ARIS SUMMARY SHEET

District Geologist, Prince George   Off Confidential: 90.01.19

ASSESSMENT REPORT 18328   MINING DIVISION: Cariboo

PROPERTY: MC
LOCATION: LAT 53 04 00   LONG 122 05 00
UTM 10 5879862 561424
NTS 093G01E

CAMP: 036 Cariboo - Quesnel Belt

CLAIM(S): MC 1-2
OPERATOR(S): Redbird Gold
AUTHOR(S): Roed, M.A.
REPORT YEAR: 1989, 59 Pages
COMMODITIES
SEARCHED FOR: Gold
KEYWORDS: Triassic,Felsic Tuff,Argillite,Tuff
WORK
DONE: Geological,Drilling,Physical
GEOL 250.0 ha
Map(s) - 4; Scale(s) - 1:5000
PETR 3 sample(s)
ROAD 6.0 km
ROTD 100.6 m 4 hole(s)
SAMP 25 sample(s) ;AU

Geological Report on 1988 Work
MC 1 and MC 2 Mineral Claims
Cottonwood Area

Cariboo Mining Division

NTS 93G 1/E

Prepared for:

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December 21, 1988

SUMMARY

The MC claims located in the Cottonwood area twenty-five miles east of Quesnel, British Columbia, were staked on the basis of research beginning in 1982. This work indicated that the bedrock source of the nugget bearing pre-glacial placer gold deposits along Mary, Norton and Alice Creeks is located on the claims. Substantial but short lived exploration in 1985 and 1986 consisting of induced polarization, VLF EM and Pulse EM in conjunction with diamond drilling and reverse circulation rotary driling proved that the suspected target source occurs in the northwestern part of the claims. Here a sequence of deeply oxidized and hydrothermally altered felsic tuffs occur with widespread anomalous gold values. Exploration to date has not succeeded in contacting economic accumulations, but the exploration hypothesis has been substantially strengthened which in turn supports further persistant efforts.

Most of the anomalies outlined represent conductive material, either sulfides or sulfides and graphite in shear zones. However, only in a few locations were the anomalies in the previous drill programs actually intersected. A new effort is therefore required. Drilling techniques to get through the substantial overburden have been greatly improved.

It is known that particulate native gold occurs in the felsic tuffs in addition to gold in pyrite along fractures. Also, the tuffs contain silicified zones and quartz stockwork structures.

All evidence suggests that the nuggets at the Toop mine

and those recently produced in Alice Creek are in an ancient mudflow and derived from a nearby pre-glacial rock highland. This highland has been located. It is now a matter of thoroughly exploring its extent. This report summarizes the data that has accumulated to arrive at this stage.

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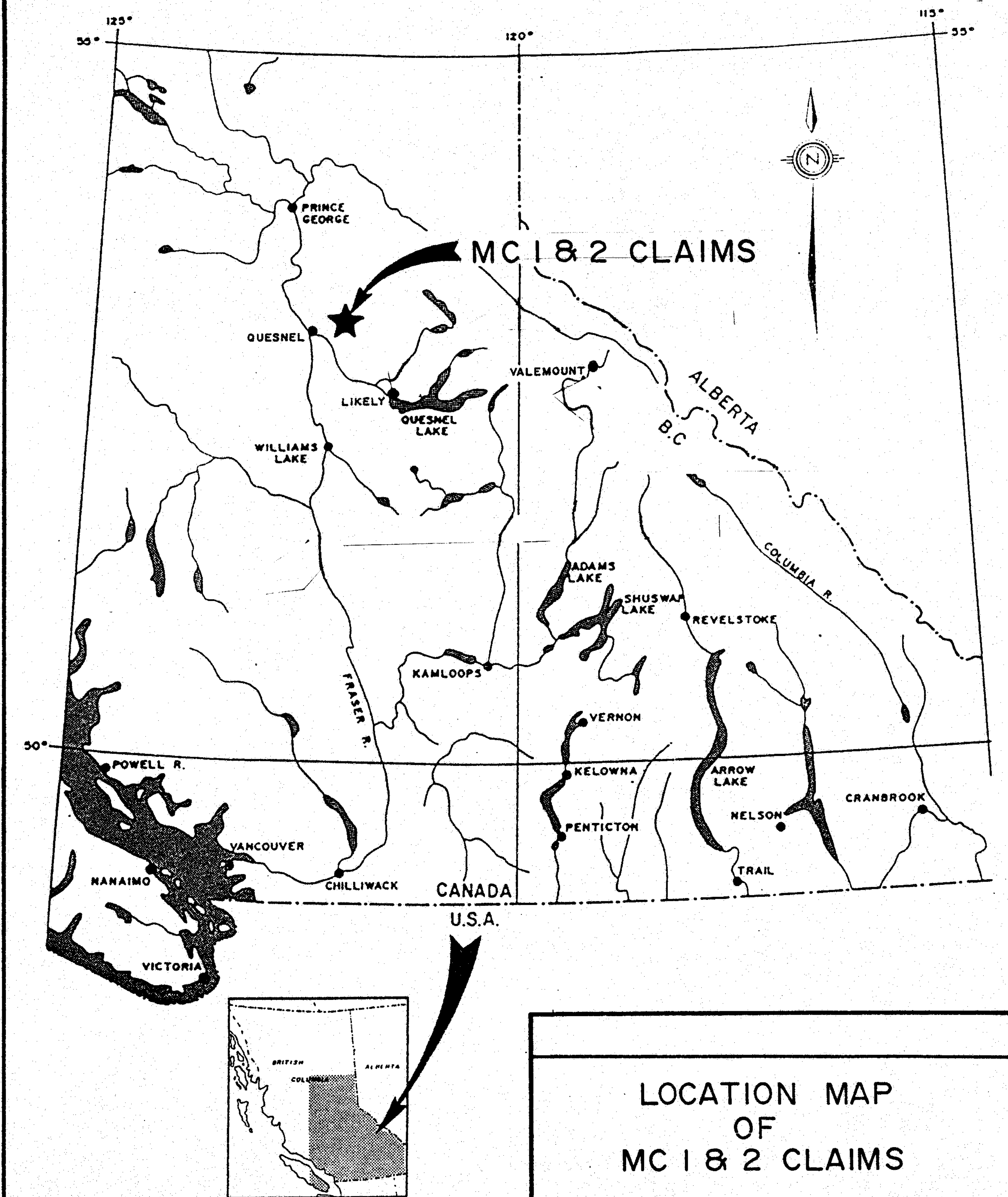
1.0 INTRODUCTION

The MC property in the Cottonwood area (93G/1E) 40 kilometers east of Quesnel, British Columbia (Figure 1) has been the subject of a long term exploration program since 1982. Interest in the area was spurred by the intrigueing occurrence of coarse gold in certain surficial deposits which occur along Norton and Mary Creeks at a placer operation owned by T. Toop. The efforts of the exploration program have been focused on the search for the source of the gold in the bedrock of the MC property in the immediate vicinity.

Since exploration to date has been conducted in a number of programs, it was appropriate in 1988 to undertake a comprehensive review of the work to date along with some new work based on a consultant's recommendations. This report attempts to pull together the previous information and the results of the present study to arrive at a current assessment of the area's potential.

1.1 Property Description

The property consists of two Modified Grid mineral claims, MC 1 and MC 2, (Record Numbers 5753 and 5754 respectively), as shown in Figure 2. The MC 1 claim contains 20 units and the MC 2 claim is made up of 16 units. The contiguous location line of the claims is along a pre-existing line belonging to expired claims of the Mary Creek II and III claim blocks. The MC property was staked in January, 1984 and recorded January 20, 1984.



LOCATION MAP
OF
MC 1 & 2 CLAIMS

DATE: DEC. /88	SCALE: 1 : 405,500
DWN BY: DBM	FIGURE NO. 1

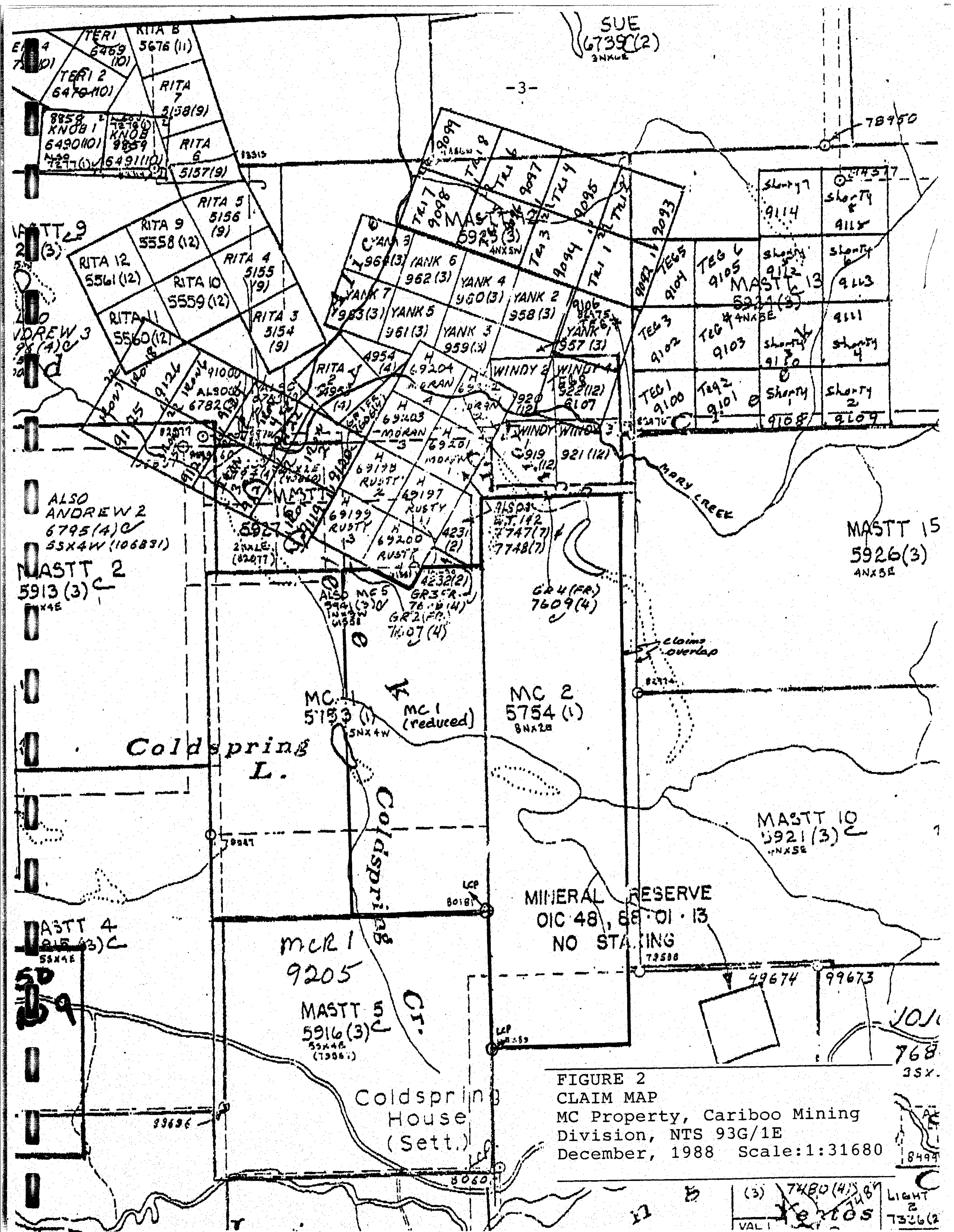


FIGURE 2
CLAIM MAP
MC Property, Cariboo Mining Division, NTS 93G/1E
December, 1988 Scale:1:31680

1.2 History

In late 1984, the MC claims were optioned to Mary Creek Resources Ltd. In 1985, this company carried out exploration work that included VLF and magnetometer surveying along with geological mapping and prospecting over 60 line kilometers of grid that was established. Mary Creek purchased the adjacent claims in December 1985 and then amalgamated to form Pundata Gold Corporation. They then carried out an Induced Polarization survey followed by rotary drilling and minor diamond drilling in 1985-1986 along with access road construction and further gridding. In early 1986, a pulse EM survey was conducted (Candy, 1986). In June 1986 a further program of diamond drilling was undertaken by Pundata on the MC 1 and MC 2 Claims following which the cliams were returned to M. Roed. A brief consultant's report was prepared in 1987 with recommendations for further work (Murrell, 1987). This was followed by the present program which included geologic mapping, access road construction, reverse circulation rotary drilling, and review of previous work in the fall of 1988 by Redbird Gold Corp. who now hold an option on the property.

1.3 Previous Work

Bedrock geology was mapped on a regional scale by Tipper (1961) and surficial geology again by Tipper (1971). Struik has undertaken a number of bedrock studies in the adjacent area (Struik, 1982). Barlee (1974) has written a brief description of the Mary Creek placer gold deposit. Apart from minor references in the B.C. Department of Mines annual reports, there are virtually no other relevant data.

During 1982 Foxview Management Limited began a study of the bedrock and surficial geology in the east half of the Cottonwood map sheet (93G/1E) with particular emphasis on the placer gold deposits on Mary Creek, Norton Creek, Alice Creek and Lightning Creek. The bedrock geology was mapped by Jennifer Pell, Ph.D. (her map is shown in Figure 4) and the surficial deposits were mapped by M. Roed, Ph.D. This work culminated in an exploration hypothesis on the origin of the placer gold deposits along Mary, Norton, and Alice Creeks and instigated a search for the bedrock source of these deposits on the MC 1 and MC 2 claims.

During 1986 Maske Creek Resources Corp. drilled a cable tool hole south of Coldspring Lake on the MC 1 claim which contributed to the geology of the area.

1.4 Physiography

The Cottonwood area (NTS 93G/1E) straddles the Fraser Plateau on the east and the Fraser Basin on the west in the Interior Plateau System of British Columbia (Holland, 1964). The MC property is situated along a dissected benchland bordering the Cariboo Mountians of the Fraser Plateau. Elevations range from 900 meters to 1,000 meters. The physiography here is dominated by incised meltwater channels of ice-contact origin up to 50 meters below gently undulating uplands. These valleys are now occupied by underfit streams examples of which include Mary Creek, Norton Creek, John Boyd Creek and Coldspring Creek, all of which flow eventually into the Cottonwood River then to the Fraser River.

Surface deposits consist of loamy till and outwash sand and gravel of Glacial origin on the uplands and organic deposits, colluvial deposits and alluvial material of Recent origin in the lowlands. Up to 100 meters of surficial material overlies bedrock on the property.

1.5 Access

Access to the property from Quesnel 40 kilometers to the west is by Highway 26 and the Forestry 3500 road. Numerous trails have been developed on the property since this program began. Approximately ten kilometers of four-wheel drive access roads now exist.

2.0 GEOLOGY

A general geologic column of the stratigraphic sequence in the area is given in Figure 3 and a general bedrock geologic map is shown in Figure 4.

2.1 Surficial Geology

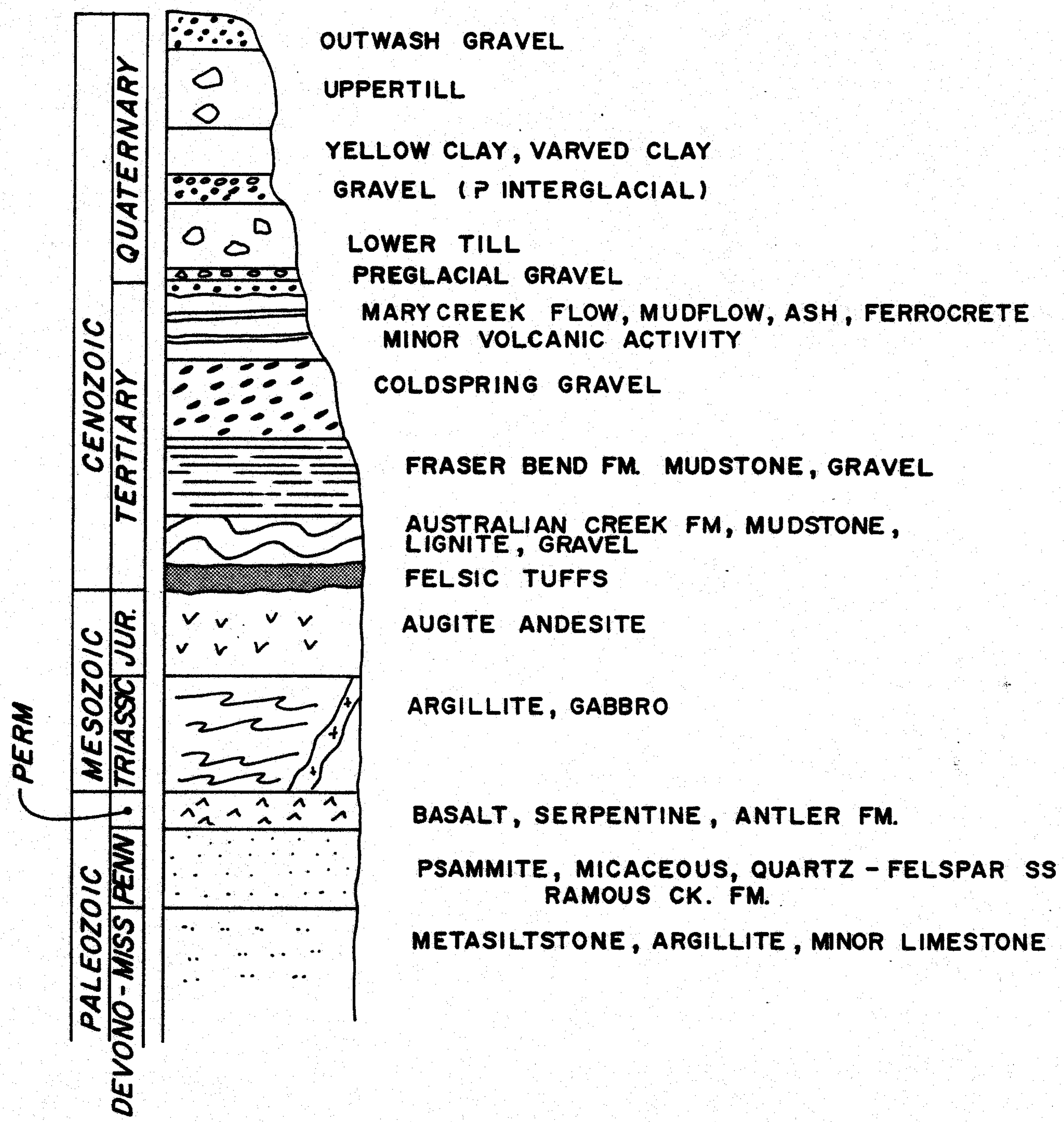
Surficial geologic deposits consist of stream, organic and colluvial deposits of Recent age, outwash and till deposits of Glacial age, and gravel and pebble to cobble clay of Preglacial age. Only the Glacial and Preglacial deposits will be discussed here with emphasis on the Preglacial materials.

2.1.1 Glacial Deposits

The area has been glaciated regionally two different times. The earliest ice invaded from the north and deposited a light brown till over the area. This till has been observed along Alice Creek and in the Toop pit as well as in Lightning Creek valley. However, in places it is absent.

The next youngest deposit is a gravel unit which is in excess of 20 meters thick in Lightning Creek valley. The gravel is informally referred to as Interglacial in age. This is a "pay" gravel in many places in the Cariboo. In the area of the MC claims it is not well developed but is at least 3 meters thick in Alice Creek and up to .5 meters thick in the Toop pit. Glaciolacustrine silt and clay are in places associated with this gravel or replace it in the sequence.

The latest glacial advance is represented by a grey-brown till which overlies the gravel-silt-clay unit or may overlie the brown till or bedrock directly. This till was deposited by a north moving glacier (Tipper, 1971). When this glacier



MC I & 2 CLAIMS
GEOLOGIC COLUMN COMPILATION
CARIBOO MINING DIVISION

DATE : DEC./88	SCALE : —
DWN. BY : DBM	FIGURE NO. 3

melted, a series of meltwater channels developed along its receding margin. All of the valleys on the property were formed at this time along with broad mantles of outwash sand and gravel forming the surface of uplands on the property.

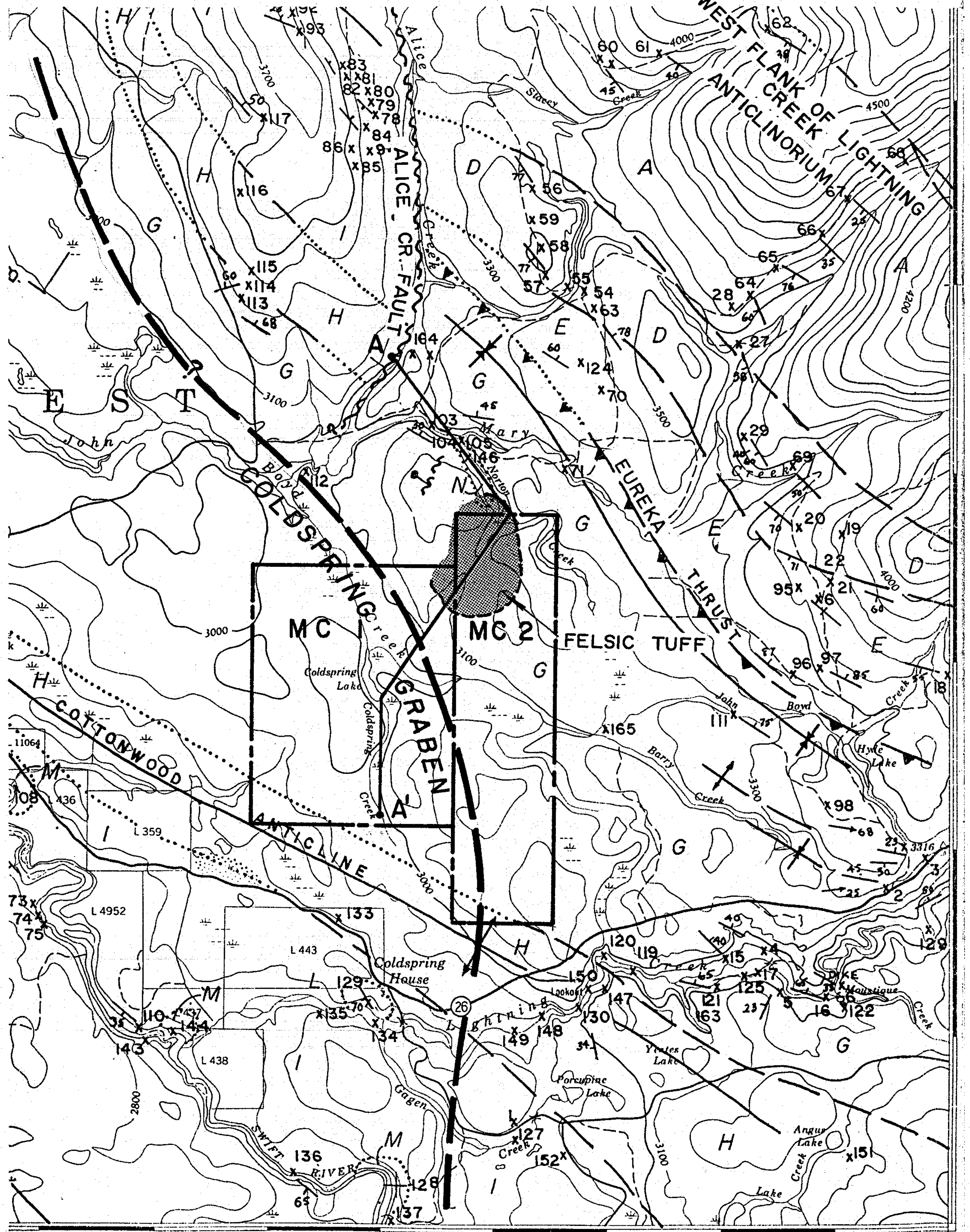
2.1.2 Preglacial Deposits

At the Toop mine and across the 3500 road along Alice Creek, a distinctive auriferous unit occurs below the glacial deposits and overlying bedrock. This unit is a light brown to orange coloured stoney clay sequence up to 4 meters thick. Considerable research has been done on this deposit. The theory of its origin is summarized below (most of the deposits referred to have been mined out). A profile of the Toop pit as it was in 1983 is given in Figure 5.

The stoney clays at the Toop mine consisted of up to 30% clasts composed of angular to subangular pebbles and cobbles of a variety of dominantly felsic tuffs (84%) with some argillite and quartz all "floating" in a matrix of sandy silty clay. The stoney clays overlie argillite bedrock of Triassic age and are overlain by a cemented gossanized gravel which in turn is overlain by deposits of Glacial origin. At the Toop pit there were up to three distinct stoney clay units separated by light grey clayey ash-like layers.

Apart from the non-glacial aspect of this deposit, the angularity of its clasts and overall texture, it is believed that the stoney clays are mudflows for the following reasons:

1. Only local bedrock materials are in the units.



LEGEND

TERTIARY

- N Mary Creek Flow, pebbly clay over bedrock.
- M Fraser Bend Fm., clay, platy
- L Australian Creek Fm., clay, lignite, gravel

CRETACEOUS

- K Syenite

TRIASSIC & JURASSIC

- J Basalt, andesite, chert, dacite
- I Siltstone, black rusty, basalt, andesite, tuff, dacite

UPPER TRIASSIC

- H Augite basalt, basalt, tuff, volcanic breccia, siltstone
- G Argillite, siltstone, minor sandstone, gabbro dikes

MISSISSIPPIAN, PENNSYLVANIAN, PERMIAN

- F Antler Fm., basalt, serpentinite
- E Ramos Ck. Fm., psammite, gritty sandstone, micaceous quartzite, silver phyllite, argillite, siltstone

DEVONIAN, MISSISSIPPIAN

- D Siltstone, phyllite, feldspathic quartzite, mica actinolite schist, minor marble

HADRYNIAN

- C Micaceous quartzite, biotite psammite, silver schist
- B Marble, micaceous marble
- A Biotite garnet psammite, biotite quartzite, silver schist, amphibolite, biotite schist

GEOLOGIC CONTACT, approximate, probable

BEDDING, inclined, horizontal, vertical.

NORMAL FAULT, defined, probable, dot on downthrown side

THRUST FAULT, approximate, probable teeth in upper sheet

ANTICLINE

SYNCLINE

MINOR FOLD AXIS

89 FIELD LOCALITY,

A ——— A' CROSS - SECTION

1000 0 1000 2000
METRES

GEOLOGY MODIFIED AFTER J. PELL

MC 1 & 2 CLAIMS
- REGIONAL GEOLOGY -
CARIBOO MINING DIVISION

DATE : DEC./88	SCALE 1 : 50,000
DWG. BY : DBM	FIGURE NO. 4

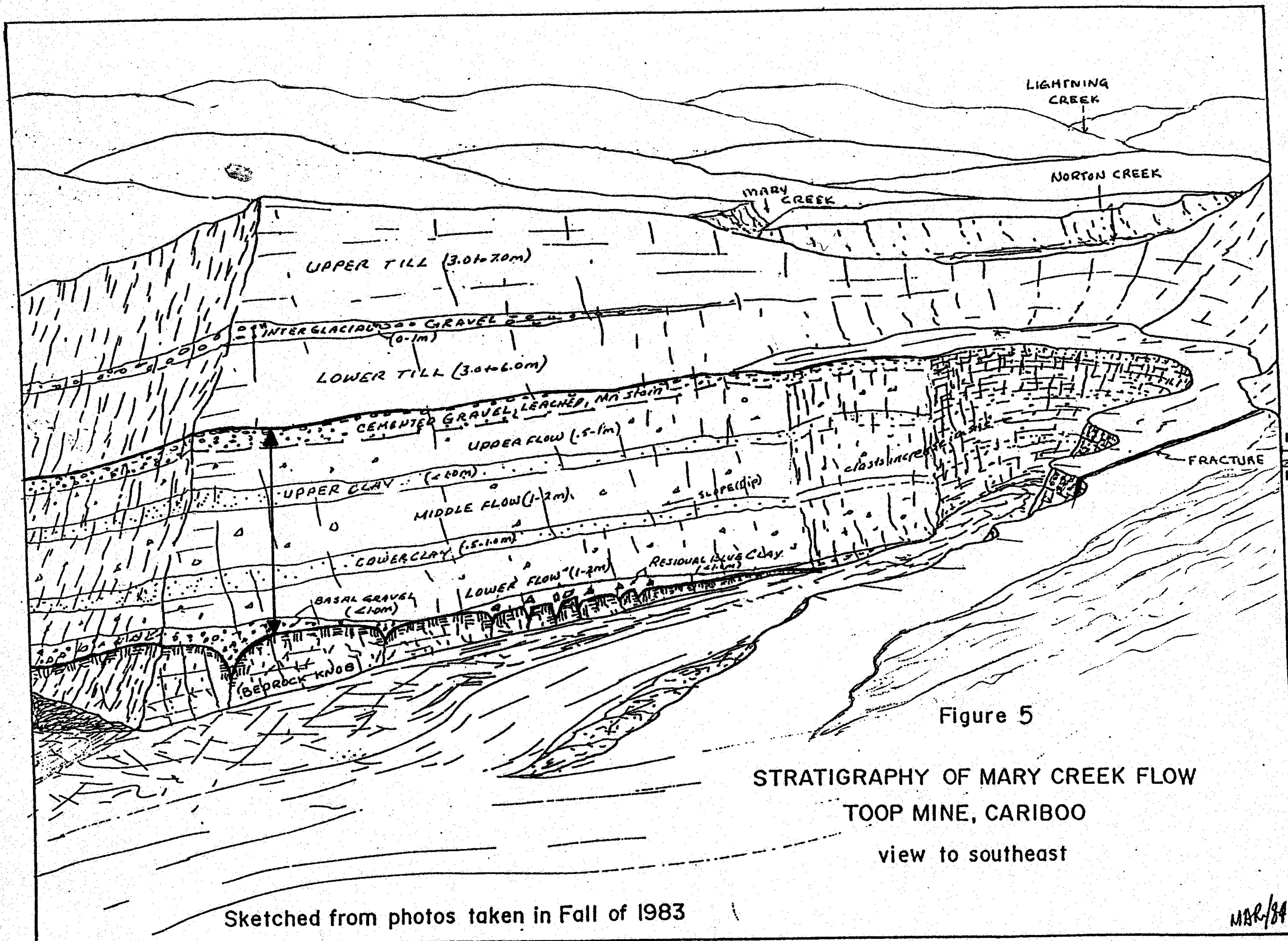


Figure 5

STRATIGRAPHY OF MARY CREEK FLOW
TOOP MINE, CARIBOO
view to southeast

Sketched from photos taken in Fall of 1983

2. The clays "flow" around and envelope local bedrock irregularities.

3. Some sections exposed contorted and convoluted bedding indicative of hydroclastic flow.

4. Delicate fossil twigs and branches of a willow (?) were recovered from the middle of the unit.

5. The units slope to the north to northeast at a slope of 1 to 2 percent.

6. Gold nuggets occur throughout the unit; one of the largest of over one ounce was taken from the top bed.

There is only one way all these textures could be present in a geologic unit and that is if the unit was flowing under the influence of gravity but without the sorting and settling action of a lot of water - in other words a mudflow. Its antiquity is inferred because of its oxidized colour, its stratigraphic position and its structural character. Open fractures have been observed that could be tectonically related.

A similar auriferous unit occurs in Alice Creek in two locations, one kilometer north of the Toop pit. Also, a similar unit was encountered in a test pit near the southern boundary of the MC 1 claim in Coldspring Creek valley. The deposit therefore has substantial areal distribution and is geologically unique for this area. It is informally referred to as the Mary Creek mudflow.

The economic interest in the felsic tuffs on the MC claims is directly related to the origin of the Mary Creek mudflow. The hypothesis is that the tuffs somewhere host native gold accumulations and during the Tertiary, when the land was elevated, suffered intensive weathering resulting in formation of thick residual soil in which gold nuggets were preserved. These nuggets were transported to their present site by a series of extensive mudflows that periodically affected the upland due to subtropical weather conditions in the Tertiary period.

Support for the occurrence of gold in the felsic tuffs has been obtained through assays of widely separated samples in four of the drill holes completed in the volcanics. The best assays are up to .031 OPT gold, but particulate gold occurs over an interval of 190 feet in D4. Numerous assays are in the range of 0.003 to 0.004 OPT gold. Although values are not particularly high, gold appears to be common in the felsic tuffs.

The gold source yet to be discovered in the felsic tuffs could occur in several modes. It could be in near crystal form and more or less disseminated; it could occur in association with quartz veins of stockworks and it could occur in shear zones. The nature of the recovered nuggets from existing placers supports all three of these hypothetical bedrock sources since very smooth nuggets occur along with nearly crystalline forms in the producing placers.

2.2 Bedrock Geology

Bedrock (Figure 4) ranging from Hadrynian to Tertiary age was mapped by Jennifer Pell, Ph.D., on the basis of adjacent stratigraphy established by Struik (1982). Summarizing, the MC property is situated straddling an overturned syncline structural complex associated with folded Eureka Thrust fault. Rocks in the synclinal core consist of black argillite of Triassic age and some grey tuff as shown by drilling (Figure 6), as exposed in Mary and Norton Creek valleys and in the Toop pit where gabbroic dikes intrude the argillite. Also, a different distinctive sequence of felsic tuffs occur presumably overlying the argillite.

Varicoloured tuffs occur in the northern part of MC 2. These rocks are felsic in composition and range from crystal tuff to lithic tuffs all of which show indications of hydrothermal alteration. Three outcrops are known where they are seen to be laminated in part with some thin dike-like intrusions and druzy quartz veins. Down to a depth of approximately 150 meters these felsic volcanics show extensive evidence of oxidation in all holes. Three samples from diamond drill hole D4 were petrographically analyzed by Maureen Johnston, P.Geol.; the results are included in Appendix A. All samples showed abundant evidence of epithermal alteration consisting of geothite and jarosite iron oxides, alunite alteration of felspars and hematite associated with pyrite and fine fractures. A gold particle was also detected in a sample of felsic lithic tuff from D4 core.

It appears that the felsic volcanics as shown in Figure 6 occupy part of circular area surrounded on three sides by argillite of Triassic age. The alteration, chemical composition and structural character of the tuff compared to the argillite suggests that the felsic volcanics may represent a later event. Clay associated with the felsic rocks is illite in composition (J. Pell, personal communication, 1988). Relatively unaltered felsic tuffs from a depth of 190 feet to 195 feet in MC-2 have been submitted to Dr. R. Armstrong of University of British Columbia for whole rock age date. The results are not expected until February, 1989.

The contact between argillite and felsic volcanics was possibly intersected in drill hole D18 but core recovery was so poor that information is unreliable. However, it has been suspected that the contact is unconformable and the age determination may prove this.

From the thin section studies, it was felt that the pyroclastic rocks were derived from a center some distance away. One to two mm size fragments are common in the rocks. Thus the rocks may occupy a graben like basin with the volcanic center somewhere to the northwest(?).

2.3 Subsurface Relationships

A graben structure has been identified on the property trending northwest along John Boyd Creek. This is illustrated in Figure 7 which is a north-south cross-section of the MC property from Alice Creek in the north to the southern boundary of the MC 1 claim along Vermillion channel and Coldspring Creek valley. This section was prepared from previous work and shows the projections of the nugget bearing material called the Mary Creek mudflow, an extensive overburden cover, a bedrock high along Mary and Norton Creeks, the deep graben in Coldspring Creek valley, and the general distribution of argillite of Triassic age and the felsic tuffs of undetermined age. Also shown is a fault along Alice Creek (see Figure 4) assumed to be vertical, and the assay sections of some drill holes.

The section illustrates that the geologic history is complex. As stated above Triassic rocks are involved in a regional syncline overturned to the west and bounded by the northwest trending Eureka Thrust just to the east of the property. The felsic rocks at the present state of knowledge could be most simply be explained as Jurassic in age and occupying the core of the overturned syncline. Due to their distribution and their fresh unaltered appearance at depth it is likely that they unconformably overlie the Triassic rocks.

2.4 Major Periods of Folding

Cretaceous and early Tertiary rocks are absent. This period is thus the most tectonically active. The area was uplifted and affected by at least two orogenies. The earliest is associated with the building of the Cariboo Mountains and the development of the Eureka Thrust (Post-Jurassic ?). The second and youngest tectonism was much less severe and is represented by the Coldspring graben and folded sediments of Oligocene age at other locations in the Cottonwood area. The Coldspring graben is filled with at least Miocene aged rocks and extends south at least 30 kilometers to the Victoria Creek basin. It is likely correlative to the Bowron Tertiary basin to the northeast of the area (There are numerous grabens with Tertiary fill in central British Columbia, see Rouse andMathews, 1979).

Oligocene and Miocene sediments are well represented in the Cottonwood area (Tipper, 1961). The Oligocene sediments are steeply folded. This folding is likely correlative to the Laramide orogeny. In contrast, Miocene sediments have been only gently tilted indicative of regional but gentle differential uplift in the late Tertiary. This weak period of uplift from Miocene to perhaps the Early Pleistocene witnessed the development of several Tertiary drainage patterns quite different to that of the present. For example, the gravel overlying bedrock (Miocene mudstone) in the Coldspring Creek valley possibly represents the latest of this kind of activity.

2.5 Felsic Tuff Paleo-highland

The graben along Coldspring Lake valley thus existed prior to Miocene time. From present data it is also possible that the talus fill along the eastern part of the valley (intersected by drill hole R10) was derived from a highland composed dominantly of felsic tuff. A remnant of this highland is present as shown in Figure 7. Likely the highland was created at the time the Coldspring graben formed. This highland could have been subjected to extensive weathering and erosion especially in the Miocene and Pliocene and to as late as early Pleistocene time.

If the felsic rocks in the highland were enriched with gold as suggested by this study, Tertiary weathering and the formation of a regolith is of great importance relative to the origin of the Mary Creek mudflow and the tracking of the bedrock source of gold nuggets in this unit (see Section 2.1.2).

2.6 Notes on Structural Features

Major structural features of the area include the Eureka thrust fault, the Coldspring graben, the overturned syncline complex on the MC claims, the Alice Creek fault and the Lightning Creek anticlinorium. These features are shown in Figure 4.

The Eureka thrust fault and Coldspring graben and the overturned syncline have been briefly discussed above. The Alice Creek fault appears to be a scissor type fault that dies out to the south in the vicinity of the junction of Mary and Alice Creeks. Further north it brings the Mesozoic sequence against Hadrynaian aged rocks - a stratigraphic throw that must be in excess of 3,000 meters and possibly much greater.

This fault also displaces the Eureka thrust fault, the offset measuring approximately five kilometers (off the north end of the map of Figure 4). The Alice Creek fault is therefore a substantial structure.

The Cottonwood anticline is a narrow but extensive feature which is cored with augite andesite of Upper Triassic age. It is interupted by the southern extension of the Coldspring graben and another graben structure of the Cottonwood River valley. The gritty gravel intersected below Miocene mudstones in the Maske Creek Resources test hole in Coldspring Creek valley was dominantly augite andesite in composition indicating a source from the west off the now buried Cottonwood anticline (see cross-section of Figure 7).

Only the west flank of the Lightning Creek anticlinorium is shown in Figure 4. This is the major structural feature of the Cariboo Mountains to the east and exposes the oldest rocks in the region.

3.0 1988 DRILLING AND ANALYSIS OF PREVIOUS WORK

Four reverse circulation rotary drill holes were attemped along Vermillion channel in the northern part of the MC 2 claim in the fall of 1988. Due to drilling problems only one hole (MC-2) was successfully completed. Six hundred meters of access road were constructed for this work and six back-hoe test pits were dug to check for near-surface bedrock. This work was undertaken in combination with a review of all drill hole data, geophysics, age dating and petrographic studies.

3.1 Test Holes

The test holes were planned according to a consultant's recommendation (Murrell, 1987) and were specifically located to check an EM anomaly (X & W in Figure 8) and the possible extension of the particulate gold found in drill hole D-4 in 1985. The holes are shown in Figure 6 and the logs of the holes are included as Appendix B. Test pits up to 5 meters deep did not intersect bedrock and therefore are not relevant.

One hole, MC-2, was successfully completed and intersected bedrock at 23 meters (75 feet). Throughout its total depth of 61 meters (200 feet) bedrock consists of argillized and vari-coloured lithic to crystal felsic tuffs. The felsic tuffs are oxidized throughout. Only a few layers at deeper levels appeared fresh looking and relatively unstained with limonite. The lower 5 to 10 meters of the hole was mineralized with disseminated pyrite within the rock and along fracture surfaces.

3.1.1 Assays from MC-2 Drill Hole

Large samples every five feet from 75 to 200 feet were

TABLE 1 SUMMARY DRILLING MC PROPERTY, COTTONWOOD AREA, 1985, 1986, 1988

Drill Hole #	Total Depth(ft)	Overburden Depth (ft)	Angle of Hole	Bearing	Collar Elev.(ft)	Logged By	Major Rock Type
D4	293	18	Vert.	Vert.	3110	W.G.	Tuff
R1	620	215	Vert.	Vert.	3220	L.W.	Tuff
R3	510	245	Vert.	Vert.	3215	L.W.	Tuff
R5	550	320	Vert.	Vert.	3220	L.W.	Arg.
R6	625	115	Vert.	Vert.	3105	W.G.	Arg.
R9	500	145	Vert.	Vert.	3220	L.W.	Arg.
R10	655	130	Vert.	Vert.	3010	L.W.	Tuff
R12	600	140	Vert.	Vert.	3055	L.W.	Arg.
D9-86	389	156	71°	267°	3200	E.R.H.	Arg.
D10-86	400	216	80°	090°	3215	E.R.H.	TBx
D11-86	443	245	82°	060°	3215	E.R.H.	TBx
D13-86	413	305	75°	230°	3220	E.R.H.	Tuff
D14-86	447	206	80°	332°	3220	E.R.H.	Tuff
D15-86	467	231	70°	285°	3210	J.S.B.	Tuff
D16-86	497	152	68°	330°	3215	J.S.B.	Tuff
D17-86	337	142	70°	150°	3215	E.R.H.	Tuff
D18-86	157	53	50°	059°	3110	J.S.B.	Tuff/Arg.
MC 1-88	50	50	Vert.	Vert.	3110	M.A.R.	Clay & grave
MC 2-88	200	75	Vert.	Vert.	3110	M.A.R.	Tuff
MC 3-88	60	60	Vert.	Vert.	3110	M.A.R.	Till
MC 4-88	20	20	Vert.	Vert.	3110	M.A.R.	Till

Total Footage Drilled: 8233 Feet

Serp. - Serpentine
Arg. - Argillite
Tuff - Tuffaceous Rocks
TBx - Tuffaceous Breccias
Phy - Phylitte
Ark.- Arkose

submitted for a cyanide leach assay conducted by Kamloops Research and Assay Laboratories Ltd. No gold was found in the liquer but tails from 75 to 80 feet and 190 to 195 feet assayed 0.004 oz per ton gold. The upper assay may be a "placer effect" and the lower interval is probably reflecting gold in the pyrite mineralization in that interval.

3.2 Previous Diamond Drill Holes

Core from diamond drill holes D4, D13, D14, D15, D16, D17 and D18 was re-examined. This core had been logged and some sections assayed during 1986.

A number of selected samples were assayed using an "all metallic" method by Bondar Clegg. In D16 the interval from 174 to 176 feet showed 0.030 oz per ton gold (particulate gold) in the +150 mesh with a total assay of 0.004 oz per ton gold. A previous assay of the interval 173 to 177 feet was less than 5ppb gold. The rock is a light brown banded fine grained tuff with thin quartz veins along fractures. Out of five D16 intervals sampled in 1988, this was the only one that contained gold.

Core from D4 was petrographically analyzed, some results of which are discussed in Section 2.2 and the report is included as Appendix A. It is significant that a particle of native gold was found in a sample of felsic lithic tuff at 78 feet. Particulate gold in the +100 mesh was found in a number of ten foot intervals from 30 feet to 220 feet in this hole in 1985. Assays from the +150 mesh minor fractions range from 0.150 to 0.315 oz per ton gold, again indicating widespread occurrance of particulate gold in the felsic tuffs. Total assays do not exceed 0.003 oz per ton gold.

3.3 Previous Assays

A review of the assay file for the previous drilling (see Table 1) revealed the following anomalous values:

Hole No.	From	To	Length(ft)	Au(oz/ton)	Ag(oz/ton)
R12	150	155	5	0.007	0.01
R12	520	530	10	0.031	0.01
R10	305	315	10	0.008	0.01
R10	400	410	10	0.001	0.25
R3	485	490	5	0.022	0.02
D4	168	173	5	0.004	0.01
D16	174	176	2	.004	
				Au(ppb)	
D9	375	382	7	280	
D11	287	292	5	135	
D14	336	342	6	105	
D15	237	247	10	480	

Assay values indicate that there is more often gold in the felsic tuffs than in the argillite. Gold occurs in particulate form in the felsic tuffs and also in pyrite of the tuffs as well as the argillite. Selected samples tested for arsenic indicate a lack of that element whereas up to 0.01% Cu occurs.

Curiously, assays from surface outcrops near D4 drill hole showing up to 1950 ppb gold and taken by Mary Creek Resources Ltd. personnel in 1985 have not been repeatable. Perhaps there was some placer contamination of the samples since the locality has yielded coarse gold from panning.

3.4 Geophysical Compilation

Geophysical surveys on the MC property include a magnetometer and VLF-EM survey in late 1985, a multipole Induced Polarization (IP) survey in late 1985, and a Pulse EM survey in the winter of 1986 (Figure 8).

The IP and VLF-EM data assisted in locating rotary drill holes for the 1986 winter program and the Pulse EM data were used for diamond drill holes for the 1986 summer program.

3.4.1 Magnetometer and VLF-EM

The magnetometer survey using a McPhar instrument was done at 25 meter intervals over 60 line miles. Magnetic variation is so low that this information was of no value for assisting exploration.

The VLF-EM survey data was gathered from the same grid using a Ronka EM16 instrument. Fraser filter analyses were conducted. The main results are shown in Figure 8. Anomalies at M,N,O,P,Q,S,T,U,Y,X and Z are considered weak conductors. Some of these are associated with weak Pulse EM conductors and portions of IP anomalies. VLF-EM anomalies at R,V and W are strong and consistent in width and length. These are also associated with well defined Pulse EM anomalies and some portions of broad IP anomalies.

The Pulse EM survey was conducted by White Geophysical Inc. The following is an excerpt from their report (Candy, 1986, pp 5 and 6):

> "The longest strike length conductor defined in this coverage is the well expressed zone labelled Conductor A on Figures 2D and 2E. An example of the multichannel response is shown on line 6400N,

Figures 132,138. The zone undergoes a strike swing to the south, paralleling Conductor B. These two responses are best defined in the east-west traverses but are also evident in the north-south coverage as broad areas of disruptions, Figure 2E. The splay like character of Conductors A,B and C is suggestive of a source in conductive shear zones. Another possibility is a lithologic source such as a graphitic argillite. Conductor B appears to be a short strike length zone within the generally high conductance background to the west.

The coverage from transmitter loop B is sensitive to conductors with grid east-west alignment. Conductor E is a strongly expressed feature roughly correlated with a magnetics low on Figure 2A. This zone is seen to correlate with a chargeability high in the multipole induced polarization results (Appendix, Figure B) near 250W on line 600S. The source of these anomalies is likely well interconnected graphite or sulphide rich zone within the argillite unit. Conductor F may be a less well expressed repetition of this zone.

Conductors G and H are short strike length zones flanking the southwest trending serpentine. Conductor I is a well defined trend which is also correlated with an apparent chargeability high"

(Note: Pulse EM anomalies B, C, and D are on adjacent property).

One of the priorities in the Pulse EM study was to detect east-west trending anomalies. Five were outlined, one at E, two parallel features at K and J, a short one at M and another at L. Of these the most interesting are K and J which are associated with a strong VLF-EM zone (R) and a broad tabular IP anomaly in Vermillion Channel. R 12, a vertical hole, was drilled to check this anomaly and although the hole intersected argillite with a comparatively elevated (compared to other holes) amount of pyrite veining and crystals and one section at 520' - 530' that ran 0.031 OPT gold (KRAL 7350-A), it is obvious that this hole missed <u>all</u> of the geophysical anomalies.

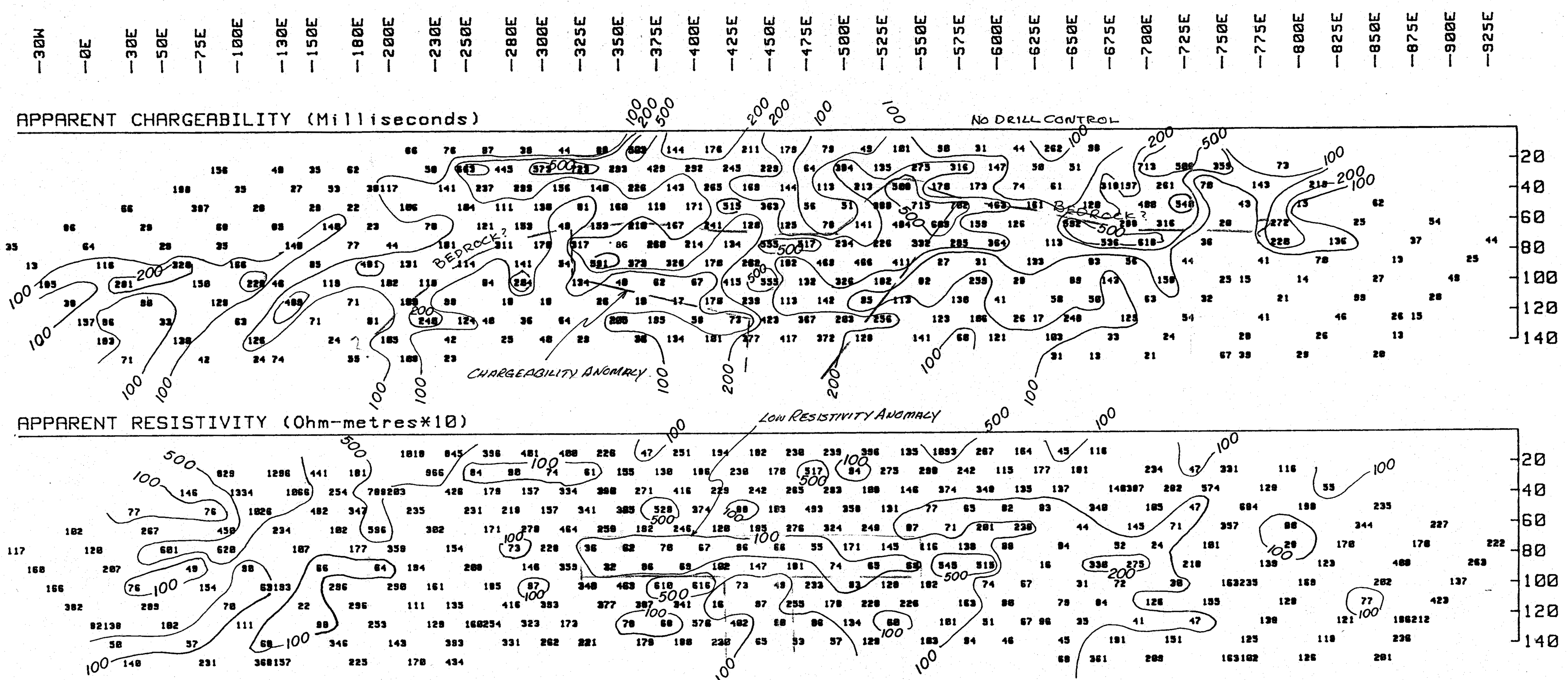
3.4.2 Induced Polarization

The induced polarization survey blanketed much of the area between Lines 50 and 63 but most lines are at a spacing of 200 meters. The results suggest an extensive and seemingly interconnected complexly shaped IP anomaly that varies in subsurface character. The southernmost anomaly portion (off map of Figure 8 to the south) is a mushroom shaped feature at a depth exceeding 80 meters extending below the 140 meter maximum depth of the survey (Figure 9). It correlates with a low resistivity zone. This seems to spread northward until it becomes a tabular anomaly in Vermillion channel 1300 meters to the north. The eastern part of the IP anomaly seems to be more vertically orientated except where it borders Vermillion channel and becomes almost identical to the tabular form of the anomaly north of R12.

As can be seen in Figure 8 only one drill hole (R1) intersected one part of this widespread anomaly. R3 is on the edge of one of the branches and R9 missed completely as did R6 and R12.

Some explanation of the location of drill holes "vis a vis" the IP data and other geophysics is required. A decision made in the field was to drill on lines in between anomalies first. Clearly this was not a good decision since most of the holes missed the target. Even the angled diamond drill holes of D9, D10, D11, D12, D13, D14, D15, D16 and D17 missed the geophysical targets. These disturbing realizations became apparent to the writer only at the time of this comprehensive review of previous data prepared by others.

The IP anomaly on Line 50N is one of the strongest on the property (Figure 9). It has chargeabilities up to 591



INSTRUMENT: 36 CHANNEL MULTIPOLE I.P.

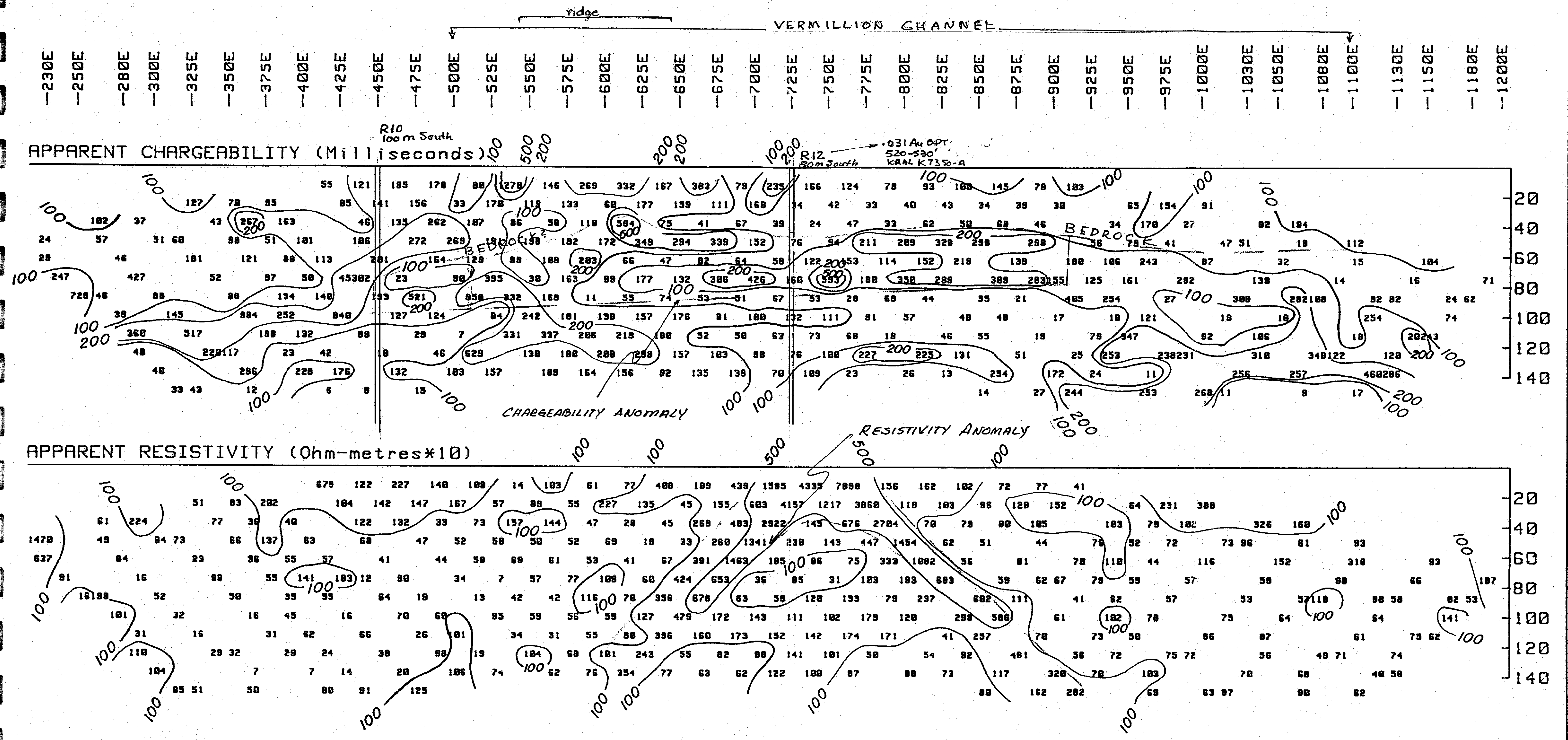
METRES
0 25 50 75 100

FOXVIEW MANAGEMENT LTD.
M.C. PROJECT
MULTIPOLE INDUCED POLARIZATION SURVEY
LINE 50N

WHITE GEOPHYSICAL INC.

DATE: DEC/85

FIG.: 9



INSTRUMENT: 36 CHANNEL MULTIPOLE I.P.

METRES
0 25 50 75 100

WHITE GEOPHYSICAL INC.

FOXVIEW MANAGEMENT LTD.
M.C.PROJECT
MULTIPOLE INDUCED POLARIZATION SURVEY
LINE 63N

DATE: DEC/85

FIG.: 10

milliseconds which is 20 times background. Most readings are in the range of 200 to 400 milliseconds, 4 to 8 times the average background. Resistivities are correspondingly low indicating a large zone of conductive material. Both resistivity and chargeability continue to a depth of at least 140 meters. However, an overlap profile in an eastern extension of this line fails to pick up the anomaly. The same condition exists for Lines 51, 52 and 53. The overlap profiles can therefore be considered either as misruns or simply as the effect of a uniformly unconductive subsurface.

The southern anomaly appears to gradually ascend into a layer-like body in the upper part of the bedrock as represented in the profiles of Line 63N over Vermillion channel (Figure 10), as discussed above.

An "anticlinal" resistivity pattern occurs on Lines 61 and 63 at approximately 450 East. It consists of alternating zones of low and very high resistivity. Associated but scattered chargeability anomalies also occur here. R10 was drilled to check this feature. The lithology samples of R10 indicate that from 136 to 655 feet depth the material is either an unconsolidated gritty gravel sequence composed of varicoloured tuff fragments or a fractured sequence of thinly banded varicoloured and interbedded tuffs. The interpretation of this hole is still in progress but for this study the former is utilized. The strange resistivity anomaly is still an enigma.

3.5 Anomalies to be Drilled

Anomalies that warrant further drilling include: (1) The east-west trending complex composing K, J and R EM anomalies and the associated IP anomaly in Vermillion channel; (R12 intersected 10 feet of 0.03 oz Au per ton at 520' - 530' depth); (2) the northerly trending Em anomalies F, G, W and X along

Vermillion channel; and (3) the IP anomalies on Lines 50, 51 and 52. These are priority targets but all of the anomalies eventually should be checked.

3.6 Overburden Thickness

Utilizing depth control from drill holes and correlating this with an interpretation from induced polarization profiles, an overburden thickness map has been prepared and shown in Figure 11.

The thickest overburden is in a linear northerly trending belt near drill hole R5 where overburden is 97 meters thick. The thinnest overburden is along Vermillion channel in which bedrock is at the surface in its northern part. A northwesterly trending buried valley in excess of 140 meters deep is indicated in the southwestern part of the map. This coincides with the Coldspring graben. The data here are dependant on the interpretation of the sequence in R10. This version assumes the gravel in R10 is part of the Tertiary "bedrock" sequence as explained in Section 3.4.2. Apart from the effect of the graben, the bedrock surface over the northern part of the claims appears to be remarkably even,gradually rising to the north with only a few gently rolling buried topographic knolls and depressions.

4.0 CONCLUSIONS

A large volume of felsic tuffs that contain widespread anomalous gold occurrences has been partially outlined in the northern part of the MC property. The work to date provides encouragement to continue "grass roots" exploration for a nearby bedrock source of the nugget gold found in placer depsoits along nearby Norton, Mary and Alice Creeks.

Previous test holes may not have intersected the majority of the geophysical anomalies that exist. However, the effectiveness of geophysical techniques in the area with its extensive and thick overburden is open to question. On the other hand the structural pattern represented by the anomalies is somewhat convincing because it strongly supports the concept of the structural setting that was expected. In view of the likelihood that some test holes missed the target further checking of existing anomalies is therefore warranted.

A remnant of a predicted paleo-highland occurs in the northern part of the MC 1 and MC 2 claims. It appears to have an extension toward the northwest although data are meager. If economic gold deposits did occur within the felsic rocks of this highland, it is possible that glacial erosion has partially removed the material of interest. However, given the occurrences and stratigraphic relationships of the Mary Creek mudflow it is doubtful if much of the bedrock source of the gold was eroded.

The influence of the major structures in the area on gold accumulation is still completely unknown. The Coldspring graben may have deep-seated connections and the Eureka thrust is clearly a regional structure. The apparent termination of the Alice Creek fault, given its substantial nature, against or close to the Coldspring graben is one of the most attractive structural targets in the area. Along the same idea is the intersection of the Eureka thrust and the Alice Creek fault especially since up to one third of an ounce of nuggets per yard have been recently produced from the Mary Creek mudflow in Alice Creek.

Reverse circulation rotary drilling is the best subsurface exploration technique. However, it is necessary to drive casing to bedrock with a standard rotary rig prior to entry of the reverse circulation rig. This reduces the possibility of overburden material plugging the doublewalled drill stem. Careful sampling of overburden during rotary drilling will allow for subsequent overburden analysis of gold distribution.

The age of felsic tuffs is still in question. Age dating results will not be received until February, 1989. The impression of some workers in the area is that the sequence is Tertiary in age due to its low metamorphism and moderate structural disturbance compared to the rocks of Triassic age. It's known distribution suggests an unconformable lower contact but this is questionable.

Work to date has not encountered economic grades, however all of the data reinforces the hypothesis that the nugget gold in the Mary Creek mudflows of preglacial age was derived from a nearby paleo-highland composed or associated with the felsic tuffs. The trend of the paleo-highland has now been outlined in some detail. Further exploration should concentrate on the northwest trend of this subsurface feature.

5.0 REFERENCES

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6.0 STATEMENT OF QUALIFICATIONS

I, MURRAY A. ROED, of the City of Kamloops, Province of British Columbia, DO HEREBY CERTIFY THE FOLLOWING:

Education:
B.A., Geology, 1959, University of Saskatchewan.
M.A., Geology, 1961, University of Saskatchewan.
Ph.D., Geology, 1968, University of Alberta.

General Experience:
Pre-1965, Employed as Geologist for Shell Canada Ltd. Research Council of Alberta. Summer employment with Shell Canada Ltd. and Geological Survey of Canada.

Post-1965 to present, Independant Geological Consultant and Engineering Geological Consultant in Edmonton; Vancouver; Sidney, Australia; Ottawa; Vernon; Kamloops.

Corporate Positions Held:
President, M.A. Roed Geological Explorations Ltd.
President, Geo-analysis Ltd.
President, Panwest Pty. Ltd.
President, Decade Development Ltd., N.P.L.
President, Pundata Gold Corporation.

Present Corporate Positions:
President, Redbird Gold Corp. (Since 1986)
President, Foxview Management Limited (Since 1974)

Mining Experience:
Produced a gold mine, Jolu Property, Mallard Lake, Saskatchewan, 1972. Numerous property examinations, exploration programs, Engineering Geology and Environmental Studies, Aggregate Studies, Placer Gold Deposits Exploration and Evaluation.

Professional Organizations:
Association of Professional Engineers of British Columbia
Fellow, Geological Association of Canada.

The work on the MC claims was supervised and conducted by myself and assistants. I am the author of the present report.

I am a substantial shareholder in Redbird Gold Corp. and an Officer and Director of the Company.

Murray A. Roed, Ph.D.
December 21, 1988

7.0 STATEMENT OF EXPENDITURES

GEOLOGICAL AND FIELD WORK

June 20 to August 18, 1988:	
M.A. Roed, Ph.D., geologist, project manager 59 hours @ $50.00 per hour	2,950.00
D. Vander Wal, field assistant, 8 days @ $144.00 per day	1,152.00
August 19 to September 5, 1988:	
M.A. Roed, Ph.D., geologist, project manager 40 hours @ $50.00 per hour	2,000.00
D. Vander Wal, field assistant, 34 hours @ $18.00 per hour	612.00
September 7 and 9, 1988:	
M.A. Roed, Ph.D., geologist, project manager 2 hours @ $50.00 per hour	100.00
October 15 to November 30, 1988:	
M.A. Roed, geologist, project manager 78 hours @ $50.00 per hour	3,900.00
R. Roed, field assistant, 44.5 hours @ $13.50 per hour	600.75
D. Vander Wal, field assistant, 8 hours @ $18.00 per hour	144.00
December 1 to December 23, 1988:	
M.A. Roed, geologist, project manager 97 hours @ $50.00 per hour	4,850.00

RESEARCH AND ASSAYS

Dr. Richard Armstrong, U.B.C., geological services, age dating	450.00
Cosmic Ventures, Invoice #88-024, Thin sections and report	202.00
Bondar Clegg, Invoice #V052212, assays	266.25
Kamloops Research and Assay Laboratory Ltd., Assays, Invoice #88-0921	676.00
Kamloops Research and Assay Laboratory Ltd., Assays, Invoice #88-0925	26.00

VEHICLES

August 19 to September 5,1988:	
Dodge 4x4, 2.4 weeks @ $187.50 per week	450.00
Dodge 4x4, 1200 km @ .30¢ per km	360.00
K5 Blazer, 1 week @ $187.50 per week	187.50
K5 Blazer, 800 km @ .30¢ per km	240.00
October 15 to November 30, 1988:	
Dodge 4x4, 836 km @ .30¢ per km	250.80
K5 Blazer, 9.5 days @ $26.79 per day	254.51
K5 Blazer, 1332 km @ .30¢ per km	399.60

ROAD CONSTRUCTION

Trio Logging Ltd., D6 Cat work and falling, September 2, 1988, statement	997.50
Turbo Transport, haul D6 Cat and John Deer Hoe, August 29, 1988, statement	130.00
Trio Logging Ltd., D6 Cat work, John Deer Backhoe and falling, October 15, 1988, statement	2,777.50
M.L. Zeiler, cat work, Invoice #43501	255.00

DRILLING

Newmac Industries Inc., Statement of November 28, 1988, reverse circulation drilling	5,131.64

DRAFTING

DMB Techncial Services, drafting, Invoice #8882	955.49

FIELD EXPENSES

Norman Wade Company, Invoice #0457, map	1.27
Japan Camera Centre, photos	9.53
Greyhound delivery, #2101	7.45
Canada Post, registered mail, #6985	6.99
Canada Post, registered mail, #7289	7.60
Sears Canada, Chainsaw file	2.64
S. Kamloops Mall, Sample Bags	59.36
Greyhound delivery, bags, #4156	8.95
Loomis Courier Service, delivery, #7701199	11.35
Canada Post, Pkg. to Armstrong	5.35
Neville Crosby Inc., Invoice6020, sample bags	75.37

FIELD ACCOMMODATION

June 20 to August 18, 1988: 14 mandays @ $50.00 per day	700.00
August 19 to September 5, 1988: 14 mandays @ $50.00 per day	700.00
October 15 to November 30, 1988: 14 mandays @ $50.00 per day	700.00
TOTAL EXPENDITURES	$32,614.40

APPENDIX A

PETROGRAPHIC ANALYSIS

PETROGRAPHIC ANALYSIS

of

NIM 88 PROJECT-MC CLAIMS

for

FOXVIEW MANAGEMENT LTD.
KAMLOOPS, B.C.
Murray A. Roed, Ph.D.

by

COSMIC VENTURES
SPRUCE GROVE, ALBERTA

PERMIT TO PRACTICE
COSMIC VENTURES
Signature [signature]
Date Sept 23/88
PERMIT NUMBER: P 4469
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

[signature]

Maureen D. Johnston, P.Geol.

September 23, 1988

COSMIC VENTURES
Box 4056
Spruce Grove
Alberta, T7X 3B3

PETROGRAPHIC ANALYSIS

Analysis by Maureen Johnston, P.Geol.

CLIENT

FOXVIEW MANAGEMENT LTD./ Dr. M. Roed

SPECIMEN NUMBER

D4 78' (Polished Thin Section): Felsic Tuff

DATE

September 23, 1988

Mineralogy

Mineral	%
MATRIX	57
FRAGMENTS	25
IRON OXIDE	15
HEMATITE	1
CHERT	1
PYRITE	1
GOLD	trace
	100%

Mineral Descriptions

MATRIX: Most of the specimen is composed of very fine grained matrix minerals. The matrix is likely siliceous and feldspathic; however, much of the matrix has been replaced or stained by iron oxides, making identification almost impossible.

FRAGMENTS: Angular fragments of quartz, approximately 50-200 microns diameter occur throughout the matrix along with larger ovoid fragments of volcanic rocks. The volcanic rock fragments are usually about 2 mm. diameter. The rock and quartz fragments are aligned parallel to the layering visible in hand specimen. The rock fragments are often dark colored when observed in hand specimen and in thin section. The dark coloration may be due to very finely divided volcanic glass.

IRON OXIDE: Very fine grained iron oxide, likely goethite and perhaps some jarosite, occurs throughout the specimen. The iron oxide occurs along layers of aligned rock and crystal fragments and penetrates into the surrounding matrix. Optical Properties: Yellowish color in transmitted light and incident light.

HEMATITE: Hematite occurs occasionally in thin veins cross-cutting the specimen and as crystalline alteration of small pyrite crystals. Optical Properties: Reddish color in transmitted light; bluish grey with red internal reflections in incident light.

CHERT: Occurs in thin veins or stringers cross-cutting the section. Optical Properties: Colorless to pale brown in plane transmitted light; low order birefringence; low relief.

PYRITE: Occasional very small rounded particle throughout the section, usually less than 5 microns diameter. Some hematite may have resulted from alteration of pyrite. Optical Properties: Bright yellowish white in incident light; isotropic.

Gold: One particle of gold was observed. It was approximately 10 microns diameter, irregular in shape and occurred attached to the edge of a quartz fragment. Optical Properties: Bright gold color in incident light.

<u>Specimen Number</u>
D4 78'

....

<u>Texture</u>
This specimen is composed of elongated to ovoid fragments of volcanic rock and quartz aligned in layers within a very fine grained siliceous/feldspathic matrix. Goethite penetrates throughout the rock along the layers. Occasional stringers of chert and hematite cross-cut the specimen.

<u>Alteration</u>
Iron oxide, as goethite and perhaps jarosite, occur as secondary alteration minerals.

<u>Petrogenesis</u>
This rock likely originated as a pyroclastic, some distance from the felsic volcanic source. Subsequent to deposition of the rock and mineral fragments, iron oxide penetrated the specimen along the planes of weakness caused by alignmemt of fragments. Gold is observed within the matrix, attached to the edge of a quartz fragment. This gold may have originated with the fragments; however, there is no substantial evidence to support this theory.

<u>Comments</u>
ROCK NAME: FELSIC LITHIC TUFF

COSMIC VENTURES
Box 4056
Spruce Grove
Alberta, T7X 3B3

PETROGRAPHIC ANALYSIS

Analysis by Maureen Johnston, P.Geol.

CLIENT

FOXVIEW MANAGEMENT/Dr. M. Roed

SPECIMEN NUMBER

D4 212" (Polished Thin Section): Felsic Tuff

DATE

September 23, 1988

Mineralogy

Mineral	%
FRAGMENTS	55
MATRIX	30
IRON OXIDE	10
PYRITE	5
	100%

Mineral Descriptions

FRAGMENTS: Angular fragments of quartz, plagioclase feldspar, potassium feldspar, volcanic rocks, a trace of epidote and possibly some alunite occur randomly dispersed throughout the matrix of the specimen. The fragments are irregular to somewhat elongated in shape and are about 100-200 microns in diameter.

MATRIX: Very fine grained, likely mostly feldspathic with intense argillaceous alteration.

IRON OXIDE: Mostly hematite; occurs in stringers cross-cutting specimen and as a surface alteration of pyrite. Optical Properties: Reddish color in transmitted light; bluish grey with red internal reflections in incident light.

PYRITE: Pyrite occurs mostly as very small (less than 5 microns) rounded particles within the matrix, usually completely surrounding individual mineral fragments. Occasional crystals up to 1 mm. are also observed. The small, rounded pyrite may be bacterial or precipitated from iron sulphide gel. Optical Properties: Bright yellowish white in incident light; isotropic.

Specimen Number
D4 212'

....

Texture
This specimen is composed of randomly oriented crystals of quartz, feldspars and volcanic rock fragments in a very fine grained feldspathic matrix. Hematite veins cross-cut the specimen and zones of intense hematitic alteration of the matrix surround the veins. Small, rounded crystals of pyrite occur throughout the specimen, usually within the matrix, completely surrounding individual crystals.

Alteration
Pyrite has been pseudomorphically altered to hematite in zones of alteration.

Alunite is observed as an alteration of some of the fragments of feldspar. Alunite has a formula $KAl_3(OH)_6(SO_4)_2$ and is similar to jarosite. It occurs as an epithermal alteration of felsic volcanics.

Petrogenesis
This rock likely originated as a pyroclastic some distance from a felsic volcanic source. The mineral fragments show little or no alignment within the matrix.
Pyrite occurs as very small rounded crystals surrounding some of the crystal fragments. The nature of the pyrite suggests bacterial origin or perhaps precipitation from iron sulphide gel. This type of pyrite often contains gold within the crystal lattice. The pyrite has been altered to hematite in zones of alteration surrounding hematite veins.
Some alunite has tentatively been identified as an alteration of some of the feldspar crystals. Alunite is common in epithermal alteration of felsic volcanics.
Hematite veining and alteration seems to be the youngest event.

Comments
ROCK NAME: CRYSTAL TUFF

COSMIC VENTURES
Box 4056
Spruce Grove
Alberta, T7X 3B3

PETROGRAPHIC ANALYSIS

....

Analysis by Maureen Johnston, P.Geol.

CLIENT

FOXVIEW MANAGEMENT LTD./Dr. M. Roed

SPECIMEN NUMBER

GOLD NUGGET

DATE

September 23, 1988

....

INTRODUCTION

A gold nugget was received for mineralogical examination. The nugget weighed 7 grams (0.25 oz). After sectioning for thin section preparation, the remaining nugget pieces weighed 0.20 oz.

EXTERNAL FEATURES

The nugget was approximately 1.6 cm. in length and 1.2 cm. in width. The surface was extremely irregular with mammary accretions of gold and deep pitted areas coated with a dark reddish substance.

The pitted areas contained fine reddish sandy material and black crystals. The black crystals were approximately 500 microns in diameter with euhedral octahedral outlines. These black crystals are likely magnetite.

POLISHED THIN SECTION OBSERVATIONS

When cut for thin section preparation, the interior of the nugget could be observed. It is composed of massive gold. Small fractures radiate from the surface towards the center of the nugget. These fractures are filled with the same reddish material observed on the surface.

Transmitted light analysis showed that the reddish material on the surface and in the fractures is hematite. Some small angular fragments of quartz and masses of chert occur along with the hematite within the fractures. Quartz fragments varying from 100 microns to 1 mm. are embedded in the outer surface of the nugget. This quartz is likely "vein" origin; the edges are sharp and in one instance, a euhedral hexagonal crystal.

PETROGENESIS

The gold is massive internally, becoming mammary in its outer edges. This is characteristic of crystallization "in situ" from

solutions. The gold is likely quite "pure", with little dilution from silver or copper.
Iron oxide (hematite) occurs as a surface coating. This coating is absent on the outer most parts of the nugget, suggesting some transportation or abrasion action removed it.
Crystalline (vein) quartz fragments are imbedded in the surface of the nugget, on top or within the hematite layer. This would suggest that the quartz was cemented on to the nugget along with the oxidizing hematite solutions. The small magnetite crystals observed on the surface may have been deposited at the same time.

CONCLUSIONS

This nugget shows characteristics of both "in situ" and transportation origin. The mammary character of the surface suggests an "in situ" origin. Subsequent to crystallization, the gold was coated in hematite. The hematite is absent from the extreme outer surfaces of the nugget and may have been removed during transportation. There is no evidence of striations or other surface abrasion so any transportation is likely limited.

APPENDIX B

REVERSE CIRCULATION DRILL HOLE LOGS

REVERSE CIRCULATION DRILL HOLE LOGS

MC Claims, 1988

Drill Hole No.1 MC-1-88
Date Drilled: November 21, 1988
Elevation:
Total Depth: 50 feet
Location:
Logged by: M. Roed

Depth in Feet	Description	Assays
0 - 20	Muck - peaty dark blue grey clay, saturated becoming medium grey sandy clay.	
20 - 40	Same as above but hit olive brown pebbly sandy clay - probably till at approximately 30'.	
40 - 50	Sandy gravel or gravely sand - mainly very coarse to pebble size varying between argillite, quartz, beige and varicolored tuff lithologys with depth. Drill stem constantly plugging up.	
	End of Hole	

REVERSE CIRCULATION DRILL HOLE LOGS

MC Claims, 1988

Drill Hole No. 2 MC-2-88
Date Drilled: November 22, 1988
Elevation: 3110 feet
Total Depth: 200 feet
Location: Approximately 20' feet east of this station @ L15+00E, 66+00N
Logged by: M. Roed

Depth in Feet	Description	Assays
0 - 30	Sand-clay-peat? Drill through landslide material.	
30 - 37	Gritty angular gravel - mainly argillite but also volcanics and quartz.	
37 - 40	Angular gritty? gravel, pebbles are argillite, light green, maroon tuff, buff tuff, quartz fragments, some sub angular.	
40 - 45	Same as 37-40 above.	
45 - 50	Same as 37-40 above, more light brown tuff showing up.	
50 - 55 (45 - 55) "B"	Gravel same as 37-40 above - 40% argillite, 30% tuff - varicolored, 30% quartz some metamorphics with some 1" pebbles coming up.	
55 - 60 "B"	More variety of volcanics- pink tuff, white phenocrysts in gray andesite - porphyritic siliceous volcanics too, plus quartz and agatey type chert or quartz.	
60 - 65	Gravel same as 55-60 with good variety of volcanics and tuffs, get yellow brown gritty clay balls (looks like mud flow material) must be a close or thin interfolding.	

Drill Hole No. 2 MC-2-88

Depth in Feet	Description	Assays
65 - 70	Same as 60-65 above, more rusty volcanic angular fragments showing up (?getting close to bedrock).	
70 - 75	Gravel as for 65-70, lots of agate quartz.	
75 - 80 "B"	Tuff medium to dark brown with (oxidized) gray siliceous veined tuff, laminated, small angular fragments (still a few pebbles but probably bedrock @ 75'.	
80 - 85 "B"	Medium brown rusty tuff, some light to medium gray tuff.	
85 - 90	Same as 75-80 above, but pink tuff fragments showing up, minor white quartz fragments, then get some pale green textured fragments (tuff) this is laced with fine veins of translucent chalcedony.	
90 - 95	Starts out mainly black tuff with white quartz laminated (wrinkled) and blebs, with medium brown rusty tuff, few white quartz fragments, then into dark brown aphanitic tuff with some olive green layers.	
95 - 100	Same as 90-95 above but get into fresh light green (large fragments) lithic tuff @ 97' with dark brown manganeese stained oxidized tuff. This interval mainly medium to dark brown tuff.	
100 - 105	Olive brown aphanitic tuff with white quratz blebs - match head size changing to olive green aphanitic tuff. Minor quartz fragments.	

Drill Hole No. 2 MC-2-88

Depth in Feet	Description	Assays
105 - 110	Same as 100-105 above changing to pale green siliceous unaltered fresh tuff, aphanitic @ 107' then @ 109' back into dark brown rusty tuff with very thin white quartz veins and blebs and ?laminae.	
110 - 115	Medium to dark brown rusty tuff with some tiny laminae and blebs of white quartz, looks good but getting dark.	
115 - 120	Same as 110-115 above.	
120 - 125	Tuff, aphanitic olive brown (looks like argillite). Then get light green tuff @ 122' with minor quartz vein. Then into dark to medium brown lithic tuff with manganeese stained oxidized - textured, fine grained @ 124'.	
125 - 130	Tuff, medium brown, fine to medium grained, some manganeese stain, oxidized, some thin veins or bands of medium green fine grained unaltered fresh tuff.	
130 - 135	Tuff yellow to brown, textured, oxidized fine to medium grained but altered, also some light gray aphanitic bands and light rust brown clayey tuff, then get some olive green fine grained tuff, then get bed of light green to gray fine grained tuff with pyrite, then back into light rusty brown to green tuff, oxidized at 134'.	
135 - 140	Light olive green to light rusty brown fine to medium grained lithic tuff, then mainly the latter, some black laminae. Some very light brown to cream and olive green tuff @ 139'.	

Drill Hole No. 2 MC-2-88

Depth in Feet	Description	Assays
140 - 145	Tuff, aphanitic olive grayish green, medium, fresh looking. Then into light gray green to green gray fine crystalline tuff (or intrusive?), fine crystalline, specks of pyrite.	
150 - 155	Tuff, extremely fine grained to fine grained, olive grayish green, changes to light medium rusty orangey brown textured tuff, rust stained, altered at 154'.	
155 - 160	Tuff, light brown to light rusty brown, aphanitic. Then into light olive green fine grained lithic tuff.	
160 - 165	Tuff, olive brown to light rusty brown extremely fine grained -aphanitic - becomes mainly medium olive green to brown aphanitic, extremely fine grained tuff.	
165 - 170	Tuff medium olive green to some rusty bands, aphanitic. Change to black laminae argillite or tuff @ 169'.	
170 - 175	Black to medium gray extremely fine grained - aphanitic tuff, minor light green aphanitic tuff band, pyrite films on black tuff. Band of medium brown rusty tuff at 174'. Ends in medium to dark gray laminated tuff (or? argillite).	
175 - 180	Dark gray to medium gray tuff, fresh, some light green gray extremely fine crystalline, then at 177' get light rusty orange brown tuff alternating with light to medium gray fine grained tuff in last 3'.	

Drill Hole 2 MC-2-88

Depth in Feet	Description	Assays
180 - 185	Interbedded dark gray to light gray tuff with rusty bands, some vein quartz (vuggy), then mainly dark gray fine grained tuff(light gray material with olive green alteration rind - fractured) with pyrite on fractured surfaces. Some laminated bands to medium gray with disseminated pyrite.	
185 - 190	Changing to medium gray to pale green gray aphanitic siliceous fresh tuff, lithic in part.	
190 - 195	Tuff, light to medium green gray extremely fine grained, lithic, minor iron staining on some pieces - some dark gray bands. Lower 3' with thin laminations and veins of pyrite.	
195 - 200	Light green gray lithic tuff, quite a lot of chlorite on fractured surface, siliceous, altered - textured, chlorite in in siliceous veins, very fine black veins.	

END OF HOLE

REVERSE CIRCULATION DRILL HOLE LOGS

MC Claims, 1988

Drill Hole No. 3 MC-3-88
Date Drilled: November 23, 1988
Elevation: 3110 feet
Total Depth: 60 feet
Location:

Depth in Feet	Description
0 - 60	Clay and saturated till -plugging drill stem - unable to continue.

END OF HOLE

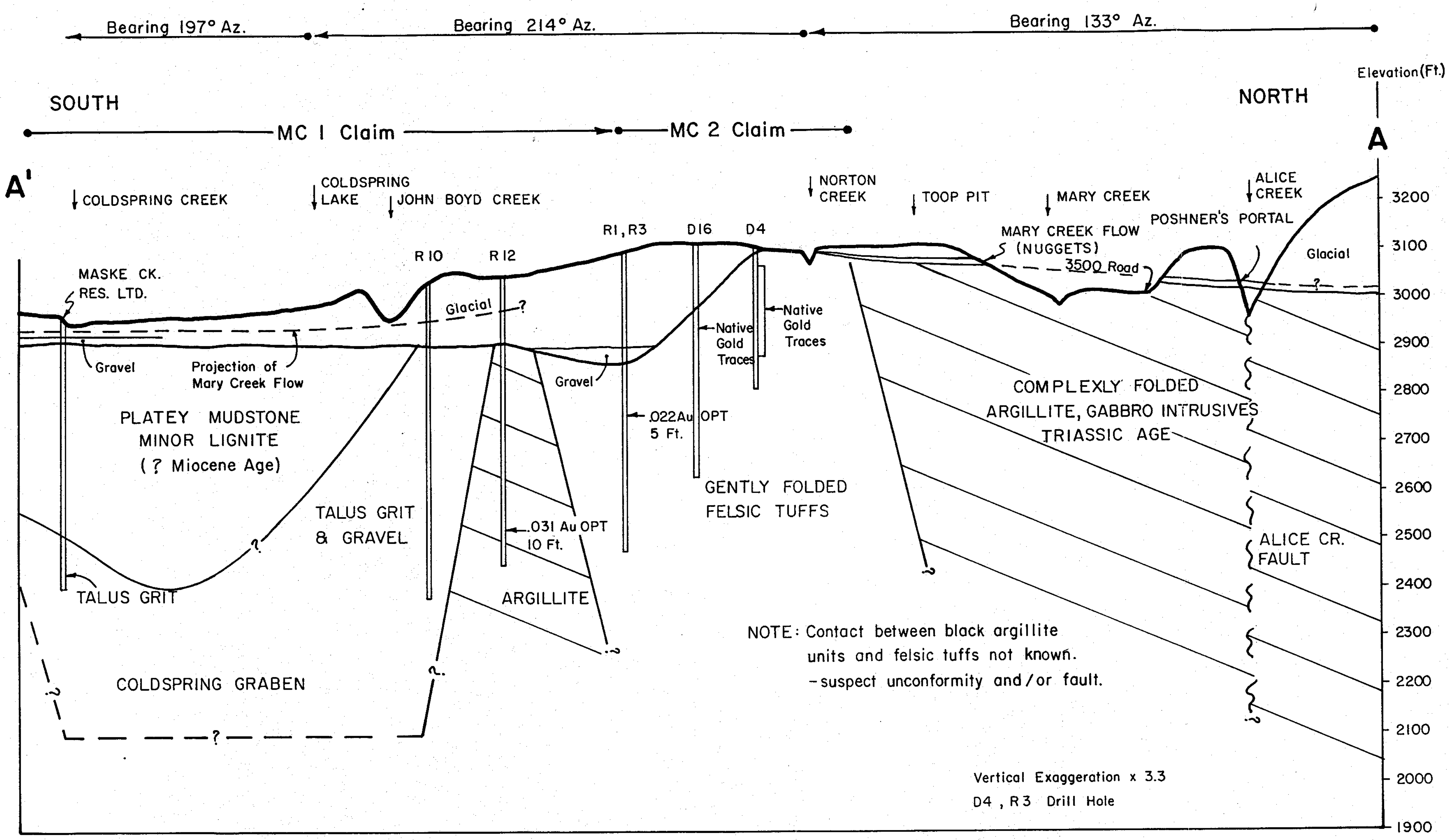
REVERSE CIRCULATION DRILL HOLE LOGS

MC Claims, 1988

Drill Hole No. 4 MC-4-88
Date Drilled: November 25, 1988
Elevation: 3110 feet
Total Depth: 20 feet
Location:

Depth in Feet	Description
0 - 20	Pebbly mud. No sample - plugging drill stem, unable to continue.

END OF HOLE



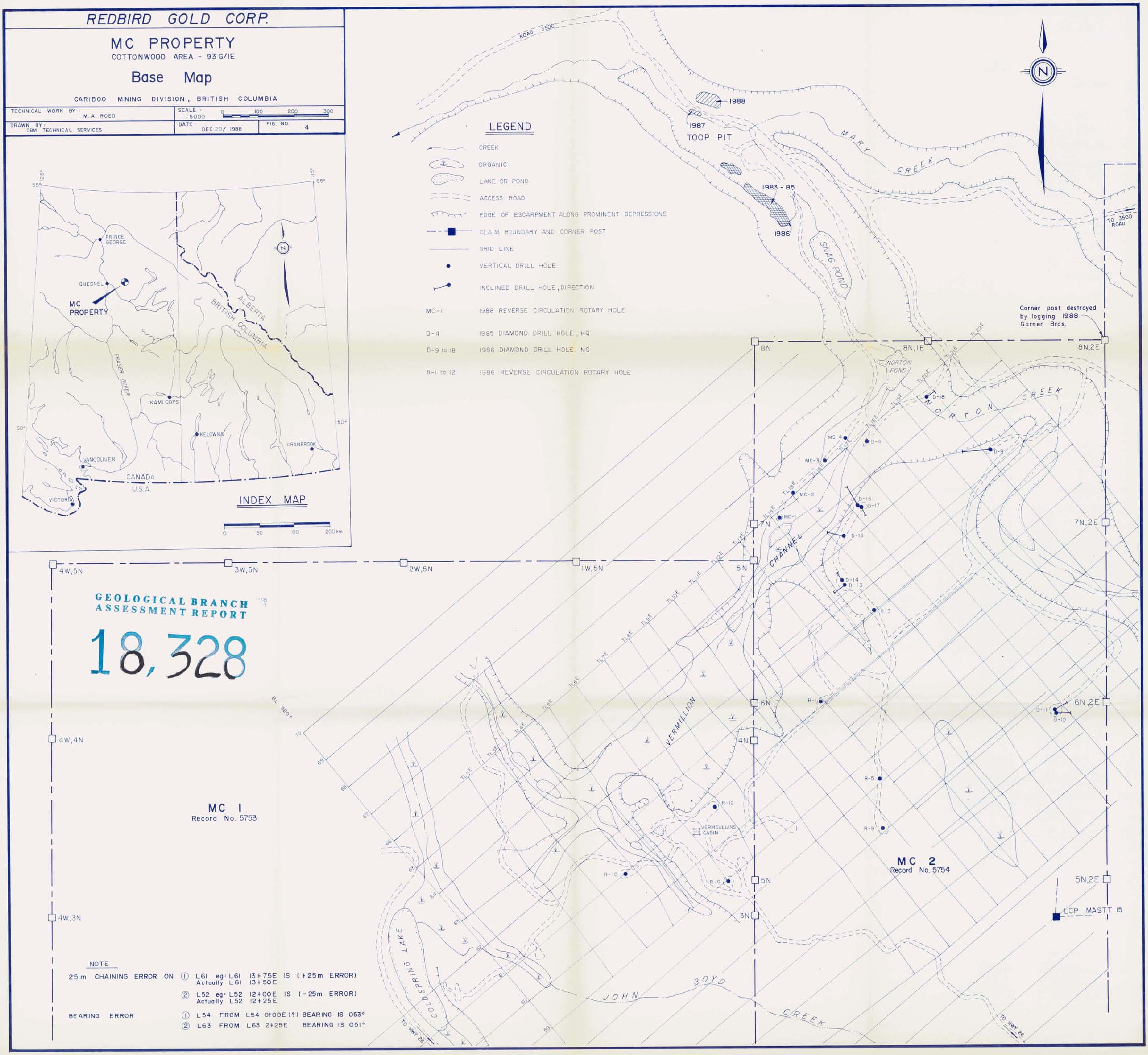
MC 1 & 2 CLAIMS

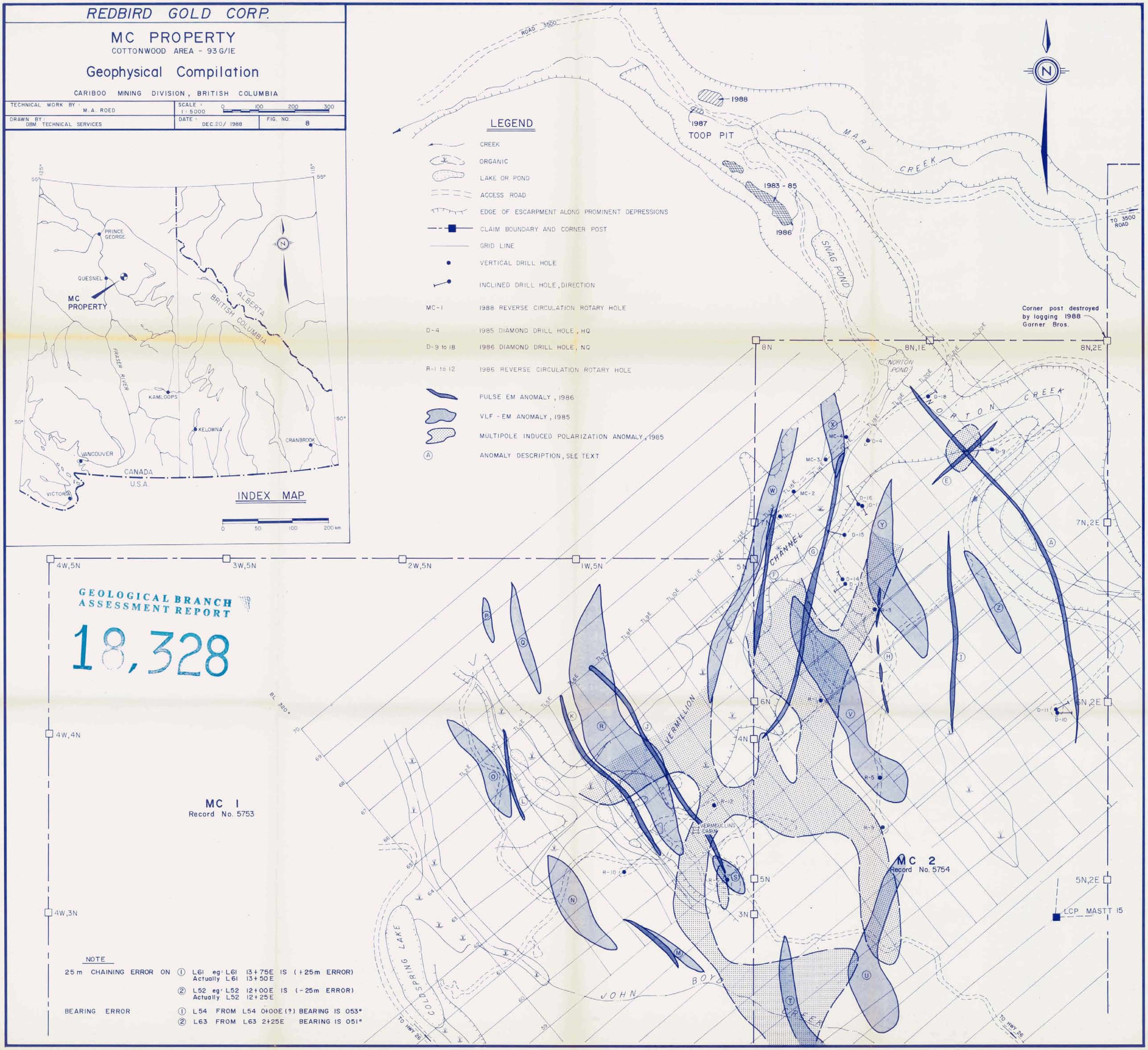
CROSS-SECTION A-A'

Alice Creek to Coldspring Creek

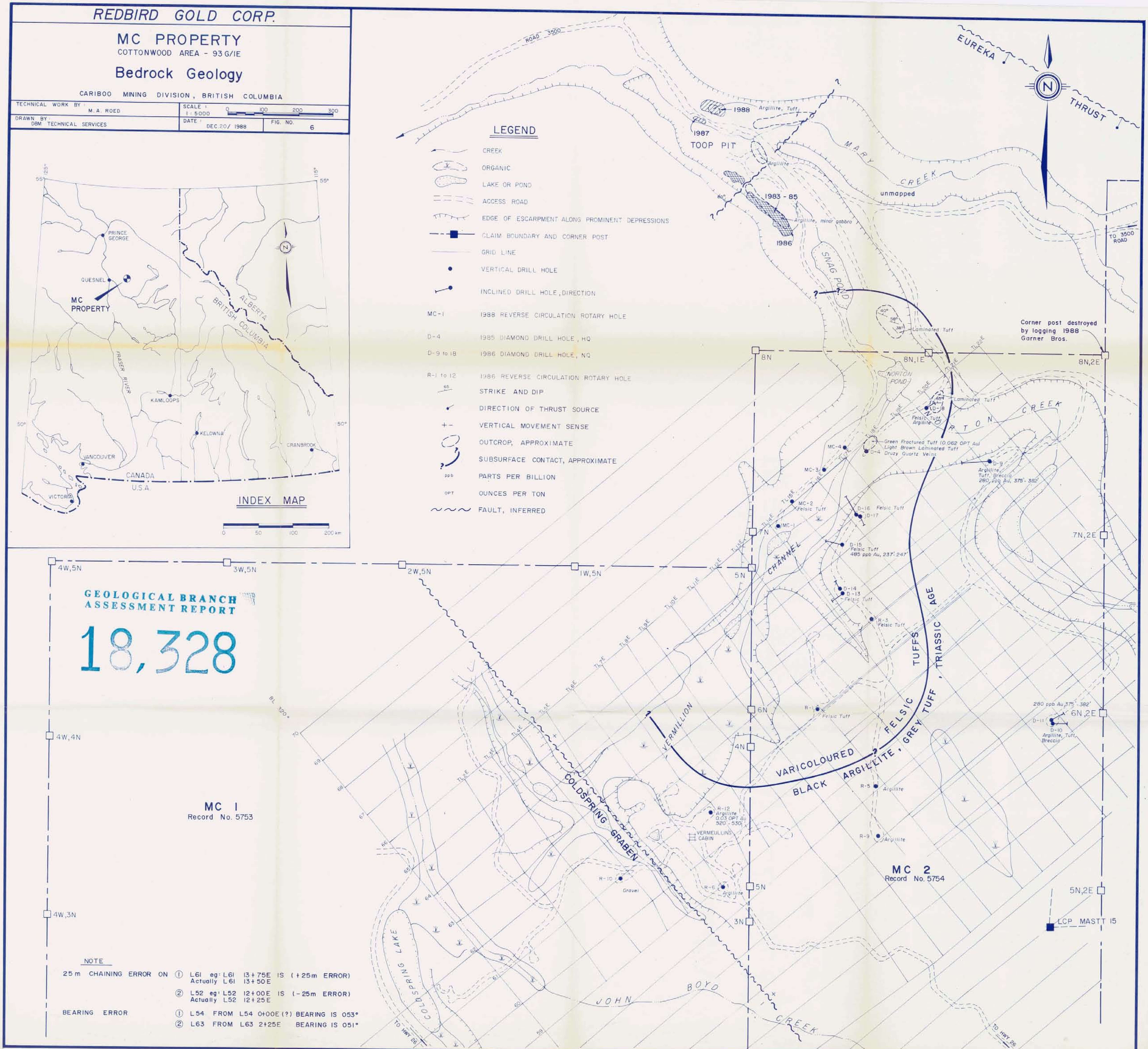
Cottonwood Area

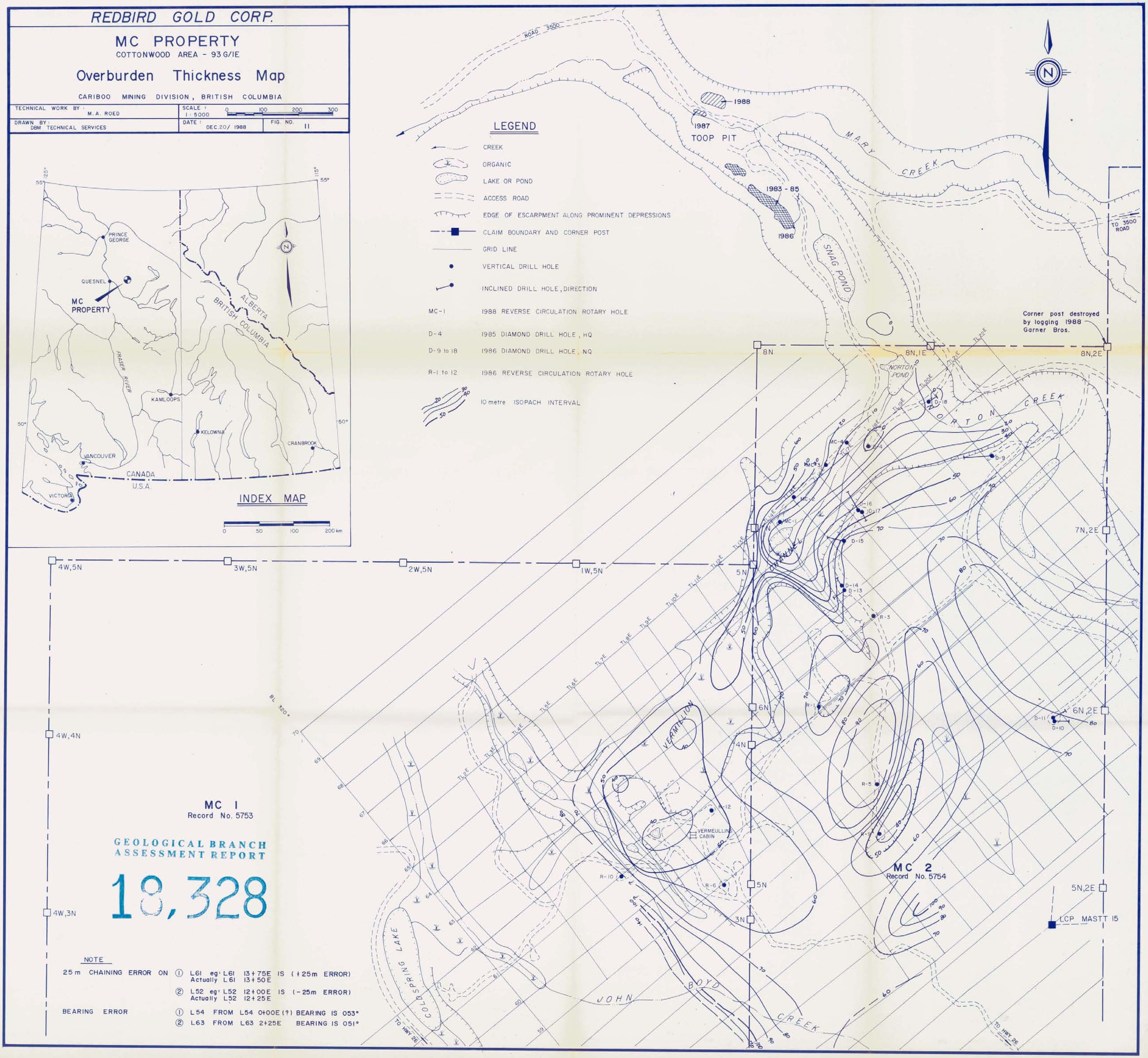
DATE: DEC./88	SCALE: HORIZ.: 1:25,000 VERT.: AS SHOWN
DRAWN BY: DBM	FIG. NO. 7


REDBIRD GOLD CORP.
MC PROPERTY
COTTONWOOD AREA - 93 G/IE
Base Map
CARIBOO MINING DIVISION, BRITISH COLUMBIA
TECHNICAL WORK BY: M.A. ROED
SCALE: 1:5000
0 100 200 300
DRAWN BY: DBM TECHNICAL SERVICES
DATE: DEC.20/ 1988
FIG. NO. 4
PRINCE GEORGE
QUESNEL
MC PROPERTY
ALBERTA
BRITISH COLUMBIA
FRASER RIVER
KAMLOOPS
KELOWNA
CRANBROOK
VANCOUVER
VICTORIA
CANADA
U.S.A.
INDEX MAP
0 50 100 200 km
LEGEND
CREEK
ORGANIC
LAKE OR POND
ACCESS ROAD
EDGE OF ESCARPMENT ALONG PROMINENT DEPRESSIONS
CLAIM BOUNDARY AND CORNER POST
GRID LINE
VERTICAL DRILL HOLE
INCLINED DRILL HOLE, DIRECTION
MC-1 1988 REVERSE CIRCULATION ROTARY HOLE
D-4 1985 DIAMOND DRILL HOLE, HQ
D-9 to 18 1986 DIAMOND DRILL HOLE, NQ
R-1 to 12 1986 REVERSE CIRCULATION ROTARY HOLE
ROAD 3500
1988
1987
TOOP PIT
1983 - 85
1986
MARY CREEK
SNAG POND
TO 3500 ROAD
Corner post destroyed by logging 1988 Garner Bros.
8N
8N,1E
8N,2E
NORTON POND
NORTON CREEK
7N
7N,2E
5N
6N
6N,2E
4N
5N,2E
3N
CHANNEL
VERMILLION
4W,5N
3W,5N
2W,5N
1W,5N
4W,4N
4W,3N
GEOLOGICAL BRANCH ASSESSMENT REPORT
18,328
MC 1
Record No. 5753
MC 2
Record No. 5754
LCP MASTT 15
VERMEULLINS CABIN
COLDSPRING LAKE
JOHN BOYD CREEK
TO HWY 26
NOTE
25 m CHAINING ERROR ON ① L61 eg: L61 13+75E IS (+25m ERROR) Actually L61 13+50E
② L52 eg: L52 12+00E IS (-25m ERROR) Actually L52 12+25E
BEARING ERROR ① L54 FROM L54 0+00E (?) BEARING IS 053°
② L63 FROM L63 2+25E BEARING IS 051°



REDBIRD GOLD CORP.
MC PROPERTY
COTTONWOOD AREA - 93 G/IE
Geophysical Compilation
CARIBOO MINING DIVISION, BRITISH COLUMBIA
TECHNICAL WORK BY: M.A. ROED
SCALE: 1:5000
0 100 200 300
DRAWN BY: DBM TECHNICAL SERVICES
DATE: DEC.20/ 1988
FIG. NO. 8
LEGEND
CREEK
ORGANIC
LAKE OR POND
ACCESS ROAD
EDGE OF ESCARPMENT ALONG PROMINENT DEPRESSIONS
CLAIM BOUNDARY AND CORNER POST
GRID LINE
VERTICAL DRILL HOLE
INCLINED DRILL HOLE, DIRECTION
MC-1 1988 REVERSE CIRCULATION ROTARY HOLE
D-4 1985 DIAMOND DRILL HOLE, HQ
D-9 to 18 1986 DIAMOND DRILL HOLE, NQ
R-1 to 12 1986 REVERSE CIRCULATION ROTARY HOLE
PULSE EM ANOMALY, 1986
VLF - EM ANOMALY, 1985
MULTIPOLE INDUCED POLARIZATION ANOMALY, 1985
(A) ANOMALY DESCRIPTION, SEE TEXT
INDEX MAP
PRINCE GEORGE
QUESNEL
MC PROPERTY
ALBERTA
BRITISH COLUMBIA
FRASER RIVER
KAMLOOPS
KELOWNA
CRANBROOK
VANCOUVER
VICTORIA
CANADA
U.S.A.
0 50 100 200 km
GEOLOGICAL BRANCH
ASSESSMENT REPORT
18,328
ROAD 3500
1988
1987
TOOP PIT
1983 - 85
1986
MARY CREEK
SNAG POND
TO 3500 ROAD
Corner post destroyed by logging 1988 Garner Bros.
8N
8N,1E
8N,2E
NORTON POND
NORTON CREEK
7N
7N,2E
6N
6N,2E
5N
5N,2E
4N
3N
4W,5N
3W,5N
2W,5N
1W,5N
4W,4N
4W,3N
CHANNEL
VERMILLION
VERMEULINS CABIN
MC 1
Record No. 5753
MC 2
Record No. 5754
LCP MASTT 15
COLDSPRING LAKE
JOHN BOYD CREEK
TO HWY 26
BL 320°
NOTE
25 m CHAINING ERROR ON (1) L61 eg' L61 13+75E IS (+25m ERROR) Actually L61 13+50E
(2) L52 eg' L52 12+00E IS (-25m ERROR) Actually L52 12+25E
BEARING ERROR (1) L54 FROM L54 0+00E (?) BEARING IS 053°
(2) L63 FROM L63 2+25E BEARING IS 051°


REDBIRD GOLD CORP.
MC PROPERTY
COTTONWOOD AREA - 93 G/IE
Bedrock Geology
CARIBOO MINING DIVISION, BRITISH COLUMBIA
TECHNICAL WORK BY: M.A. ROED
SCALE: 1:5000
0 100 200 300
DRAWN BY: DBM TECHNICAL SERVICES
DATE: DEC.20/ 1988
FIG. NO. 6
LEGEND
CREEK
ORGANIC
LAKE OR POND
ACCESS ROAD
EDGE OF ESCARPMENT ALONG PROMINENT DEPRESSIONS
CLAIM BOUNDARY AND CORNER POST
GRID LINE
VERTICAL DRILL HOLE
INCLINED DRILL HOLE, DIRECTION
MC-1 1988 REVERSE CIRCULATION ROTARY HOLE
D-4 1985 DIAMOND DRILL HOLE, HQ
D-9 to 18 1986 DIAMOND DRILL HOLE, NQ
R-1 to 12 1986 REVERSE CIRCULATION ROTARY HOLE
STRIKE AND DIP
DIRECTION OF THRUST SOURCE
VERTICAL MOVEMENT SENSE
OUTCROP, APPROXIMATE
SUBSURFACE CONTACT, APPROXIMATE
ppb PARTS PER BILLION
OPT OUNCES PER TON
FAULT, INFERRED
INDEX MAP
PRINCE GEORGE
QUESNEL
MC PROPERTY
ALBERTA
BRITISH COLUMBIA
FRASER RIVER
KAMLOOPS
KELOWNA
CRANBROOK
VANCOUVER
VICTORIA
CANADA
U.S.A.
0 50 100 200 km
EUREKA THRUST
MARY CREEK
unmapped
ROAD 3500
TO 3500 ROAD
1988 Argillite, Tuff
1987 TOOP PIT
1983 - 85
1986
Argillite, minor gabbro
SNAG POND
NORTON POND
NORTON CREEK
Laminated Tuff
Corner post destroyed by logging 1988 Garner Bros.
8N
8N,1E
8N,2E
7N
7N,2E
6N
6N,2E
5N
5N,2E
4N
3N
4W,5N
3W,5N
2W,5N
1W,5N
4W,4N
4W,3N
CHANNEL
VERMILLION
TUFFS TRIASSIC AGE
VARICOLOURED BLACK ARGILLITE, GREY TUFF FELSIC
Green Fractured Tuff (0.062 OPT Au)
Light Brown Laminated Tuff
Druzy Quartz Veins
280 ppb Au, 375'-382'
485 ppb Au, 237'-247'
Felsic Tuff
Argillite, Tuff, Breccia
R-12 Argillite 0.03 OPT Au 520'-530'
VERMEULLING CABIN
Gravel
GEOLOGICAL BRANCH ASSESSMENT REPORT
18,328
MC 1 Record No. 5753
MC 2 Record No. 5754
LCP MASTT 15
COLDSPRING GRABEN
COLDSPRING LAKE
JOHN BOYD CREEK
TO HWY 26
NOTE
25m CHAINING ERROR ON ① L61 eg: L61 13+75E IS (+25m ERROR) Actually L61 13+50E
② L52 eg: L52 12+00E IS (-25m ERROR) Actually L52 12+25E
BEARING ERROR ① L54 FROM L54 0+00E (?) BEARING IS 053°
② L63 FROM L63 2+25E BEARING IS 051°



REDBIRD GOLD CORP.
MC PROPERTY
COTTONWOOD AREA - 93 G/1E
Overburden Thickness Map
CARIBOO MINING DIVISION, BRITISH COLUMBIA
TECHNICAL WORK BY : M.A. ROED
DRAWN BY : DBM TECHNICAL SERVICES
SCALE : 1 : 5000
0 100 200 300
DATE : DEC.20/ 1988
FIG. NO. 11
PRINCE GEORGE
QUESNEL
MC PROPERTY
ALBERTA
BRITISH COLUMBIA
FRASER RIVER
KAMLOOPS
KELOWNA
CRANBROOK
VANCOUVER
VICTORIA
CANADA
U.S.A.
INDEX MAP
0 50 100 200 km
LEGEND
CREEK
ORGANIC
LAKE OR POND
ACCESS ROAD
EDGE OF ESCARPMENT ALONG PROMINENT DEPRESSIONS
CLAIM BOUNDARY AND CORNER POST
GRID LINE
VERTICAL DRILL HOLE
INCLINED DRILL HOLE, DIRECTION
MC-1 1988 REVERSE CIRCULATION ROTARY HOLE
D-4 1985 DIAMOND DRILL HOLE, HQ
D-9 to 18 1986 DIAMOND DRILL HOLE, NQ
R-1 to 12 1986 REVERSE CIRCULATION ROTARY HOLE
10 metre ISOPACH INTERVAL
ROAD 3500
1988
1987
TOOP PIT
1983 - 85
1986
MARY CREEK
SNAG POND
TO 3500 ROAD
Corner post destroyed by logging 1988 Garner Bros.
8N
8N,1E
8N,2E
NORTON POND
NORTON CREEK
7N,2E
6N,2E
5N,2E
4W,5N
3W,5N
2W,5N
1W,5N
5N
6N
4N
3N
4W,4N
4W,3N
VERMILLION
VERMEULLIN CABIN
MC 1
Record No. 5753
MC 2
Record No. 5754
LCP MASTT 15
COLDSPRING LAKE
JOHN BOYD CREEK
TO HWY 26
BL 320°
GEOLOGICAL BRANCH
ASSESSMENT REPORT
18,328
NOTE
25 m CHAINING ERROR ON ① L61 eg: L61 13+75E IS (+25m ERROR) Actually L61 13+50E
② L52 eg: L52 12+00E IS (-25m ERROR) Actually L52 12+25E
BEARING ERROR ① L54 FROM L54 0+00E(?) BEARING IS 053°
② L63 FROM L63 2+25E BEARING IS 051°