | 2 | Senneville | I | 9 | 29 | March 20, 1987 |
| 421645 | 1 | Senneville | I | 5 | 6 | March 20, 1987 |
| 421645 | 2 | Senneville | I | 6 | 12 | March 20, 1987 |
| 421645 | 3 | Senneville | I | 7 | 22 | March 20, 1987 |
| 426732 | 1 | Senneville | "B" | 1 | 16 | January 21, 1987 |
| 426732 | 2 | Senneville | "B" | 2 | 11 | January 21, 1987 |
| 408932 | 3 | Senneville | "B" | 3 | 12 | April 20, 1987 |
| 408932 | 4 | Senneville | "B" | 4 | 13 | April 20, 1987 |
| 408932 | 5 | Senneville | "B" | 5 | 10 | April 20, 1987 |
| 408931 | 1 | Senneville | "B" | 6 | 18 | April 20, 1987 |
| 408931 | 2 | Senneville | "B" | 7 | 14 | April 19, 1987 |
| 408933 | 1 | Senneville | "A" | 1 | 1 | April 19, 1987 |
| 408933 | 2 | Senneville | "A" | 2 | 2 | April 19, 1987 |
| 408933 | 3 | Senneville | "A" | 3 | 4 | April 19, 1987 |
| 408933 | 4 | Senneville | "A" | 4 | 5 | April 19, 1987 |
| 408933 | 5 | Senneville | "A" | 5 | 19 | April 19, 1987 |
| 408936 | 1 | Senneville | Not Surveyed | | 16 | April 21, 1987 |
| 408936 | 2 | Senneville | Not Surveyed | | 16 | April 21, 1987 |
| 408936 | 3 | Senneville | Not Surveyed | | 16 | April 21, 1987 |
| 408936 | 4 | Senneville | Not Surveyed | | 6 | April 21, 1987 |
| 408936 | 5 | Senneville | Not Surveyed | | 16 | April 21, 1987 |
| 408937 | 1 | Senneville | Not Surveyed | | 16 | April 21, 1987 |
| 408937 | 2 | Senneville & Vassan | Not Surveyed | | 16 | April 21, 1987 |
| 408937 | 3 | Senneville & Vassan | Not Surveyed | | 8 | April 21, 1987 |

**Table 3 - List of Mining Claims, Lac Blouin South Property**

Because the dispersion trains originated at the base of the ice, they are either partly or entirely buried by younger, nonanomalous glacial debris. Most trains are confined to the bottom layer of debris deposited during glacial recession--the basal till. In fact, the sampling of glacial overburden for exploration purposes is commonly referred to as "basal till sampling". It is important to note, however, that in areas affected by multiple glaciations the bottom layer of debris in the overburden section may be only the lowermost of several stacked basal tills, and that a dispersion train may occur at any level within any one of the basal till horizons. Consequently, the term "basal till sampling" is not synonymous with the collection of samples from the base of the overburden section. Moreover, the term is not strictly correct because significant glacial dispersion trains can occur in formations other than basal till.

From the foregoing statements, it can be seen that glacial dispersion and glacial stratigraphy are interdependent. Consequently, the effectiveness of overburden sampling as an exploration method is related to the ability of the sampling equipment to deliver stratigraphic information from the unconsolidated glacial deposits. In areas of deep overburden including most of the Abitibi greenstone belt in northwestern Quebec, drills must be used. Most drills have been designed to sample bedrock and are unsuitable for overburden exploration, but in the last fifteen years rotasonic coring rigs and reverse circulation rotary rigs have been developed to sample the overburden as well as the bedrock. Both drills provide accurate stratigraphic information throughout the hole and also deliver large samples that compensate for the natural inhomogeneity of glacial debris.

Reverse circulation rotary rigs are much more widely used in the Abitibi than are rotasonic coring rigs. They employ dual-tube rods and a tricone bit with the outer rod tube acting as a casing to contain the drill water for recirculation and to prevent contamination of samples by material caving from overlying sections. Air and water are injected at high pressure through the annulus between the outer and inner rods to deliver a continuous sample of the entire overburden section through the small inner rod (Fig. 9). The sample is disturbed but returns to surface instantly, and the precise positions of stratigraphic contacts can be identified. Full sample recovery is possible in all formations regardless of porosity or consistency, although sample loss due to blow-out commonly occurs in the first 1 to 3 metres of the hole until a sediment seal is made around the outer rod.

Reverse circulation holes are normally extended 1.5 metres into bedrock. Cuttings of maximum 1 cm size are obtained. The bedrock samples are used to determine overburden provenance (and, hence, the precise directions of glacial transport), and the interrelated bedrock and overburden data provide exceptionally comprehensive exploration coverage.

Most of the glacial overburden in Canada is fresh, and metals in the overburden occur in primary, mechanically dispersed minerals rather than in secondary chemical concentrations. While ore mineral dispersion trains are very large, they are also weak due to dilution by glacial transport and are difficult to identify from a normal "soil" analysis of the fine fraction of the samples. Consequently, heavy mineral concentrates are prepared to amplify the primary anomalies, and analysis of the fines is normally reserved for areas where significant post-glacial oxidation is evident. The heavy mineral concentrates are very sensitive, and special care must be taken to avoid the introduction of contaminants into the samples. On gold exploration programs, it is advantageous to separate and examine any free gold particles because most gold anomalies in heavy mineral concentrates are caused by background nugget grains that are of no interest.

## 2.3 Property Description and Access

The Lac Blouin property is 6 km north of Val d'Or in Senneville and Vassan Townships (Fig. 1, 2). It comprises thirty-five mining claims totalling 706 hectares (Table 3 and Fig. 3). Most of this land is surveyed but part of it lies under Lac Blouin. The property is under option to Comox from Northern Abitibi Mining Corporation and Golden Rule Resources Limited.

Access from Val d'Or to the east side of Lac Blouin is via Highway 397 which leads northeastward to the village of Val Senneville. All holes in this area were drilled either along the highway or on gravel spur roads leading to cottages along the lake. Access to the west side of the lake is via a paved road that branches from Highway 111 between Val d'Or and the village of Vassan. Holes in this area were drilled in laneways and fields along the main road.

## 2.4 Physiography and Vegetation

The Lac Blouin South property lies within the southeastern portion of the Abitibi Uplands (Bostock, 1967), a north-sloping clay belt region that was covered by Lake Ojibway 10,000 years ago during Late Wisconsinan ice withdrawal. The southern boundary of the clay belt is the Hudson Bay-St. Lawrence River drainage divide. The divide also roughly coincides with the southern edge of the Abitibi greenstone belt.

Overburden over the southern part of the clay belt averages about 10 metres compared to 30 metres in the north, but increases to 25 metres in the Lac Blouin drill holes due to the presence of a major north-south trending esker on the east side of the lake. This esker was once called the Mattagami Esker but has been renamed the Harricana Moraine (Dyke et. al., 1982) because it formed the boundary between two ice lobes in Late Wisconsinan time.

Surface relief in the drill area (Plan 2) varies from about 290 m on Lac Blouin to 335 m on the crest of the esker. Drainage is generally good, and some small beef and dairy farms have been developed on the clay plains flanking the esker. Areas between these farms are covered by boreal forest in various stages of post-harvest regrowth.

## 2.5 Previous Work

All of the reverse circulation holes were drilled in Senneville Township. This township has not been mapped in detail because outcrops are few and are clustered in the northwestern corner away from the esker. A compilation of assessment work by the Quebec Ministry of Energy and Resources (Masterman, 1982; summarized on Plan 1) shows east-west trending, generally intermediate to mafic volcanic stratigraphy west of and under Lac Blouin, with truncation east of the lake against the northeast-trending dioritic contact phase of the Bourlamaque granodiorite batholith.

The earliest work relevant to the drill area was recorded by McRae Gold Mines Limited in 1937 (Lundberg, 1937). A small auriferous quartz vein was exposed by trenching in Lot 3, Range A, west of Lac Blouin and some follow-up geophysical work and diamond drilling was done.

In 1972, the Geological Survey of Canada drilled six reverse circulation holes on the eastern part of the property during the Mattagami Esker phase of a Timmins-Val d'Or reconnaissance program (Skinner, 1972). The reverse circulation technique was still being developed at that time and was subject to several technical problems. First, sample recovery was poor and most till sections were mislogged as gravel. Secondly, very small heavy mineral concentrates were analyzed because the necessary technology for preparing large concentrates had not been developed. Thirdly, the concentrates were severely contaminated by base metals derived from the drilling equipment (Proudfoot et. al., 1975).

The GSC samples were not analyzed for gold in 1972 because gold was not an attractive commodity at that time, but in 1982 determinations were made on small 0.2 to 2 gram rejects of the basal samples from most drill holes (DiLabio, 1983). This probably should not have been done as research by ODM and others had already shown that small till concentrates are very susceptible to spurious gold anomalies generated by the nugget effect. Nevertheless, the GSC data release was accompanied by only a weak caution, and the Lac Blouin South property was staked by Northern Abitibi and Golden Rule partly on the basis of one of the strongest gold anomalies -- 35,000 ppb in Hole ME-04.

In 1984-85, Northern Abitibi and Golden Rule conducted magnetic and VLF electromagnetic surveys in Ranges A and B west of Lac Blouin and in Range I east of the lake. In the western area, several VLF conductors suggestive of shear zones were outlined near the old McRae gold showing (Hansen, 1985). In the eastern area, a small cluster of VLF conductors was encountered over the Bourlamaque Batholith. It was not clear whether these conductors were caused by a shear zone or by cultural features (power transmission lines), but the possibility of a shear zone was enticing as the Ferderber gold mine of Belmoral Mines Limited 8 km to the east (Fig. 2) was discovered by drilling a VLF-indicated shear in the batholith. Most other Val d'Or gold deposits occur at the batholith contact (e.g. Siscoe, Sullivan) or in sheared volcanic rocks near satellite intrusives (e.g. Sigma, Lamaque; Lang et. al., 1964).

Comox optioned the Lac Blouin South property late in 1985, and the present reverse circulation drilling is the first major work program it has conducted on the property.

## 2.6 Project Costs

Budgeted and actual costs for the reverse circulation drilling program are presented in Table 4.

The budget was based on:

1. Fifteen holes totalling 350 metres.
2. Drilling productivity at 6.7 metres per operating hour.
3. A total of 60 overburden samples.

| | | | Budget | | | Actual | | |
|---|---|---|---|---|---|---|---|---|
| | Service | Company | $ Total | $/Metre | $/Foot | $Total | $/Metre | $/Foot |
| 1. | Pre-drilling | ODM | 600.00 | 1.71 | 0.52 | 832.41 | 2.25 | 0.68 |
| 2. | Drilling operations | H&S | 21,880.00 | 62.51 | 18.83 | 19,980.68 | 54.10 | 16.30 |
| 3. | Field supervision, logging, sampling | ODM | 4,987.50 | 14.25 | 4.29 | 3,526.79 | 9.55 | 2.88 |
| 4. | Sample shipping | Various | 375.00 | 1.07 | 0.32 | 636.35 | 1.72 | 0.52 |
| 5. | Sample processing | ODM | 2,010.00 | 5.74 | 1.73 | 3,405.00 | 9.22 | 2.78 |
| 6. | Analytical | Bondar-Clegg | 1,198.50 | 3.42 | 1.03 | 1,918.50 | 5.19 | 1.56 |
| 7. | Report | ODM | 3,400.00 | 9.72 | 2.92 | Est. 5,900.00 | 15.98 | 4.81 |
| | TOTALS | | 34,451.00 | 98.43 | 29.65 | 36,199.73 | 98.02 | 29.52 |

Table 4 - Budgeted and Actual Costs, Lac Blouin South Project

Fourteen holes totalling 369.3 metres (Table 1) were actually drilled. Drilling productivity averaged 9.0 metres per hour, a 35 percent improvement over the budget figure. This increased efficiency was largely offset by a 70 percent increase in the number of overburden samples and a corresponding increase in sample processing, analytical and interpretation costs. As a result, total costs were $98.02 per metre ($29.52 per foot), only 0.4 percent below the budget figure of $98.43/metre ($29.65/foot).

# 3. BEDROCK GEOLOGY

## 3.1 Regional Geology

The Val d'Or area is in the southeastern portion of the Archean, Abitibi greenstone belt. The Abitibi belt comprises repeated komatiitic to calc-alkalic cycles of lavas, volcaniclastics, porphyries and layered basic-ultrabasic intrusions with coeval clastic sedimentary rocks and intrusives of potassium poor dioritic to tonalitic composition. These rocks have been complexly deformed and metamorphosed to the greenschist facies and intruded by late kinematic granodiorite and monzonite plutons (Gariepy, Allègre, Lajoie, 1984).

The stratigraphic classification applicable to Val d'Or is the one developed for the south limb of the Lamotte Anticline (MERQ-OGS, 1983). The strata young southward and correlate with the predominantly komatiitic ultramafic rocks and basalts of the LaMotte-Vassan, Dubuisson and Jacola Formations of the Lower Malartic Group, and the predominantly tholeiitic basalts and andesites of the Heva Formation of the Upper Malartic.

The Lac Blouin South property lies in an area where the Dubuisson Formation of predominantly komatiitic volcanics is intruded by the Bourlamaque Batholith. This batholith characteristically has a granodiorite core and quartz diorite margins. It is well-foliated and is considered to be synvolcanic (Sharpe, 1968).

## 3.2 Bedrock Lithology of the Reverse Circulation Drill Holes

Only three rock units -- intermediate to mostly mafic volcanics (i.e. flows), graywacke and diorite/quartz diorite -- were intersected in the Lac Blouin South drill holes. These units are described in detail below. In general, the volcanics are relatively undeformed and have a sub-greenschist facies mineral assemblage including abundant primary pyroxene whereas the diorite is severely deformed and has a greenschist facies mineral assemblage including abundant secondary chlorite and calcite. The pyroxene in the volcanics is mostly a very pale green colour and is probably Mg-rich orthopyroxene as would be expected in the generally komatiitic Dubuisson Formation. Magnetite, a mineral that is common in tholeiitic volcanics, is absent at Lac Blouin.

### 3.2.1 Intermediate to Mafic Volcanics (Unit 1)

Intermediate to mafic volanics were intersected in all five holes west of Lac Blouin and in four holes east of the lake. The volcanic/diorite contact crosses Highway 397 between Holes 03 and 04 one kilometre east of the position shown on the MERQ compilation map (Plan 1). Thus most of Range II is underlain by volcanics rather than the diorite shown in the MERQ interpretation. This explains the abundance of VLF conductors north of the highway.

Volcanic samples from Holes 04, 09 and 13 contain less than 35 percent mafic minerals and more than 65 percent plagioclase and are classified as intermediate (andesite; Subunit 1a) while samples from Holes 06, 07, 10, 11, 12 and 14 contain more than 35 percent mafic minerals and less than 65 percent plagioclase and are classified as mafic (basalt; Subunit 1b). The intermediate samples are also a light to medium green colour and contain up to 40 percent plagioclase phenocrysts (Hole 04) and about 10 percent quartz while the mafic samples are a darker green and contain no plagioclase phenocrysts and no discernible quartz. As well, the intermediate volcanics have a finer average grain size (0.05 to 0.2 mm, excluding the plagioclase phenocrysts which may reach a diameter of 1.0 mm) than the mafic volcanics (0.1 to 0.4 mm).

In most of the volcanic samples, deformation is slight, the primary interlocking texture is obvious, plagioclase is relatively unaltered and the principal mafic mineral is primary pyroxene. West of Lac Blouin, however, a stronger foliation is often present, pyroxene has been partly to completely chloritized, and up to 15 percent calcite (Hole 13) has developed from the plagioclase. None of the samples contain hydrothermal (Fe/Mg) carbonate and none contain more than a trace of pyrite. A trace of chalcopyrite is evident in Holes 04, 11 and 12.

### 3.2.2. Graywacke (Unit 2)

Graywacke was intersected only in Hole 01 near the site of GSC Hole ME-04. The sample is a medium gray colour and is well foliated. It consists of sorted, 0.1-0.2 mm fine sand grains and 15 percent chlorite which is a gray colour rather than the common green of volcanic chlorite. Only 10 percent of the sand grains are quartz with the balance being an indistinguishable mix of rock chips and plagioclase.

The graywacke contains no carbonate minerals or pyrite. However, quartz veins that comprise 0.1 percent of the sample contain 2 percent sphalerite and 2 percent chalcopyrite. Although this mineralization is weak, it may be significant as Hole 01 was drilled beside a VLF conductor that apparently has never been tested by diamond drilling. The conductor is overlain by 35 metres of esker sand and gravel. The possibility that this conductor is due to massive sulphides and has not been detected by other EM methods due to the thick overburden or to a high sphalerite: chalcopyrite + pyrite ratio should not be discounted. For example, the presence of the graywacke could indicate a transition to calc-alkalic volcanism and a traditional base metal environment, since no till is present here, and mineralization associated with the conductor probably would not have been detected in the Comox and GSC reverse circulation drill holes.

### 3.2.3. Diorite and Quartz Diorite (Unit 3)

Diorite was intersected in Holes 02 and 03 and quartz diorite in Hole 08. All intersections are east of Lac Blouin in the main body of the Bourlamaque Batholith and have a relatively coarse grained (1-5 mm), equigranular, interlocking texture.

The diorite (Subunit 3a) and quartz diorite (Subunit 3b) are very similar rocks containing about 70 percent plagioclase, 20-30 percent hornblende and 0.1 percent accessory sphene. Differentiation is based solely on quartz content, with 10 percent or less in diorite and more than 10 percent in quartz diorite.

The primary coarse grained, equigranular, interlocking texture of the samples from Holes 02 and 08 has been greatly modified by shearing which has preferentially crushed the hornblende and some of the plagioclase to a 0.1 mm sugar, creating a pseudoporphyry in which relict quartz and plagioclase form the "phenocrysts". This shearing is accompanied by complete chloritization of hornblende and the development of about 5 percent calcite in plagioclase sites.

Holes 02 and 08 were both drilled very close to VLF conductors and the observed shearing explains the conductivity. In the case of Hole 08, the conductor is in the cluster that Northern Abitibi and Golden Rule identified in Range I and interpreted as possibly being caused by power transmission lines.

The only sulphide minerals present in the diorite/quartz diorite samples are 0.1 percent pyrite, 0.1 percent pyrrhotite and a trace of chalcopyrite in Hole 08.

## 3.3 Bedrock Geochemistry

Bondar-Clegg analyzed the Lac Blouin South bedrock samples in two batches using gold detection limits of 5 ppb and 10 ppb, respectively. Only one gold assay exceeded these limits -- 50 ppb in Hole 07. The anomalous sample is a massive, unaltered basalt containing no carbonate minerals and only a trace of pyrite. Consequently the assay is suspect and a check assay has been requested.

Arsenic values are mostly less than the 2 ppm limit of detection, and copper and zinc are mostly in the normal Abitibi background range of less than 100 ppm. The only exception is 129 ppm Cu in the basalt sample of Hole 11, which correlates with the trace of chalcopyrite noted during binocular logging. The visually more interesting chalcopyrite/sphalerite mineralization in the graywacke of Hole 11 yielded only 77 ppm Cu and 58 ppm Zn because the mineralization is confined to veinlets that comprise only 0.1 percent of the sample.

# 4.0 OVERBURDEN GEOLOGY

## 4.1 Quaternary History and Stratigraphy of the Abitibi Region

The Quaternary geology of the Abitibi region, as determined by ODM from thousands of drill holes and scanty literature, is summarized in Figure 10 and Table 5. Tills from the three major glaciations and sediments from two interglacial periods are present.

The oldest till was deposited by ice moving southward from Hudson Bay -- possibly 1 million years ago in Kansan time -- and is enriched in clasts of Proterozoic sandstone and Paleozoic limestone. This till is so rarely preserved that it is of no significance in exploration. The next till (Lower Till) was deposited by ice moving southwestward from Nouveau Quebec in Illinoian time more than 125,000 years ago. It is preserved in many buried valleys and contains the dispersion trains from any mineralization in these valleys. The youngest till was deposited 10,000 years ago by Late Wisconsinan ice that has split into a southeast-moving Matheson/Cochrane lobe west of Val d'Or-Matagami and a southwest-moving Chibougamau lobe east of Val d'Or-Matagami. The esker-like Harricana Moraine was deposited at the contact between the two ice lobes.

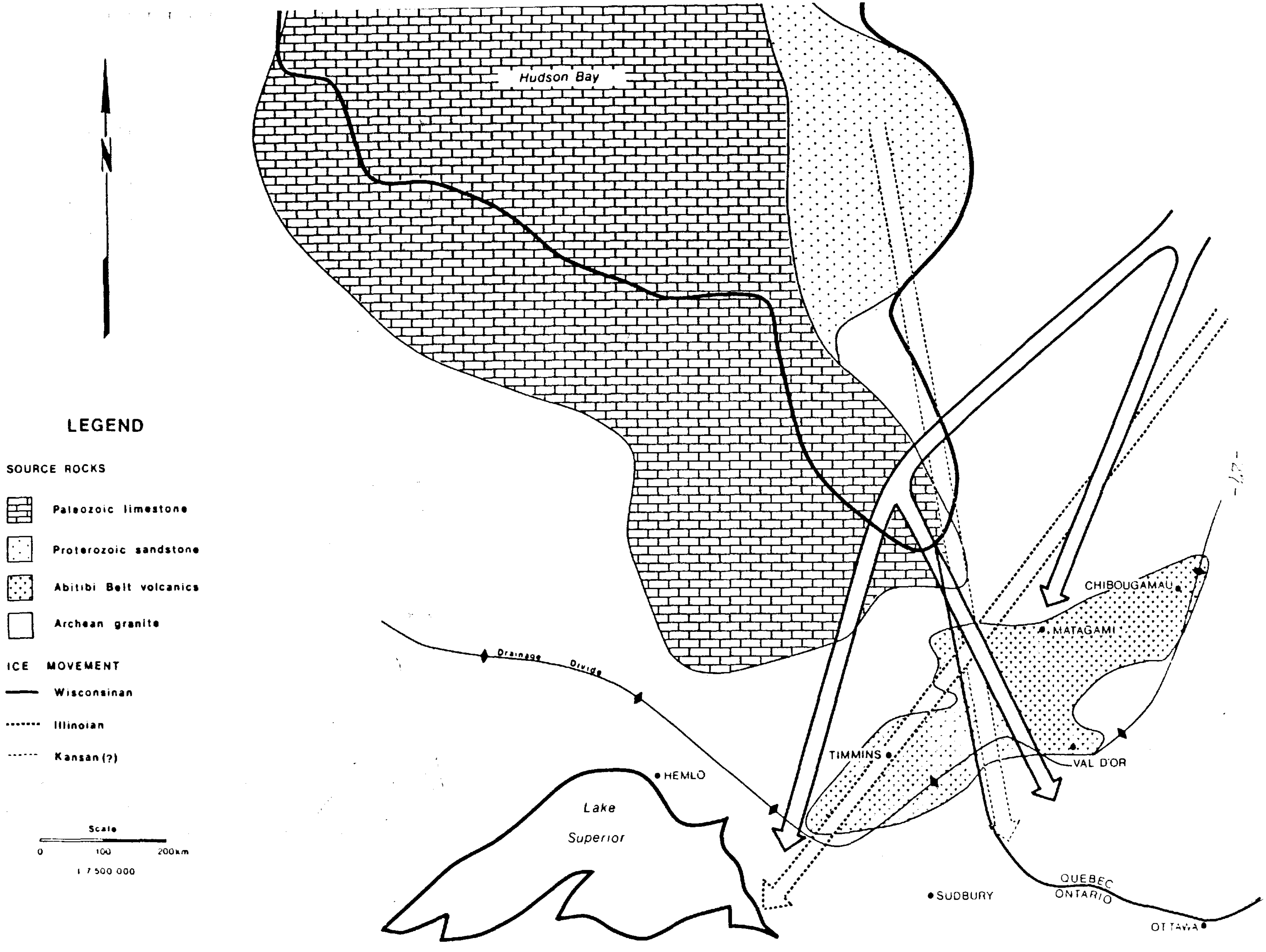


Figure [illegible] - Glacial history of the Abitibi Region

## Quaternary Stratigraphy

YEARS B.P.

| | | |
|---|---|---|
| 10,000 | **LATE WISCONSINAN** | |
| | 6 | Cochrane Unit<br>6c - regressive sediments<br>6b - till<br>6a - transgressive sediments |
| | 5 | Ojibway II Sediments<br>5d - littoral and aeolian member<br>5c - glaciolacustrine clay member<br>5b - glaciolacustrine sand member<br>5a - glaciofluvial member |
| | 4 | Chibougamau/Matheson Till |
| 100,000 | **EARLY WISCONSINAN AND SANGAMON** | |
| | 3 | Missinaibi Sediments<br>3c - Ojibway I member<br>3b - forest-peat member<br>3a - fluvial member |
| | **ILLINOIAN** | |
| | 2 | Lower Till and Sediments |
| 1,000,000 | **YARMOUTH AND KANSAN** | |
| | 1 | Older Till and Sediments |

Table 5 - Table of Quaternary Formations for the Abitibi Region

In Yarmouth and Sangamon time immediately following the Kansan and Illinoian glaciations, respectively, interglacial sediments including soil profiles and northward-transported fluvial gravels were deposited on the Kansan and Illinoian tills. The gravels consist mostly of recycled till debris, are oxidized, and often contain wood fragments.

In Early Wisconsinan time 100,000 years ago and again in Late Wisconsinan time 10,000 years ago, the region was flooded by glacial Lakes Ojibway I and II respectively, and varved clay, silt and fine sand sheets up to 30 metres thick were deposited. The Ojibway I sediments coarsen upward because they were deposited from a transgressive ice sheet. They were overridden by the thick Wisconsinan glacier and are compact, dry and platy whereas the Ojibway II sediments were deposited from regressive ice, fine upward and are soft. Glaciofluvial esker/delta sands and gravels were deposited by the meltwater rivers that fed both lakes.

The final glacial event in the Abitibi was a minor southwestward re-advance of the thin Cochrane ice lobe into the north part of Lake Ojibway II, depositing Cochrane Till which consists mainly of clay recycled from the soft lake bed. When the Cochrane ice melted, Lake Ojibway II drained catastrophically, exposing the Late Wisconsinan eskers which were subject to considerable erosion by wave and wind action until they become stabilized by vegetation.

## 4.2 Quaternary Geology of the Lac Blouin South Property

None of the pre-Wisconsinan deposits at Lac Blouin South survived the Wisconsinan glaciation. A fairly complete Late Wisconsinan section was deposited, although the Cochrane units are absent because the Cochrane readvance did not extend this far south. The Late Wisconsinan units are described in detail below.

### 4.2.1 Chibougamau/Matheson Till (Abitibi Unit 4)

The Lac Blouin South property straddles the Mattagami Esker (Harricana Moraine) which in Late Wisconsinan time formed the boundary between the southwest-moving Chibougamau ice lobe and the southeast-moving Matheson ice lobe. Although the esker trends southwest, suggesting a strong Chibougamau influence, the associated till could have been deposited by either or both ice lobes and will therefore be referred to as Chibougamau/Matheson Till.

Chibougamau/Matheson Till throughout much of the Abitibi region consists mainly of recycled bottom sediments of Lake Ojibway I, and the till thickens northward because the lake deepened in that direction. The Lac Blouin South area was near the southern edge of the lake where the bottom sediments were thin and sandy. Consequently the till here also tends to be thin -- generally 1-2 metres (Fig. 7, 8) -- and sandy, and was completely eroded along the axis of the Mattagami Esker.

Most of the sand in the till matrix is fine grained and has the gray-beige to gray colour of its Ojibway I parent. Toward the bottom of an unusually thick (11 m) section of the till in Hole 08, the matrix becomes more clayey and changes to a gray-green colour, indicating a greater volcanic bedrock component. These matrix changes are accompanied by an increase in clast size from pebbly to cobbly and by a rise in the volcanic: granitoid clast ratio from 70:40 to 85:15. The granitoid clasts are far-travelled, being derived from the terrain north of the Abitibi Belt. Granitoid clasts from the Boulamaque Batholith are not a major constituent of the till because none of the till intersections are more than 200 metres down-ice from the north edge of the batholith.

### 4.2.2 Ojibway II Sediments (Abitibi Unit 5)

The following sediments were deposited while the Lac Blouin South property was flooded by Lake Ojibway II:

Subunit 5a: Glaciofluvial sand and gravel of the Mattagami Esker, which was deposited partly as the bed of a major meltwater channel and partly as a subaqueous fan at the mouth of the channel.

Subunit 5b: The lower esker/ice-proximal silty sand member of the lake bed.

Subunit 5c: The upper ice-distal silt and clay member of the lake bed.

Subunit 5d: Conformably overlying offlap littoral sands that developed as aprons along both sides of the esker during the lowering of the lake.

The Mattagami Esker on the Lac Blouin South property forms a major northeast-southwest trending ridge that is up to 30 metres high and up to 700 metres wide (Plan 2, in pocket). The trend of an esker normally indicates the direction of ice flow but this is probably not the case at Lac Blouin South, as the regional direction of ice flow was essentially due south along the line of confluence of the Matheson and Chibougamau ice lobes. Rather, the esker appears to follow the southeastern rim of a 50 metre deep, northeast-southwest trending bedrock valley. This valley is almost certainly fault-controlled, as is the volcanic/Bourlamaque Batholith contact which coincides with the valley (Plans 1, 2). Different rates of Late Wisconsinan isostatic rebound on opposite sides of the fault probably caused extensive ice fracturing which in turn controlled the course of the meltwater channel.

The northeast-southwest trending ridge is actually only the surface expression of a much wider esker that spreads westward in the subsurface, filling the bedrock valley (Fig. 7 and Plan 2). The high-energy axial zone of the esker was intersected in Hole 05. This zone occurs centrally in the buried valley and is more than 53 metres thick. It consists of pebbly to cobbly, clast-supported gravel that was partly ground to rock flour by the drill bit, causing the section to be mislogged as till. The gravel was also very difficult to penetrate and it was necessary to abandon the hole at a depth of 70 metres. However the gravel probably extends to bedrock for it consists of recycled till and the clast compositions mirror those of the till, with volcanic:granitoid ratios increasing downward from 70:30 to 85:15.

Bordering the clast-supported gravel are lower energy sediments that also extend to bedrock and are up to 40 metres thick. These sediments consist of gravel and fine to coarse sand that are sometimes so thinly laminated that they were mixed by the drill and were mistaken for unsorted till (Hole 06). Pebbles in the gravel beds have a maximum diameter of 1 cm. The sand beds are a clean beige colour, indicating complete winnowing of silt which is normally a dirty gray colour.

The esker flanks consist of fine, washed beige sand that grades outward into unwashed, silty gray sand. The silty sand is the lower member of the lake bottom sediments (Subunit 5b) and grades upward into varved gray clay/silt (Subunit 5c) that is up to 10 metres thick (Holes 05 and 07). In Holes 05 and 08, the clay is overlain by 1 to 3 metres of littoral sand (Subunit 5d) that was washed downslope from the esker ridge during the lowering of Lake Ojibway II.

## 5. OVERBURDEN GEOCHEMISTRY

### 5.1 Regional Gold Background

Most gold occurrences in the Abitibi belt are of the free gold type. Even in Casa-Berardi or Hemlo-type deposits having a high pyrite/arsenopyrite content, most of the gold is free although very fine grained (50 microns). Thus, all tills over the Abitibi belt contain scattered free gold particles. Due to the nugget effect -- the chance occurrence of a coarse gold particle in a given sample -- the gold backgrounds of small till samples collected at the same site will vary by several orders of magnitude.

The nugget effect can be overcome if a sample of sufficient size is collected and all of the gold is concentrated into a small heavy mineral fraction that is then analyzed in its entirety (Clifton, 1967). We have found that at least 50 kg of till would be needed to overcome the nugget effect. However, it is impractical to collect, process or analyze samples of this size. We have standardized to 7-9 kg samples because reverse circulation drills deliver this quantity of material during one metre of advance.

Rather than trying to eliminate the nugget effect, we have developed procedures for recognizing and discounting anomalies that are caused by it. Specifically we measure the dimensions of all gold grains sighted on the table or recovered by panning and use these dimensions to calculate the expected contribution of each gold grain to the concentrate assay (Appendix C). In this way, the cause of each high assay is identified and nugget anomalies are screened out.

Most gold particles occur as thin flakes and it is difficult to position these flakes on edge to measure their thickness. However, we have found that each flake can be treated as a disc in which the thickness is a function of the diameter. For flakes of less than 1000 microns diameter, this relationship is expressed by the following equation:

$$t = 0.2d - 0.01\frac{(d-100)\ d}{100}$$

Thus, by simply measuring the diameters of the gold flakes that separate from the samples during tabling, it is possible to calculate the relative volume of gold in a given flake and from this relative volume to calculate the geochemical assay that the flake would produce in a sample of specific size. Clifton (1967) showed that a 100 micron flake will produce a value of approximately 100 ppb in a 15-gram sample. Conveniently, the analyzed 3/4 concentrates of reverse circulation samples also weigh about 15 grams. Table 2 shows the range of assays produced in a concentrate of this size by a single gold flake of varying size.

It is apparent from the figures in Table 2 that till concentrates that contain no free gold will assay less than 10 ppb provided auriferous sulphides are also absent. Concentrates containing a single gold particle will assay from 10 ppb to more than 55,000 ppb depending on the size of the gold particle. Thus the normal background for till concentrates ranges from less than 10 ppb to more than 55,000 ppb.

We have found that fewer than 30 percent of till concentrates from the Abitibi region yield gold assays lower than 10 ppb. Most samples give assays of 20 to 500 ppb, suggesting the presence of one to five gold particles in the 50 to 150 micron range or/and of auriferous sulphide minerals. Ten to fifteen percent of samples contain a coarser gold grain that produces an assay over 1000 ppb.

### 5.2 Gold and Base Metal Anomaly Threshold Levels

Gray (1983) observed that heavy mineral gold assays in a number of dispersion trains tested by Asarco were 3000 ppb or higher. We have arrived at the same 3000 ppb threshold figure in a different manner. As early as 1976, we recognized that the grade of our concentrates within 1 km of source on base metal and uranium dispersion trains was similar to the grade of the source provided the source was of normal width (5 to 10 metres) and was oriented perpendicular to the direction of glacial ice advance. We have since proved that the same relationship applies to gold dispersion trains. Thus, assuming that gold mineralization must grade a minimum of 3 g/tonne (3000 ppb) to be significant, the anomaly threshold level in our concentrates is 3000 ppb.

It is not uncommon for gold deposits in the Abitibi belt to have a subcropping strike length of only 100 metres. Most of these deposits strike sub-parallel to bedrock stratigraphy and sub-perpendicular to glaciation. Using the 3000 ppb anomaly threshold level, a cross-ice reverse circulation drill hole separation of 100 metres would be needed to detect the deposits. However, most of the deposits occur in anomalous horizons that are much larger than the deposits themselves. If a low anomaly threshold is used and careful gold grain counts are made, the anomalous horizons can be detected with confidence using a 300-400 metre hole separation. This greatly reduces exploration costs. We therefore consider any gold values over 1000 ppb to be potentially anomalous, and we prefer to pan concentrates in which any gold is seen or in which pyrite levels are sufficient (+20 percent) to interfere with the table gold count.

The base metal background of a heavy mineral concentrate, and particularly of our high-density methylene iodide concentrate, is higher than that of a whole sample, ranging up to several hundred ppm, because base metals tend to substitute to a significant extent for other metal ions in the structures of heavy silicate and sulphide minerals such as pyroxene and pyrite. The established anomaly threshold level for Cu and Zn, indicating the presence of ore-type minerals such as chalcopyrite and sphalerite in the sample, is 800 ppm. Because methylene iodide concentrates from dispersion train samples tend to grade the same as the bedrock source mineralization, massive sulphide deposits which typically grade 50,000 ppm (5 percent) combined Cu-Zn often produce anomalies over 10,000 ppm in each metal. The anomaly threshold level for arsenic is about the same as for Cu and Zn but only those arsenic anomalies having a gold association are significant.

## 5.3 Stratigraphic Properties of a Dispersion Train

Glacial processes are systematic and heavy mineral dispersion trains in tills have specific configurations (Averill, 1978). For example, dispersed material tends to be sheeted progressively upward in the ice with increasing distance from source, causing the trains to rise in the till and thicken down-ice. Lateral spreading, in contrast, is minimal and most trains are tapered ribbons rather than fans.

ODM has traced nine gold dispersion trains (Table 6) and several base metal and uranium trains to source on both new discoveries and known deposits. These trains have had the following properties:

1. At a specific distance from source, the mineralization was confined to a specific level within a specific till unit.
2. The train was at least two samples (2-3 m) thick unless:
   (a) The host till was very thin.

   or (b) The train was intersected within 100 m of source.
3. The width of the train was not more than twice the cross-ice length of the source mineralization.

| PROVINCE | GOLD DEPOSIT | TRAIN LENGTH[1] (m) | |
|---|---|---|---|
| | | TRACED | EST. TOTAL |
| Saskatchewan | Lake "X"[2] | 300 | 300 |
| Saskatchewan | Star Lake | 300 | 800 |
| Saskatchewan | Lake "Y" | 500 | 1000 |
| Saskatchewan | Waddy Lake[2] | 600 | 2000 |
| Ontario | McCool | 300 | 400 |
| Quebec | Cooke Mine[3] | 800 | 1000 |
| Quebec | Golden Pond West | 300 | 400[4] |
| Quebec | Golden Pond | 400 | 500[4] |
| Quebec | Golden Pond East | 100 | 1000 |

1 - Based on minimum 10 gold grains of similar size and shape per 8 kg sample for free gold trains and on coincident high gold and base metal assays for invisible gold trains

2 - Deposit oriented parallel to glacial ice advance

3 - Invisible gold deposit

4 - Train foreshortened by erosion in last ice advance.

Table 6 - Heavy Mineral Dispersion Trains Identified by Overburden Drilling Management Limited Laboratory

4. The maximum length of the train for deposits oriented perpendicular to glaciation was 1 km (gold) to 5 km (base metals/uranium).

## 5.4 Properties of a Free Gold Dispersion Train

Ten to fifteen percent of background till samples over the Abitibi belt produce heavy mineral gold anomalies higher than our 1000 ppb threshold due to the nugget effect. For the reverse circulation/heavy mineral method to be effective, significant free gold dispersion trains, which are relatively rare, must be differentiated with confidence from the numerous nugget anomalies. This is done on the basis of the gold grain counts rather than the assays. We have found that the gold particles in significant dispersion trains have the following properties:

1. At least 10 gold particles are present per 7 kg of till matrix.

2. The gold particles are of a common size, reflecting the size of crystallization at source.

3. The gold particles are of a common shape, reflecting a common distance of transport from source.

4. Since most gold dispersion trains are traceable for less than one km (Table 6) and gold particles become abraded after one km of ice transport (Fig. 5), the shape of the gold particles is usually irregular or delicate.

Background nugget anomalies, unlike dispersion trains, do not normally repeat in the section, although with 10 to 15 percent of samples containing anomalies of this type, chance repetition does occur. Another property common to many gold dispersion trains is the presence of pathfinder minerals because most gold deposits zones are polymetallic. Even deposits that are considered to be strictly free gold occurrences often have alteration halos containing sufficient pyrite, arsenopyrite, galena, chalcopyrite or molybdenite for a pathfinder association to be evident in the dispersion train. Nugget anomalies have no pathfinder association.

## 5.5 Properties of an Invisible Gold Dispersion Train

We have encountered only one invisible gold dispersion train among nine gold trains tested. In one other train, the gold was very fine and more was recovered as composite gold/sulphide grains than as free grains.

In invisible gold trains it is not possible to use gold particle shape to predict distance to source. The distance must be gauged from the vertical positions of the anomaly in the host till and of the till in the stratigraphic succession. In most other respects, however, invisible gold dispersion trains are easier to trace than free gold dispersion trains. The following specific advantages are cited:

1. A pathfinder mineral association is always present.

2. The pathfinder minerals occur in sufficient concentrations that they can be seen in pebbles as well as in the heavy mineral fraction, and the host rock can therefore be determined.

3. The source mineralization is generally conductive and can be located by geophysical methods.

4. Gold/pathfinder metal ratios in the concentrates are relatively constant, and any interference from background nuggets is readily recognized.

5. The dispersion trains are longer and more uniform than free gold trains.

Some of these advantages apply only to unoxidized till samples from drill holes. Invisible gold is chemically reconstituted into the clay fraction if the host sulphides are destroyed by oxidation. Thus, in surface pit sampling programs, heavy mineral analysis will detect only the free gold. Conventional geochemical analysis should be used if sulphide gold targets are expected.

## 5.6 Lac Blouin South Heavy Mineral Gold Anomalies

Bondar-Clegg pulped 3/4 splits of the Lac Blouin South overburden concentrates and analyzed them for gold using the fire assay method with atomic absorption finish. For concentrates that were known to contain a gold grain over 200 microns in diameter, separate determinations were made on the -150 mesh and +150 mesh portions of the pulp to minimize analytical problems caused by the nugget effect.

Gold assays exceeding the 1000 ppb anomaly threshold and ranging up to 10,320 ppb were reported for ten of the one hundred and two overburden samples (10%). Three additional samples (3%) containing visible gold would have given assays over 1000 ppb if the coarsest grain(s) had entered the 3/4 analytical split of the heavy mineral concentrate. No samples met or exceeded the 10 gold grain anomaly threshold. Thus, a total of 13 percent of the Lac Blouin South samples are anomalous. This is within the normal 10-15 percent background range for the Abitibi region.

Plan 3 is a diagrammatic representation of the Lac Blouin South overburden gold anomalies. In this figure the drill holes that contain anomalous levels of gold are plotted INPUT-fashion. Where two or more anomalous samples are present in a hole, the best anomaly is shown. The cross-hair indicates a gold content greater than or equal to the 1,000 ppb (measured or calculated) or 10 grain/sample anomaly threshold levels. Quadrants one through four (clockwise from upper right) represent greater than or equal to one thousand ppb Au, greater than or equal to ten grains of visible gold, stratigraphic continuity and a pathfinder metal association, respectively.

As numerous anomalous samples and holes are present, various screening processes are used to separate background noise from those anomalies which are, or may be, caused by dispersion from significant mineralized sources. The screening processes and anomalies discounted are listed in Table 7. In some cases anomalies are discounted for more than one reason.

| Gold Anomalies | | | | Grains V.G. (*Not Panned) | 1st Phase Screening (No. Strat. Cont.) | 2nd Phase Screening (Good Corr./ Low Assay) | 3rd Phase Screening (Inferred Nugget) | Remarks |
|---|---|---|---|---|---|---|---|---|
| Hole No. | Sample No. | Au Assay (ppb) | | | | | | |
| | | Meas. | Calc. | | | | | |
| CX-86- 01 | 02 | 850 | 1176 | 1* | X | X | NA | Esker gravel sample. |
| 04 | 04 | 1810 | 898 | 7 | Basal (esker) | Artificially High | NA | Esker sand sample. All gold grains abraded. Pulp and metallics assay. Sample overpulped giving 0.08 g of +150 mesh assaying 317,250 ppb. |
| 05 | 03 | 8370 | 6855 | 5 | X | X | NA | Esker gravel sample 50 m above bedrock |
| | 08 | 1310 | 354 | 1* | X | High | X | Gravel sample. Check panned 1/4 conc.; no V.G., 30% py. |
| | 19 | 2730 | 2379 | 1* | X | X | NA | Esker gravel sample. |
| | 21 | 80 | 1495 | 1* | X | X | NA | Esker gravel sample. |
| 06 | 17 | 250 | 2282 | 1* | Chance | X | NA | Esker sand and gravel sample. |
| | 18 | 1,380 | 2,360 | 7 | Chance | X | NA | Esker and gravel sample. All gold grains abraded, two coarsest grains contain 80% of total gold. |
| 08 | 09 | 1100 | 567 | 5 | X | Artificially High | NA | Washed till sample at esker interface. 70% of gold is contained in coarsest grain. Pulp and metallics assay. Sample overpulped giving 0.39 g of +150 mesh assaying 24,310 ppb. |
| 09 | 01 | 1110 | Nil | 0* | X | High | X | Esker sand sample. Check panned 1/4 conc.; 2 abraded V.G. 25 x 25 and 50 x 50 microns, no pyrite. |
| | 04 | 4660 | Nil | 0* | X | High | X | Esker sand sample. Check panned 1/4 conc.; no V.G., 0.5% py. |
| 12 | 01 | 3365 | Nil | 0* | ? | High | X | Composite sand (mostly) and till sample. Check panned 1/4 conc.; no V.G. and no py. |
| 13 | 02 | 10,320 | 8016 | 5 | X | X | NA | Washed till sample at Ojibway II interface. All gold grains abraded. |

Table 7: Gold Anomaly Discrimination For Samples With Calculated or/and Measured Assays Over 1000 ppb or/and More Than 10 Grains Visible Gold

One screening method is to eliminate anomalies which have no stratigraphic continuity. In this regard, an anomaly at the base of a till horizon is assumed to have stratigraphic continuity as is an anomaly in a single sample till horizon. A lack of stratigraphic continuity is displayed by a single, isolated anomalous sample within or at the top of a multi-sample till horizon. A lack of stratigraphic continuity may be due to the presence of a single nugget or of an erratic, high concentration of gold grains, especially in placer beds in Sangamon gravels or at the washed surfaces of till horizons.

A second phase of anomaly screening is the calculation of assays (Appendix C) using the formula/parameters discussed in a previous chapter. In this case the calculated and measured (geochemical) assays are compared. Either good correlation or a low measured assay is indicative of sufficient visible gold being seen initially to account for the anomaly. We consider the correlation between calculated and measured assays to be "good" if the calculated assays are not more than twice as high as or fifty percent less than the measured assays. This allows for a doubling or halving of the normal thickness factor for flake gold particles used in the calculation. A low measured assay indicates that the largest grain of visible gold or a disproportionate number of the grains remained in the retained 1/4 split of the concentrate. Thus either good correlation of measured and calculated assays or a low measured assay generally indicates background noise if the 10 gold grain threshold for dispersion trains is not met.

A third screening method is the direct elimination of nugget anomalies by check panning and analysis. Table 7, in addition to Low Assays and Good Correlation, includes another category - High Assays - which refers to those samples in which the number of gold grains sighted was not sufficient to explain the anomalies obtained. High Assays can be caused by any one of the following:

1. A missed nugget.
2. A sighted nugget for which the actual thickness is greater than the assumed thickness (0.1-0.2 x diameter) used in the assay calculation.

3. The difference in weight between the total concentrate on which the calculation is based and the 3/4 concentrate that is assayed (applies only to samples in which a nugget is present, as fine gold would be evenly distributed through the sample).

4. A large number of missed fine gold grains.

5. Invisible gold in pyrite or other heavy minerals.

Missed nuggets normally account for about 80 percent of High Assays, the thickness and weight factors for 10-20 percent, and fine gold and invisible gold for less than 10 percent. Only the fine gold and invisible gold anomalies are significant.

One method of evaluating anomalies in the High Assay category is to pan the retained 1/4 concentrates (Table 7). An absence or minimal amount of fine visible gold or less than ten percent sulfides in the 1/4 concentrate precludes the occurrence of fine gold or sulphide gold in anomalous concentrations in the 3/4 analytical split, and such anomalies can be assumed to have been caused by a missed or unusually thick nugget. Samples which apparently contain multiple gold particles but do not meet the ten grain minimum (assuming visible gold in the 1/4 and 3/4 is directly proportional) are grouped with nugget anomalies provided sulphide levels are low. Where uncertainty exists the 1/4 concentrate can be analyzed by the non-destructive INA method with the hope of duplicating the 3/4 analysis.

Using the above screening processes, all thirteen of the Lac Blouin South gold anomalies can be confidentally discounted as background nugget occurrences (Table 7). The anomalies occur either in the Mattagami Esker or in washed till immediately below the esker, suggesting that they are mostly placer anomalies. They fall into two groups -- Group 1 in which sufficient visible gold was found during initial processing to account for the Bondar-Clegg assays and Group 2 (High Assay category) in which little or no visible gold was seen.

Nine of the anomalies are in Group 1. In each case the concentration of gold grains is below the 10-grain dispersion train threshold and all of the grains are of the abraded background or placer type rather than the irregular/delicate dispersion train type. Six of the nine anomalies also have no stratigraphic continuity, two have chance continuity with one another and one is in an esker sample at the bedrock interface.

Four of the anomalies are in Group 2. All four lack stratigraphic continuity and could be dismissed on this basis alone. As a further check, the four 1/4 concentrates were panned. No significant gold grain or sulphide mineral concentrations were found.

## 5.7 Lac Blouin South Heavy Mineral Base Metal Anomalies

Arsenic levels in the Lac Blouin South heavy mineral concentrates range from less than the limit of the detection (2 ppm) to a maximum of 133 ppm and are therefore well below the 800 ppm anomaly threshold. All zinc values are also less than 800 ppm.

Copper values range to 2150 ppm, with all values over 800 ppm occurring in the cobbly, clast-supported axial esker gravel of Hole 05 (Samples 08, 12, 13, 14, 15, 16, 17, 18, 19, 21 and 26). The anomalous concentrates contain no chalcopyrite but do contain 15 to 25 percent coarse, crystalline pyrite that was milled from the gravel clasts by the drill bit. They also contain 1 to 3 percent drill steel that could not be removed magnetically because it is rusted to coarser, non-magnetic minerals grains. Tests by ODM have shown that such drill steel does not normally contain copper. Therefore the copper in Hole 05 must be contained in the pyrite. Mineralization of this type is not of economic significance.

# 6. CONCLUSIONS AND RECOMMENDATIONS

## 6.1 Significance of the GSC Hole ME-04 Anomaly

The first objective of the Comox reverse circulation drilling was to evaluate the 35,000 ppb heavy mineral gold anomaly reported by the GSC from esker gravels at the bottom of Hole ME-04.

The drilling confirmed the suspicion that the GSC anomaly was caused by the nugget effect and is of no significance. First, Comox's Hole 01 was drilled at the same site and did not reproduce the anomaly. Secondly, Comox intersected thirteen new nugget anomalies in the same glaciofluvial environment. These anomalies are caused both by random gold grains and by placer concentrations that are of low grade and very limited extent and are not of economic interest.

## 6.2 Gold Potential of the North Margin of the Bourlamaque Batholith

The second objective of the reverse circulation drilling was to test the gold potential of VLF-indicated shear zones near the north edge of the Bourlamaque Batholith.

The highly sheared and crushed diorite/quartz diorite bedrock intersections in Holes 02 and 08 do confirm the existence of the shear zones, but these shears have not been hydrothermally altered and are not anomalous in gold. Overburden results near the shears and along the batholith/volcanic contact are also negative. Thus the margin of the batholith, which forms such an important ore control elsewhere in the Val d'Or area, does not appear to be a significant exploration target at Lac Blouin South.

## 6.3 Gold Potential of the McRae Showing Area

The third and final objective of the reverse circulation drilling was to evaluate the gold potential of VLF-indicated shear zones in volcanic rocks near the old McRae Gold Mines showing west of Lac Blouin.

The holes were drilled south of the VLF conductors to test for down-ice dispersion and thus intersected unsheared bedrock and do not provide any direct evidence of the existence or nature of the inferred shear zones. The overburden results are uniformly negative but the gold potential of the area cannot be completely discounted on the basis of these results because the till here is very thin and terrain conditions did not allow the easternmost holes (No. 11 and 14) to be drilled directly down-ice from their intended targets.

## 6.4 Follow-Up Targets

The principal encouragement obtained from the drilling is not gold but rather the Cu-Zn indications found in the graywacke bedrock of Hole 01. Although the mineralized veins constitute only 0.1 percent of the sample, the occurrence could be significant for the following reasons:

1. The concentration of both chalcopyrite and sphalerite in the veinlets is relatively high (2 percent).
2. The graywacke indicates the possible presence of a previously unknown basin of calc-alkalic volcanism within the predominantly komatiitic volcanics of the property.
3. The intersection is proximal to two previously undrilled VLF conductors that could be caused by massive sulphides and were not tested by the reverse circulation drilling because they occur in the till-free scour channel of the Mattagami Esker.

The proposed link between the mineralized veinlets in Hole 01 and the VLF conductors is, of course, highly speculative but is sufficiently sound geologically to warrant further investigation. We specifically recommend that any assessment work files from the area be carefully reviewed for supportive clues. Consideration should also be given to performing a ground EM survey over the subject area using a system such as MAXMIN that is more sulphide-specific than VLF. Survey specifications should allow for the east-west stratigraphic trend, the northeast-southwest bedrock topographic trend, the 30 to 70+ metre overburden depth and the saturated, gravelly character of the overburden. If any EM conductors consistent with massive sulphide mineralization are encountered, they should be tested by diamond drilling.

S. Averill, President

## CERTIFICATE - STUART A. AVERILL

I, Stuart A. Averill, residing at 192 Powell Avenue, Ottawa, Ontario hereby certify as follows:

That I attended the University of Manitoba at Winnipeg, Manitoba and graduated with a B.Sc. (Hons.) in Geology in 1969.

That I have worked continuously in the field of mining exploration geology since 1971.

That I am President and a principal owner of Overburden Drilling Management Limited, 107-15 Capella Court, Nepean, Ontario, an independent geological consulting company that I founded in 1974.

That I qualify for and have recently applied for fellowship in the Geological Association of Canada.

That this technical report is based on data gathered on the subject property by employees of Overburden Drilling Management Limited and interpreted by me.

That I have no direct or indirect interest in Comox Resources Limited, Northern Abitibi Mining Corp., or Golden Rule Resources Limited.

Stuart A. Averill, B.Sc. (Hons.)

Dated at Ottawa, Ontario this 12th day of December, 1986

## CERTIFICATE - JENS E. HANSEN

I, Jens E. Hansen, residing at 19 Nesbitt Street, Nepean, Ontario hereby certify as follows:

That I attended Queen's University at Kingston, Ontario and graduated with a B.Sc. in Engineering Geophysics in 1964.

That I am a member of the Order of Engineers of Quebec.

That I am a member of the Professional Engineers of Ontario.

That I have worked in the field of mining exploration geophysics since 1964 and as an independent geophysical consultant since 1979.

That I have reviewed this technical assessment report and discussed its contents with the author and that I have been on the property discussed in this report.

That I have a direct interest in Golden Rule Resources Limited as a shareholder and a director and in Northern Abitibi Mining Corp. as a shareholder, an officer and a director.

Jens E. Hansen, P. Eng.

Dated at Ottawa, Ontario this 12th day of December, 1986

## REFERENCES

Averill, S.A. 1978: Overburden Exploration and the new Glacial History of Northern Canada; Canadian Mining Journal, Vol. 99, No. 4, p. 58-64.

Bostock, H.S. 1968: Geology and Economic Minerals of Canada, 5th Edition: Maps and Charts, Physiographic Regions, edited by R.J.W. Douglas; Geological Survey of Canada; Economic Geology Report No. 1.

Clifton, H.E., Hubert, A., Phillips, R.L. 1967: Marine Sediment Sample Preparation for Analysis for Low Concentrations of Fine Detrital Gold; U.S. Dept. Interior, Geol. Surv. Circ. 545, 11p.

DiLabio, R.N.W. 1983: Gold Content of Overburden Samples in the Abitibi Clay Belt, Quebec; Geol. Surv. Can., Open File Report 945, 4 p.

Dyke, A.S., Dredge, L.A., Vincent, J.S. 1982: Configuration and Dynamics of the Laurentide Ice Sheet During the Late Wisconsian Maximum; Géographic Physique et Quaternaire, Vol. XXXVI, Nos. 1-2, p.5-14.

Gray, R.S. 1983: Overburden Drilling as a Tool for Gold Exploration; 85th Annual General Meeting of CIM-1983, Paper No. 19.

Hansen, J.E. 1985: Report on Geophysical Surveys, Senneville Lac Blouin South Property, Phase III, Senneville Township, Quebec; Northern Abitibi Mining Corp. and Golden Rule Resources Ltd., Company Report.

Lang, A.H. et. al. 1968 Geology and Economic Minerals of Canada, 5th Edition: Economic Minerals of the Canadian Shield, edited by R.J.W. Douglas; Geol. Surv. Can., Economic Geology Report No. 1, pp. 205-206.

Lundberg, Hans 1937: Report on Geophysical Surveys on the Property of McRae Gold Mines Limited, Vassan and Senneville Townships, Abitibi County, Quebec; Quebec Ministry of Natural Resources, Assessment File 8559-B.

Masterman, P.C. Geoscientific Compilation Maps 32C/4-0302 and 0303; Edwin Gaucher and Associates for Quebec; Quebec Ministry of Energy and Resources.

MERQ-OGS 1983: Lithostratigraphic Map of the Abitibi Subprovince; Ontario Geological Survey/Ministère de L'Énergie et des Ressources, Québec, 1:500,000, Catalogued as "Map 2484" in Ontario and "DV 83-16" in Québec.

Proudfoot, D.A. Skinner, R.G. Shilts, W.W. 1975: Contamination in Overburden Samples Obtained by the Rotary, Dual-Tube Drilling Technique, Geol. Surv. Can., Open File 277, 15 pp.

Sharpe, J.I. 1968: Louvicourt Township, Abitibi-East County, Quebec; Geological Report 135, Quebec Dept. of Natural Resources.

Skinner, R.G. 1972: Drift Prospecting in the Abitibi Clay Belt: Overburden Drilling Program Methods and Costs; Geol. Surv. Can., Open File 116, 27 pp.

# APPENDIX A

# REVERSE CIRCULATION DRILL HOLE LOGS

. Elevation : 32.6 m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 23 19 86

SHIFT HOURS

______ TO ______

TOTAL HOURS

CONTRACT HOURS

HOLE NO CX-86-01 LOCATION 1 Km north of Hwy 307 (adjacent to MEC 4)

GEOLOGIST HOLMES DRILLER Hing BIT NO. CB66426 BIT FOOTAGE 0 - 36.2

MOVE TO HOLE

DRILL 8 .15AM 300 m

MECHANICAL DOWN TIME

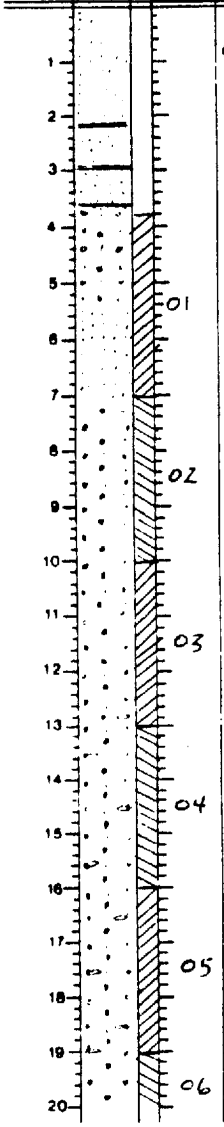
DRILLING PROBLEMS repair hydraulic hose at 10 30 am pull rods at 12 [illegible]

OTHER Travel by pickup 7.00 730 AM , haul water 7.30 [illegible] 815 AM

MOVE TO NEXT HOLE

NEW BIT
NEW SUB
NEW ROD (NO CHARGE)

Page 1 of 2



**DESCRIPTIVE LOG**

0.0 - 34.7 OJIBWAY II SEDIMENTS

0 - 3.8 Fine to medium grey sand interbedded with thin horizons of pure grey-beige clay good return but not sampled

3.8 - 5.5 pebble gravel, no fine material except for drill clast, angular pebbles clast composition approximately 70% volcanics/sediments 30% granitoid

5.5 - 6.6 medium grained beige sand

6.6 - 7.1 medium to coarse beige sand

7.1 - 12.4 pebble gravel similar to 3.8 to 5.5

12.4 - 21.3 pebble/cobble gravel similar to above gravel with occasional small cobbles, mostly angular to subrounded
70 80% volcanics
20 30% granitoid

Note This sand/gravel sequence is a section through the interlobate moraine 'Harricana Esker'

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 23 1986

SHIFT HOURS
____ TO ____

TOTAL HOURS
____

CONTRACT HOURS
____

HOLE NO CX-86-01 LOCATION ____

GEOLOGIST ____ DRILLER ____ BIT NO. ____ BIT FOOTAGE ____

MOVE TO HOLE ____

DRILL ____

MECHANICAL DOWN TIME ____

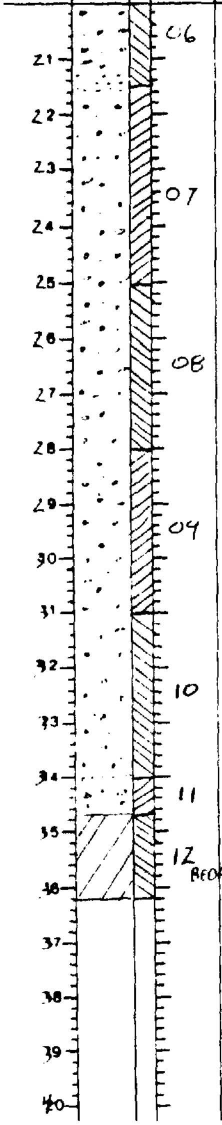
DRILLING PROBLEMS ____

OTHER ____

MOVE TO NEXT HOLE ____

Page 2 of 2

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG



21.3-215 medium to coarse grained beige sand, interbedded with the gravel

21.5-34.4 gravel similar to 12.4to21.3

at 34.4- thin horizon medium grained grey sand

34.4-34.7 pebble/cobble gravel
little or no fine material
angular to subrounded clasts
approximately
85% volcanics
15% granitoid

34.7-36.2 BEDROCK

- medium to dark green colour
- fine grained
- granular texture
- massive structure
- no carbonate no sulphides
- Intermediate/mafic volcanic

36.2 EOH

Elevation: [illegible]

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 23 19 86

SHIFT HOURS

_____ TO _____

TOTAL HOURS

CONTRACT HOURS

HOLE NO CX-86-02 LOCATION Hwy 387 (Farthest east hole) 200m N of Hwy

GEOLOGIST Holmes DRILLER Howe BIT NO CB68426 BIT FOOTAGE 30.2-50.2

MOVE TO HOLE 3 00 PM - 4 00 PM

DRILL 4 00 PM - 5.00 PM

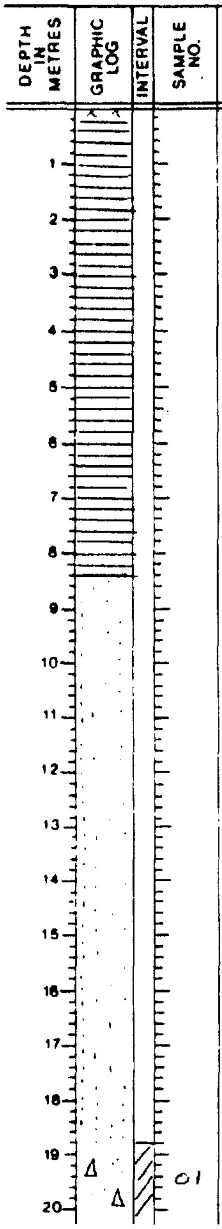
MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE

Page 1 of 2



DESCRIPTIVE LOG

0-18.8 OJIBWAY II SEDIMENTS

0-84 pure gray-beige clay

8.4-18.8 very fine to fine gray sand

18.8-20.4 C/M TILL

Fine gray sand matrix
very pebbly, angular clasts,
composition approximately
60% volcanics, sediments
20% granitoid

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 22 19 86

SHIFT HOURS

_______ TO _______

TOTAL HOURS

_______

CONTRACT HOURS

_______

HOLE NO CX-86-02 LOCATION ______________

GEOLOGIST ________ DRILLER ________ BIT NO ________ BIT FOOTAGE ________

MOVE TO HOLE ______________

DRILL ______________

MECHANICAL DOWN TIME ______________

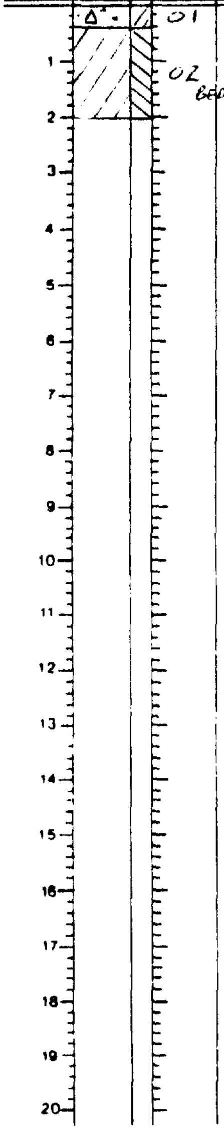
DRILLING PROBLEMS ______________

OTHER ______________

MOVE TO NEXT HOLE ______________

page 2 of 2

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG



20.4 - 22.0 BEDROCK

- medium green colour
- Fine grained
- massive structure
- < 1% carbonate, no sulphides
- Intermediate/mafic volcanic

22.0 E.O.H.

Elevation: 306 m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 23 19 96

SHIFT HOURS

______TO ______

TOTAL HOURS

______

CONTRACT HOURS

______

HOLE NO CX-96-03 LOCATION Hwy 387

GEOLOGIST HOLMES DRILLER Hong BIT NO CB68426 BIT FOOTAGE 50.2-64.2

MOVE TO HOLE 5.00 - 5:45 PM

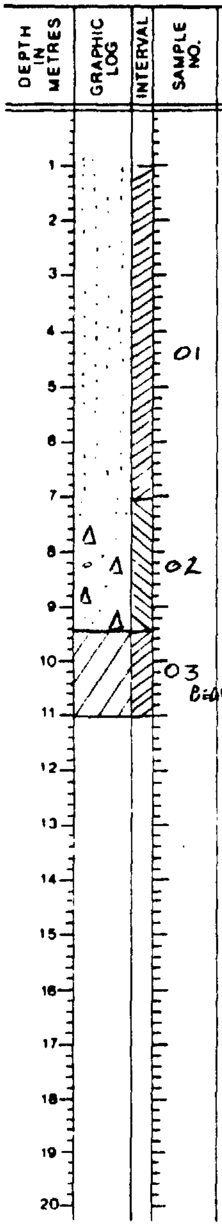
DRILL 5 45 - 6:30 PM

MECHANICAL DOWN TIME ______

DRILLING PROBLEMS ______

OTHER travel 6:30 - 7.00 PM

MOVE TO NEXT HOLE ______



DESCRIPTIVE LOG

0 - 1.0 No RETURN
(very oxidized sand on surface)

1.0 - 7.4 OJIBWAY II SEDIMENTS

Fine beige sand

7.4 - 9.4 C/M TILL

distinct contact with overlying unit

- Fine gray sand matrix clasts primarily angular to subrounded pebbles, composition approximately 60% volcanics/sediments 40% granitoid

9.4 - 11.0 BEDROCK

- green 60% and white pink 40% blotchy colour rock

where green is hornblende
white pink is Feldspar and quartz

- medium grained rock

- massive structure or possibly banded

- no sulphides, no carbonate

- Granodiorite

11.0 EOH

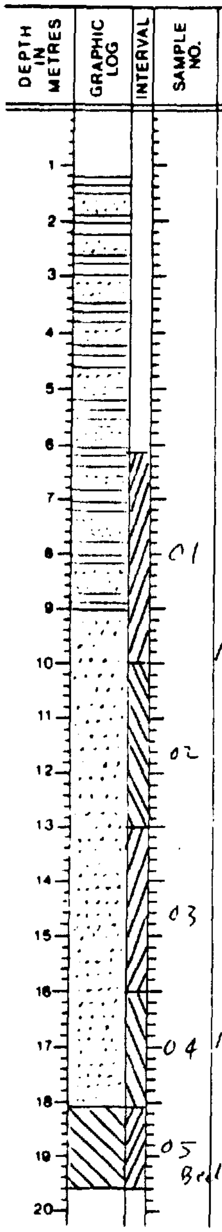
Elevation 51m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE Oct 24 1986
SHIFT HOURS
_____ TO _____
TOTAL HOURS
_____
CONTRACT HOURS
_____

HOLE NO GX-86-04 LOCATION On Hwy 307 drilling on shoulder
GEOLOGIST Holmes DRILLER Hong BIT NO GB68427 BIT FOOTAGE 0-19.5m
MOVE TO HOLE 7:30 to 8.00
DRILL 8.00 to 9.15
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER TRAVEL 7:00 to 7:30
MOVE TO NEXT HOLE

NEW BIT



**DESCRIPTIVE LOG**

0-1.2 Road Gravel

1.2 18.1 OJIBWAY II SEDIMENTS

1.2-9.0 - Pure beige clay interlayered with fine beige sand occasional very thin horizon of pebbles interbedded with sand.

9.0-17.0 - Fine beige sand occasional very thin horizon of pebbles interbedded with sand

17.0-18.1 - Medium grained beige sand

18.1-19.6 - BEDROCK
- medium green to white
- fine grained
- Massive Structure
- sugary texture
- no carbonate
- no sulphides
- hard to drill (high silica?)
- INTERMEDIATE VOLCANIC

19.6 E.O.H.

Elevation: 205 m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 24 19 86

SHIFT HOURS

______ TO ______

TOTAL HOURS

CONTRACT HOURS

HOLE NO CX-86-05 LOCATION Hwy 387

GEOLOGIST HOLMES DRILLER Hwng BIT NO CBC8427<br>CBC8428 BIT FOOTAGE 175 - 72.5<br>C - 17

MOVE TO HOLE

DRILL

MECHANICAL DOWN TIME

DRILLING PROBLEMS

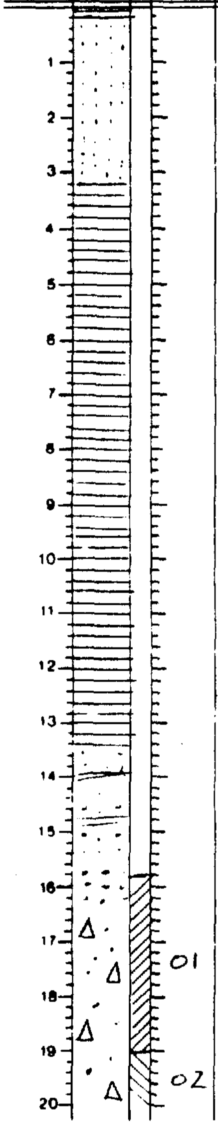
OTHER

MOVE TO NEXT HOLE

New Bit

Page 1 of 4

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG



0 - 16.2 OJIBWAY II SEDIMENTS

0-02 pure gray clay

02-3.2 Fine gray sand

3.2 - 14.5 pure gray clay, soft, downsection occasional thin gray sand interlayers

14.5 - 16.2 pebble gravel interbedded with Fine gray sand, clast composition approximately 60% volcanics/sediments, 40% granitoid

16.2 - 70.0 C/M TILL

till very pebbly

Fine gray sand matrix

angular to subrounded clasts, approximate lithologic composition

60 to 70% volcanics/sediments

40 to 30% granitoid

Note: Character samples 01 to 29 under binocular. All are gravels with a small amount of artificial fine matrix ground by drill bit (ie. clast-supported). In Samples 27 to 29, amount of artificial matrix increases due to very heavy grinding under high torque conditions just before hole was abandoned. Pebbles throughout have py. at natural surfaces, indicating all gravel is glaciofluvial (no Sangamon interglacial). Pebbles tend to be subrounded.

NA. Dec.05/86

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 24 19 86

SHIFT HOURS

_______ TO _______

TOTAL HOURS

_______

CONTRACT HOURS

_______

HOLE NO CX-86-05 LOCATION _______

GEOLOGIST _______ DRILLER _______ BIT NO _______ BIT FOOTAGE _______

MOVE TO HOLE _______

DRILL _______

MECHANICAL DOWN TIME _______

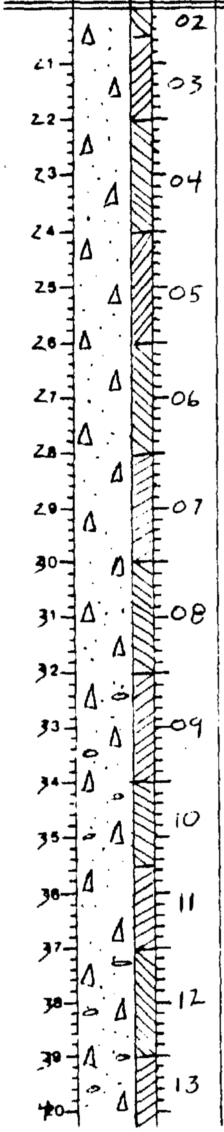
DRILLING PROBLEMS _______

OTHER _______

MOVE TO NEXT HOLE _______

Page 2 of 4

| DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|



Till unit consistant down section

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 24 19 86

HOLE NO CX-86-05 LOCATION ______

GEOLOGIST ______ DRILLER ______ BIT NO. ______ BIT FOOTAGE ______

SHIFT HOURS

______ TO ______

MOVE TO HOLE ______

DRILL ______

TOTAL HOURS

______

MECHANICAL DOWN TIME ______

DRILLING PROBLEMS ______

CONTRACT HOURS

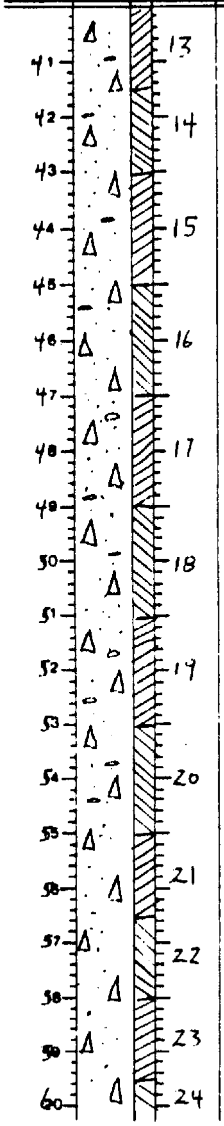
______

OTHER ______

MOVE TO NEXT HOLE ______

page 3 of 4

| DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG |
|---|---|---|---|---|



till unit consistant
downsection

Pull rods at 53m, replace bit
lost 1 cone

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 24 19 86

SHIFT HOURS

_____ TO _____

TOTAL HOURS

_____

CONTRACT HOURS

_____

HOLE NO CX-86-05 LOCATION _____

GEOLOGIST _____ DRILLER _____ BIT NO _____ BIT FOOTAGE _____

MOVE TO HOLE _____

DRILL _____

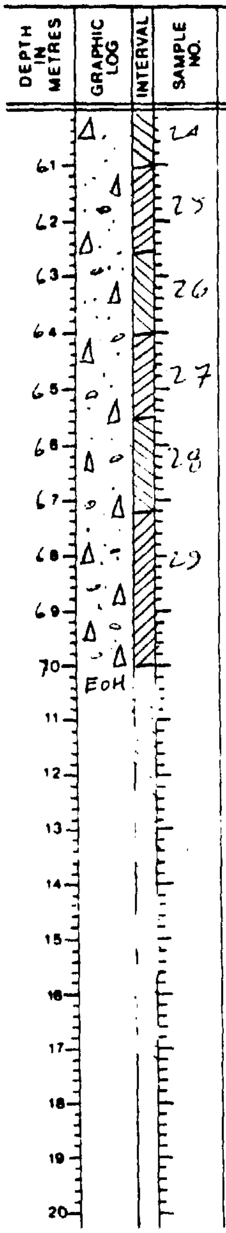
MECHANICAL DOWN TIME _____

DRILLING PROBLEMS _____

OTHER _____

MOVE TO NEXT HOLE _____

page 4 of 4



DESCRIPTIVE LOG

61.0 - 70.0 Fine green-gray sand matrix, till still pebbly, occasional cobbles, clast composition approximately 60-70% volcanics/sediments to 30% granitoid

poor return below 67 m

70.0 EOH.

Torque on rods too high to continue drilling

Elevation: 305m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE OCTOBER 25 19 86

SHIFT HOURS

_____ TO _____

TOTAL HOURS

_____

CONTRACT HOURS

_____

HOLE NO CX 86-06 LOCATION corner Hwy 397

GEOLOGIST HOLMES DRILLER Hong BIT NO CB1848 BIT FOOTAGE 170-642

MOVE TO HOLE 7 30 - 9 00 AM

DRILL 8 00 - 10 30 AM

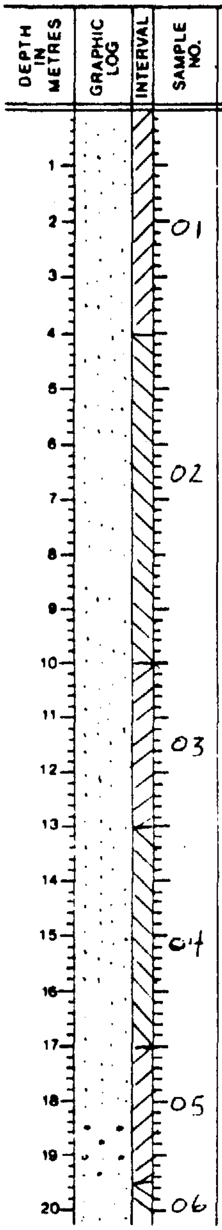
MECHANICAL DOWN TIME _____

DRILLING PROBLEMS _____

OTHER Travel 7 00 - 7:30

MOVE TO NEXT HOLE _____

Page 1 of 3



DESCRIPTIVE LOG

0 - 23.0 OJIBWAY II SEDIMENTS

0 - 2.8 Fine beige sand

2.8 - 3.5 medium beige sand

3.5 - 6.0 Fine beige sand

6.0 - 7.5 medium to coarse sand

7.5 - 18.5 Fine to medium beige sand with occasional thin pebble interbed

18.5 - 19.5 pebble gravel
angular to rounded clasts
approximate composition
60% volcanics/sediments
40% granitoid

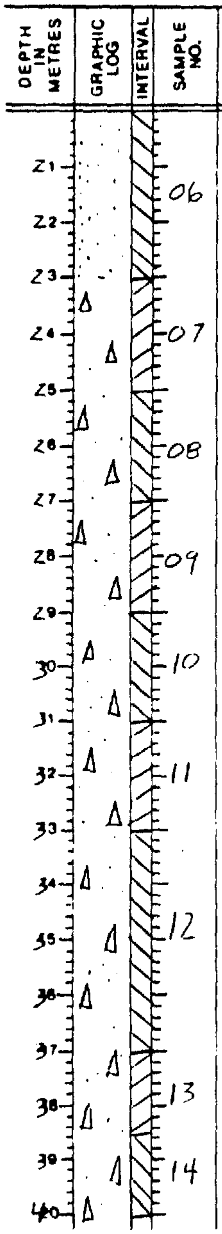
19.5 - 23.0 Fine to medium beige sand

## OVERBURDEN DRILLING MANAGEMENT LIMITED
## REVERSE CIRCULATION DRILL HOLE LOG

DATE October 29 19__
SHIFT HOURS
______ TO ______
TOTAL HOURS
______
CONTRACT HOURS
______

HOLE NO CX-86-06 LOCATION ______
GEOLOGIST ______ DRILLER ______ BIT NO ______ BIT FOOTAGE ______
MOVE TO HOLE ______
DRILL ______
MECHANICAL DOWN TIME ______
DRILLING PROBLEMS ______
OTHER ______
MOVE TO NEXT HOLE ______

Page 2 of 3



DESCRIPTIVE LOG

230-45.6 C/M TILL

gradational contact with overlying sediment unit

230-270 Fine gray-beige sand matrix (till contains a lot of matrix)
pebbles and granules
subangular to subrounded
60% volcanics/sediments
40% granitoid.

270-45.6 matrix changes to fine gray sand, clast composition remains consistent but percentage of clasts in till increases

Note Checked character samples 07 to 18 under binocular. All are pebbly sands with a washed, sorted matrix. Bedding from fine (100 μ) to medium (300-500 μ) sand is evident, with a general coarsening down-section. Pebbles are max. 1 cm and presumably occur thinly interbedded with sand, hence section mislogged as unsorted till. Silt (<100 μ) is completely absent.

Dec 05/86

Pebbles are subrounded to rounded, have fresh pg. at natural surfaces + therefore are not Sangamon.

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 25 19 86

SHIFT HOURS

____ TO ____

TOTAL HOURS

____

CONTRACT HOURS

____

HOLE NO CX-86-06 LOCATION ____

GEOLOGIST ____ DRILLER ____ BIT NO. ____ BIT FOOTAGE ____

MOVE TO HOLE ____

DRILL ____

MECHANICAL DOWN TIME ____

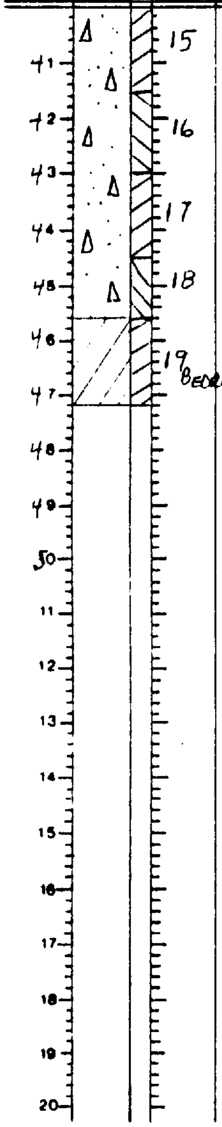
DRILLING PROBLEMS ____

OTHER ____

MOVE TO NEXT HOLE ____

page 3 of 3

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG



45.6 - 47.2 BEDROCK

- rock is Fractured, some contamination (granules) from overlying till unit
- medium green colour
- Fine grained
- massive structure
- < 1% carbonate, no sulphides
- hard to drill

Intermediate/mafic volcanic

47.2 EOH

Elevation : 505 m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 25 19 86

SHIFT HOURS

_____ TO _____

TOTAL HOURS

_____

CONTRACT HOURS

_____

HOLE NO CX-86-07 LOCATION 200 m NW of Fernor Hwy 377

GEOLOGIST HOLMES DRILLER Howg BIT NO CBC8429 BIT FOOTAGE 0 - 17.0

MOVE TO HOLE 10:30 - 11 00 AM

DRILL 11:00 - 12:00

MECHANICAL DOWN TIME _____

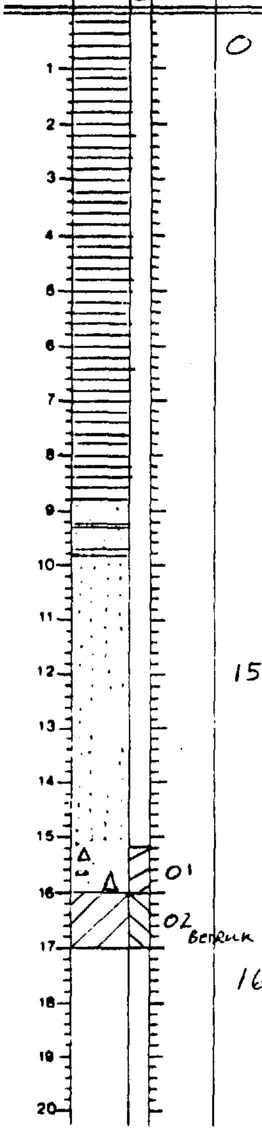
DRILLING PROBLEMS _____

OTHER _____

MOVE TO NEXT HOLE _____

NEW BIT

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG



0 - 15.2 OJIBWAY II SEDIMENTS

0 - 5.5 pure beige clay, soft

5.5 - 8.8 very distinct gray and beige pure varved clay

8.8 - 10.0 very fine gray sand with thin pure gray clay interbeds

10.0 - 15.2 Fine gray-beige sand with occasional thin interbeds of angular pebbles and gray medium sand

15.2 - 16.0 C/M TILL

Fine gray sand matrix angular pebbles and small cobbles, composition approximately 85% volcanics/sediments 15% granitoids

16.0 - 17.0 BEDROCK

- dark gray-green colour
- fine grained
- massive structure
- no carbonate, no sulphides

Intermediate/mafic volcanic

17.0 EOH

Note: Top broke off first rod, lost rod, bit sub and bit downhole.

Elevation 326 m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
## REVERSE CIRCULATION DRILL HOLE LOG

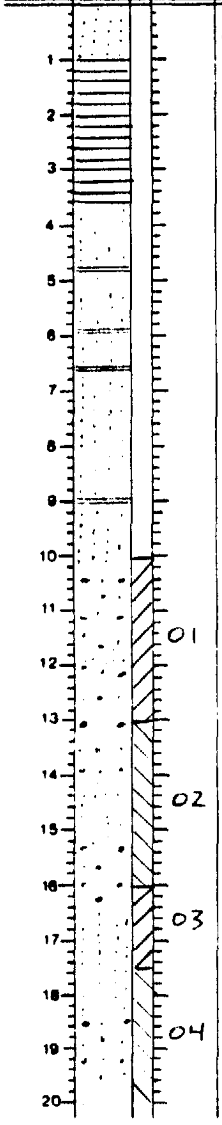
DATE October 25 19 __
SHIFT HOURS
______ TO ______
TOTAL HOURS
______
CONTRACT HOURS
______

HOLE NO CX-86-08 LOCATION 1 Km south of corner on Hwy 347 on [illegible]
GEOLOGIST Holmes DRILLER Henry BIT NO CB68430 / CB68431 BIT FOOTAGE 0 - 42.5 / 0 - 1.0
MOVE TO HOLE 12.00 - 12.45 PM
DRILL 12.45 - 5.30
MECHANICAL DOWN TIME ______
DRILLING PROBLEMS ______
OTHER travel 5 30 - 6.00
MOVE TO NEXT HOLE ______

NEW BIT
NEW BIT
NEW SUB

Page 1 of 3

| DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG |
|---|---|---|---|---|



0 - 31.0 OJIBWAY II SEDIMENTS

0 - 1.0 very oxidized beige, medium sand

1.0-3.6 pure beige clay, soft

3.6 - 10.2 very fine gray-beige sand with occasional thin pure beige clay interbeds - poor return

10.2 - 19.5 interbedded fine beige sand with medium to course sand and pebble gravel, clast composition of gravel approximately 60% volcanics/sediments 40% granitoid

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 25 19 86

HOLE NO CX-86-08 LOCATION ____________

GEOLOGIST ________ DRILLER ________ BIT NO. ________ BIT FOOTAGE ________

SHIFT HOURS

______ TO ______

TOTAL HOURS

______

CONTRACT HOURS

______

MOVE TO HOLE ____________

DRILL ____________

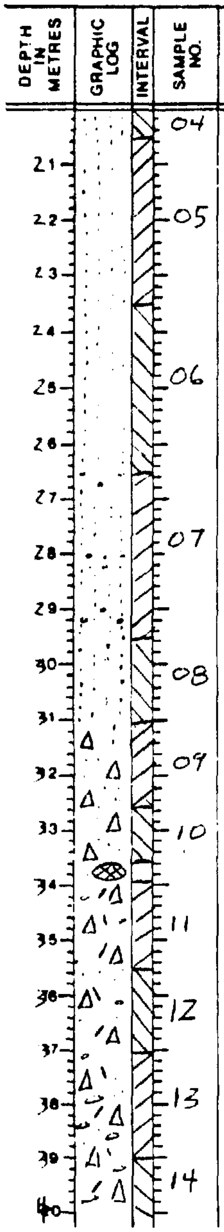
MECHANICAL DOWN TIME ____________

DRILLING PROBLEMS ____________

OTHER ____________

MOVE TO NEXT HOLE ____________

page 2 of 3



DESCRIPTIVE LOG

19.5 240 Fine beige sand

at 240 thin pebble interbed with a few hard, platy pieces of gritty clay - sand (carbonate cemented) in the fine sand

240 - 29.4 Fine beige sand with occasional thin pebble horizon

29.4 - 31.0 medium to coarse beige sand

31.0 - 42.0 C/M TILL

31.0 - 335 Fine gray sand matrix, subangular to subrounded pebbles and small cobbles approximately
70 to 80% volcanics/sediments
30 to 20% granitoid
some of the pebbles have clay coatings

335 - 33.9 boulder - volcanic

33.9 - 35.5 till consists of fine gray-green sand matrix with a lot of small, gritty, gray-green clay lumps, cobble composition approximately
60% diorite
10% granite
10% volcanics/sediments

355 - 380 till changes to fine gray sand matrix, gritty gray green clay lumps comprising up to 10% of sample return, pebble and cobble composition
75% volcanics/sediments
25% granitoid

380 - 390 till becomes very cobbly

## OVERBURDEN DRILLING MANAGEMENT LIMITED
## REVERSE CIRCULATION DRILL HOLE LOG

DATE October 25 1986
SHIFT HOURS
_____ TO _____
TOTAL HOURS
_____
CONTRACT HOURS
_____

HOLE NO CX-86-08 LOCATION _____
GEOLOGIST _____ DRILLER _____ BIT NO _____ BIT FOOTAGE _____
MOVE TO HOLE _____
DRILL _____
MECHANICAL DOWN TIME _____
DRILLING PROBLEMS _____
OTHER _____
MOVE TO NEXT HOLE _____

Page 3 of 3

| DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. |
|---|---|---|---|
| 41 |  | | 14 |
| 42 | | | |
| 43 | | | 15 BEDROCK |
| 44 | | | |
| 45 | | | |
| 46 | | | |
| 47 | | | |
| 48 | | | |
| 49 | | | |
| 50 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |

**DESCRIPTIVE LOG**

39.0-42.0 till contains fine gray-green sand matrix with gritty gray-green clay lumps, very cobbly, composition approximately
85% volcanics/sediments
15% granite

pull rods at 42 m to replace bit, bit CB 8430 had cones pushed together

42.0 - 43.5 BEDROCK
- medium green and white colour
- fine grained
- massive structure
- quartz vein at 43.0
- >1% carbonate, no sulphides

Intermediate/mafic volcanic

43.5 EOH

Elevation: 314 m

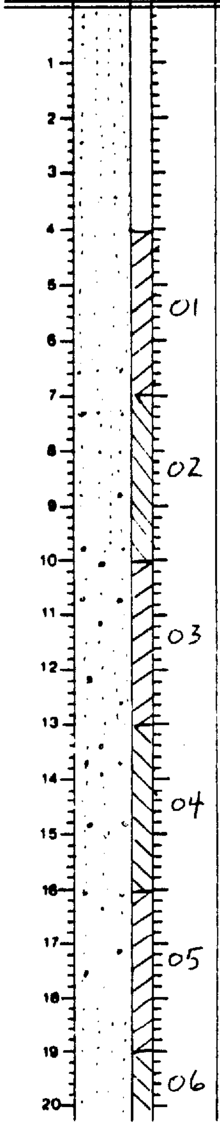
# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 26 19 86
SHIFT HOURS
____ TO ____
TOTAL HOURS
____
CONTRACT HOURS
____

HOLE NO CX-86-09 LOCATION west of Hwy 377
GEOLOGIST HOLMES DRILLER Hong BIT NO. CB68431 BIT FOOTAGE 1.0 - 43.5
MOVE TO HOLE 7 30 - 8.00
DRILL 8 00 - 10:00
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER travel 7-7.30 travel 5 30 - 6 00
~~MOVE TO NEXT HOLE~~ Standby 5 hours wait for Float for transport
mobilization costs to move to west of Lac Blouin

Page 1 of 3

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO.



DESCRIPTIVE LOG

0 - 41.4 OJIBWAY II SEDIMENTS

0 - 2.0 Fine beige sand

2.0 - 6.5 medium grained gray-beige to gray sand

6.5 - 10.0 Fine beige sand with occasional thin pebble interbed

10.0 - 12.5 Fine to medium grained beige sand with occasional thin pebble interbed

12.5 25.0 interbedded medium and coarse sand with pebble beds and also with fine beige sand

# OVERBURDEN DRILLING MANAGEMENT LIMITED
## REVERSE CIRCULATION DRILL HOLE LOG

DATE October 26 19 86

HOLE NO CX-86-09 LOCATION

GEOLOGIST DRILLER BIT NO. BIT FOOTAGE

SHIFT HOURS

TO

MOVE TO HOLE

DRILL

TOTAL HOURS

MECHANICAL DOWN TIME

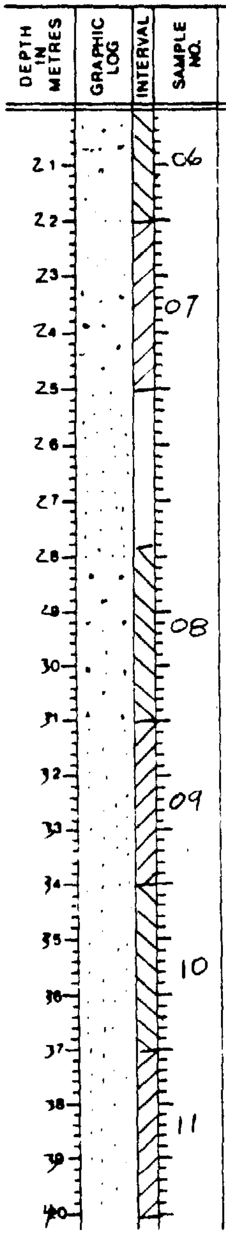
DRILLING PROBLEMS

CONTRACT HOURS

OTHER

MOVE TO NEXT HOLE

Page 2 of 3



DESCRIPTIVE LOG

250 - 27.8 Fine gray sand, not sampled

27.8 - 31.0 medium to coarse sand

31.0 - 33.0 Fine gray-beige sand

33.0 - 39.0 course sand

39.0 - 41.4 Fine gray-beige sand occasional pebble included

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 26 19 86

SHIFT HOURS

_____ TO _____

TOTAL HOURS

_____

CONTRACT HOURS

_____

HOLE NO CX-86-09 LOCATION _____

GEOLOGIST _____ DRILLER _____ BIT NO _____ BIT FOOTAGE _____

MOVE TO HOLE _____

DRILL _____

MECHANICAL DOWN TIME _____

DRILLING PROBLEMS _____

OTHER _____

MOVE TO NEXT HOLE _____

Page 3 of 3

| DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG |
|---|---|---|---|---|
| 41 | | ▨ | 12 | Note possible very thin veneer of till immediately overlying bedrock |
| 42 | ▨ | ▨ | 13 BEDROCK | |
| 43 | | | | |
| 44 | | | | 41.4 - 42 5 BEDROCK |
| 45 | | | | - medium green colour |
| 46 | | | | - Fine grained<br>- massive structure |
| 47 | | | | - no carbonate, no sulphides |
| 48 | | | | - Intermediate/mafic volcanic |
| 49 | | | | |
| 50 | | | | 42.5 EOH |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |

Elevation 303m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE OCTOBER 27 19 86

SHIFT HOURS

____ TO ____

TOTAL HOURS

____

CONTRACT HOURS

____

HOLE NO CX-86-10 LOCATION west of Lac Blouin

GEOLOGIST HOLMES DRILLER Howes BIT NO CB6431 BIT FOOTAGE 435-500

MOVE TO HOLE 7.30 - 8.45

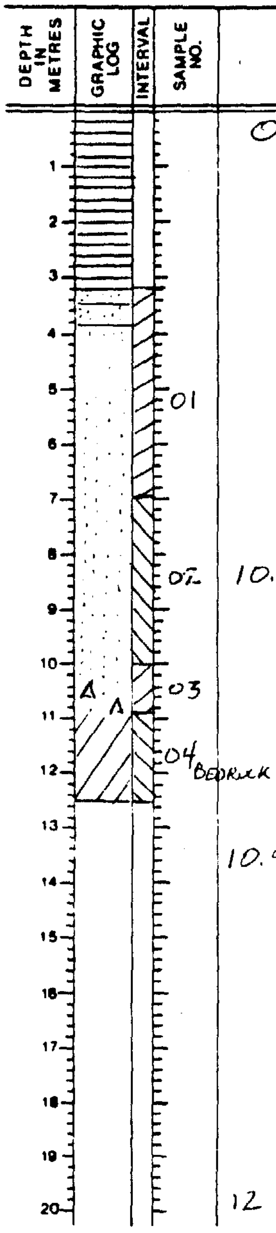
DRILL 8.45 - 9.30

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER Travel 7.00 - 7.30

MOVE TO NEXT HOLE



DESCRIPTIVE LOG

0-10.4 OJIBWAY II SEDIMENTS

0-2.0 pure beige clay
moderately compact

2.0-3.2 pure gray-beige clay

32-40 Fine to very fine beige
sand interlayered with
pure gray clay

40-10.4 Fine to very fine beige
sand

10.4-109 C/M TILL

- Fine gray sand matrix
angular cobbles and pebbles
clast composition approximately
90% volcanic,
20% granitoid

10.9-12.5 BEDROCK

- medium green colour
- Fine grained
- schistose structure
- 1% carbonate, no sulphides
- soft to drill
- Intermediate/mafic
volcanic

12.5 EOH

Elevation 303m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 27 19 86

SHIFT HOURS

______ TO ______

TOTAL HOURS

______

CONTRACT HOURS

______

HOLE NO CX-86-11 LOCATION west of Lac Blouin

GEOLOGIST Holmes DRILLER Howe BIT NO CB69431 BIT FOOTAGE 5[illegible]-661

MOVE TO HOLE 7 30 - 9:45 AM

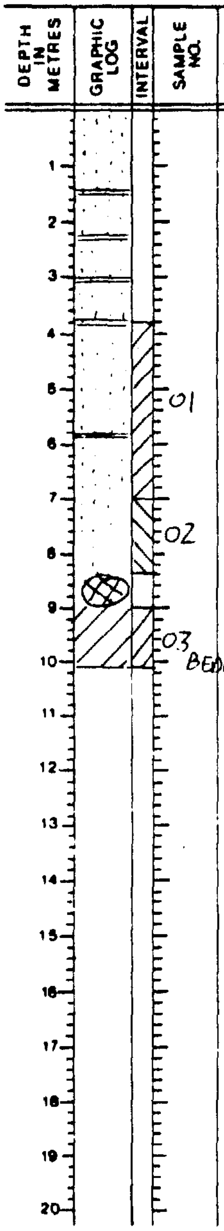
DRILL 9 45 - 10:30 AM

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE



DESCRIPTIVE LOG

0 - 8.4 OJIBWAY II SEDIMENTS

0 - 0.5 ochre fine sand and organics

05 - 4.2 very fine to fine gray sand and thin pure gray - beige clay interbeds

4.2 - 8.4 fine beige sand with few pure clay interbeds

8.4 - 9.0 boulder - granodiorite possibly C/M TILL unit but could not recover enough sample

90 - 10.1 BEDROCK

- medium green colour
- fine grained
- slightly schistose
- > 1% carbonate, no sulphides
- soft to drill
- below 9.9 rock becomes yellowish - green with approximately 2% quartz veins (sericite alteration ?)

bleached Intermediate / mafic volcanic

10.1 EOH

· Elevation 303m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE OCTOBER 27 19 86

SHIFT HOURS

______ TO ______

TOTAL HOURS

______

CONTRACT HOURS

______

HOLE NO CX-86-12 LOCATION west of Lac Blouin

GEOLOGIST HOLMES DRILLER Hong BIT NO CB6043Z BIT FOOTAGE 0 - 7.8

MOVE TO HOLE 10 30 - 10:45

DRILL 10:45 - 11:15

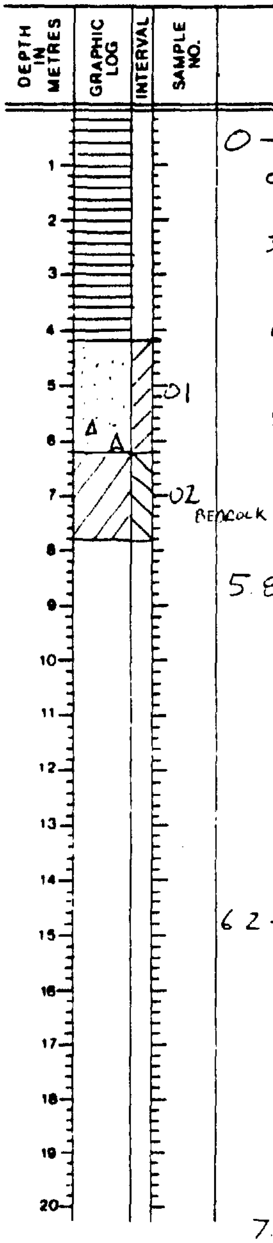
MECHANICAL DOWN TIME ______

DRILLING PROBLEMS ______

OTHER ______

MOVE TO NEXT HOLE ______

NEW BIT



DESCRIPTIVE LOG

0 - 5.8 OJIBWAY II SEDIMENTS

0 - 3.8 pure beige clay, moderately compact

3.8 - 4.2 gray and beige pure clay varves

4.2 - 5.5 very fine gray sand grading into fine beige sand

5.5 - 5.6 fine ochre sand

5.6 - 5.8 fine beige sand

5.8 - 6.2 C/M TILL

. very thin veneer of till over bedrock, not enough for even a small sample on its own

. fine gray - beige sand matrix

clast composition approximately
85% volcanics/sediments
15% granitoid

6.2 - 7.8 BEDROCK

- medium to dark green colour
- fine grained
- schistose
- no carbonate, no sulphides
soft to drill

Intermediate/mafic volcanic

7.8 EOH.

Elevation 303m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 27 19 86

HOLE NO CX-86-13 LOCATION west of Lac Blouin on Hwy

GEOLOGIST HOLMES DRILLER Howe BIT NO CB68432 BIT FOOTAGE 7.8 - 26.1

SHIFT HOURS

____ TO ____

MOVE TO HOLE 11:15 - 11:30 AM

DRILL 11.30 - 12:00

TOTAL HOURS ____

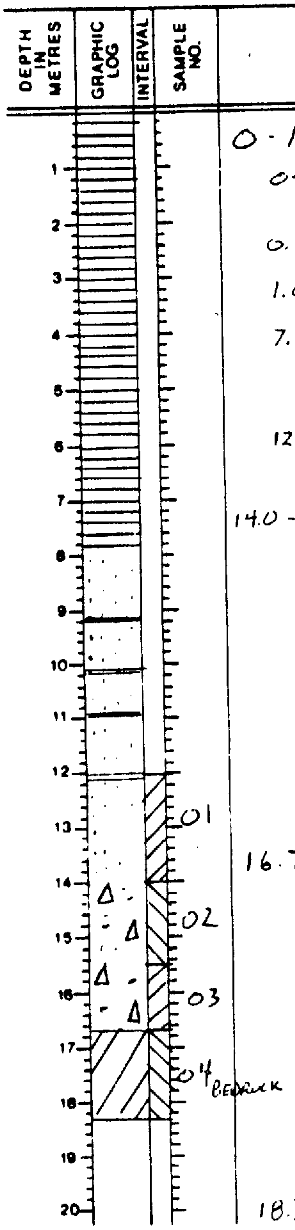
MECHANICAL DOWN TIME

DRILLING PROBLEMS

CONTRACT HOURS ____

OTHER

MOVE TO NEXT HOLE



DESCRIPTIVE LOG

0 - 14.0 OJIBWAY II SEDIMENTS

0-0.2 pure brown clay and organics

0.2-10 pure beige clay

1.0 - 7.8 pure gray-beige clay

7.8 - 12.0 very Fine gray sand occasional thin pure gray clay interbeds

12.0 - 14.0 Fine beige sand

14.0 - 16.7 C/M TILL

- distinct contact with overlying sediment unit
- Fine gray sand matrix, pebbles and small cobbles, subangular to subrounded composition approximately 65% volcanics/sediments 35% granitoid

16.7 - 18.3 BEDROCK

- light green to white colour (becomes yellowish downsection - sericite alteration)
- Fine grained
- slightly schistose
- > 1% carbonate, no sulphides
- bleached Intermediate/mafic volcanic

18.3 EOH

· Elevation · 303 m

# OVERBURDEN DRILLING MANAGEMENT LIMITED
# REVERSE CIRCULATION DRILL HOLE LOG

DATE October 27 19 86

SHIFT HOURS

_____ TO _____

TOTAL HOURS

_____

CONTRACT HOURS

_____

HOLE NO CX-86-14 LOCATION east of Hwy, west of Lac Plomin

GEOLOGIST STRANK DRILLER Hong BIT NO CB65432 BIT FOOTAGE 26.1 - 37.7

MOVE TO HOLE 12:00 - 12.30 PM

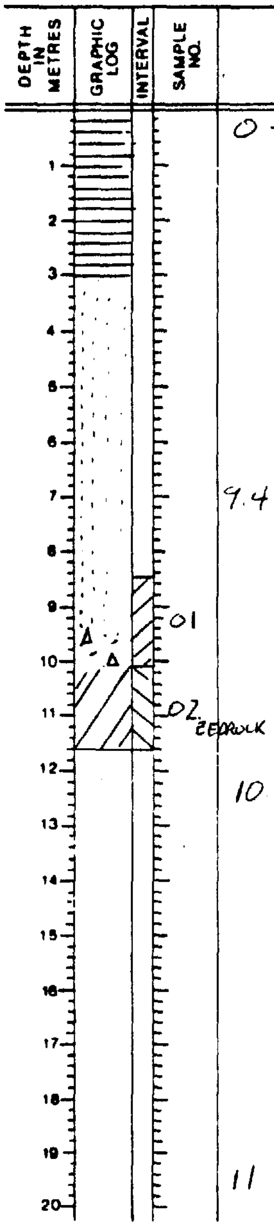
DRILL 12:30 - 1:00

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER half hour travel

MOVE TO NEXT HOLE Move To Road 1:00 - 1:30



DESCRIPTIVE LOG

0 - 9.4 OJIBWAY II SEDIMENTS

0 - 0.2 organics

0.2 - 3.0 gray and beige pure varved clay

3.0 - 8.5 very fine gray sand

8.5 - 8.9 medium grained ochre coloured sand

8.9 - 9.4 Fine beige sand

9.4 - 10.1 C/M TILL

- Fine gray sand matrix
clast composition approximately
70 % volcanics/sediments
30 % granitoid

10.1 - 11.6 BEDROCK

- dark green colour
- Fine grained
- slightly schistose
- no carbonate, no sulphides
- soft to drill
- Intermediate to mafic volcanic

11.6 EOH

# APPENDIX B

## SAMPLE WEIGHTS - HEAVY MINERAL CIRCUIT

COMX1NOV.WR1

## OVERBURDEN DRILLING MANAGEMENT LIMITED

### LABORATORY SAMPLE LOG

| SAMPLE NO. | WEIGHT (KG.WET) | | | WEIGHT (GRAMS DRY) | | | | | AU | | DESCRIPTION | | | | | | | | | | | CLASS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | M. I. CONC | | | | | CLAST | | | | | MATRIX | | | | | | |
| | TABLE SPLIT | +10 CHIPS | TABLE FEED | TABLE CONC | M.I. LIGHTS | CONC. TOTAL | NON MAG | MAG | NO. V.G. | CALC PPB | SIZE | % | | | | S/U | SD | ST | CY | COLOR | | |
| | | | | | | | | | | | | V/S | GR | LS | OT | | | | | SD | CY | |
| CX-86 | | | | | | | | | | | | | | | | | | | | | | |
| 01-01 | 8.8 | 1.1 | 7.7 | 184.2 | 150.8 | 33.4 | 23.8 | 9.6 | 0 | NA | P | 80 | 20 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -02 | 6.6 | 3.2 | 3.4 | 84.5 | 76.9 | 7.6 | 5.3 | 2.3 | 1 | 1176 | P | 75 | 25 | NA | NA | S | C | Y | N | GNB | NA | GRAVEL |
| -03 | 7.3 | 3.7 | 3.6 | 104.3 | 92.8 | 11.5 | 8.0 | 3.5 | 0 | NA | P | 75 | 25 | NA | NA | S | C | Y | N | GNB | NA | GRAVEL |
| -04 | 8.3 | 3.1 | 5.2 | 149.6 | 129.1 | 20.5 | 12.3 | 8.2 | 0 | NA | P | 80 | 20 | NA | NA | S | C | Y | N | GG | NA | GRAVEL |
| -05 | 8.9 | 2.1 | 6.8 | 280.1 | 199.3 | 80.8 | 51.2 | 29.6 | 0 | NA | P | 80 | 20 | NA | NA | S | C | Y | N | GN | NA | GRAVEL |
| -06 | 8.7 | 1.3 | 7.4 | 119.0 | 88.3 | 30.7 | 7.8 | 22.9 | 0 | NA | C | 80 | 20 | NA | NA | S | C | Y | N | GN | NA | GRAVEL |
| -07 | 8.2 | 1.7 | 6.5 | 135.1 | 106.7 | 28.4 | 9.5 | 18.9 | 0 | NA | C,P | 80 | 20 | NA | NA | S | C | Y | N | GN | NA | GRAVEL |
| -08 | 7.4 | 3.2 | 4.2 | 77.6 | 61.7 | 15.9 | 9.8 | 6.1 | 0 | NA | P | 85 | 15 | NA | NA | S | C | Y | N | GN | NA | GRAVEL |
| -09 | 3.8 | 1.4 | 2.4 | 40.0 | 32.7 | 7.3 | 4.8 | 2.5 | 0 | NA | P | 75 | 25 | NA | NA | U | Y | Y | Y | GN | GN | TILL |
| -10 | 8.9 | 3.1 | 5.8 | 153.5 | 97.0 | 56.5 | 20.6 | 35.9 | 0 | NA | P | 80 | 20 | NA | NA | S | C | Y | N | GN | NA | GRAVEL |
| -11 | 6.0 | 1.0 | 5.0 | 91.4 | 68.0 | 23.4 | 11.0 | 12.4 | 0 | NA | P | 80 | 20 | NA | NA | U | Y | Y | Y | GG | GG | TILL&BDK |
| 02-01 | 9.7 | 1.4 | 8.3 | 200.4 | 161.0 | 39.4 | 30.0 | 9.4 | 5 | 147 | P | 80 | 20 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| 03-01 | 5.9 | 0.0 | 5.9 | 194.5 | 160.7 | 33.8 | 26.5 | 7.3 | 5 | 277 | TR | NA | NA | NA | NA | S | F | Y | Y | BNB | BNB | SAND |
| -02 | 8.4 | 0.9 | 7.5 | 205.9 | 176.7 | 29.2 | 22.1 | 7.1 | 6 | 220 | P | 60 | 40 | NA | NA | U | Y | Y | Y | BGN | BGN | TILL |
| 04-01 | 7.5 | 0.0 | 7.5 | 246.3 | 185.2 | 61.1 | 47.8 | 13.3 | 8 | 66 | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| -02 | 8.2 | 0.0 | 8.2 | 245.5 | 196.2 | 49.3 | 37.8 | 11.5 | 1 | 17 | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| -03 | 8.7 | 0.0 | 8.7 | 209.4 | 148.5 | 60.9 | 48.8 | 12.1 | 9 | 112 | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| -04 | 7.1 | 0.0 | 7.1 | 153.8 | 113.4 | 40.4 | 31.6 | 8.8 | 7 | 898 | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| 05-01 | 9.6 | 2.3 | 7.3 | 125.7 | 84.8 | 40.9 | 31.8 | 9.1 | 0 | NA | P | 80 | 20 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -02 | 5.2 | 2.1 | 3.1 | 91.0 | 76.2 | 14.8 | 11.1 | 3.7 | 0 | NA | P | 85 | 15 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -03 | 4.7 | 1.8 | 2.9 | 131.8 | 121.5 | 10.3 | 7.9 | 2.4 | 5 | 6855 | P | 85 | 15 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -04 | 5.8 | 2.1 | 3.7 | 206.7 | 194.4 | 12.3 | 10.2 | 2.1 | 0 | NA | P | 80 | 20 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -05 | 9.0 | 2.7 | 6.3 | 164.9 | 138.7 | 26.2 | 21.1 | 5.1 | 0 | NA | P | 80 | 20 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -06 | 8.9 | 2.2 | 6.7 | 111.9 | 80.3 | 31.6 | 26.9 | 4.7 | 0 | NA | P | 80 | 20 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -07 | 7.8 | 2.3 | 5.5 | 174.0 | 154.6 | 19.4 | 15.1 | 4.3 | 0 | NA | P | 80 | 20 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -08 | 8.5 | 2.7 | 5.8 | 238.5 | 216.0 | 22.5 | 17.6 | 4.9 | 1 | 354 | P | 75 | 25 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -09 | 9.3 | 2.0 | 7.3 | 205.7 | 175.0 | 30.7 | 24.1 | 6.6 | 0 | NA | P | 80 | 20 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -10 | 8.8 | 2.1 | 6.7 | 136.8 | 111.6 | 25.2 | 16.5 | 8.7 | 0 | NA | P | 85 | 15 | NA | NA | S | C | N | Y | GB | GN | GRAVEL&BLD |
| -11 | 6.4 | 1.3 | 5.1 | 208.9 | 176.2 | 32.7 | 20.4 | 12.3 | 1 | 785 | P | 80 | 20 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -12 | 8.6 | 2.3 | 6.3 | 218.3 | 201.2 | 17.1 | 11.8 | 5.3 | 0 | NA | P | 75 | 25 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -13 | 8.9 | 2.3 | 6.6 | 186.4 | 156.6 | 29.8 | 11.3 | 18.5 | 0 | NA | P | 75 | 25 | NA | NA | S | C | N | N | GB | NA | GRAVEL |
| -14 | 8.3 | 2.3 | 6.0 | 173.2 | 131.6 | 41.6 | 14.9 | 26.7 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -15 | 8.3 | 2.2 | 6.1 | 213.6 | 183.0 | 30.6 | 11.7 | 18.9 | 0 | NA | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -16 | 8.3 | 2.0 | 6.3 | 161.7 | 120.5 | 41.2 | 15.5 | 25.7 | 0 | NA | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -17 | 9.5 | 2.4 | 7.1 | 197.5 | 138.7 | 58.8 | 16.1 | 42.7 | 0 | NA | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -18 | 9.2 | 2.2 | 7.0 | 236.2 | 179.0 | 57.2 | 20.8 | 36.4 | 0 | NA | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -19 | 9.2 | 2.2 | 7.0 | 257.0 | 198.5 | 58.5 | 19.7 | 38.8 | 1 | 2379 | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -20 | 9.4 | 2.9 | 6.5 | 208.2 | 150.9 | 57.3 | 15.6 | 41.7 | 0 | NA | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -21 | 9.6 | 3.0 | 6.6 | 216.6 | 161.2 | 55.4 | 14.4 | 41.0 | 1 | 1495 | P | 90 | 10 | TR | NA | U | Y | Y | Y | GB | GN | TILL |
| -22 | 9.9 | 2.6 | 7.3 | 193.0 | 140.0 | 53.0 | 14.7 | 38.3 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GN | TILL |
| -23 | 6.5 | 1.2 | 5.3 | 159.9 | 133.9 | 26.0 | 9.7 | 16.3 | 0 | NA | P | 80 | 20 | NA | NA | U | Y | Y | Y | GB | GY | TILL |
| -24 | 8.4 | 2.4 | 6.0 | 161.9 | 128.7 | 33.2 | 10.7 | 22.5 | 0 | NA | P | 75 | 25 | NA | NA | U | Y | Y | Y | GB | GY | TILL |
| -25 | 8.0 | 0.6 | 7.4 | 194.0 | 153.4 | 40.6 | 19.6 | 21.0 | 0 | NA | G,P | 70 | 30 | NA | NA | U | Y | Y | Y | GB | GY | TILL |
| -26 | 8.8 | 2.5 | 6.3 | 149.2 | 117.5 | 31.7 | 10.9 | 20.8 | 1 | 351 | P | 75 | 25 | NA | NA | S | C | Y | N | GB | NA | GRAVEL |

COMX1NOV.WR1

## OVERBURDEN DRILLING MANAGEMENT LIMITED

### LABORATORY SAMPLE LOG

| SAMPLE NO. | WEIGHT (KG.WET) TABLE SPLIT | +10 CHIPS | TABLE FEED | WEIGHT (GRAMS DRY) TABLE CONC | M.I. LIGHTS | M. I. CONC CONC. TOTAL | NON MAG | MAG | AU NO. V.G. | CALC PPB | DESCRIPTION CLAST SIZE | % V/S | GR | LS | OT | MATRIX S/U | SD | ST | CY | COLOR SD | CY | CLASS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CX-86 | | | | | | | | | | | | | | | | | | | | | | |
| -27 | 6.1 | 1.0 | 5.1 | 127.3 | 104.1 | 23.2 | 10.9 | 12.3 | 0 | NA | P | 75 | 25 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -28 | 4.1 | 0.5 | 3.6 | 91.7 | 75.9 | 15.8 | 7.8 | 8.0 | 0 | NA | G | 70 | 30 | NA | NA | U | Y | Y | N | GG | NA | TILL |
| -29 | 8.0 | 0.5 | 7.5 | 181.6 | 150.7 | 30.9 | 14.2 | 16.7 | 0 | NA | G | 70 | 30 | NA | NA | U | Y | Y | N | GG | NA | TILL |
| 06-01 | 8.0 | 0.0 | 8.0 | 212.6 | 163.7 | 48.9 | 38.2 | 10.7 | 0 | NA | TR | NA | NA | NA | NA | S | M | Y | N | B | NA | SAND |
| -02 | 8.7 | 0.0 | 8.7 | 219.4 | 177.6 | 41.8 | 32.7 | 9.1 | 0 | NA | TR | NA | NA | NA | NA | S | M | Y | N | GB | NA | SAND |
| -03 | 8.2 | 0.0 | 8.2 | 283.7 | 229.8 | 53.9 | 42.6 | 11.3 | 3 | 246 | TR | NA | NA | NA | NA | S | M | Y | N | GB | NA | SAND |
| -04 | 7.0 | 0.1 | 6.9 | 193.6 | 158.9 | 34.7 | 28.2 | 6.5 | 1 | 136 | P | 85 | 15 | NA | NA | S | M | Y | N | GB | NA | SAND |
| -05 | 6.1 | 0.2 | 5.9 | 205.2 | 165.6 | 39.6 | 33.8 | 5.8 | 0 | NA | P | 85 | 15 | NA | NA | S | M | Y | N | GB | NA | SAND |
| -06 | 8.3 | 0.1 | 8.2 | 277.3 | 229.7 | 47.6 | 40.5 | 7.1 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -07 | 8.7 | 0.2 | 8.5 | 205.6 | 163.1 | 42.5 | 35.3 | 7.2 | 0 | NA | P | 80 | 20 | NA | NA | U | Y | Y | Y | GB | GB | TILL |

COMX2NOV.WR1

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

| SAMPLE NO. | WEIGHT (KG.WET) | | | WEIGHT (GRAMS DRY) | | | | | AU | | DESCRIPTION | | | | | | | | | | | CLASS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | M. I. CONC | | | | | CLAST | | | | | MATRIX | | | | | | |
| | TABLE SPLIT | +10 CHIPS | TABLE FEED | TABLE CONC | M.I. LIGHTS | CONC. TOTAL | NON MAG | MAG | NO. V.G. | CALC PPB | SIZE | % | | | | S/U | SD | ST | CY | COLOR | | |
| | | | | | | | | | | | | V/S | GR | LS | OT | | | | | SD | CY | |
| CX-86 | | | | | | | | | | | | | | | | | | | | | | |
| 06-08 | 8.4 | 1.3 | 7.1 | 156.5 | 131.1 | 25.4 | 20.9 | 4.5 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -09 | 7.8 | 0.7 | 7.1 | 192.2 | 160.2 | 32.0 | 25.2 | 6.8 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -10 | 9.0 | 0.3 | 8.7 | 192.4 | 163.8 | 28.6 | 23.1 | 5.5 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -11 | 8.0 | 0.7 | 7.3 | 171.6 | 141.5 | 30.1 | 24.8 | 5.3 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -12 | 9.0 | 0.2 | 8.8 | 238.0 | 186.2 | 51.8 | 44.2 | 7.6 | 3 | 232 | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| 10-01 | 6.1 | 0.0 | 6.1 | 146.9 | 113.0 | 33.9 | 26.3 | 7.6 | 0 | NA | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| -02 | 8.2 | 0.0 | 8.2 | 156.9 | 110.0 | 46.9 | 36.9 | 10.0 | 0 | NA | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| -03 | 5.0 | 0.3 | 4.7 | 76.4 | 42.1 | 34.3 | 27.9 | 6.4 | 0 | NA | P,BL | 90 | 10 | NA | NA | U | Y | Y | Y | B | B | TILL&BLD |
| 13-01 | 7.9 | 0.0 | 7.9 | 95.5 | 52.7 | 42.8 | 32.4 | 10.4 | 1 | 20 | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| -02 | 9.3 | 1.6 | 7.7 | 110.3 | 75.3 | 35.0 | 24.4 | 10.6 | 5 | 9016 | P | 50 | 50 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -03 | 9.5 | 2.0 | 7.5 | 79.7 | 53.9 | 25.8 | 18.3 | 7.5 | 1 | 209 | P | 75 | 25 | NA | NA | U | Y | Y | Y | B | B | TILL |
| 06-13 | 8.6 | 0.4 | 8.2 | 42.7 | 21.6 | 21.1 | 16.9 | 4.2 | 0 | NA | P | 60 | 40 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -14 | 9.2 | 0.7 | 8.5 | 177.8 | 138.0 | 39.8 | 32.6 | 7.2 | 0 | NA | P | 80 | 20 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -15 | 9.3 | 1.1 | 8.2 | 245.1 | 186.5 | 58.6 | 48.7 | 9.9 | 1 | 44 | P | 70 | 30 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -16 | 8.4 | 0.3 | 8.1 | 202.4 | 168.1 | 34.3 | 28.4 | 5.9 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -17 | 8.9 | 0.6 | 8.3 | 231.0 | 192.2 | 38.8 | 29.9 | 8.9 | 1 | 2292 | P | 80 | 20 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -18 | 9.4 | 1.8 | 7.6 | 377.5 | 335.3 | 42.2 | 33.1 | 9.1 | 7 | 2360 | P | 80 | 20 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| 07-01 | 5.7 | 0.5 | 5.2 | 154.7 | 119.7 | 35.0 | 28.9 | 6.1 | 0 | NA | P | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| 08-01 | 7.3 | 0.6 | 6.7 | 270.3 | 248.3 | 22.0 | 17.4 | 4.6 | 0 | NA | P | 75 | 25 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -02 | 7.6 | 2.2 | 5.4 | 151.1 | 135.9 | 15.2 | 12.3 | 2.9 | 0 | NA | P | 65 | 35 | NA | NA | U | Y | Y | Y | GB | GB | TILL |

COMX3NOV.WR1

OVERBURDEN DRILLING MANAGEMENT LIMITED

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## LABORATORY SAMPLE LOG

| SAMPLE NO. | WEIGHT (KG.WET) | | | WEIGHT (GRAMS DRY) | | | | | AU | | DESCRIPTION | | | | | | | | | | | | CLASS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | M. I. CONC | | | | | CLAST | | | | | | MATRIX | | | | | | |
| | TABLE SPLIT | +10 CHIPS | TABLE FEED | TABLE CONC | M.I. LIGHTS | CONC. TOTAL | NON MAG | MAG | NO. V.G. | CALC PPB | SIZE | % | | | | S/U | SD | ST | CY | COLOR | | |
| | | | | | | | | | | | | V/S | GR | LS | OT | | | | | SD | CY | |
| CX-86 | | | | | | | | | | | | | | | | | | | | | | |
| 08-03 | 6.8 | 0.5 | 6.3 | 179.5 | 156.3 | 23.2 | 19.1 | 4.1 | 0 | NA | G | 85 | 15 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -04 | 8.7 | 0.4 | 8.3 | 241.5 | 210.6 | 30.9 | 23.7 | 7.2 | 0 | NA | P,G | 85 | 15 | NA | NA | U | Y | Y | Y | B | B | TILL |
| -05 | 8.5 | 0.0 | 8.5 | 138.1 | 109.6 | 28.5 | 22.0 | 6.5 | 1 | 96 | TR | NA | NA | NA | NA | U | Y | Y | Y | B | B | TILL |
| -06 | 8.9 | 0.0 | 8.9 | 154.0 | 118.5 | 35.5 | 27.4 | 8.1 | 1 | 14 | TR | NA | NA | NA | NA | U | Y | Y | Y | B | B | TILL |
| -07 | 9.4 | 0.0 | 9.4 | 131.7 | 101.3 | 30.4 | 22.7 | 7.7 | 7 | 340 | TR | NA | NA | NA | NA | U | Y | Y | Y | B | B | TILL |
| -08 | 8.8 | 0.2 | 8.6 | 271.4 | 246.9 | 24.5 | 18.7 | 5.8 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | N | B | NA | TILL |
| -09 | 9.2 | 1.4 | 7.8 | 165.2 | 127.2 | 38.0 | 28.3 | 9.7 | 5 | 567 | P | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -10 | 3.1 | 0.5 | 2.6 | 97.0 | 84.1 | 12.9 | 10.4 | 2.5 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GY | GY | TILL |
| -11 | 6.5 | 0.8 | 5.7 | 206.0 | 173.5 | 32.5 | 24.6 | 7.9 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GY | GY | TILL |
| -12 | 4.4 | 0.8 | 3.6 | 184.3 | 164.9 | 19.4 | 15.1 | 4.3 | 0 | NA | P | 85 | 15 | NA | NA | U | Y | Y | Y | GY | GY | TILL |
| -13 | 6.8 | 1.0 | 5.8 | 223.4 | 195.6 | 27.8 | 22.3 | 5.5 | 0 | NA | P | 75 | 25 | NA | NA | U | Y | Y | Y | GY | GY | TILL |
| -14 | 8.7 | 0.9 | 7.8 | 248.3 | 210.6 | 37.7 | 33.0 | 4.7 | 0 | NA | P | 75 | 25 | NA | NA | U | Y | Y | Y | GY | GY | TILL |
| 09-01 | 8.7 | 0.1 | 8.6 | 249.0 | 206.1 | 42.9 | 33.6 | 9.3 | 0 | NA | P | 85 | 15 | NA | NA | S | F,M | Y | N | B | NA | SAND |
| -02 | 8.7 | 0.2 | 8.5 | 245.8 | 210.9 | 34.9 | 28.3 | 6.6 | 1 | 135 | P,G | 75 | 25 | NA | NA | S | F,M | Y | N | B | NA | SAND |
| -03 | 8.3 | 0.1 | 8.2 | 224.5 | 188.4 | 36.1 | 30.3 | 5.8 | 0 | NA | P,G | 50 | 50 | NA | NA | S | F,M | Y | N | B | NA | SAND |
| -04 | 8.7 | 0.6 | 8.1 | 214.4 | 190.7 | 23.7 | 18.5 | 5.2 | 0 | NA | P,G | 85 | 15 | NA | NA | U | Y | Y | N | B | NA | TILL |
| -05 | 8.6 | 0.0 | 8.6 | 251.6 | 207.8 | 43.8 | 35.0 | 8.8 | 3 | 39 | TR | NA | NA | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -06 | 8.0 | 0.4 | 7.6 | 370.8 | 342.0 | 28.8 | 21.9 | 6.9 | 0 | NA | P | 90 | 10 | NA | NA | S | M,C | Y | N | GB | NA | SAND |
| -07 | 8.1 | 0.0 | 8.1 | 225.0 | 188.9 | 36.1 | 29.2 | 6.9 | 1 | 975 | TR | NA | NA | NA | NA | S | M | Y | N | GB | NA | SAND |
| -08 | 9.2 | 0.1 | 9.1 | 296.5 | 261.3 | 35.2 | 28.6 | 6.6 | 0 | NA | P | 85 | 15 | NA | NA | S | M | Y | N | GB | NA | SAND |
| -09 | 8.3 | 0.0 | 8.3 | 174.5 | 137.4 | 37.1 | 29.5 | 7.6 | 0 | NA | TR | NA | NA | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -10 | 9.0 | 0.6 | 8.4 | 247.3 | 219.8 | 27.5 | 22.6 | 4.9 | 0 | NA | P,G | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -11 | 8.7 | 0.1 | 8.6 | 162.0 | 125.9 | 36.1 | 28.6 | 7.5 | 1 | 22 | P,G | 85 | 15 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| -12 | 9.4 | 0.1 | 9.3 | 172.2 | 129.2 | 43.0 | 33.1 | 9.9 | 0 | NA | P,G | 90 | 10 | NA | NA | U | Y | Y | Y | GB | GB | TILL |
| 11-01 | 8.0 | 0.0 | 8.0 | 162.5 | 121.9 | 40.6 | 29.2 | 11.4 | 0 | NA | TRBL | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND&BLD |
| -02 | 5.1 | 0.0 | 5.1 | 132.9 | 105.5 | 27.4 | 21.2 | 6.2 | 0 | NA | TRBL | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND&BLD |
| 12-01 | 3.8 | 0.0 | 3.8 | 134.6 | 114.3 | 20.3 | 17.0 | 3.3 | 0 | NA | TR | NA | NA | NA | NA | S | F | Y | Y | B | B | SAND |
| 14-01 | 8.0 | 0.3 | 7.7 | 141.3 | 107.2 | 34.1 | 25.5 | 8.6 | 0 | NA | P | 95 | 5 | NA | NA | U | Y | Y | Y | B | B | TILL |

# APPENDIX C

# GOLD GRAIN COUNTS AND CALULATED VISIBLE GOLD ASSAYS

## GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX1NOV.WR1 NUMBER OF GRAINS

| SAMPLE # | PANNED | | | ABRADED | | IRREGULAR | | DELICATE | | | NON MAG | CALC V.G. ASSAY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y/N | DIAMETER | THICKNESS | T | P | T | P | T | P | TOTAL | GMS | PPB | REMARKS |
| CX-86 | | | | | | | | | | | | | |
| 01-01 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -02 | N | 125 X 200 | 31 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 5.3 | 1176 | |
| -03 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -04 | Y | NO VISIBLE GOLD | | | | | | | | | | | EST. 5% PYRITE |
| -05 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -06 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -07 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -08 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -09 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -10 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -11 | Y | NO VISIBLE GOLD | | | | | | | | | | | EST. 10% PYRITE |
| 02-01 | Y | 25 X 75 | 10 C | 1 | 1 | | | | | 2 | | | EST. 5% PYRITE |
| | | 75 X 100 | 18 C | 1 | | | | | | 1 | | | |
| | | 75 X 125 | 20 C | 1 | | | | | | 1 | | | |
| | | 100 X 100 | 20 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 5 | 30.0 | 147 | |
| 03-01 | Y | 50 X 75 | 13 C | 2 | | | | | | 2 | | | EST. 0.25% PYRITE |
| | | 50 X 100 | 15 C | | 1 | | | | | 1 | | | |
| | | 75 X 100 | 18 C | 1 | | | | | | 1 | | | |
| | | 100 X 200 | 29 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 5 | 26.5 | 277 | |
| -02 | Y | 25 X 50 | 8 C | | 1 | | | | | 1 | | | EST. 0.25% PYRITE |
| | | 50 X 75 | 13 C | 1 | | | | | | 1 | | | |
| | | 50 X 100 | 15 C | 1 | | | | | | 1 | | | |
| | | 75 X 75 | 15 C | 1 | | | | | | 1 | | | |
| | | 75 X 100 | 18 C | 1 | | | | | | 1 | | | |
| | | 75 X 150 | 22 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 6 | 22.1 | 220 | |

## GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX1NOV.WR1

NUMBER OF GRAINS

| SAMPLE # | PANNED Y/N | DIAMETER | THICKNESS | ABRADED |  | IRREGULAR |  | DELICATE |  |  | NON MAG | CALC V.G. ASSAY |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | T | P | T | P | T | P | TOTAL | GMS | PPB | REMARKS |
| CX-86 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 04-01 | Y | 25 X 25 | 5 C |  |  |  |  |  | 2 | 2 |  |  | EST. 0.25% PYRITE |
|  |  | 25 X 50 | 8 C |  |  |  |  |  | 1 | 1 |  |  |  |
|  |  | 50 X 50 | 10 C |  | 1 |  | 1 |  |  | 2 |  |  |  |
|  |  | 50 X 100 | 15 C |  | 1 |  |  |  |  | 1 |  |  |  |
|  |  | 50 X 125 | 18 C | 2 |  |  |  |  |  | 2 |  |  |  |
|  |  |  |  |  |  |  |  |  | TOTAL | 8 | 47.8 | 66 |  |
| -02 | N | 50 X 100 | 15 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  |  |  |  |  |  |  |  | TOTAL | 1 | 37.8 | 17 |  |
| -03 | Y | 25 X 25 | 5 C |  | 1 |  | 1 |  |  | 2 |  |  | NO SULFHIDES |
|  |  | 50 X 50 | 10 C | 1 | 2 |  | 1 |  |  | 4 |  |  |  |
|  |  | 50 X 125 | 18 C |  | 1 |  |  |  |  | 1 |  |  |  |
|  |  | 75 X 150 | 22 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  | 100 X 100 | 20 C |  | 1 |  |  |  |  | 1 |  |  |  |
|  |  |  |  |  |  |  |  |  | TOTAL | 9 | 48.8 | 112 |  |
| -04 | Y | 25 X 50 | 8 C |  | 1 |  |  |  |  | 1 |  |  | NO SULFHIDES |
|  |  | 75 X 75 | 15 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  | 75 X 100 | 18 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  | 100 X 100 | 20 C |  | 1 |  |  |  |  | 1 |  |  |  |
|  |  | 100 X 150 | 25 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  | 150 X 175 | 31 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  | 150 X 300 | 42 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  |  |  |  |  |  |  |  | TOTAL | 7 | 31.6 | 898 |  |
| 05-01 | N | NO VISIBLE GOLD |  |  |  |  |  |  |  |  |  |  |  |
| -02 | N | NO VISIBLE GOLD |  |  |  |  |  |  |  |  |  |  |  |
| -03 | Y | 75 X 100 | 18 C |  | 1 |  |  |  |  | 1 |  |  | EST. 5% PYRITE |
|  |  | 125 X 150 | 27 C |  | 1 |  |  |  |  | 1 |  |  |  |
|  |  | 150 X 225 | 36 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  | 175 X 225 | 38 C |  | 1 |  |  |  |  | 1 |  |  |  |
|  |  | 225 X 325 | 50 C | 1 |  |  |  |  |  | 1 |  |  |  |
|  |  |  |  |  |  |  |  |  | TOTAL | 5 | 7.9 | 6855 |  |
| -04 | N | NO VISIBLE GOLD |  |  |  |  |  |  |  |  |  |  |  |
| -05 | N | NO VISIBLE GOLD |  |  |  |  |  |  |  |  |  |  |  |
| -06 | N | NO VISIBLE GOLD |  |  |  |  |  |  |  |  |  |  |  |

## GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX1NOV.WR1 NUMBER OF GRAINS

| | | | | ABRADED | | IRREGULAR | | DELICATE | | | NON | CALC V.G. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE # | PANNED | | | | | | | | | | MAG | ASSAY | |
| | Y/N | DIAMETER | THICKNESS | T | P | T | P | T | P | TOTAL | GMS | PPB | REMARKS |
| CX-86 | | | | | | | | | | | | | |
| -07 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -08 | N | 125 X 200 | 31 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 17.6 | 354 | |
| -09 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -10 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -11 | N | 150 X 300 | 42 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 20.4 | 795 | |
| -12 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -13 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -14 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -15 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -16 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -17 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -18 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -19 | N | 100 X 150 | 400 M | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 19.7 | 2379 | |
| -20 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -21 | N | 50 X 125 | 375 M | | | 1 | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 14.4 | 1495 | |
| -22 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -23 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -24 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -25 | N | NO VISIBLE GOLD | | | | | | | | | | | |

```
GOLD CLASSIFICATION
===================
VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX1NOV.WR1                           NUMBER OF GRAINS

                                       ABRADED   IRREGULAR  DELICATE       NON    CALC V.G.
SAMPLE # PANNED                        ========  =========  ========       MAG      ASSAY
           Y/N    DIAMETER   THICKNESS    T    P    T    P    T    P TOTAL GMS      PPB    REMARKS

   CX-86
     -26    Y      75 X  200      27 C                   1                1                EST. 10% PYRITE
                                                                      ---------------------
                                                                TOTAL     1  10.9      351

     -27    N   NO VISIBLE GOLD

     -28    N   NO VISIBLE GOLD

     -29    N   NO VISIBLE GOLD

   06-01    N   NO VISIBLE GOLD

     -02    N   NO VISIBLE GOLD

     -03    Y      75 X   75      15 C         1                          1                EST. 0.5% PYRITE
                  100 X  125      22 C    1                               1
                  125 X  225      34 C    1                               1
                                                                      ---------------------
                                                                TOTAL     3  42.6      246

     -04    N     100 X  175      27 C    1                               1
                                                                      ---------------------
                                                                TOTAL     1  28.2      136

     -05    N   NO VISIBLE GOLD

     -06    N   NO VISIBLE GOLD

     -07    N   NO VISIBLE GOLD
```

```
GOLD CLASSIFICATION
===================
VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX2NOV.WR1                           NUMBER OF GRAINS

                                       ABRADED   IRREGULAR  DELICATE      NON    CALC V.G.
SAMPLE #  PANNED                       ========  =========  ========      MAG      ASSAY
          Y/N    DIAMETER   THICKNESS    T    P     T    P     T    P TOTAL GMS      PPB    REMARKS

CX-86
   06-08   N   NO VISIBLE GOLD

     -09   N   NO VISIBLE GOLD

     -10   N   NO VISIBLE GOLD

     -11   N   NO VISIBLE GOLD

     -12   Y      50 X   75      13 C         1                         1                   EST. 0.25% PYRITE
                 100 X  125      22 C                   1               1
                 125 X  225      34 C              1                    1
                                                                 ___________________
                                                           TOTAL        3   44.2       232

   10-01   N   NO VISIBLE GOLD

     -02   N   NO VISIBLE GOLD

     -03   N   NO VISIBLE GOLD

   13-01   N      50 X  100      15 C    1                              1
                                                                 ___________________
                                                           TOTAL        1   32.4        20

     -02   Y      75 X  125      20 C         1                         1                   EST. 0.25% PYRITE
                 175 X  175      34 C    1                              1
                 225 X  275      46 C    1                              1
                 300 X  450      65 C    1                              1
                 300 X  550      71 C    1                              1
                                                                 ___________________
                                                           TOTAL        5   24.4      8016

     -03   N     125 X  150      27 C    1                              1
                                                                 ___________________
                                                           TOTAL        1   18.3       209

   06-13   N   NO VISIBLE GOLD

     -14   N   NO VISIBLE GOLD

     -15   N     100 X  125      22 C    1                              1
                                                                 ___________________
                                                           TOTAL        1   48.7        44

     -16   N   NO VISIBLE GOLD
```

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMY2NOV.WR1 NUMBER OF GRAINS

| SAMPLE # | PANNED Y/N | DIAMETER | THICKNESS | ABRADED | | IRREGULAR | | DELICATE | | TOTAL | NON MAG GMS | CALC V.G. ASSAY PPB | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | T | P | T | P | T | P | | | | |
| CX-86 | | | | | | | | | | | | | |
| | | | | | | | | | TOTAL | 1 | 29.9 | 2282 | |
| -18 | Y | 75 X 75 | 15 C | | 1 | | | | | 1 | | | EST. 10% PYRITE |
| | | 75 X 125 | 20 C | | 1 | | | | | 1 | | | 70 GRAINS GALENA |
| | | 100 X 100 | 20 C | | | | 1 | | | 1 | | | |
| | | 125 X 150 | 27 C | | 1 | | | | | 1 | | | |
| | | 125 X 200 | 31 C | 1 | | | | | | 1 | | | |
| | | 200 X 275 | 44 C | 1 | | | | | | 1 | | | |
| | | 300 X 350 | 58 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 7 | 33.1 | 2360 | |
| 07-01 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| 08-01 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -02 | N | NO VISIBLE GOLD | | | | | | | | | | | |

```
GOLD CLASSIFICATION
===================
VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX3NOV.WR1                           NUMBER OF GRAINS

                                       ABRADED   IRREGULAR  DELICATE       NON     CALC V.G.
SAMPLE #  PANNED                       ========  =========  ========       MAG       ASSAY
           Y/N    DIAMETER   THICKNESS    T    P    T    P     T   P TOTAL GMS       PPB    REMARKS

   CX-86
   08-03    N   NO VISIBLE GOLD

     -04    N   NO VISIBLE GOLD

     -05    N     100 X  125      22 C    1                               1
                                                                       ____________________
                                                                TOTAL     1   22.0       96

     -06    N      50 X   75      13 C    1                               1
                                                                       ____________________
                                                                TOTAL     1   27.4       14

     -07    Y      50 X   50      10 C         2                          2                 NO SULPHIDES
                   50 X   75      13 C         2                          2
                   75 X   75      15 C         1                          1
                   75 X  100      18 C    1                               1
                  150 X  150      29 C    1                               1
                                                                       ____________________
                                                                TOTAL     7   22.7      340

     -08    N   NO VISIBLE GOLD

     -09    Y      75 X   75      15 C    1                               1                 EST. 12% PYRITE
                   75 X  100      18 C         1                          1
                   75 X  125      20 C         1               1          2
                  150 X  250      38 C    1                               1
                                                                       ____________________
                                                                TOTAL     5   28.3      567

     -10    N   NO VISIBLE GOLD

     -11    N   NO VISIBLE GOLD

     -12    N   NO VISIBLE GOLD

     -13    N   NO VISIBLE GOLD

     -14    N   NO VISIBLE GOLD

   09-01    N   NO VISIBLE GOLD

     -02    N      75 X  200      27 C    1                               1
                                                                       ____________________
                                                                TOTAL     1   28.3      135

     -03    N   NO VISIBLE GOLD
```

## GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

COMX3NOV.WR1 NUMBER OF GRAINS

| SAMPLE # | PANNED | | | ABRADED | | IRREGULAR | | DELICATE | | | NON MAG | CALC V.G. ASSAY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y/N | DIAMETER | THICKNESS | T | P | T | P | T | P | TOTAL | GMS | PPB | REMARKS |
| CX-86 | | | | | | | | | | | | | |
| -04 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -05 | Y | 25 X 50 | 8 C | | 1 | | | | | 1 | | | EST. 15% PYRITE |
| | | 50 X 100 | 15 C | | | | | | 1 | 1 | | | 30 GRAINS GALENA |
| | | 75 X 75 | 15 C | | 1 | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 3 | 35.0 | 39 | |
| -06 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -07 | N | 200 X 350 | 50 C | | | 1 | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 29.2 | 975 | |
| -08 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -09 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -10 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -11 | N | 100 X 150 | 15 C | 1 | | | | | | 1 | | | |
| | | | | | | | | | TOTAL | 1 | 28.6 | 22 | |
| -12 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| 11-01 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| -02 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| 12-01 | N | NO VISIBLE GOLD | | | | | | | | | | | |
| 14-01 | N | NO VISIBLE GOLD | | | | | | | | | | | |

# APPENDIX D

# BINOCULAR LOGS - BEDROCK CHIP SAMPLES

| SAMPLE NUMBER | COLOR | STRUCTURE | GRAIN SIZE(mm | TEXTURE | MINERALOGY | | | | NAME |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Silicates | Carbonates | Sulphides | Other | |
| Comox<br>CX-86<br>01-12 | Med. gray to gray-green | Well foliated | 0.1-0.2 | Sandy, sorted | Feldspathic rock chips with 15% gray-green to gray chlorite and only 10% qtz. | Nil | No pyrite.<br>0.1% qtz. vein containing 2% cpy. and 2% sphal. | | GRAYWACKE |
| 02-02 | Medium green | Well foliated, almost an augen gneiss/mylonite (ie highly crushed) | Phenos: 1-4<br>Ground mass: 0.1 | Porphyritic with sugary groundmass By comparison to # 04, this texture is secondary but has been produced by shearing and crushing. | 60% plag. and 10% quartz phenocrysts, 30% chloritic groundmass derived from crushing of hornblende sites | 5% calcite assoc. with plagioclase | Nil | Trace sphene | DIORITE |
| 03-03 | Mottled dark green and white | Massive with 10% of chips from narrow shear | 1-5 | Equigranular, interlocking | 60-70% plag., 30% hb. mostly alt. to chlorite, 5% quartz | Trace dissem. calcite | Nil. | 0.1% finely dissem hem., locally staining plag. red | DIORITE |
| -04-05 | Mottled light and medium gray-green | Massive to weakly foliated | Phenos: 1.0<br>Ground-mass: 0.1-0.2 | Porphyritic. Qtz in groundmass locally shows graphic texture, indicating porphyritic texture is primary | Phenos (40% sample) - 99% plag, 1% px.<br>Groundmass: 50:50 plag + pale green px. 10% qtz<br>px. partly chloritized | Nil | Nil pyrite, rare trace finely dissem cpy. | Trace magnetite | INT. VOLC. |
| -05- | NO | BEDROCK SAMPLE | | | | | | | |

| SAMPLE NUMBER | COLOR | STRUCTURE | GRAIN SIZE(mm | TEXTURE | MINERALOGY | | | | NAME |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Silicates | Carbonates | Sulphides | Other | |
| CX-86 -06-19 | Dark green | Weakly foliated, | 0.1-0.4 | Slightly porphyritic with dark green px. gradational from groundmass to ophitic phenocrysts | 50-60% plag., 20% dark green pyroxene/hornblende (partly chloritized), 30% light green px., no quartz. | Nil | Trace finely dissem. py. | | MAFIC VOLC. |
| 07-02 | Dark green | Massive | 0.2 | Equigranular, interlocking | 60% dark to pale green px., 40% plag. | Nil | Trace finely dissem. py. | | MAFIC VOLC. |
| 08-15 | Mottled dark and light green | Extensively crushed | 1-3 | Equigranular, interlocking; plag. & chl. locally reduced by crushing and alteration | 70% sauss. plag., 20% chlorite, 15% blue qtz | 5% dissem calcite | < 0.1 % each dissem po. and py., trace dissem cpy. | 0.1 % sphene | QUARTZ DIORITE |
| 09-13 | Medium gray green | Moderately foliated with aligned phenocrysts | Groundmass: 0.1<br>Phenos: 0.3-0.5 | Porphyritic with equigranular, interlocking groundmass | 10% plag. phenos. in groundmass of 75% plag., 25% partly chlorilized dk. green px., no quartz | Nil | Trace dissem py. | | INT. VOLC. |
| 10-04 | Medium green | Weakly foliated | Ground-mass: 0.1-0.2<br>Phenos: 0.3-0.5 | Porphyritic with equigranular, interlocking groundmass | 1-2% plag. phenos in groundmass of 60% plag. and 40% pale green px. No discernible quartz. | Variable 0-3% dissem calcite | Trace both dissem. po. and py. | | MAFIC VOLC. |

| SAMPLE NUMBER | COLOR | STRUCTURE | GRAIN SIZE(mm | TEXTURE | MINERALOGY | | | | NAME |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Silicates | Carbonates | Sulphides | Other | |
| CX-86<br>11-03 | Medium green | Massive with 15% quartz-carb. veins; chilled where aphanitic; fractured | Variable, aphanitic to 0.2 | Equigranular, interlocking | 60% pale green pyroxene, (partly chloritized) 40% plagioclase | No dissem. carb; 50% calcite in qtz-carb. veins and along fractures. | 0.1% cpy in qtz-carb. veins for 0.015% cpy overall. No pyrite | | MAFIC VOLC. |
| 12-02 | Medium to dark green | Massive (light green) to nearly schistose (dark green) | 0.1 | Equigranular, interlocking | 40-50% plag. and 50-60% pyroxene (light green) or chlorite (dark green chips). | 1% fracture calcite | Trace dissem. py. and shear plane cpy. | | MAFIC VOLC. |
| 13-04 | light green | well foliated; 5% or less calcite stringers/veinlets | to 0.1 | equigranular, interlocking texture | 10-15% greenish (light) chlorite<br>5% sericite -undoubtedly some primary pyroxene in rock but unable to distinguish | 12-14% calcite - disseminated and as veinlets/stringers - in part imparts light color to sample | — | | Intermediate Volcanic |
| 14-02 | dark grey-green | well foliated - minor slip planes | 0.2-0.4 | fairly good texture with interlocking crystalline mafic minerals and anhedral plagioclase | 45% mafic minerals including medium to dark green pyroxene (15-20%), biotite/chlorite (5%), and well crystallized, elongate to fibrous light green actinolite(?) (20-25%) | 3% calcite - disseminated | — | | MaFic Volcanic |
| | | | | | | | | | |

# APPENDIX E

# BONDAR-CLEGG BEDROCK ANALYSES

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Telex: 053-3233

BONDAR-CLEGG

Geochen
Lab Re

REPORT: 016-5009

PROJECT: NONE

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au PPB |
|---|---|---|---|---|---|
| CX-86-01-12B | | 77 | 58 | <2 | <5 |
| CX-86-02-02B | | 18 | 63 | <2 | <5 |
| CX-86-03-03B | | 2 | 51 | <2 | <5 |
| CX-86-04-05B | | 26 | 50 | <2 | <5 |
| CX-86-06-19B | | 96 | 47 | 3 | <5 |
| CX-86-07-02B | | 9 | 38 | <2 | 50 |
| CX-86-08-15B | | 50 | 67 | <2 | <5 |
| CX-86-09-13B | | 51 | 32 | 2 | <5 |

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## Geochemical Lab Report

REPORT: 016-2030

PROJECT: NONE PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au PPB |
|---|---|---|---|---|---|
| CX-86-10-04B | | 75 | 48 | <2 | 10 |
| CX-86-11-03B | | 122 | 42 | <2 | 15 |
| CX-86-12-02B | | 99 | 47 | <2 | 10 |
| CX-86-13-04B | | 46 | 33 | 2 | 15 |
| CX-86-14-02B | | 52 | 34 | <2 | 10 |

# APPENDIX F

# BONDAR-CLEGG HEAVY MINERAL ANALYSES

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**BONDAR-CLEGG**

# Geochemical Lab Report

REPORT: 016-5004

PROJECT: NONE

PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au PPB | TestWt gm |
|---|---|---|---|---|---|---|
| CX-86-01-01-3/4 | | 33 | 17 | 4 | 30 | |
| CX-86-01-03-3/4 | | 609 | 65 | 16 | <25 | 2.00 |
| CX-86-01-04-3/4 | | 428 | 54 | 21 | 25 | 5.50 |
| CX-86-01-05-3/4 | | 162 | 69 | 41 | 10 | |
| CX-86-01-06-3/4 | | 128 | 64 | 49 | 90 | 3.20 |
| CX-86-01-07-3/4 | | 582 | 59 | 16 | <20 | 2.80 |
| CX-86-01-08-3/4 | | 506 | 48 | 17 | 315 | 3.10 |
| CX-86-01-09-H | | 347 | 37 | 17 | <25 | 2.00 |
| CX-86-01-10-3/4 | | 441 | 127 | 75 | 100 | 8.00 |
| CX-86-01-11-3/4 | | 440 | 96 | 83 | 210 | 4.30 |
| CX-86-02-01-3/4 | | 225 | 45 | 41 | 355 | |
| CX-86-03-02-3/4 | | 16 | 16 | <2 | 40 | 8.40 |
| CX-86-04-01-3/4 | | 8 | 10 | <2 | 20 | |
| CX-86-04-02-3/4 | | 7 | 11 | <2 | 10 | |
| CX-86-04-03-3/4 | | 8 | 11 | <2 | 365 | |
| CX-86-05-01-3/4 | | 186 | 82 | 67 | 180 | |
| CX-86-05-02-3/4 | | 498 | 193 | 128 | 210 | 4.50 |
| CX-86-05-04-3/4 | | 672 | 229 | 81 | 235 | 3.50 |
| CX-86-05-05-3/4 | | 438 | 145 | 93 | 125 | 5.00 |
| CX-86-05-06-3/4 | | 451 | 124 | 47 | 625 | |
| CX-86-05-07-3/4 | | 636 | 211 | 82 | 355 | 5.00 |
| CX-86-05-09-3/4 | | 693 | 287 | 102 | 190 | |
| CX-86-05-10-3/4 | | 746 | 203 | 74 | 40 | 5.00 |
| CX-86-05-12-3/4 | | 1490 | 208 | 75 | 45 | 5.40 |
| CX-86-05-13-3/4 | | 817 | 137 | 84 | 80 | 2.80 |
| CX-86-05-14-3/4 | | 2150 | 202 | 97 | 140 | 5.00 |
| CX-86-05-15-3/4 | | 1420 | 173 | 71 | 85 | 4.30 |
| CX-86-05-16-3/4 | | 1410 | 146 | 63 | 165 | 6.00 |
| CX-86-05-17-3/4 | | 1450 | 152 | 67 | 60 | 6.10 |
| CX-86-05-18-3/4 | | 648 | 68 | 48 | 970 | 5.90 |
| CX-86-05-20-3/4 | | 779 | 153 | 41 | 205 | 7.00 |
| CX-86-05-22-3/4 | | 735 | 95 | 49 | 340 | 6.40 |
| CX-86-05-23-3/4 | | 493 | 110 | 44 | 180 | 3.70 |
| CX-86-05-24-3/4 | | 627 | 81 | 37 | 800 | 3.50 |
| CX-86-05-25-3/4 | | 635 | 82 | 36 | 435 | 5.70 |
| CX-86-05-27-3/4 | | 533 | 51 | 35 | 660 | 5.00 |
| CX-86-05-28-3/4 | | 377 | 60 | 34 | 45 | 2.00 |
| CX-86-05-29-3/4 | | 520 | 61 | 21 | 160 | 4.20 |
| CX-86-06-01-3/4 | | 11 | 13 | 3 | 335 | |
| CX-86-06-02-3/4 | | 11 | 20 | <2 | 40 | |

REPORT: 016-5004

PROJECT: NONE

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au PPB | TestWt gm |
|---|---|---|---|---|---|---|
| CX-86-06-04-3/4 | | 67 | 11 | <2 | 15 | |
| CX-86-06-05-3/4 | | 49 | 15 | <2 | <5 | |
| CX-86-06-06-3/4 | | 26 | 15 | <2 | <5 | |
| CX-86-06-07-3/4 | | 41 | 13 | 2 | <5 | |
| CX-86-06-08-3/4 | | 43 | 14 | 2 | <10 | 5.00 |
| CX-86-06-09-3/4 | | 34 | 15 | 2 | 35 | |
| CX-86-06-10-3/4 | | 137 | 59 | 26 | 190 | 6.90 |
| CX-86-06-11-3/4 | | 125 | 54 | 27 | 40 | |
| CX-86-06-13-3/4 | | 320 | 129 | 50 | 155 | 7.80 |
| CX-86-06-14-3/4 | | 361 | 131 | 60 | 105 | |
| CX-86-06-15-3/4 | | 259 | 99 | 46 | 65 | |
| CX-86-06-16-3/4 | | 346 | 146 | 56 | 60 | |
| CX-86-06-17-3/4 | | 473 | 224 | 106 | 250 | |
| CX-86-10-01-3/4 | | 12 | 12 | 5 | 270 | |
| CX-86-10-02-3/4 | | 11 | 12 | <2 | 515 | |
| CX-86-10-03-3/4 | | 170 | 15 | <2 | 130 | |
| CX-86-13-01-3/4 | | 12 | 12 | <2 | 85 | |
| CX-86-13-03-3/4 | | 40 | 28 | 6 | 480 | 9.20 |

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## Geochemical Lab Report

REPORT: 026-5135

PROJECT: NONE PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au PPB | TestWt gm |
|---|---|---|---|---|---|---|
| CX-86-07-01 | | 329 | 125 | 49 | 225 | 10.00 |
| CX-86-08-01 | | 100 | 28 | 4 | 35 | 10.00 |
| CX-86-08-02 | | 133 | 27 | 6 | 480 | 5.00 |
| CX-86-08-03 | | 32 | 14 | 3 | 150 | 10.00 |
| CX-86-08-04 | | 138 | 19 | 4 | 140 | 10.00 |
| CX-86-08-05 | | 55 | 19 | 6 | 470 | 10.00 |
| CX-86-08-06 | | 31 | 13 | 3 | 220 | 10.00 |
| CX-86-08-07 | | 19 | 13 | <2 | 190 | 10.00 |
| CX-86-08-08 | | 120 | 20 | 4 | 20 | 10.00 |
| CX-86-08-10 | | 179 | 60 | 34 | 360 | 4.00 |
| CX-86-08-11 | | 138 | 74 | 27 | 190 | 10.00 |
| CX-86-08-12 | | 197 | 45 | 34 | 600 | 8.00 |
| CX-86-08-13 | | 421 | 41 | 55 | 275 | 10.00 |
| CX-86-08-14 | | 367 | 49 | 26 | 245 | 10.00 |
| CX-86-09-01 | | 16 | 15 | <2 | 1110 | 10.00 |
| CX-86-09-03 | | 15 | 14 | <2 | 175 | 10.00 |
| CX-86-09-04 | | 62 | 23 | 2 | 4660 | 10.00 |
| CX-86-09-05 | | 429 | 192 | 69 | 75 | 10.00 |
| CX-86-09-06 | | 536 | 243 | 66 | 70 | 8.00 |
| CX-86-09-08 | | 499 | 177 | 77 | 230 | 10.00 |
| CX-86-09-09 | | 303 | 121 | 50 | 610 | 10.00 |
| CX-86-09-10 | | 357 | 186 | 55 | 350 | 10.00 |
| CX-86-09-11 | | 231 | 136 | 68 | 125 | 10.00 |
| CX-86-09-12 | | 310 | 149 | 60 | 180 | 10.00 |
| CX-86-11-01 | | 10 | 13 | <2 | 185 | 10.00 |
| CX-86-11-02 | | 12 | 13 | <2 | 120 | 10.00 |
| CX-86-12-01 | | 44 | 14 | <2 | 3365 | 10.00 |
| CX-86-14-01 | | 773 | 28 | 18 | 935 | 10.00 |

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# Geochemical Lab Report

REPORT: 016-5005

PROJECT: NONE

PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au-150 PPM | Au+150 PPM | Au AV PPM | TestWt gms | -150Wt gms | +150Wt gms |
|---|---|---|---|---|---|---|---|---|---|---|
| CX-86-01-02 | | 129 | 40 | 12 | 0.14 | 28.91 | 0.85 | 1.87 | 4.36 | 0.11 |
| CX-86-03-01 | | 10 | 13 | 2 | 0.67 | <0.01 | 0.63 | 15.00 | 17.68 | 1.03 |
| CX-86-04-04 | | 18 | 12 | 4 | 0.68 | 317.25 | 1.81 | 20.00 | 22.27 | 0.08 |
| CX-86-05-03 | | 529 | 203 | 113 | 1.32 | 160.50 | 8.37 | 3.00 | 5.18 | 0.24 |
| CX-86-05-08 | | 954 | 495 | 133 | 1.58 | <0.01 | 1.31 | 8.00 | 10.18 | 2.15 |
| CX-86-05-11 | | 747 | 181 | 77 | 0.33 | <0.01 | 0.30 | 10.00 | 12.98 | 1.54 |
| CX-86-05-19 | | 1007 | 149 | 36 | 0.82 | 11.92 | 2.73 | 9.00 | 11.35 | 2.36 |
| CX-86-05-21 | | 807 | 127 | 54 | 0.09 | <0.01 | 0.08 | 6.00 | 8.58 | 1.65 |
| CX-86-05-26 | | 1348 | 72 | 42 | 0.36 | <0.01 | 0.35 | 5.00 | 7.28 | 0.24 |
| CX-86-06-03 | | 29 | 12 | <2 | 0.11 | <0.01 | 0.10 | 20.00 | 28.55 | 2.27 |
| CX-86-06-12 | | 321 | 143 | 63 | 0.09 | 4.18 | 0.31 | 20.00 | 29.91 | 1.73 |
| CX-86-13-02 | | 70 | 13 | 14 | 0.78 | 48.32 | 10.32 | 10.00 | 13.78 | 3.46 |

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# Geochemical Lab Report

REPORT: 016-5107

PROJECT: NONE PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Zn PPM | As PPM | Au-150 PPM | Au+150 PPM | Au AV PPM | TestWt gms | -150Wt gms | +150Wt gms |
|---|---|---|---|---|---|---|---|---|---|---|
| CX-86-06-18 | 3/4 | 639 | 285 | 128 | 0.64 | 8.07 | 1.39 | 18.00 | 20.35 | 2.26 |
| CX-86-08-09 | 3/4 | 213 | 63 | 44 | 0.63 | 24.31 | 1.10 | 17.00 | 15.30 | 0.35 |
| CX-86-09-02 | 3/4 | 13 | 16 | <2 | 0.10 | 0.03 | 0.09 | 16.00 | 18.05 | 1.59 |
| CX-86-09-07 | 3/4 | 391 | 167 | 30 | 0.21 | 0.04 | 0.21 | 17.00 | 19.55 | 0.57 |