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**SUMMARY REPORT**

**ON THE**

*(NTS)*

**CARIBOO-LIKELY PROJECT**

**CARIBOO MINING DIVISION**

**NTS 93A/11W, 12E**

**Latitude 52°39'; Longitude 121°36'**

**MT. CALVERY RESOURCES LTD.**

**1027 - 470 Granville Street**

**Vancouver, B.C.**

**By**

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**Vancouver, B.C.**

**March 17, 1984**

## TABLE OF CONTENTS

	<b>PAGE</b>
I. SUMMARY AND CONCLUSIONS.....	1
II. INTRODUCTION.....	2
III. LOCATION & ACCESS.....	4
IV. CLAIMS AND CLAIM GROUPS.....	5
V. HISTORY.....	7
VI. REGIONAL GEOLOGY.....	10
VII. GEOLOGY OF CARIBOO-LIKELY PROJECT CLAIMS.....	11
VIII. WORK COMPLETED ON THE CARIBOO-LIKELY PROJECT.	14
A. GEOPHYSICS.....	14
B. GEOCHEMISTRY.....	16
IX. RECOMMENDATIONS.....	20
X. ESTIMATE OF EXPENDITURES.....	21
CERTIFICATE, John Deleen, P.Eng.....	22
BIBLIOGRAPHY.....	23

## TABLES

	<b>PAGE</b>
TABLE I List of Claims and Claim Groups	6
TABLE II Assay Distribution Parameters	17

## APPENDICES

APPENDIX I Analytical Procedures	
APPENDIX II Histograms of Geochemical Data	

## LIST OF ILLUSTRATIONS

### FOLLOWING

			PAGE
FIGURE 1	Location Map	1:2,400,000	3
FIGURE 2	Access Map	1: 250,000	4
FIGURE 3	Claim Map	1: 100,000	6
FIGURE 4	Placer Claims in Likely Area 1930-35	1" = 2 mi.	6
FIGURE 5	Regional Geology	1:1,000,000	8
FIGURE 6	Geology of Project Area	1: 500,000	9
FIGURE 7	Geophysical and Geochemical Anomalies	1: 500,000	10
FIGURE 8	Proposed Geochemical Survey	1: 100,000	15

## I. SUMMARY AND CONCLUSIONS

The Cariboo-Likely Project consists of 396 claim units which are owned by Carolin Mines Limited subject to an underlying vendor agreement with R. Mickle. Mt. Calvery Resources Ltd., by way of an option agreement, has the right to acquire an initial 50% interest in the claims from Carolin Mines Ltd. The claims, which are drained by several streams that produced placer gold in the past, are underlain by an assemblage of mafic lavas, volcanoclastic sediments and intrusive rhyolite to diorite dykes and stocks. Prior to 1981, the exploraton work completed by various companies to find lode gold mineralization in the area had included limited soil geochemistry, diamond drilling and reconnaissance geological mapping. This work failed to find the source of the placer gold in the Cariboo-Likely area.

In February 1981, an airborne magnetometer and electro-magnetometer survey was completed by Carolin Mines, and eight anomalous areas were found. By October 1981, four of these areas had been investigated by geochemcial surveys, and anomalous gold values had been found in all four areas investigated. Anomalous gold values were often associated with anomalous arsenic values.

Coincident geophysical and geochemical anomalies of impressive magnitude have been outlined within a geological setting similar to that of Dome Mines' nearby QR gold deposit. The QR deposit is reported to contain reserves of 950,000 tons of 0.2 ounces of gold per ton, minable by open pit methods.

A program of comprehensive and systematic geochemical sampling, IP-VLF surveying and geologic mapping is warranted on the four areas investigated and also on the remainder of the claim area. With the completion of this work, a program of percussion drilling will be required to evaluate gold-bearing anomalies.

Total estimated expenditure for the above 1984 program is \$468,500.

## II. INTRODUCTION

The Cariboo-Likely Project, which covers an area of approximately 8,680 hectares, is located in the old Cariboo-Likely Placer Mining District of British Columbia. The original 198 claims units were optioned from R.E. Mickle by Aquarius Resources Ltd. and Carolin Mines Limited in 1980. An additional 198 claims units were acquired during 1980, 1981 and 1982. Carolin Mines purchased the Aquarius interest in 1982. These claims were acquired on the premise that local bedrock gold deposits produced the District's placer gold. Added encouragement was received when an airborne magnetometer and electromagnetometer survey, followed by geochemical surveys, was completed in 1981. The following eight geophysical anomalies were identified as priority targets:

1. T-1 : EM Anomaly on JUN 9 Claim
2. T-2 : EM Anomaly on Easy 6 Claim
3. T-3 : EM Anomaly on Easy 1 Claim
4. T-4 : Magnetic and EM Anomaly on Easy 5, Easy 3  
and JUN 10 Claims
5. T-5 : Magnetic Anomaly on Easy 4 and Easy 1 claims
6. T-6 : Magnetic Anomaly on June, Dug and Rose 3 claims
7. T-7 : Magnetic Anomaly on Jul 1 Claim
8. T-8 : Magnetic Anomaly on JUN 9 and Dug claims

Four of these geophysical anomalies, T-2, T-4, T-5 and T-6 were investigated by geochemical surveys in 1981. All were found to contain anomalous gold values (Figures 7 & 8).

A small trenching program for assessment purposes was completed over portions of the anomalous areas in 1982. These trenches either failed to reach bedrock or exposed barren volcanic

rocks. The information obtained from the program did not explain the above anomalies. No physical work has been completed on the anomalous areas since 1982.

Mt. Calvery Resources optioned the property from Carolin Mines Ltd. in January 1984 and will obtain a 50% interest in the property by the completion of an exploration program and issue of shares to Carolin Mines Ltd.

Follow-up work on the anomalous areas already delineated and on the remainder of the claim area is warranted. Geochemical surveys are recommended over the entire claim block despite the fact that an airborne geophysical survey has been completed. The magnetic/-electro-magnetic airborne survey would identify areas of sulfide mineralization. It would not, however, disclose the presence of veins or zones of silicification or disseminated gold deposits occurring in argillaceous sediments. The proposed work will, therefore, further define the targets already found and prospect the unsurveyed portion of the claims.

This report summarizes the work completed to date and makes recommendations for an exploration program for 1984. It has been completed from property examinations made in June and October 1982, and from the reports listed in the bibliography.

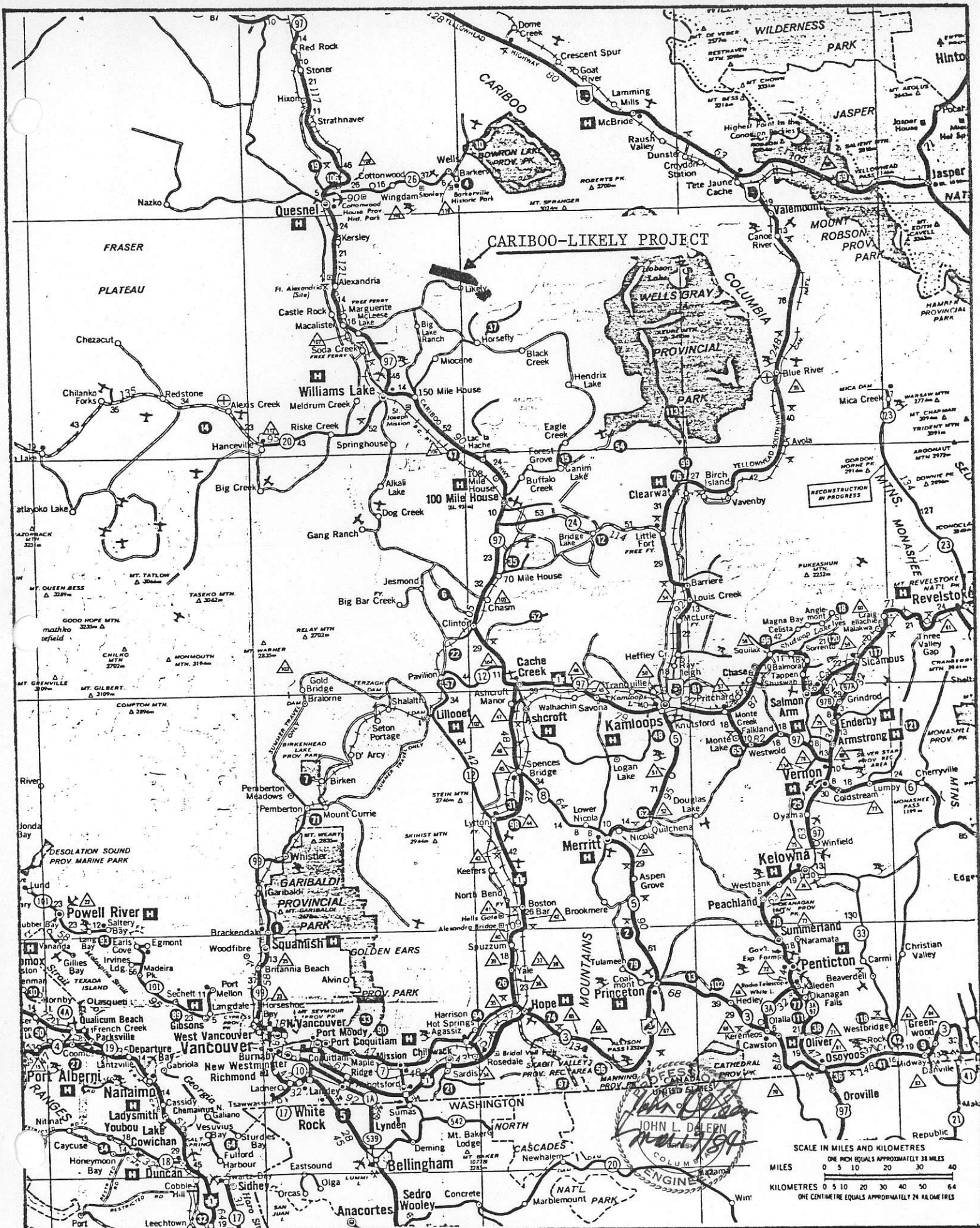


FIGURE 1  
LOCATION OF CARIBOO-LIKELY PROJECT

### III. LOCATION AND ACCESS

The Property is located immediately to the east of the towns of Likely and Quesnel Forks between Spanish and Quesnel Lakes in the south and the southern flank of Kangaroo Mountain in the north (Figure 2). Most of the claims are located to the south of the Cariboo River and to the northeast of the Quesnel River. The isolated southern claim group is located on the northeastern slope of Mount Warren 1.8 km to the southeast of the main block of claims (Figure 2). The Property is located in the Cariboo Mining Division of British Columbia at Latitude  $52^{\circ}39'$  and Longitude  $121^{\circ}36'$ .

The area is accessible from Highway 97 at 150 Mile House by 75 km of all-weather gravel road to Likely (Figure 1). All-weather roads lead from Likely to Quesnel Forks and Keithley Creek through the central portion of the Property. Numerous logging roads, which vary from good two-wheel-drive roads to overgrown walking paths, provide access to all parts of the Property. Logging has been extended to the east boundary of the claims located on the northern side of the Cariboo River, and access to the Kangaroo drainage is by foot.

Elevations vary from 604 m on the Quesnel River to 1500 m on the eastern side of the claim group.



121°30'

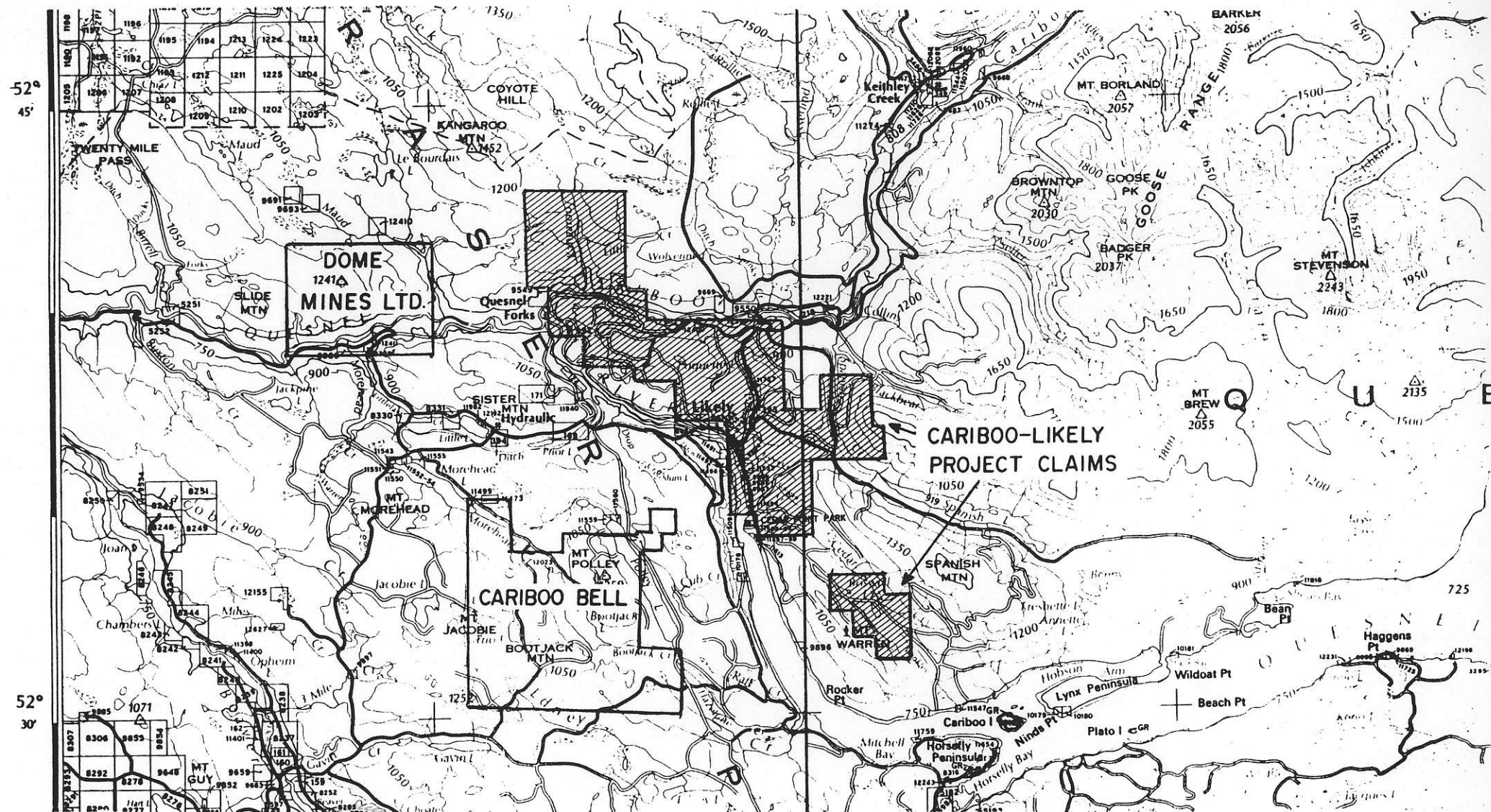


FIGURE 2

MT. CALVERY RESOURCES LTD.  
LOCATION OF CLAIMS

MAP:93A/12E

SCALE 1:250,000

#### IV. CLAIMS AND CLAIM GROUPS

The Cariboo-Likely Project consists of modified grid and 2-post claims totalling 396 units which are owned by Carolin Mines Limited (Figure 3). These claims are located on topographic maps 93A/12E and 93A/11W. The claims were optioned by Mt. Calvery Resources Ltd. By the completion of a work commitment and issue of shares to Carolin Mines Ltd. Mt. Calvery Resources Ltd. will earn a 50 percent interest subject only to an underlying vendor agreement with R. Mickle. The data on the claim map, Figure 3, is taken from the records of the Mining Recorder in Vancouver, B.C., and is complete to March 1, 1984.

The claims which comprise the Cariboo-Likely Project have been placed in four groups and seven separate claims as follows:

**SCHEDULE 'A' TO AGREEMENT BETWEEN CAROLIN MINES LTD.  
AND MT. CALVERY RESOURCES LTD. DATED JANUARY 30, 1984  
Cariboo-Likely property, Cariboo M.D., B.C.  
List of Claims and Claim Groups (N to S)**

6

Group Names	Claim Name	Record Numbers	Units	Date Recorded	Expiry Date
Group 1	JUN 6	1794	20	7 July 1980	7 July 1984
	JUN 7	1795	20	7 July 1980	7 July 1984
	JUN 8	1796	20	7 July 1980	7 July 1984
	JUN 9	1797	20	7 July 1980	7 July 1984
	JUNE	1050	20	28 June 1979	28 June 1984
			<u>100</u>	units total	
Group 2	DUG	999	12	22 May 1979	22 May 1984
	ROSE 4 Fr	4197	1	15 Dec 1981	15 Dec 1984
	ROSE 3	4196	15	15 Dec 1981	15 Dec 1985
	ROSE 2	3992	12	25 Aug 1981	25 Aug 1984
	EASY 7	1007	20	23 May 1979	23 May 1984
	EASY 6	923	20	7 Dec 1978	7 Dec 1984
	TY	1051	20	29 Jun 1979	29 Jun 1984
			<u>100</u>	units total	
Group 3	EASY 4	880	20	2 Nov 1978	2 Nov 1984
	EASY 1	877	20	2 Nov 1978	2 Nov 1984
	EASY 5	881	6	2 Nov 1978	2 Nov 1984
	AUG 1	1149	6	31 Aug 1979	31 Aug 1984
	EASY 3	879	15	2 Nov 1978	2 Nov 1984
	E2	4321	6	17 May 1982	17 May 1984
			<u>73</u>	units total	
Group 4	NOV 4	1366	20	6 Dec 1979	6 Dec 1984
	MARCH 1	1531	20	17 Mar 1980	17 Mar 1985*
	MARCH 2	1532	4	17 Mar 1980	17 Mar 1986*
	JUN 11	1799	18	7 Jul 1980	7 Jul 1985*
	JUN 10	1798	18	7 Jul 1980	7 Jul 1985*
	LAKE 1	3994	8	24 Aug 1981	24 Aug 1986*
			<u>88</u>	units total	
Not Grouped:					
	ROSE 1	3993	2	24 Aug 1981	24 Aug 1984
	GOLD 1	1800	1	7 Jul 1980	7 Jul 1984
	GOLD 2	1801	1	7 Jul 1980	7 Jul 1984
	JUL 1	1852	9	8 Aug 1980	8 Aug 1984
	J1	4406	10	29 Jul 1982	29 Jul 1984
	J2	4407	10	29 Jul 1982	29 July 1984
	EJL	4592	2	25 Nov 1982	25 Nov 1985
			<u>35</u>	units total	
<b>TOTAL: - 396 Claim Units</b>					

(\*) Assessment work filed, but records show expiry date of 1984.

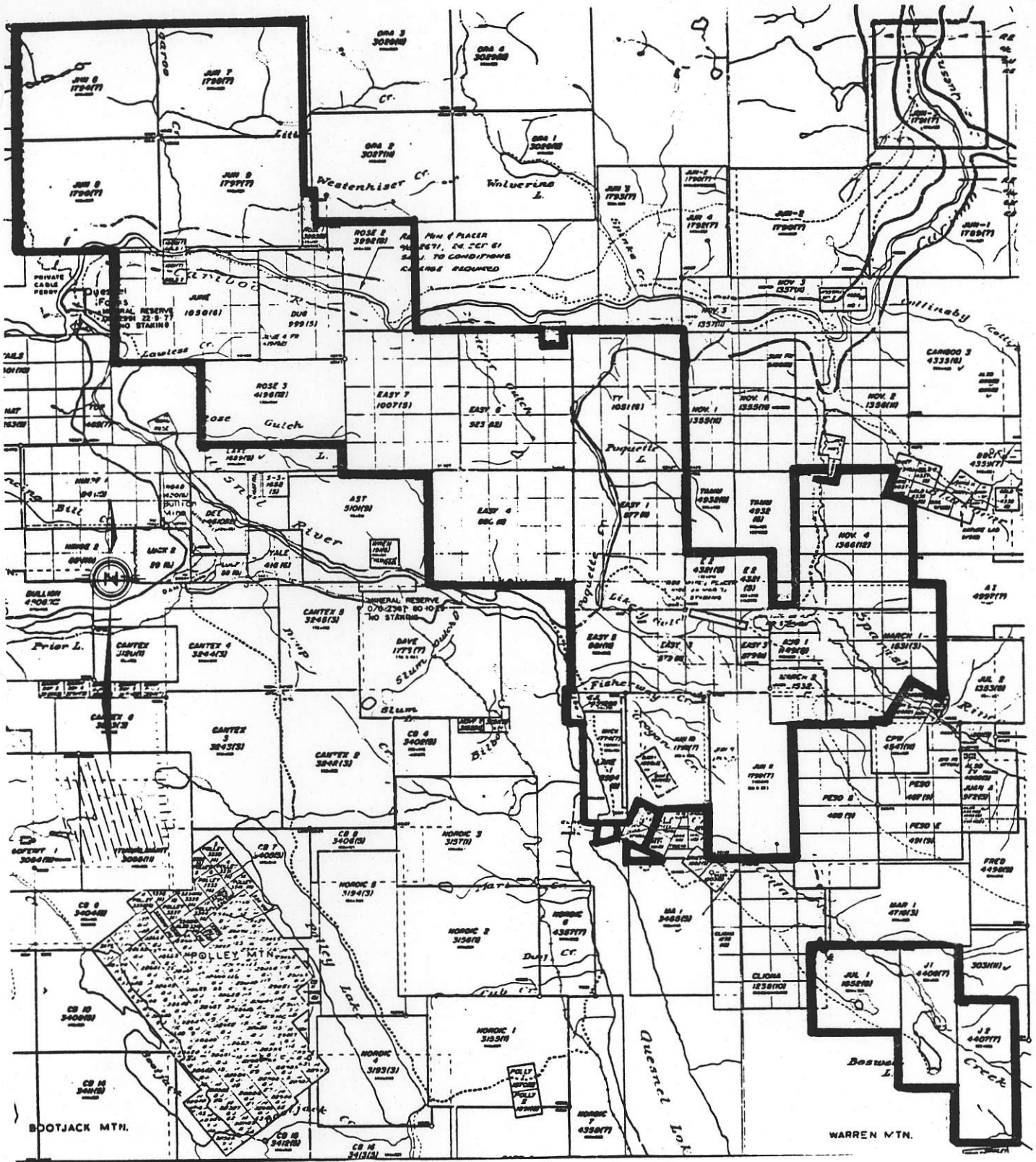


FIGURE 3

MT. CALVARY RESOURCES LTD.  
 CARIBOO-LIKELY PROJECT  
 CLAIM MAP

SCALE 1:100,000





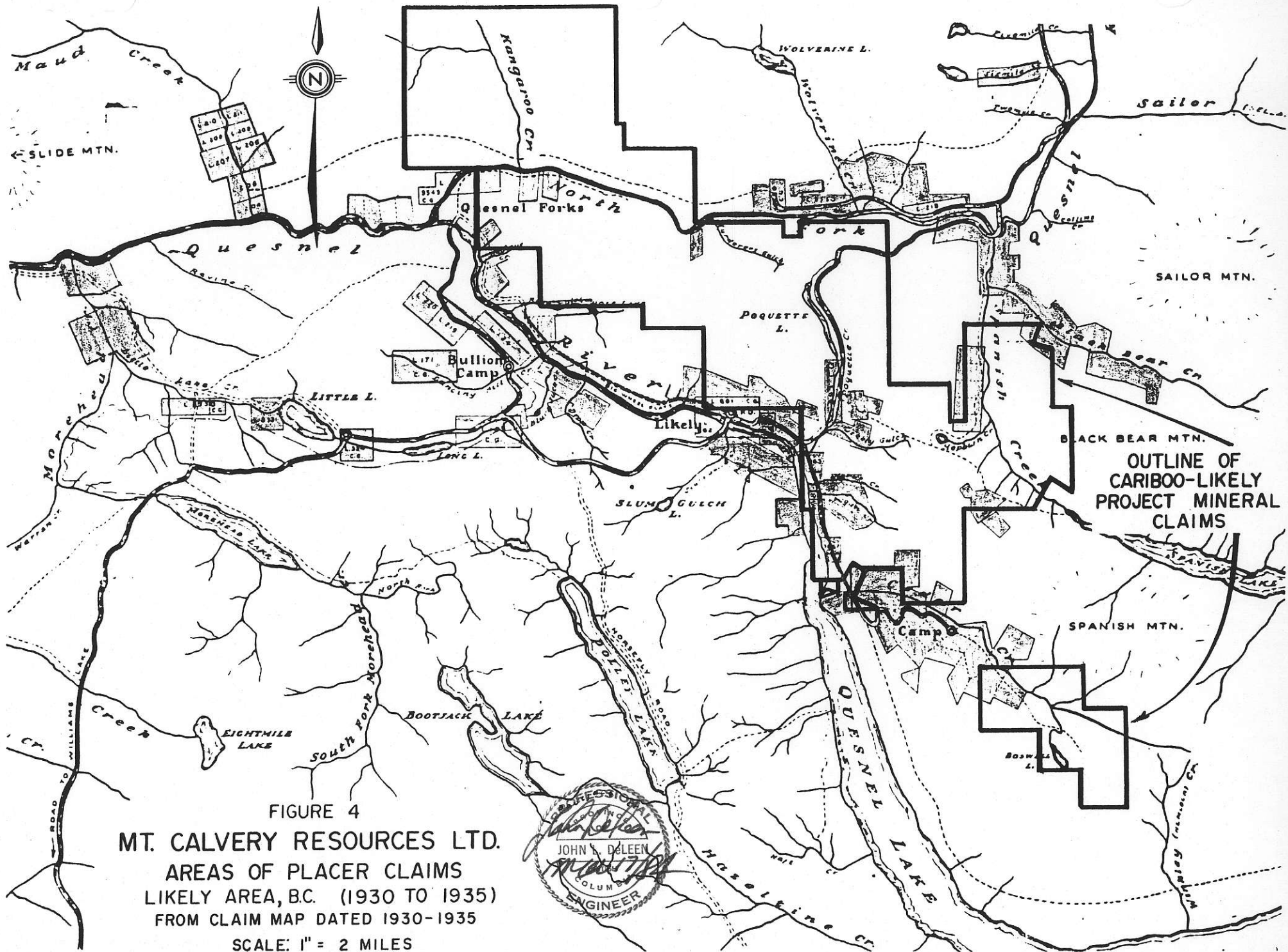
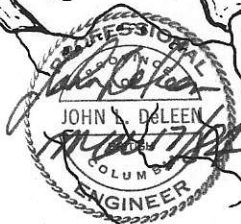


FIGURE 4  
**MT. CALVARY RESOURCES LTD.**  
 AREAS OF PLACER CLAIMS  
 LIKELY AREA, B.C. (1930 TO 1935)  
 FROM CLAIM MAP DATED 1930-1935  
 SCALE: 1" = 2 MILES



## V. HISTORY

The first gold discovery in the Cariboo was in mid 1859 on the Horsefly River about 20 km south of the Cariboo-Likely Project. By late 1859, numerous miners were working shallow diggings on gravel bars around the junction between the Cariboo and Quesnel Rivers. Subsequent discoveries of richer placer deposits at Keithley Creek in 1860 and then the bonanza of Williams Creek in 1861 attracted a stampede of men through the area.

Quesnel Forks townsite was laid out by the Royal Engineers in 1861, and remained the main supply centre for the Cariboo until 1865 when the Cariboo Wagon Road was completed via Quesnel and Lightning Creek. A claim map covering the placer claims staked during the period 1930 to 1935 is included on Figure 4. This map shows the areas which were worked during that period. It suggests that there are several potential lode-gold source areas for placer gold within the Cariboo-Likely Property. The Cariboo-Likely property overlies an area of the greatest concentration of placer gold production in the Quesnel district.

Placer mining in the Quesnel Forks region is discussed in detail by Cockfield and Walker (1932) and is summarized as follows:

1. Shallow workings were mined on the gravel flat around the Quesnel Forks townsite where gold was found on certain clay layers. Glaciofluvial bench gravels were also productive along the Cariboo River.
2. High level gravels from buried channel deposits on bedrock were worked on a large scale at the Bullion Mine hydraulic operation 5 km downstream from Likely. Another high level old channel deposit was

worked along lower Morehead Creek, 13 km downstream from Quesnel Forks.

3. Recent bar gravels on the Quesnel River were deposited from small tributary creeks cutting the old high level channel. Gravels in the small tributary creeks were also extensively mined.
4. Apparently eluvial (residual) concentrations of gold were found in Cedar Creek and Poquette Creek Valley.

The famous Bullion Mine (Figure 4) operated from 1894 to 1905, when somewhat over 12 million yards of Pleistocene gravels were processed to yield \$ 1,233,800 (approximately 59,700 ounces). The Bullion Mine was operated on a small scale between 1933 and 1942. After 1942 the placer mining activity in the area terminated. Placer mining commenced on a small scale after 1975.

Placer gold has been found in the creeks draining the Cariboo-Likely Project claims. The most notable production came from Cedar Creek, Likely Gulch, Gold Creek, Rose Gulch and Spanish Creek (Figures 4 & 7).





Exploration in the area since 1965 has resulted in the discoveries of the Cariboo Bell porphyry copper-gold deposit on Mount Polley and the Dome Mines Limited Quesnel River Gold Deposit between lower Maud Creek and Slide Mountain (Figures 2 and 5). The Cariboo Bell Property is being actively investigated by E. & B. Explorations, Inc. Copper and gold values are reported to be related to pyrite in breccia zones and pipes. The reported tonnage developed to date is 100 million tonnes of 0.32 percent copper and 0.45 gms gold per tonne. E. & B. Explorations, Inc. conducted drilling programs on

# CARIBOO-QUESNEL GOLD BELT

FIGURE 5

## REGIONAL GEOLOGY

### MT. CALVERY RESOURCES and CAROLIN MINES

-  PLACER GOLD
-  GOLD SOIL ANOMALY
-  GOLD MINERALIZATION
-  PORPHYRY COPPER GOLD MINERALIZATION

#### JURASSIC

 SYENITE, DIORITE, SUB-VOLCANICS

 BASALT, ANDESITE, ARGILLITE

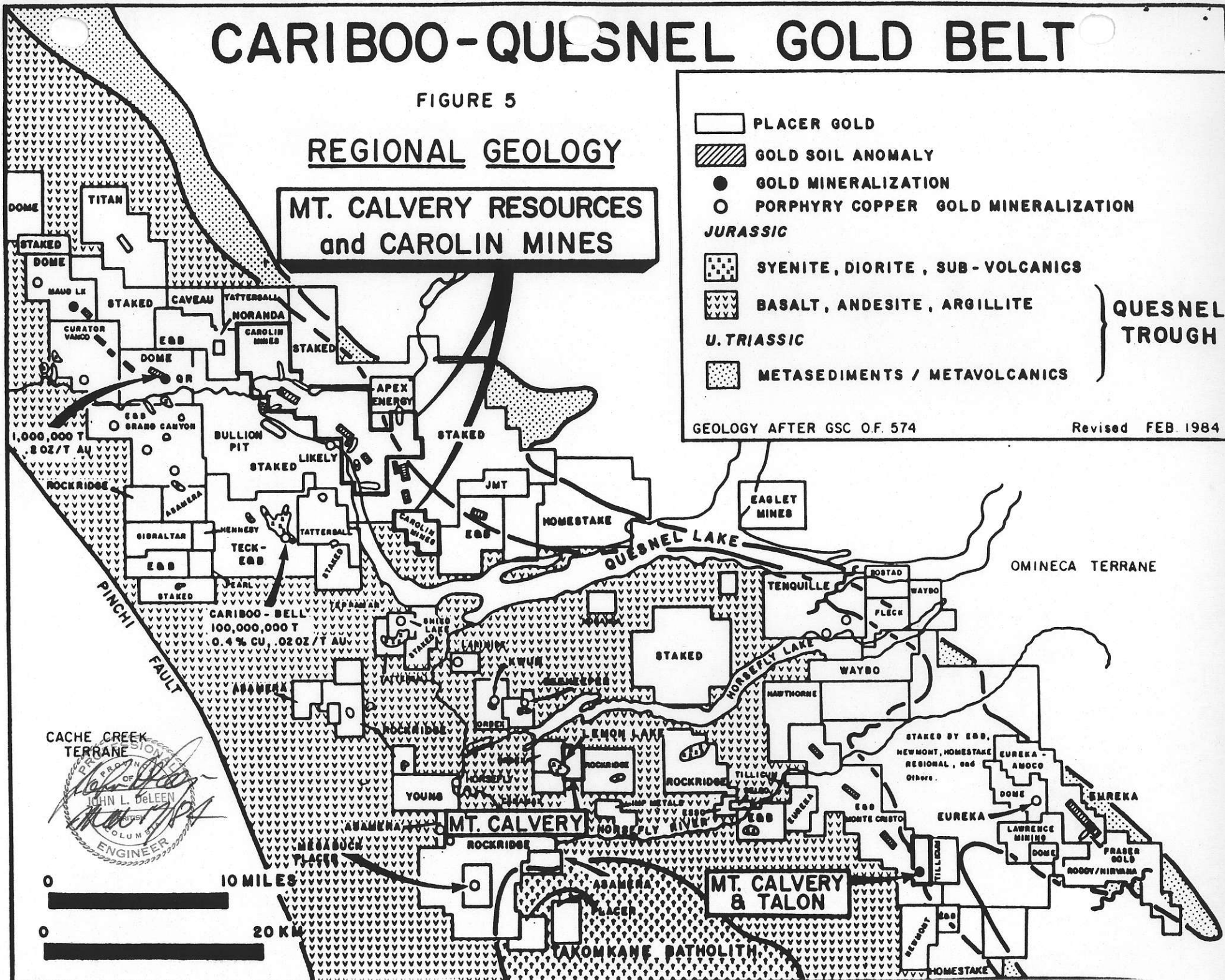
#### U. TRIASSIC

 METASEDIMENTS / METAVOLCANICS

QUESNEL TROUGH

GEOLOGY AFTER GSC O.F. 574

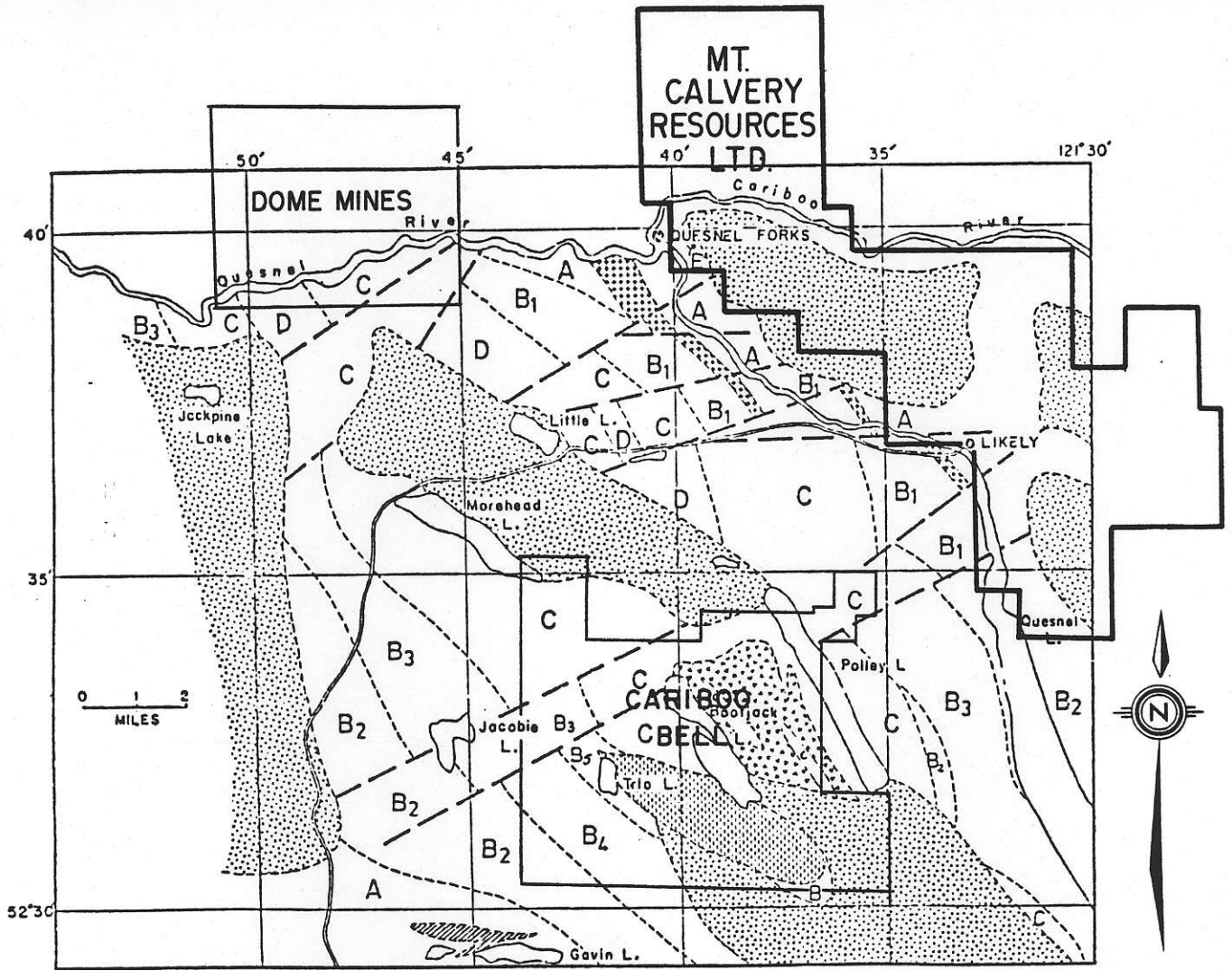
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the property in 1981, 1982 and 1983 to investigate zones of higher gold content. Dome Mines Limited report that on their Quesnel River (QR) Property they have developed 950,000 tons of open pit gold ore containing 0.21 ounces of gold per ton (Dome Mines, Annual Report 1981). It is believed that the gold mineralization is related to pyritic zones located in sedimentary and volcanic rocks. These zones are located near or on the margins of small stocks.

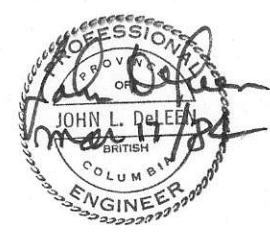
In 1981, the results of a regional geochemical survey, completed in the Likely area by the Provincial Government, were published. The information contained in this survey and the announcement, by Dome Mines, of the results of the drilling on their QR claims attracted the attention of prospectors to the Likely area. To date an area of approximately 30 x 60 kilometers, has been staked (Figure 5) solidly in the Likely area.



**LEGEND**

SEDIMENTARY AND VOLCANIC ROCKS		INTRUSIVE ROCKS	
PLEISTOCENE	GLACIAL, FLUVIOGLACIAL, AND FLUVIAL GRAVELS	GAVIN LAKE STOCK - QUARTZ MONZONITE	<b>SYMBOLS</b> - - - - - GEOLOGICAL CONTACT - - - - - FAULT ——— MAIN ROAD
CRETACEOUS (?)	QUARTZOFELDSPATHIC GRITS AND SANDSTONES	BOOTJACK STOCK - MEDIUM TO COARSE-GRAINED LIGHT GREY NEPHELINE SYENITE	
MIDDLE JURASSIC (?)		MOUNT POLLEY STOCK - FINE TO MEDIUM-GRAINED SYENITE, MONZONITE, AND DIORITE	
LOWER JURASSIC	MAROON TRACHYBASALT FLOWS AND BRECCIAS, GENERALLY ANALCITE BEARING	FINE TO MEDIUM-GRAINED HORN-BLENDE DIORITE AND MONZONITE	
	<b>METTAMBIAN</b>		
	POLYLITHOLOGIC VOLCANIC BRECCIAS, CONGLOMERATES, SANDSTONES, MINOR LIMESTONE		
	HORN-BLENDE-PYROXENE BASALT FLOWS AND BRECCIA		
	PYROXENE BASALT SLUMP BRECCIAS		
	MAROON PYROXENE BASALT FLOWS AND BRECCIA, LOCALLY ANALCITE BEARING		
---	GREEN AND GREY PYROXENE BASALT PILLOW LAVAS AND BRECCIAS, LOCALLY ANALCITE BEARING		
	GREEN AND GREY PYROXENE HORN-BLENDE BASALT BRECCIA AND HORN-BLENDE ANDESITE BRECCIA		
	<b>NORIAN (?)</b>		
UPPER TRIASSIC (?)	DARK GREY CALCAREOUS CONGLOMERATES, SANDSTONES, AND ARGILLITES, VOLCANICLASTIC TOWARD TOP		

FIGURE 6  
 MT. CALVERY RESOURCES LTD.  
 GENERALIZED GEOLOGY  
 OF  
 CARIBOO-LIKELY  
 PROJECT AREA  
 BY D.G. BAILEY, 1975



## VI. REGIONAL GEOLOGY

The general geology of the Likely area is shown on Figure 5. In general, the district is composed of a series of volcanic and sedimentary rocks which have been partially metamorphosed to schist, greenstone and quartzite. There are few areas of outcrop in the Likely area; consequently, detailed geologic mapping has not been completed on the property. In the Moorehead-Likely area (Figure 6) geologic mapping was completed by D.G. Bailey in 1975. His map covers approximately 75 percent of Cariboo-Likely Project claims. The rocks in this area have been divided into a series of calcareous argillites, sandstones and conglomerates of Upper Triassic age. Overlying this sedimentary sequence are a series of seven Jurassic units. The lower units are a series of basaltic flows and breccias. The intermediate units are a series of limestones, mudstones, greywackes and conglomerates. The upper unit is a series of maroon coloured basaltic flows and breccias. This sequence has been intruded by a series of stocks and sills of monzonite and syenite.

The gold mineralization on the Dome claims is reported to occur with pyrite in the contact zone located between sediments and basaltic volcanic rocks near the margins of the intrusives. The copper-gold mineralization on the Cariboo Bell claims occurs within the intrusive rocks. While there are a few areas of outcrop on the claims of the Cariboo-Likely project, it is believed that the units mapped on Figure 6 occur on the claims beneath the glacial cover.

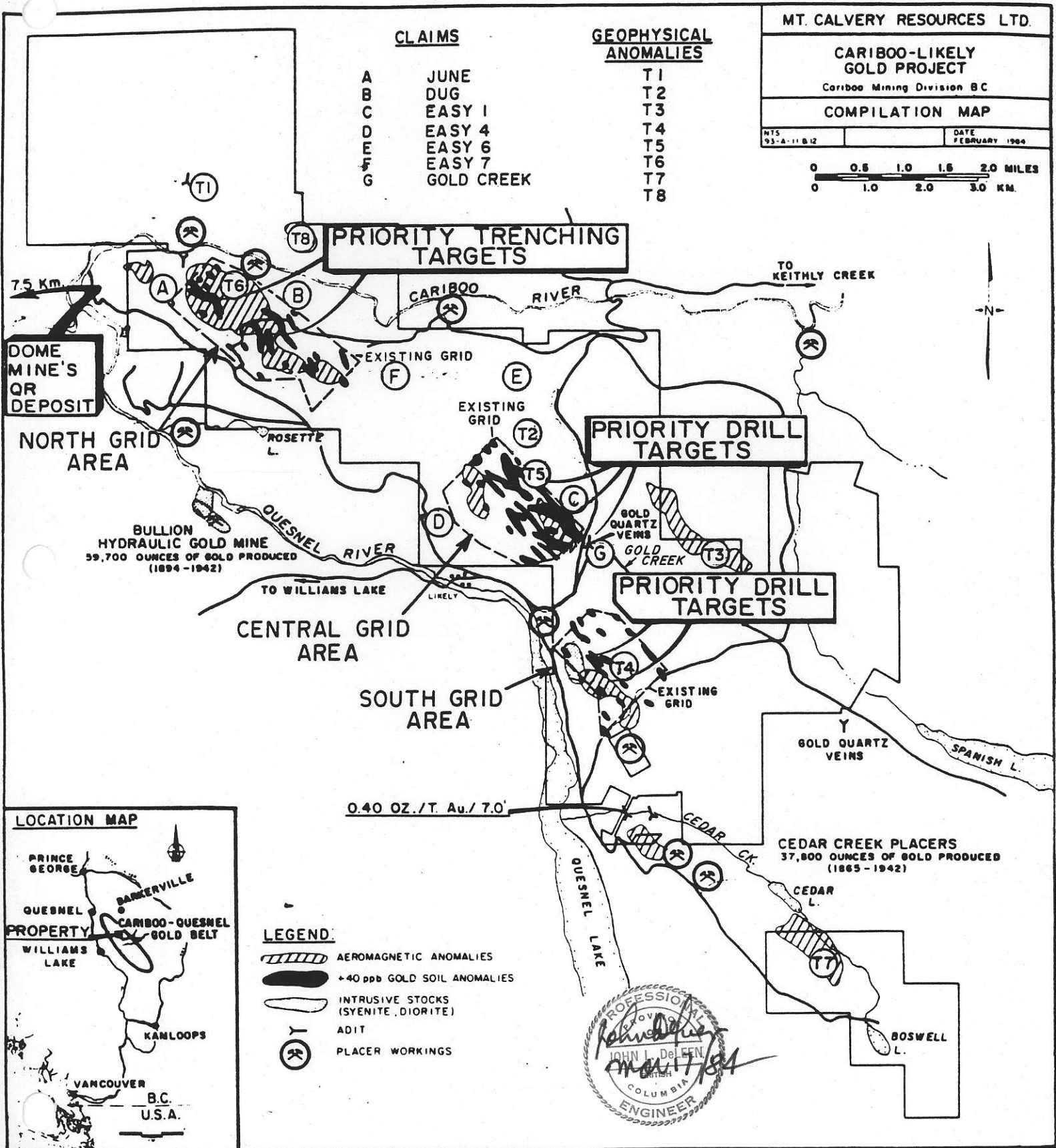


FIGURE 7

**GEOPHYSICAL AND GEOCHEMICAL ANOMALIES**

## VII. GEOLOGY OF CARIBOO-LIKELY PROJECT CLAIMS

Reconnaissance geological observations completed by R.A. Hrkac, R.H. Beaton and the Geological Survey of Canada (Open File 574, 1978) have been plotted on Figure 7. The following notes on the geology were completed by R. Hrkac in 1981 (see reference in bibliography).

"Rocks on the claim group include a series of sediments and metamorphic rocks: argillites, phyllites, quartzites, slates, schists and greenstones. These rocks are generally exposed on the margins of the Property in steep sided valleys.

The main rock unit on the Property is a volcanic series of andesitic and basaltic flows, agglomerates and tuffs. The volcanic sequence has been intruded by small dykes and sills of diorite, syenite and rhyolite. The outcrops of the basalt and andesite were found to contain pyrrhotite and pyrite. Some gold values were obtained in quartz veins in the rhyolite dykes."

### JUNE, DUG, EASY 4, 6, 7 MINERAL CLAIMS

The June, Dug, Easy 4, 6 & 7 mineral claims are underlain by olivine-augite basalts and agglomerates (Figure 7). The volcanics are cut by northeast-trending rhyolite dykes. Anomalous gold values are related to the dykes and their contained quartz veinlets. However, to date, no significant portion of the dykes has proven to be economic.

The basalts are dark green, fine to medium-grained, and at times porphyritic, containing tabular augite phenocrysts. Calcite amygdules and fine calcite veinlets are common. Fine, disseminated pyrite is present in amounts much less than one percent. The

agglomerates, with fragments up to 8 x 10 cm, are composed of the basalts described above. When tested with HCl, a moderate to strong reaction occurs in both the basalts and the agglomerates.

On the EASY 4 (Figure 7) mineral claim, the basalts contain epidote alteration as patches, veinlets and replacement of augite. Here calcite veinlets are more numerous, and up to two cm in thickness. Despite the increase in alteration, pyrite remains a minor constituent.

The basalts are intruded by vertical to steeply-dipping rhyolite dykes striking from N25E to N80E. Most are one to two metres wide. On the EASY 7 (Figure 7) claim the attitude of a dyke was N85W/75S while on the JUNE claim, opposite Kangaroo Creek, a rhyolite dyke, was noted to have an attitude of N70W/90.

The rhyolite is pale, grey-green, fine-grained and contains white and clear quartz grains and green feldspar. It weathers to a prominent rusty-orange colour that penetrates one to three cm into the rock, both at surface and along joints and fractures. Approximately one percent pyrite is present as cubes and fine disseminated grains. Quartz veinlets having a width of from one to five millimetres are common. While most of the veins are vertical and strike at right angles to the strike of the dykes, a few veins have a random orientation. The weathered surfaces of the rhyolite reacts with HCl, however there is little or no reaction with HCl on the fresh surface of the rhyolite. The basalts adjacent to the dykes are altered to a medium green, fine-grained rock.

Intermittent exposures of andesite occur along the Keithley Creek road from Likely Gulch to the north end of Poquette Lake. The andesite is medium green, fine to medium-grained with minor epidote and calcite alteration and little or no reaction with HCl. It contains

less than one percent fine, disseminated pyrite.

South of Gold Creek (Figure 7) the andesite is cut by rhyolite dykes averaging one metre in width. The dykes strike northeasterly, and have vertical to steep southeasterly dips. They are identical to the rhyolites previously described.

A major fault zone is well exposed along the Spanish Lake Road south of Gold Creek, near the mouth of Gold Creek and along a road cut north of Gold Creek and west of Poquette Creek. Within the fault, andesite and rhyolite are sheared into haphazard blocks, and numerous rust-coloured earthy gouge zones occur from several mm to 0.5 metres wide. They are commonly occupied by quartz veinlets up to several centimetres in width.

At Gold Creek, the fault has cut a zone consisting of rhyolite with some andesite, and contains a series of vertical, east-west shears one to seven centimetres in width which contain reddish, earthy gouge flanking quartz veinlets. Channel samples taken by R.H. Beaton (1979) across the shears, and samples taken by Godfrey in 1980 across the gouge and quartz, have shown that significant gold and silver values are present.

## VIII. WORK COMPLETED ON THE CARIBOO-LIKELY PROJECT

In order to define target areas on the claims of the Cariboo-Likely Project, an airborne magnetometer and EM survey was completed by Carolin Mines and Aquarius Resources in February, 1981. Six magnetic and two EM anomalies (T-1 to T-8 inclusive) were found (Figure 7). In October 1981, some geochemical surveys were completed on anomalies T-2, T-4, T-5 and T-6 (Figures 7 & 8). The results of the above surveys are described in the following headings.

### A. GEOPHYSICS

The results of the airborne magnetometer and EM survey have been compiled on Figure 7. The following notes have been taken from the field examinations completed by R. Hrkac and D. Rennie, and from the writer's field examination in 1981 and 1982, and from Richardson's report of 1983.

#### ANOMALIES T-1 AND T-2

These E.M. anomalies are located in the northwestern portion of the claim group on the JUN 9 and EASY 6 claims. There are no outcrops and the causes of the anomalies are not known. A ground magnetometer, a gold geochemical, and perhaps an EM survey are warranted on the T-1 anomaly. The T-2 anomaly was investigated by a geochemical survey for gold. The results are described in the geochemistry section.

#### ANOMALY T-3

An EM anomaly lies on the northeast flank of a magnetic anomaly located partially on the EASY 1



Claim. The anomaly should be investigated by a geochemical survey for gold and an IP survey.

#### **ANOMALY T-4**

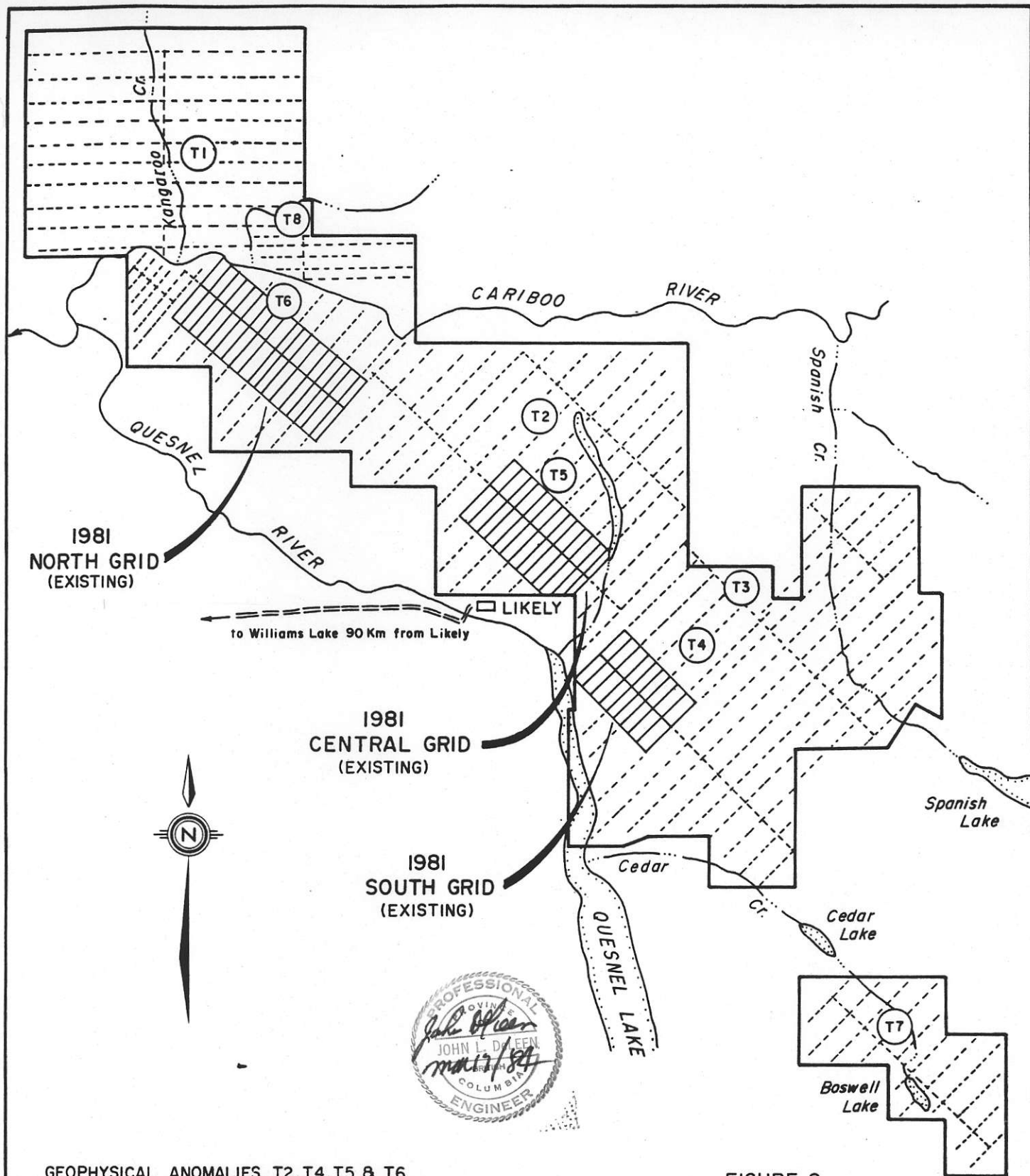
This is a major northwest-trending coincident magnetic and E.M. anomaly located on the EASY 5, EASY 3 and JUN 10 mineral claims. Magnetic diorite was noted in the outcrops of Fisher Creek. The outcrops in the anomaly on the JUN 10 Claim are basalt which contains pyrrhotite and pyrite. The anomaly was investigated by about 21 km of geochemical survey as indicated on Figure 7. An IP survey and a detailed geochemical sampling program for gold should be completed on the grid lines.

#### **ANOMALY T-5**

This magnetic anomaly is located mostly on the EASY 4 mineral claim. A diorite intrusive has been mapped by Silver Standard Mines Ltd. at the southeastern end of the magnetic anomaly. Basalt and rhyolite dykes containing minor amounts of chalcopyrite were noted in the road cuts. The basalt, in the anomalous area, contained moderate amounts of epidote, chlorite, and calcite alteration. A grid 21 km in length, as indicated on Figure 7 was completed. A detailed I.P. survey and a geochemical soil sampling program should be completed on the grid.

#### **ANOMALY T-6**

The T-6 magnetic anomaly has a length of about 4000



GEOPHYSICAL ANOMALIES T2, T4, T5 & T6  
 INVESTIGATED BY GEOCHEMICAL SOIL SURVEYS IN 1981.

FIGURE 8

**MT. CALVERY RESOURCES LTD.**

**CARIBOO-LIKELY PROJECT**

----- PROPOSED GEOCHEMICAL GRID FOR 1984 PROPOSED GEOCHEMICAL SURVEY

SCALE: 1:100,000  
 (approx.)

metres and a width of about 1200 metres. The rocks on the anomaly are generally believed to be flows of basalt and andesite which have been cut by dykes of rhyolite. The basalt and andesite flows have been subjected to propylitic alteration. The geological environment is similar to the Dome Mines QR deposit setting located approximately 6 km to the west. The anomaly was investigated by 457 soil samples. An I.P. survey and a detailed geochemical soil sampling program are warranted.

#### **ANOMALIES T-7 AND T-8**

Magnetic anomalies T-7 on JUL 1 and T-8 on Rose 2 are to be investigated by geophysical and geochemical surveys. (Figure 7).

#### **B. GEOCHEMISTRY**

Three areas, covering magnetometer anomalies T-2, T-4, T-5 and T-6 were selected for soil sampling. Three separate baselines with an azimuth of  $135^{\circ}$  were completed. Line cutting was done by Amex Exploration Services Ltd. of Kamloops. All lines were cleaned out with a chainsaw in order to be wide enough for induced polarization surveys. A total of 66 kilometres of line was cut (Figure 8).

The soil lines were run perpendicular to the baselines at 200 metre intervals and the sample stations were marked every 50 metres by a wooden picket. The soil sampling was conducted by Amex Exploration Services under contract to Carolin Mines Limited. All samples, with few exceptions, were taken from the B horizon, which varied in thickness from

a few centimetres to over 50 centimetres. The samples were taken by grubhoe, and each sample was placed in a kraft waterproof paper bag and assayed by Acme Analytical Laboratories Ltd. of Vancouver. The analytical procedure is outlined in Appendix 1.

A total of 1201 soil samples were collected on three grids as follows: North Grid, 457 soils; Central Grid, 444 soils; and South Grid, 300 soils (Figures 8). All samples were analyzed for Au, Ag, As, Cu, Zn, Pb, Mo, Ni, Co, Sb and W. Histograms were plotted for each element except Mo, Sb and W. Statistical parameters of the histogram distributions are listed in Table II and the histograms are included in Appendix II.

**TABLE II**  
**ASSAY DISTRIBUTION PARAMETERS**

<b>ELEMENT</b>	<b>MEAN</b>	<b>RANGE</b>	<b>THRESHOLD</b>
GOLD	40.05 ppb	5 ppb - 9,500 ppb	40 ppb
SILVER	0.25 ppm	0.1 ppm - 5.3 ppm	0.6 ppm
ARSENIC	46.0 ppm	3 ppm - 1,656 ppm	75 ppm
COPPER	48.6 ppm	6 ppm - 779 ppm	85 ppm
ZINC	92.5 ppm	6 ppm - 599 ppm	120 ppm
LEAD	11.1 ppm	1 ppm - 155 ppm	16 ppm
COBALT	19 ppm	2 ppm - 104 ppm	35 ppm
NICKEL	30.5 ppm	5 ppm - 132 ppm	50 ppm

The gold and silver sample populations are typical of the truncated distributions due to the low concentration inaccuracy of Atomic Absorption and ICP (Induction Coupled Plasma) analytical methods. Arsenic, copper, zinc, lead, cobalt and nickel exhibit near normal distributions that are slightly skewed to the right. An overlap of two distinctly different populations is suggested for zinc and lead. Iron content of the samples averaged 4-5% which interfered with Sb and W results. Molybdenum values are slightly higher than normal. The ICP run was not corrected enough for the iron background. There is very little variation in Mo, Sb and W values throughout all of the grids.

The plus 40 ppb areas of anomalous gold in the soils are plotted for each grid on Figure 7. Since the lines are 200 metres apart, the data cannot be meaningfully contoured. Intermediate lines at 100 metre spacing should be established where the many isolated anomalous gold samples occur. Closer sample intervals are required to outline trends and peaks of gold soil anomalies.

The results of the geochemical survey for gold have followed a pattern expected for gold mineralization as follows:

1. high gold and arsenic values are not always coincident.
2. the silver values bear no relationship to the gold values.
3. the copper in general appears to be related to the gold mineralization.

The results of the gold geochemical survey are summarized and plotted on Figure 7 over the anomalous areas found by the airborne magnetometer and EM surveys. Anomalous gold values were found over the magnetometer anomalies on the North and Central Grids where only the areas of the magnetometer anomalies were soil sampled. On the Southern Grid, (Figure 7) the area lying 400 metres to the east of the magnetometer anomaly was sampled. Scattered areas of anomalous gold were also found here. The soil sampling grid was extended over an EM anomaly, T-2, on Figure 7. Nine anomalous gold samples were obtained.

The work completed to date on the Cariboo-Likely Project suggests that anomalous gold values can be obtained not only in areas of magnetic anomalies but also in areas without magnetic anomalies. The main magnetic anomalies containing anomalous gold values are located to the east of location T-4 on Figure 7. The widespread anomalous gold indicated by the survey can, in part, be attributed to the Pleistocene glaciation. It has been found in the Likely area that there were several creeks (Figure 4) which produced placer gold. Although some dispersion of gold mineralization may be due to glaciation, spatial distribution of placer gold occurrences in streams draining the Property suggests separate and distinct source areas. Consequently, detailed surveys should be completed over the entire claim group to outline further target areas.

**IX. RECOMMENDATIONS**

The work completed to date has indicated that four of the areas investigated by geophysics and geochemistry contain anomalous gold values. A major work program is recommended to complete the examination of areas containing anomalous gold values and to complete an initial investigation of the entire claim group. The work recommended is as follows:

1. Complete a claim survey and tie in all old and new grid lines and check all of the claim posts.
2. Extend the reconnaissance geochemical survey grid across the claims as indicated in Figure 8. Detailed soil sampling is recommended in the areas containing 40 ppb gold for a total addition of 28.1 km of baseline and 221.6 km of crosslines.
3. Complete a geologic map of the claim area by using existing and proposed grid lines for control.
4. Complete an IP survey in the areas containing significant gold soil anomalies (estimate 63.3 km)
5. Complete 2439 m (8000 feet) of rotary percussion drilling.

The estimated time to complete this work is 5 months and the estimated expenditure is \$468,500.

X. **ESTIMATED EXPENDITURES**

The above recommended program should be completed in 5 months for an estimated expenditure of \$468,500.

1.	Baselines - 28.1 km @ \$ 190/km		\$	5,300
2.	Cross lines & soil sampling-221.6 km @ \$190/km			42,100
3.	Geochem analyses - 4400 samples @ \$10(Au, As, Cu)			44,000
4.	IP Survey -63.3 km @ \$600/km			38,000
5.	Rotary percussion drilling - 8000 ft @ \$10.60/ft. (+ \$5,000 mob)			89,800
6.	Trenching and Road Building, estimate			20,000
7.	Assaying - 1600 samples (Au,As) @ \$10/sample			16,000
8.	Sample Shipments			3,000
9.	Consulting Fees (3 reports)			14,500
10.	Labour			82,400
11.	Helicopter Support			4,000
12.	Transport - 2 Rentals -4 mos. @ \$800	\$ 6,400		
	Fuel - 2 x 4 x \$ 350	2,800		9,200
13.	Room and Board - Cabin - 4 mos. X \$750/mo.	\$ 3,000		
	Food - 4 mos. x 30 x 25/ man/day	9,000		12,000
14.	Communications			1,700
15.	Drafting & Reproductions (including base maps)			9,000
16.	Misc. Field Equipment			5,000
	Sub-Total		\$	396,000
17.	Recording Assessment Work (5%), Bonds			17,200
	Sub-Total		\$	413,200
18.	Prospectors Payments			10,000
19.	Travel			2,700
	Sub-Total		\$	425,900
20.	Management Fees			42,600
	TOTAL		\$	468,500
				=====

Respectfully submitted,

*John DeLeen*

John DeLeen, P.Eng.

17 March 1984





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## CERTIFICATE

I, John DeLeen, of the City of Vancouver in the Province of British Columbia, hereby certify the following:

1. I am a geological and mining engineer with an office at 1015-837 West Hastings Street, Vancouver, B.C.
2. I am a graduate of the University of British Columbia with a B.A.Sc. (1943) and M.A.Sc. (1946) degrees in Geological Engineering. In 1950 I obtained the degree of Mining Engineer from the University of California.
3. I have practised my profession since 1946.
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6. This report is based upon examination of the property in June 1981, October 1982, field work in the area in 1983 and upon the reports listed in the Bibliography.

DATED AT VANCOUVER, BRITISH COLUMBIA this 17th day of March 1984.



  
John DeLeen, P.Eng.

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**APPENDIX I**

**ANALYTICAL PROCEDURES**

**Acme Analytical Laboratories Ltd.  
852 East Hastings Street  
Vancouver, B.C  
V6A 1R6**

ACME ANALYTICAL LABORATORIES LTD.

852 East Hastings Street,  
Vancouver, B.C.

GEOCHEMICAL ANALYSIS PROCEDURE

GOLD

The samples are ignited overnight at 600°C. The minus 80 mesh portion is ground in a ring grinder and 10 grams are digested with dilute hot aqua regia. The clear solution is extracted with methyl isobutyl ketone. Gold is determined in the methyl isobutyl ketone extract by atomic absorption. The remaining ground pulp is then set aside and saved for use in other analytical methods or to check initial results.



ACME ANALYTICAL LABORATORIES LTD.

Assaying & Trace Analysis

852 E. Hastings St., Vancouver, B.C. V6A 1R6

Telephone : 253 - 3158

Multi Element Analysis by ICP

Digestion of Sample \*

0.5 gram samples are digested with hot aqua regia for one hour and the sample is diluted to 10 ml. The diluted sample is aspirated by ICP and the analytical results are printed by Telex, either in percent or ppm as shown.

Please Note : This digestion is partial for Al, Ca, La, Mg, P Ti, W and very little Ba is dissolved.

Report Format

HO/22N 3850W  
EGC

BURN # 1 GE16 15:46 3FEB1981

IS  
1357

MO	CU	PB	ZN	AG	NI	CO	MN	FE%	AS
3.92	41.5	9.00	136	.332	15.3	5.70	312	3.167	5.73
U	IS	TH	IS	CD	SB	BI	V	CA%	P%
4.11	.371	.424	1073	.960	1.94	4.51	52.7	1.107	.206
LA	IN	MG%	BA%	TI%	B	AL%	IS	IS	W
22.1	3.50	.2589	.0184	.0014	-.05	1.720	0	3.06	.276

\*O/M1  
EGC

BURN # 1 GE16 15:48 3FEB1981

1358

.563	29.3	34.6	171	.154	33.4	11.5	794	2.536	8.77
3.57	.044	2.79	765	1.08	.635	4.25	54.8	.6452	.109
6.42	2.88	.6008	.0252	.0753	-.37	1.944	0	2.32	-.61

Code :

HO, \*O, EGC  
/22N 3850 W  
/M1  
15:46 3FEB1981  
BURN # 1 GE16  
IS

Computer Instructions.  
Sample Number.  
ACME Geochem standard for quality control.  
Time and Date of Analysis.  
Geochem Computer Program.  
Internal Standard.

\* All samples were sieved to -80 mesh and pulverized to -150 mesh.



## ACME ANALYTICAL LABORATORIES LTD.

Assaying & Trace Analysis

852 E. Hastings St., Vancouver, B.C. V6A 1R6

Telephone : 253 - 3158

### Interpretation of Results

Standard M-1 is a certified geochem standard used to monitor the results. M-1 has the following analysis.

1.	Mo	:	in ppm	M1	2.	ppm
2.	Cu	:	in ppm	M1	28.	ppm
3.	Pb	:	in ppm	M1	38.	ppm
4.	Zn	:	in ppm	M1	180.	ppm
5.	Ag	:	in ppm	M1	0.3	ppm
6.	Ni	:	in ppm	M1	32.	ppm
7.	Co	:	in ppm	M1	12.	ppm
8.	Mn	:	in ppm	M1	800.	ppm
9.	Fe	:	in %	M1	2.5	%
10.	As	:	in ppm	M1	8.	ppm
11.	U	:	in ppm	M1	3.	ppm
12.	IS	:	Internal Standard.			
13.	Th	:	in ppm	M1	3.	ppm
14.	IS	:	Internal Standard.			
15.	Cd	:	in ppm	M1	2.	ppm
16.	Sb	:	in ppm	M1	3.	ppm
17.	Bi	:	in ppm	M1	2.	ppm
18.	V	:	in ppm	M1	54.	ppm
19.	Ca	:	in %	M1	0.62	%
20.	P	:	in %	M1	0.11	%
21.	La	:	in ppm	M1	8.	ppm
22.	In	:	in ppm	M1	2.	ppm
23.	Mg	:	in %	M1	0.67	%
24.	Ba	:	in %	M1	0.023	%
25.	Ti	:	in %	M1	0.07	%
26.	B	:	in ppm	M1	12.	ppm
27.	Al	:	in %	M1	1.9	%
28.	IS	:	Internal Standard.			
29.	IS	:	Internal Standard.			
30.	W	:	in ppm	M1	1.	ppm

### Notes:

1. Zinc over 5000 ppm interferes on W channel.
2. Iron over 1. % interferes on In and Sb channel.

### Monitoring of Results:

If analysis of standard M-1 is different than the certification, then compensate (add or subtract) samples appropriately.

### Standardization:

Complete set of USGS standards, Canadian Certified Reference Materials and 72 specpure metals from Johnson Matthey.

**APPENDIX II**

**HISTOGRAMS OF GEOCHEMICAL DATA**



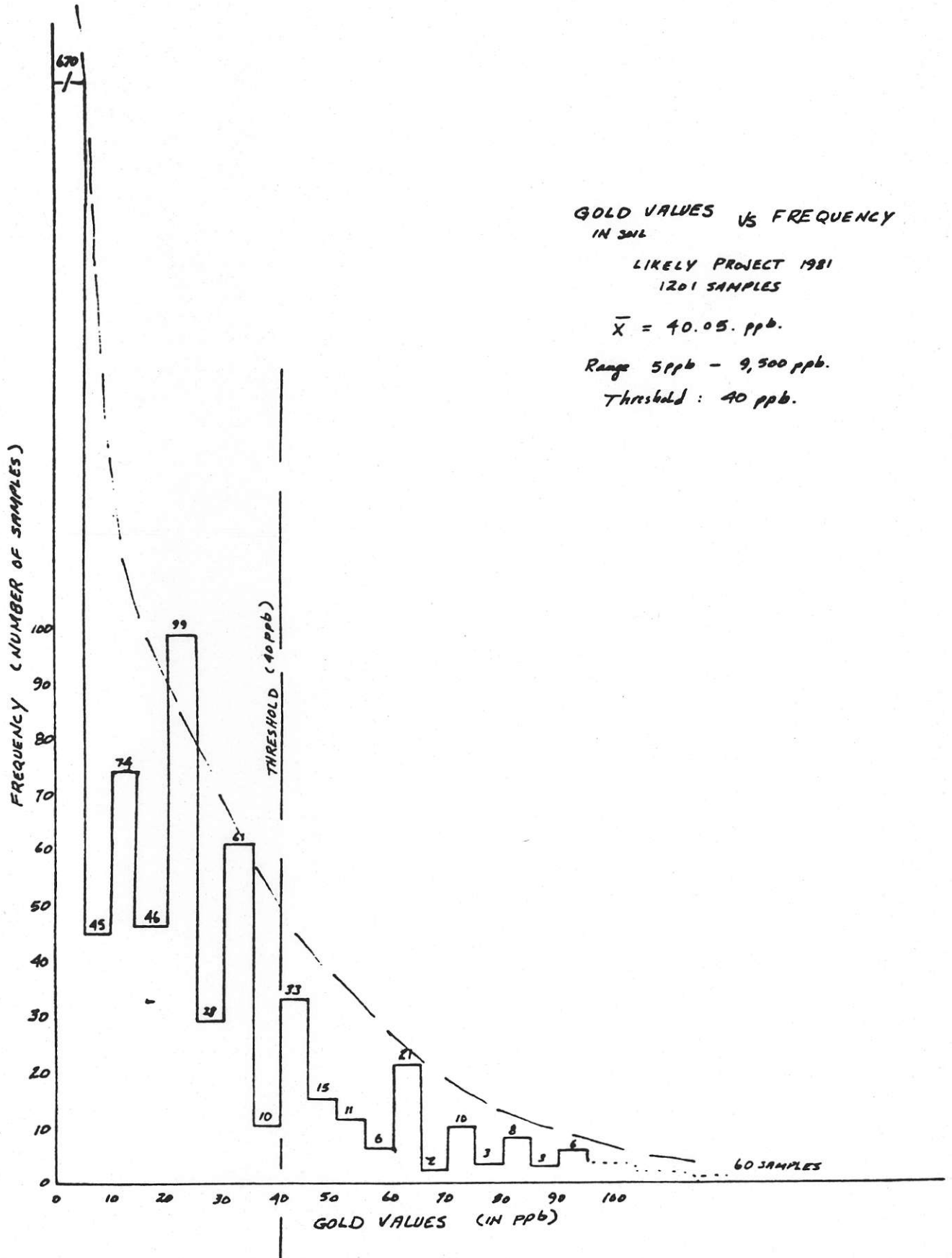
GOLD VALUES VS FREQUENCY  
IN 30L

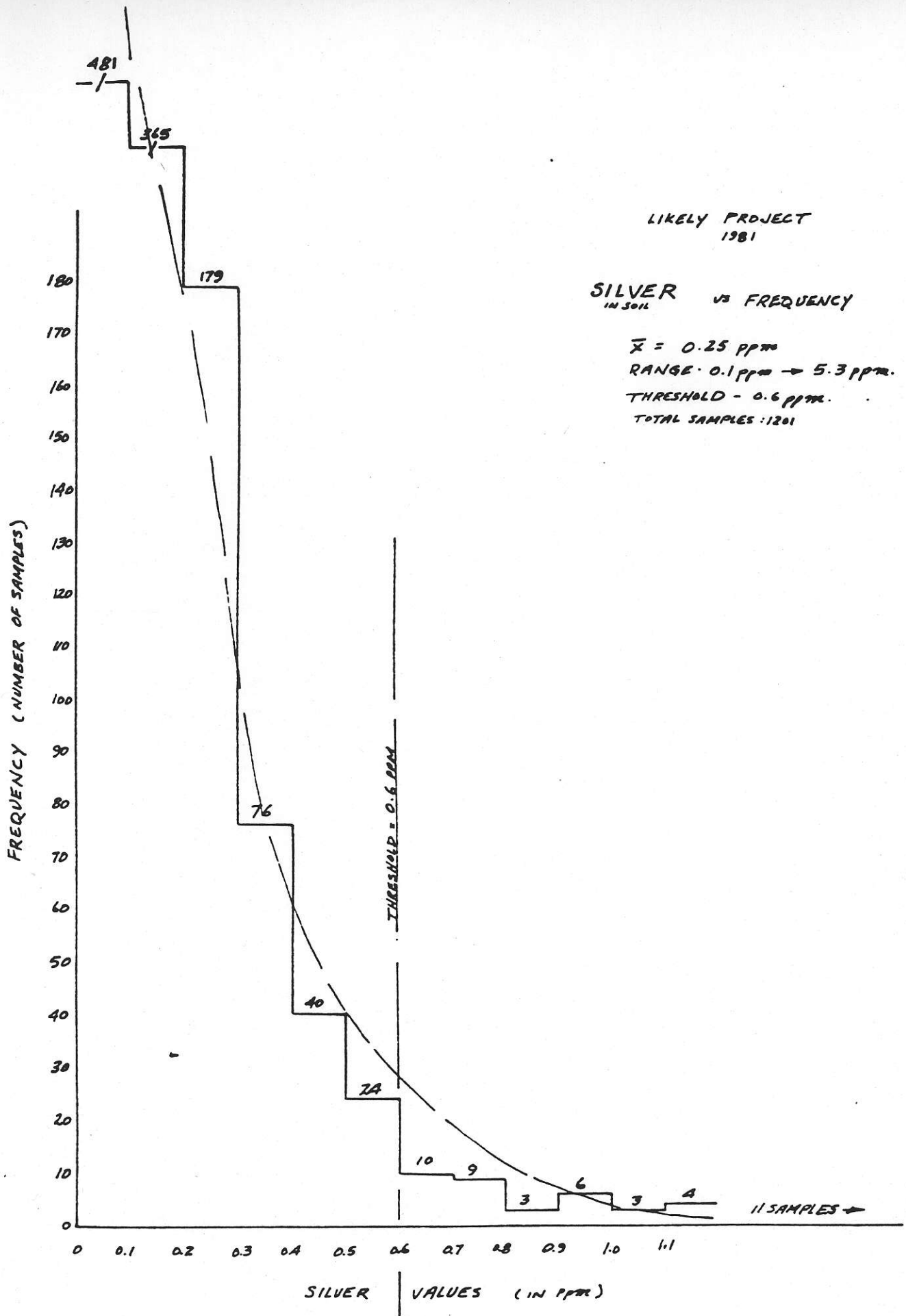
LIKELY PROJECT 1981  
1201 SAMPLES

$$\bar{X} = 40.05 \text{ ppb.}$$

Range 5 ppb - 9,500 ppb.

Threshold : 40 ppb.

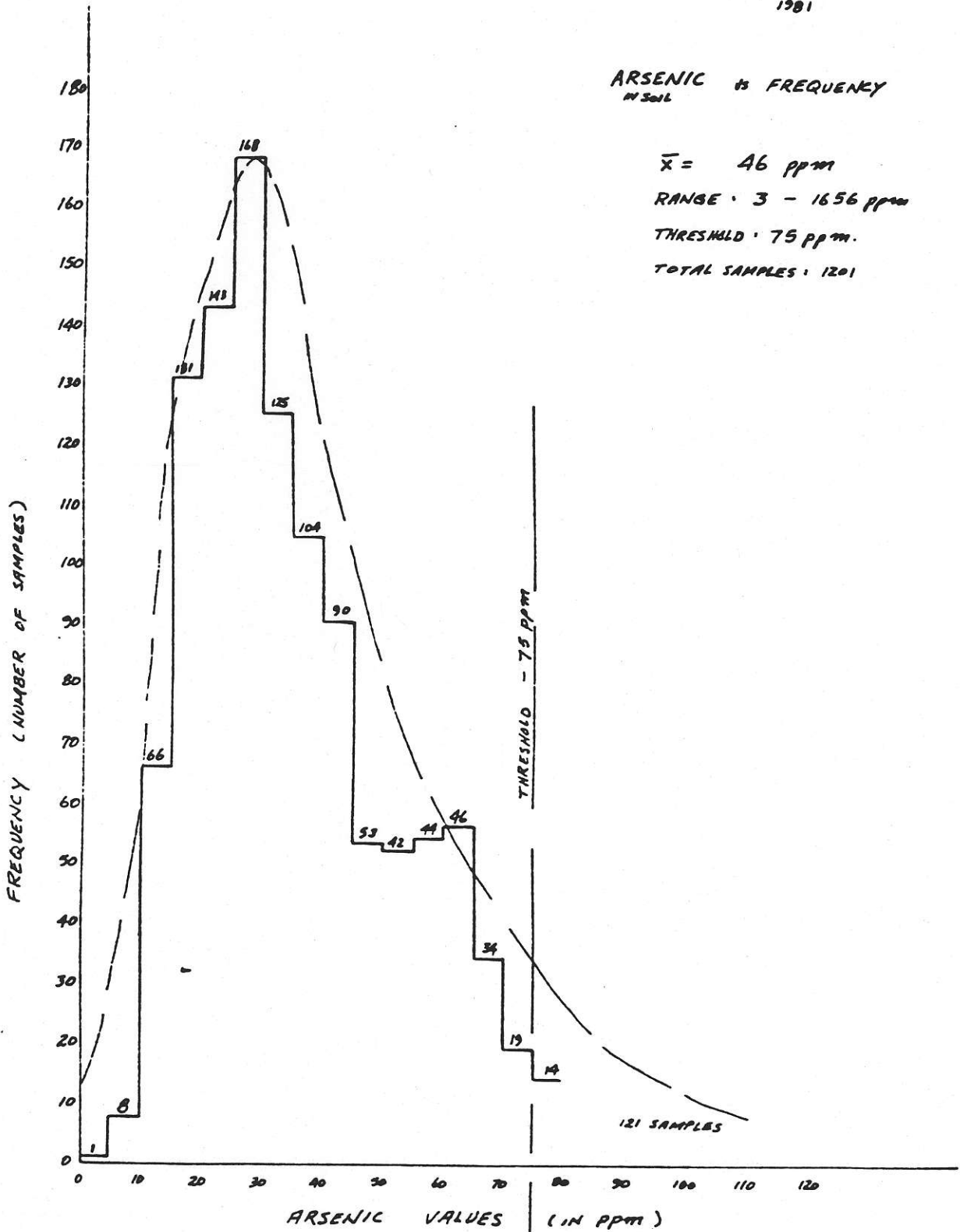




LIKELY PROJECT  
1981

ARSENIC vs FREQUENCY  
IN SOIL

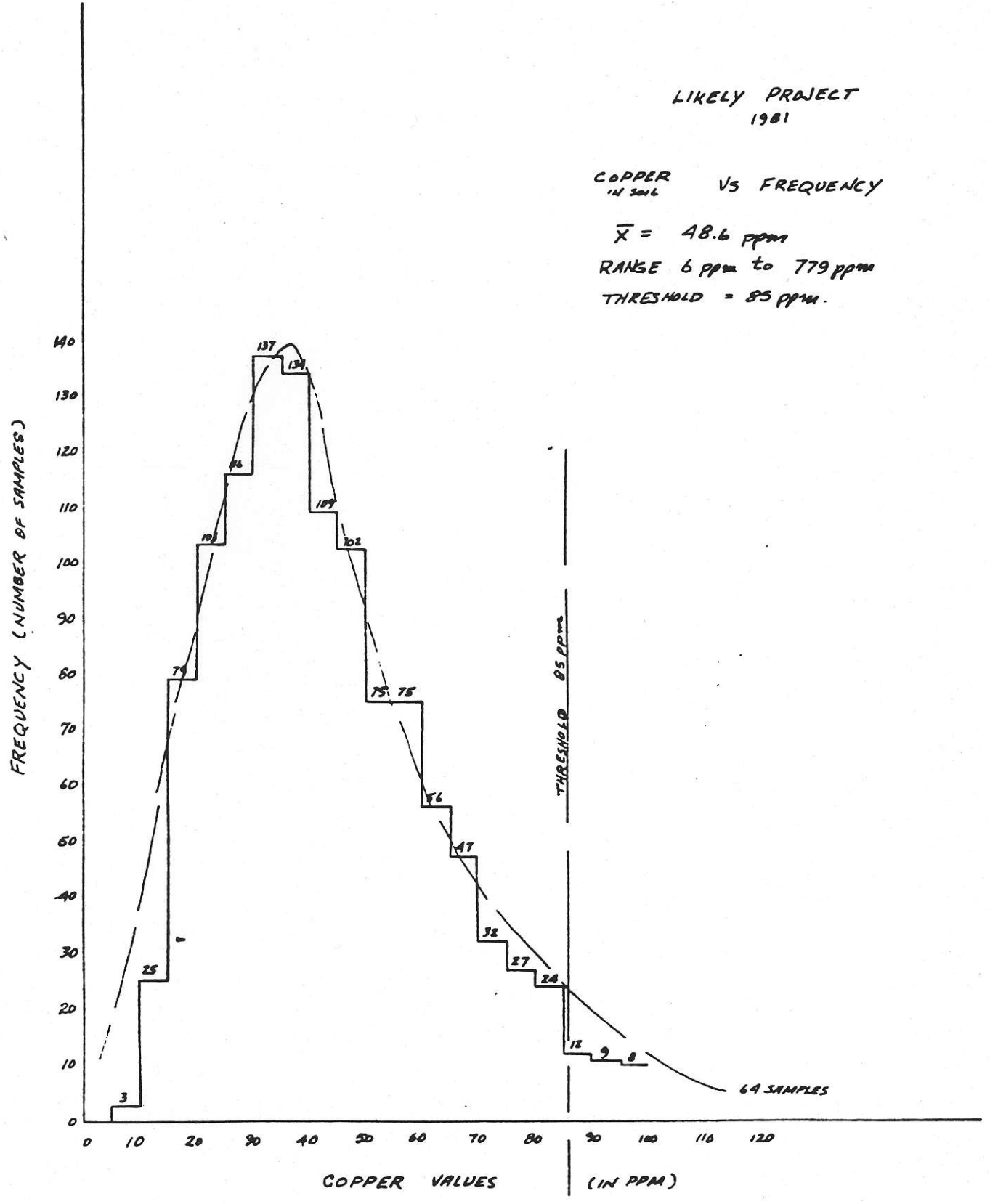
$\bar{x} = 46 \text{ ppm}$   
RANGE: 3 - 1656 ppm  
THRESHOLD: 75 ppm.  
TOTAL SAMPLES: 1201

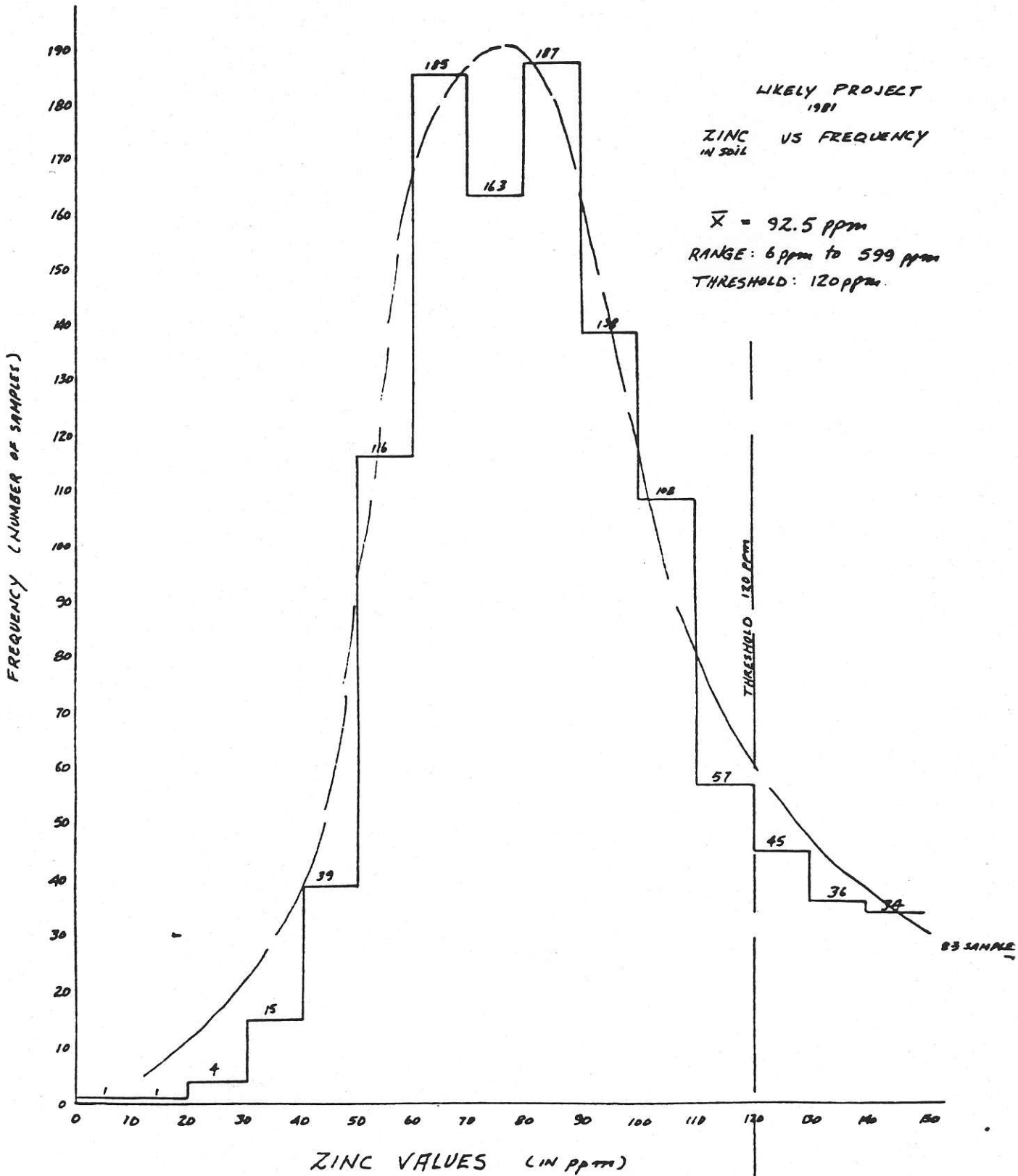


LIKELY PROJECT  
1981

COPPER VS FREQUENCY  
IN SOIL

$\bar{x} = 48.6$  ppm  
RANGE 6 ppm to 779 ppm  
THRESHOLD = 85 ppm.





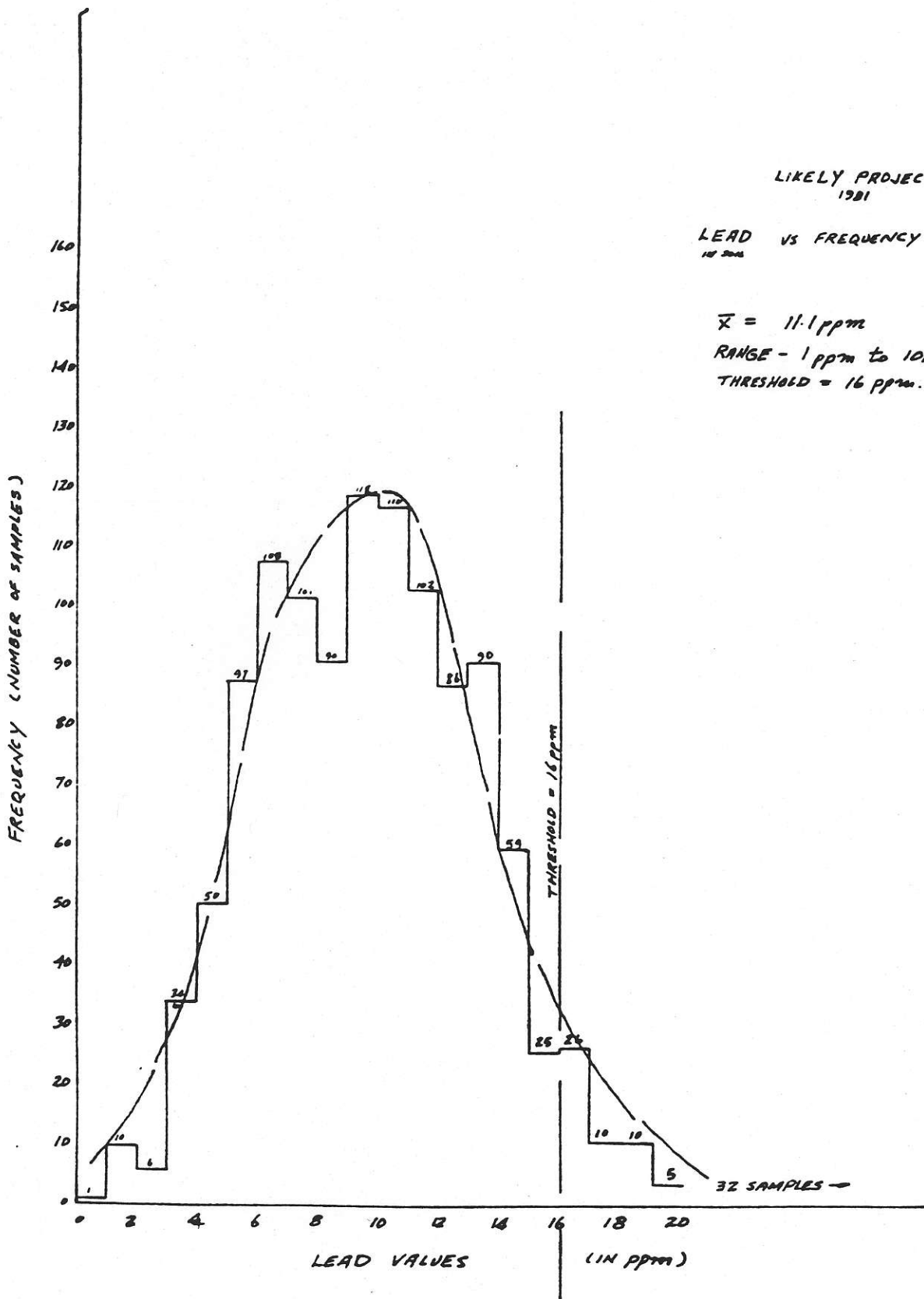
LIKELY PROJECT  
1981

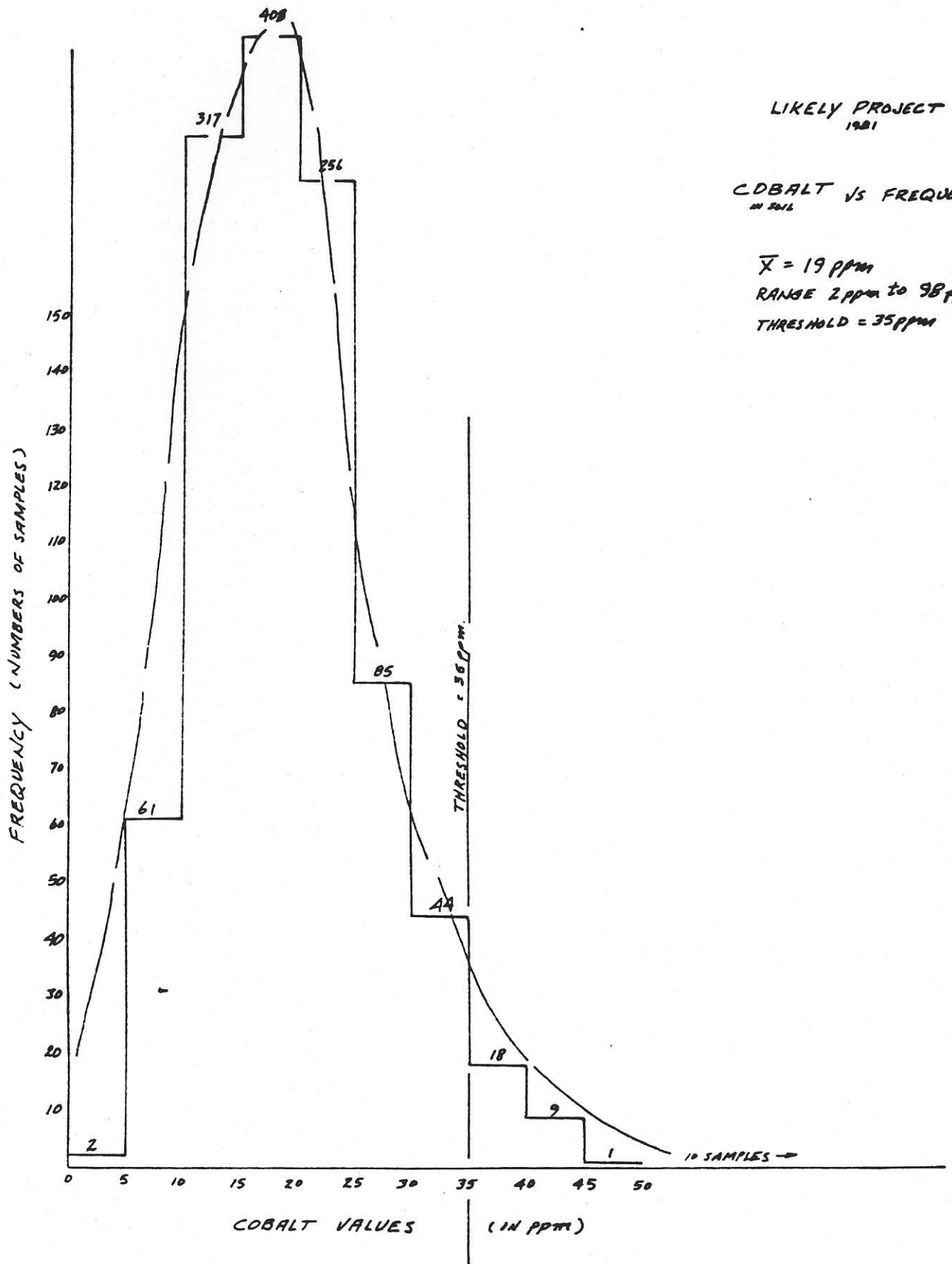
LEAD VS FREQUENCY  
1st 2004

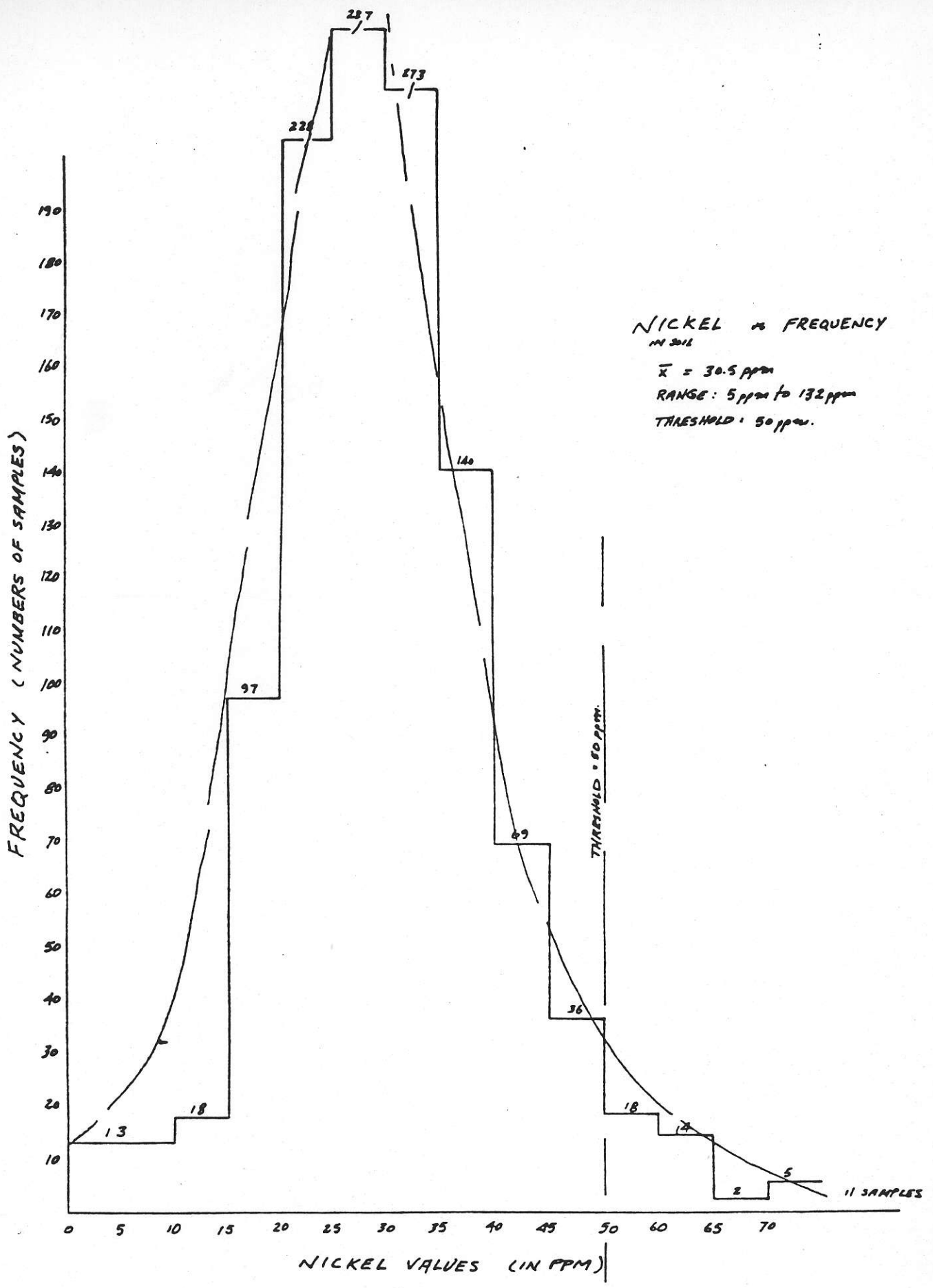
$$\bar{x} = 11.1 \text{ ppm}$$

RANGE - 1 ppm to 101 ppm

THRESHOLD = 16 ppm.









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2. I am a graduate of the University of British Columbia with a B.A.Sc., (1943) and M.A. Sc. (1946) degrees in Geological Engineering from the University of California.
3. I have practised my profession since 1946.
4. I am a member of the Association of Professional Engineers of British Columbia.
5. I have no interest, direct or indirect, in Mt. Calvery Resources Ltd., nor do I expect to receive any such interest in the future.
6. This report is based upon examination of the property in June 1981, October 1982, fieldwork in the area in 1983, a property examination on August 29, 1984, and upon the reports listed in the bibliography.

DATED at Vancouver, B.C. this 26th day of September 1984.



John L. DeLeen, P.Eng.



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