

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

14,986

ECONOMIC GEOLOGY

of the

BAR CLAIM GROUP, COTTONWOOD GOLD CAMP

Quesnel, British Columbia

Trio Petroleums Ltd.

Cariboo Mining Division

N.T.S. 93G/1E

Lat. 53°06.4' Long. 122°11.5'

Owner/Operator: Pundata Gold Corporation

FILMED

FOXVIEW MANAGEMENT LIMITED

#16, 250 Pemberton Terrace,
Kamloops, British Columbia, V2C 6A9
(604) 374-7204

Murray A. Roed, Ph. D., P. Eng.

June 20, 1986



Coast 1971

B. A. Suss
M. A. Roed
Ph.D. Alta

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
1.1 Property Description	3
1.2 Physiography	3
1.3 Access and Vegetation	3
1.4 Claim Map and Existing Showings	5
2.0 ECONOMIC GEOLOGY	6
2.1 Previous Work	6
2.2 Present Work	7
2.3 Bedrock Geology	7
2.3.1 Mineralization	8
2.4 Surficial Geology	8
2.4.1 Placer Gold	9
2.5 1985 Geophysical Survey	9
3.0 DISCUSSION OF RESULTS	10
4.0 CONCLUSIONS AND RECOMMENDATIONS	12
5.0 ESTIMATED COSTS	13
6.0 REFERENCES	14
STATEMENT OF EXPENDITURES	15

FIGURES

Figure 1 Location Map	2
Figure 2 Claim Map	Pocket
Figure 3 Geologic and Terrain Map	Pocket
Figure 4 Diagrammatic Cross-Section	11

PLATES

Plate 1 and Overlay	4
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ECONOMIC GEOLOGY of the BAR CLAIM GROUP
Cottonwood Gold Camp
Quesnel, British Columbia

1.0 INTRODUCTION

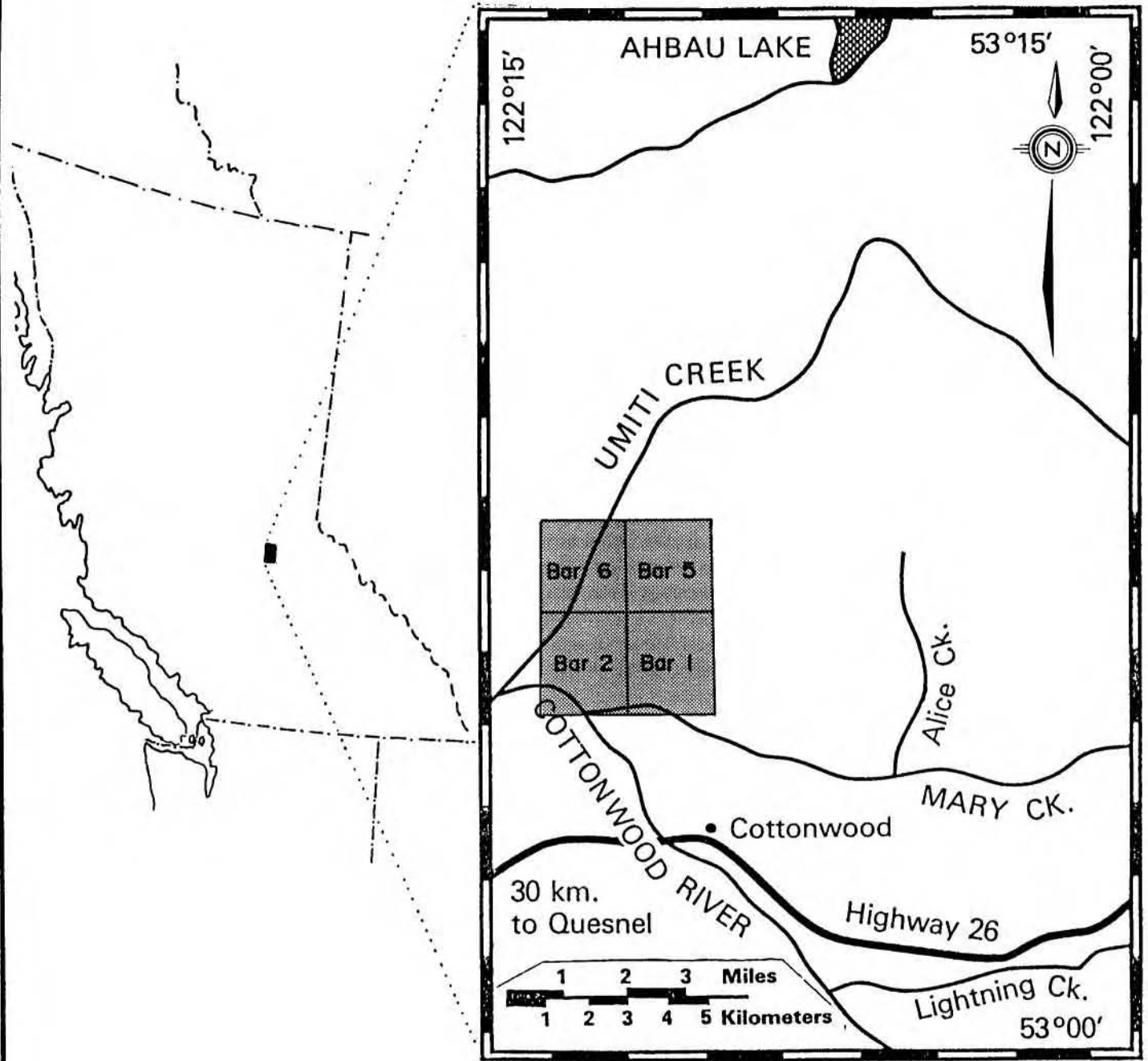
Recent discoveries of lode gold in the Cottonwood area by Mastt Resources, Gabriel Resources and Pundata Gold Corporation has resulted in substantial interest in this part of the Quesnel Gold Belt. Responding to this, Trio Petroleum Ltd. has recently entered into a Joint Venture with Pundata Gold to explore the Bar and Handy claim blocks.

This report presents the geologic features of the Bar claims straddling Umiti Creek, Cottonwood River and John Boyd Creek as shown in Figure 1 and located 25 km east of Quesnel.

Geologic sequences and structure are both complex in the area and a thick mantle of surficial material conceals much of the bedrock on the property. Outcrops are restricted to river and creek cut banks, and canyons. All of these except parts of Umiti Creek valley have been traversed in this work. Photogeologic interpretation of both 1980 and 1984 air photos have been done, and an interpretation of the results of 1985 geophysical work is included in this assessment.

Economic deposits in the area consist of potential for volcanoclastic stratiform mineralization similar to that of the Dome Mines "QR" deposit, massive sulfides similar to that exposed in the Gabriel showing, felsic volcanic assemblages, quartz stockworks and sulfide bearing shear zones found on the Pundata Gold property, and auriferous quartz veins of Mastt Resources.

Active gold placers occur adjacent to the property. These operations have been especially notable along the Cottonwood River. Many have been worked intermittantly since the late 1800's.



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**LOCATION
of
MAP AREA**

DATE: JUNE/86

SCALE: AS SHOWN

DWN. BY: T.P.Q.

DWG. NO.: 1

1.1 Property Description

The Bar 1,2,5, and 6 mineral claims are composed of four equally sized 20 unit claim blocks. The claims all extend 5 units North and 4 units East or West. Area totals nearly 5000 acres (or 2000 hectares). The Legal Corner Post for all four claims is common and centrally located.

1.2 Physiography

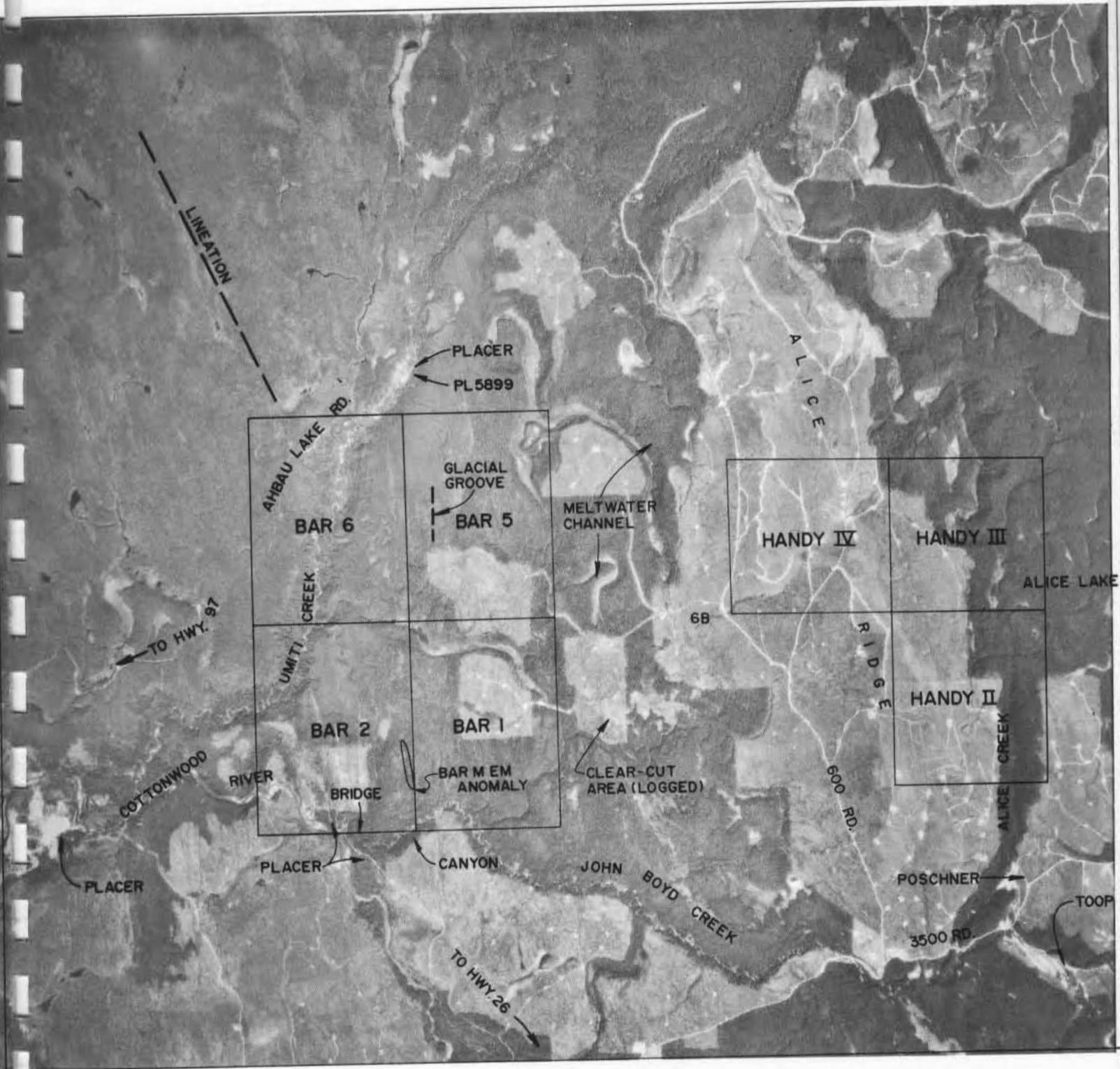
This part of the Quesnel Highlands is characterized by broad drift mantled rolling plains that have been partly drumlinized and deeply dissected by glaciofluvial streams (Plate 1). Umiti Valley is the most prominent feature. It is a wide meltwater channel with steep sides whereas Umiti Creek itself is comparatively small. The Cottonwood River is the largest stream and has developed an extensive meander cut-off in the south west part of the property. John Boyd Creek is a steep narrow valley and the stream is comparatively small. The stream cuts through Tertiary mudstone and glacial deposits mainly but it has carved a steep narrow bedrock canyon 600 meters long just before it enters the Cottonwood River.

Uplands are well drained but contain patches of organic material and poorly drained linear depressions of glacial grooves. Several prominent meandering meltwater channels occur and contain organic terrain composed of peat likely in excess of 3 meters thick.

1.3 Access and Vegetation

The Bar claims are accessible from three directions. A road on the east side of the Cottonwood River connects the southern part of the property with Highway 26. This road heads north just to the east of the "new" bridge over the Cottonwood River. Logging trails penetrate to Umiti Creek valley via this access.

Access for 1985 work was gained from the 6B logging road branching west off the 600 road at the 9 km. mark. The 600 road leads to Highway 26 at Cottonwood 6 km. to the south.



Air Photo BC 84036-178, Courtesy of Maps B.C., Scale 1:60,000

Plate 1:

Air photo taken in 1984 showing major geologic features, mineral showings, geographic features, access and approximate boundaries of Trio Petroleum Ltd. claims referred to as the Bar and Handy claim blocks, Cottonwood Gold Camp. Adjacent properties belonging to other companies have not been shown. The approximate location of the Bar M VLF-EM anomaly between Bar 2 and Bar 1 is shown.

The western part of the property can be reached via the Abhau Lake road. This road runs eastward from Highway 97 a few kilometers north of the bridge over the Cottonwood River. It is approximately 20 km to the property along this road which has rough spots.

Vegetation on the property consists of timber grade fir, spruce, balsam and hemlock. The eastern portion has been extensively logged (see Plate 1). Willow, aspen, blueberry occur along streams and in clear-logged localities. Windfall in the forest is common.

1.4 Claim Map and Existing Showings

A compilation of existing mineral claims in the area is shown in Figure 2. Also shown are the general locations of known showings which include the gold show and EM anomaly, on the Bar 2, the lead-zinc and gold showings of Mastt Resources, the gold showings of Pundata, the Toop Mine and various placer mines.

2.0 ECONOMIC GEOLOGY

This section deals with previous work, the object and results of the present work, the procedures utilized and discusses the principal exploration hypothesis for the property.

2.1 Previous Work

The most recent work involved a line cutting program, magnetometer survey and a VLF-EM survey carried out in 1985 and the subject of an assessment report by Dirk Moraal (see references). Subsequent to this the claims were prospected by Bryan Elliott. Little exploration of bedrock had been done up until this time due to the sparceness of outcrop.

The author mapped a portion of Umiti Creek valley in detail (subject of another consulting report) specifically Placer Lease No. 5899, and has concluded several studies in the area over the last four years.

Numerous placer operations have been active along the Cottonwood River in the past dating to the late 1800's. A substantial Chinese community apparently occuppied a valley north of the Cottonwood River along Umiti Creek.

From 1920 to 1950 extensive dredging of the Cottonwood River near its confluence with John Boyd Creek was undertaken.

The most recent placer operation was that of Columbia Metals on a low terrace on the north side of the Cottonwood River on the border of the Bar 2 claim. It is reported that substantial amounts of fine gold were recovered from this now defunct mining venture.

On a regional scale the bedrock geology of the area has been mapped by Tipper (1961), and the surficial geology has also been mapped by Tipper (1971). An aeromagnetic map (Anonymous, 1963) is available for the Cottonwood area but was not utilized in the present work.

Mastt Resources has reportedly some showings of lead, zinc and copper to the south of the property along the

Cottonwood River (Figure 2). Only minor work has been done so far.

2.2 Present work

The present work is an attempt to map the bedrock geology and major terrain features, assess the previous work, and formulate a plan to begin systematic exploration of the property.

The Cottonwood River and John Boyd Creek were traversed and roads in the central part of the property were travelled. Also parts of the Umiti Valley and the adjacent upland to the west were travelled. This was combined with airphoto interpretation and the results of exploration in nearby properties to produce this report.

2.3 Bedrock Geology

Outcrop data gathered in this work and projected from other areas is shown in the geologic map of Figure 3.

The northeastern part of the claims appear to be completely covered with a thick mantle of surficial material. From information gathered in adjacent areas and outcrops of folded Tertiary mudstones in John Boyd Creek south of the Bar claims, it is apparent that this part of the Bar claims is underlain by a Tertiary filled graben. Folded sandstone and poorly cemented gravel occur near the southern boundary of the claims along the Cottonwood River, and nearly horizontal lignite and mudstone strata outcrop in Umiti Creek valley one kilometer north of Bar 6 mineral claim. Tertiary clay overlies andesite west of the bridge over John Boyd Creek on Bar 2.

Projecting basement rocks (those below the Tertiary sediments) from the southeast, the claims are inferred to be underlain by a thick northwesterly trending series of Triassic to Jurassic aged siltstone, chert, basalt and argillite. These rocks likely form the floor of a pre-Tertiary graben and could be quite irregular in subsurface topography. That is, bedrock highs and lows can be expected below the cover of surficial material.

The southwest corner of the claims, on Bar 2, straddles

the core of the Cottonwood anticline. This is a narrow fold that has been traced for 20 km. from Lightning Creek. Rocks on it's west flank are exposed in the canyon upstream from the mouth of John Boyd Creek. Lithologies present range from thinly bedded laminated gray siltstones to massive interbeds of fractured gray-green basalt to andesite volcanics. Structure is complex; this fold could be affected by parasitic folding on its flanks. A syenite dike is reported to the southwest along Cottonwood River, and the Jurassic-Triassic rocks are intruded by dioritic dikes in other localities of the area.

2.3.1 Mineralization

Fractured greenstone outcrops at the bridge over John Boyd Creek. These rocks are rust stained and most of the fractures have a coating of pyrite. Some thin quartz veining also occurs. A grab sample of the andesite assayed 0.002 oz Au/ton. The fracture zone appears to be 50 meters wide and can be traced for approximately 200 meters along both sides of the creek. This locality is very easily accessible. One of the location posts for Bar 2 is situated approximately 100 meters east of the bridge.

2.4 Surficial Geology

The main terrain features are shown in Figure 3 and Plate 1. These consist of dissected uplands of till and outwash sand and gravel, organic lowland in raised meltwater channels, silt, sand and gravel alluvium along flood plains, and gravel, sand and clay in raised terraces. Colluvium mantles all steep slopes and landslides occur along some portions of the valley.

Sections along Umiti Creek valley reveal two glacial tills and a sand to clay glaciolacustrine unit between the tills. Also there are numerous outcrops of a rusty pebble gravel up to 10 meters thick which is believed to be pre-glacial in age.

The surfical material along Umiti Creek valley is up to 70 meters thick in places and could be thicker. The only bedrock found is Tertiary mudstone (see Tipper's 1961 map) and unusually large boulders of mica schist just to the north of Bar 6 in the stream channel of Umiti Creek.

2.4.1 Placer Gold

Placer gold has been mined along Umiti Creek and the Cottonwood River for years. Two localities are of particular relevance to the Bar claim. One locality is in the vicinity of the mica schist boulders referred to above. Here gold is mined at the contact with the Tertiary bedrock and in the boulder deposit of mica schist. Coarse gold can be panned readily in the spaces between the boulders. These boulders are so large and so numerous that it is suspected that they are residual in origin and that a Precambrian structure surfaces here (quite at odds with the rest of the geology in the region). This "structure" could be present on the Bar claims and should be considered in future work.

The other placer gold locality is at the mouth of John Boyd Creek. Briefly, the source of this gold could have easily been derived from the adjacent Jurassic-Triassic volcano-sedimentary core forming the Cottonwood Anticline. These rocks outcrop on the Bar 2 claim and warrant further investigation.

2.5 1985 Geophysical Survey

The 1985 VLF-EM survey of the central part of the Bar claims revealed 10 conductors that trend northwest. These anomalies are shown on Drawings No.4 of the report by Moraal (1985). The anomalies do not have a strong response hence they are suspected to be overlain by overburden which could be in the order of 30 to 60 meters in depth. Overburden has the effect of subduing electrical response in some cases. The anomalies could be shear zones in the underlying bedrock, or sulfide bearing bedrock layers, all of which offer the potential of auriferous content. The Fraser Filter contours of these anomalies suggest conductors that are up to 50 meters wide, and the axis of the longest conductor is 800 meters long. This particular anomaly will be referred to as the Bar M anomaly in this report and is shown in Plate 1 and Figure 3..

The magnetometer survey revealed a moderate magnetic low which partly flanks the Bar M EM anomaly on the east. This is shown by the vertical field component of the data (Drawing No.7 of Moraal's report). Other magnetic features are not amenable to interpretation at this time.

3.0 DISCUSSION OF RESULTS

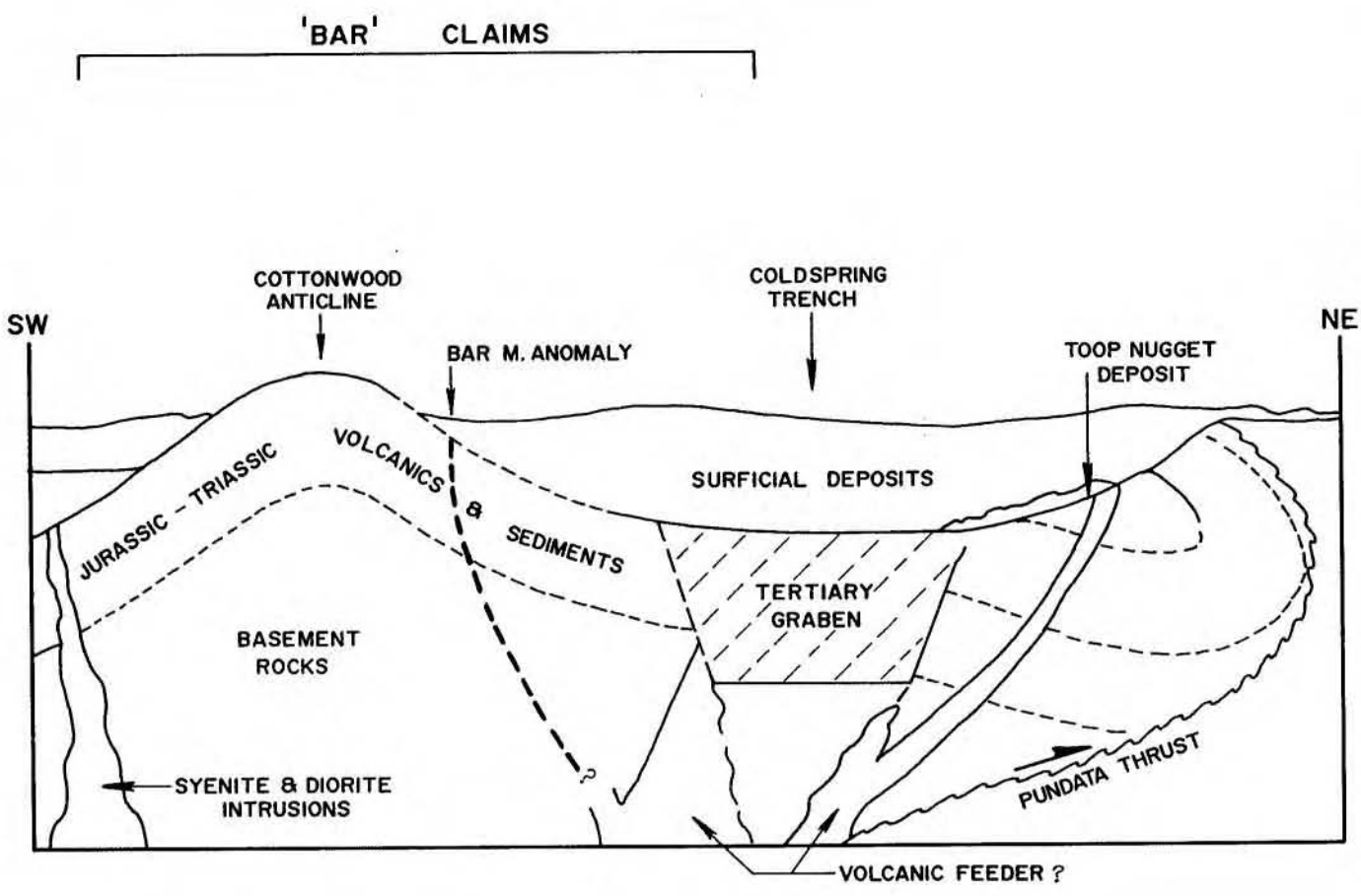
Auriferous fractured andesites with associated pyrite occur in a 50 meter wide zone on the Bar 2 mineral claim at John Boyd bridge. This locality is situated on the easterly flank of a northwesterly trending anticline at the mouth of John Boyd Creek. The locality is on Strike with reported lead-zinc-copper sulfide occurrences that occur to the south in association with a reported syenite dike. These rocks are also approximately on Strike with a massive sulfide discovery by Gabriel Resources on Ahbau Creek 12 km. to the northwest. Up to 0.6 oz Au/ton is apparently associated with the Gabriel discovery in rocks similar to those that occur on the Bar 2 claim. This part of the property therefore requires more assessment and is easily accessible.

The sequence exposed in John Boyd Creek is not dissimilar to that encountered in the QR deposit by Dome Mines near Likely, B.C. The regional magnetic map clearly shows that the structure is continuous to the Cottonwood area, and this provides a level of confidence to encourage exploration here (Copeland and Schmidt, 1984).

The adjacent occurrence of placer gold in the Cottonwood River is interpreted as reflecting a nearby source. The anticline rocks on the Bar 2 could contain lode deposits that may be the source of this placer gold.

The Bar M VLF-EM anomaly is a drillable target on a reconnaissance basis but further work should be done prior to drilling. This work should include detailed EM and magnetometer surveys and Induced Polarization. The anomaly, along with other similar anomalies, occur in a regional structural graben that may harbour important accumulations of economic minerals. Pundata Gold's discoveries are associated with this structure, as shown in Figure 4.

The occurrence of the mica schist boulders along with placer gold is a substantial geologic dilemma in the area. If the deposit is residual in origin, it represents a ridge of rock likely of Precambrian age that has never been recognized in this part of the Cariboo. If it has been transported, it's source is presently unknown. In view of the Mesozoic-Cenozoic structural complexity of the area, a major structural discontinuity affecting the Bar claims cannot be dismissed. Further work will assist in placing the significance of the mica schist boulders into perspective, and may reflect favourably on the subsurface geology of the Bar claim group.



Foxview MANAGEMENT LIMITED	
TRIO PETROLEUMS LTD.	
DIAGRAMMATIC CROSS - SECTION	
DATE:	JUNE / 86
SCALE:	Not To Scale
DWN. BY:	T.P.Q.
DWG. NO.:	4

4.0 CONCLUSIONS AND RECOMMENDATIONS

The Bar claims are situated in a pre-Tertiary graben flanked by a resistant and prominent ridge of Jurassic-Triassic volcanic-sedimentary assemblage. The graben is known to be associated with rich nugget-gold bearing deposits to the southeast at the Toop Mine, and auriferous felsic volcanic and interesting gold-bearing shear features on Pundata Gold's property in the same locality. These structural features are proven in the area and warrant further investigation. Nearby occurrences of massive sulfide to the south, and the on-trend discovery of gold bearing massive sulfides in similar rock types of Gabriel Resources to the north combine to further encourage additional work on the Bar claims. Trenching and geochemical sampling should be conducted on the showing at John Boyd Creek bridge.

The Bar claims present a VLF-EM anomaly up to 50 meters wide and 800 meters long that requires subsurface testing. Detailed EM magnetometer and Induced Polarization surveys should be conducted. Plans should be made for a follow-up diamond drill program. At least eight holes should be drilled to a depth of 100 meters every 100 meters along the anomaly. This amounts to approximately 1000 meters of drilling.

The balance of the property should be field surveyed and lines established every 100 meters on a north-south and east-west grid. Lines should be marked every 50 meters and stations established every 100 meters.

Rocks along the John Boyd Canyon should be sampled in detail for rock geochemistry, and Umiti Creek and various tributaries should be traversed and mapped in detail.

Outcrops along the Cottonwood River area should be re-examined and follow-up mapping and sampling should be conducted.

5.0 ESTIMATED COSTS

Geologic Mapping and Prospecting	\$ 5,000.00
Rock Geochemical Analyses	1,000.00
Induced Polarization	10,000.00
Detailed Magnetometer	5,000.00
Detailed VLF-EM (or Pulse EM)	10,000.00
Line Cutting & Surveying	15,000.00
Diamond Drilling	60,000.00
Trenching, Backhoe	2,000.00
Catwork	8,000.00
Assays	3,000.00
Final Report	10,000.00
Administration	10,000.00
Contingencies	<u>11,000.00</u>
Total	<u>\$150,000.00</u>

6.0 REFERENCES

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- Struik, L.C., 1982, Geological Survey Canada Open File, No. 858, Cariboo Lakes, Spectacle Lakes, Swift River and Wells map areas, British Columbia.
- Saleken, L.W. and Simpson, R.G., 1984, Cariboo-Quesnel Gold Belt. A Geological Overview. Western Miner, April 1984.
- Tipper, H.W. 1961, Geology, Prince George, Cariboo District, British Columbia. Geological Survey Canada Map 49-1960.
- Tipper, H.W., 1971, Glacial Geomorphology and Pleistocene History of Central British Columbia. Geological Survey Canada Bull. 196, 89pp.

STATEMENT OF EXPENDITURES

GEOLOGIC MAPPING

Field Time:

Murray A. Roed, Ph.D., P.Eng., Geologist	
May 5 to May 14, 1986, 9 days @ \$400/day	\$3,600.00
D. Vander Wal, Field Assistant	
May 5 to May 14, 1986, 9 days @ \$140/day	1,260.00

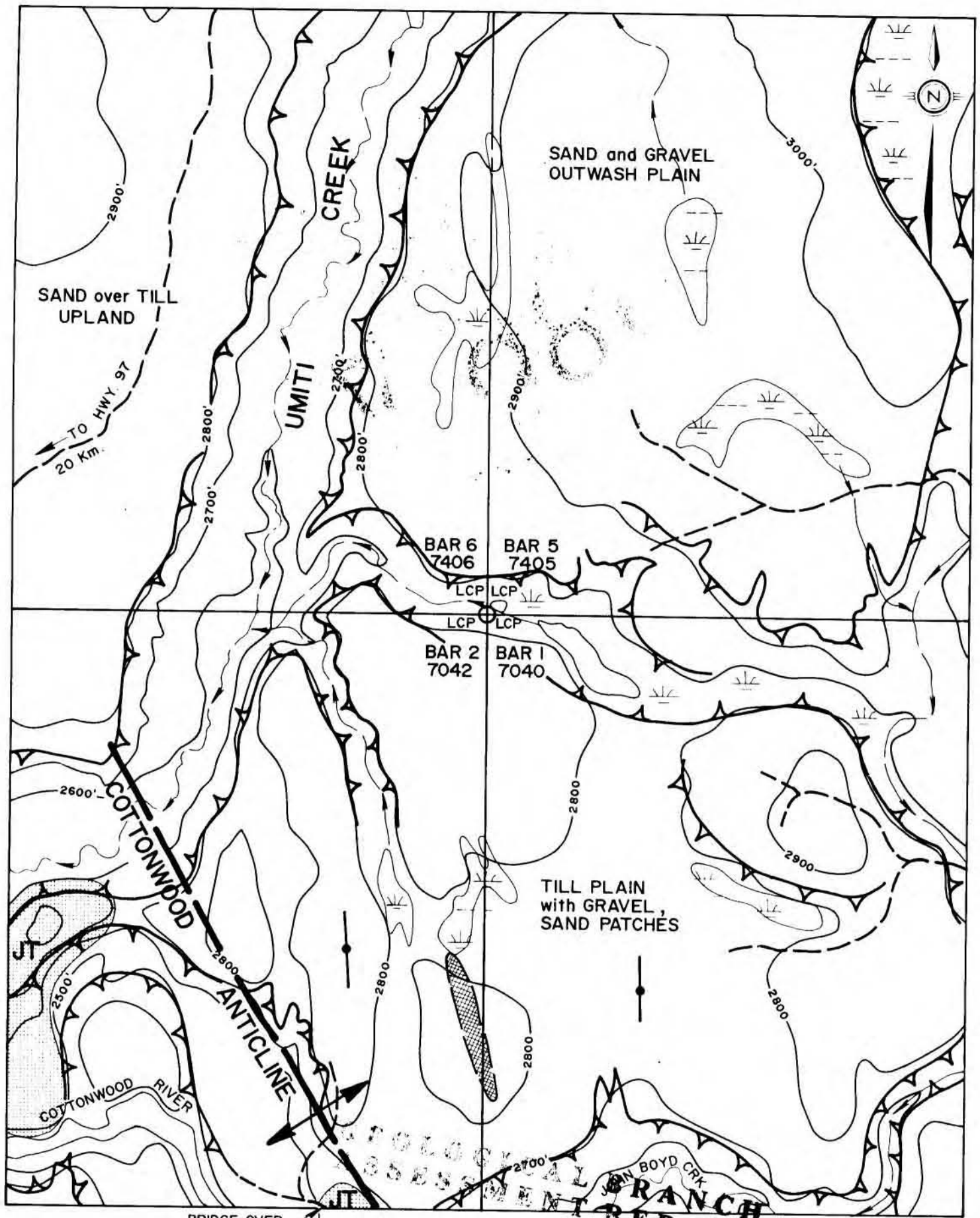
Field Expenses:

Rental of Vehicle @ \$25/day, 9 days	225.00
Food and Accommodation, 18 mandays @ \$40/day	720.00
Kileage (from <u>Quesnel</u> only), 400 km. @ .30/km.	120.00
Air Photos, no charge	

Report Preparation:

Air Photo Interpretation	
M. Roed, 1 day @ \$400/day	400.00
Drafting, 16 hours @ \$23/hour, T. Quinn	368.00
Writing and Report Organization	
M. Roed, 3 days @ \$400.00	1,200.00
Typing, Copying, Binding, etc.	<u>300.00</u>

Total Expenditure \$8,193.00



LEGEND

BEDROCK GEOLOGY

JT JURASSIC - TRIASSIC ANDESITE, SILTSTONE

TERRAIN FEATURES

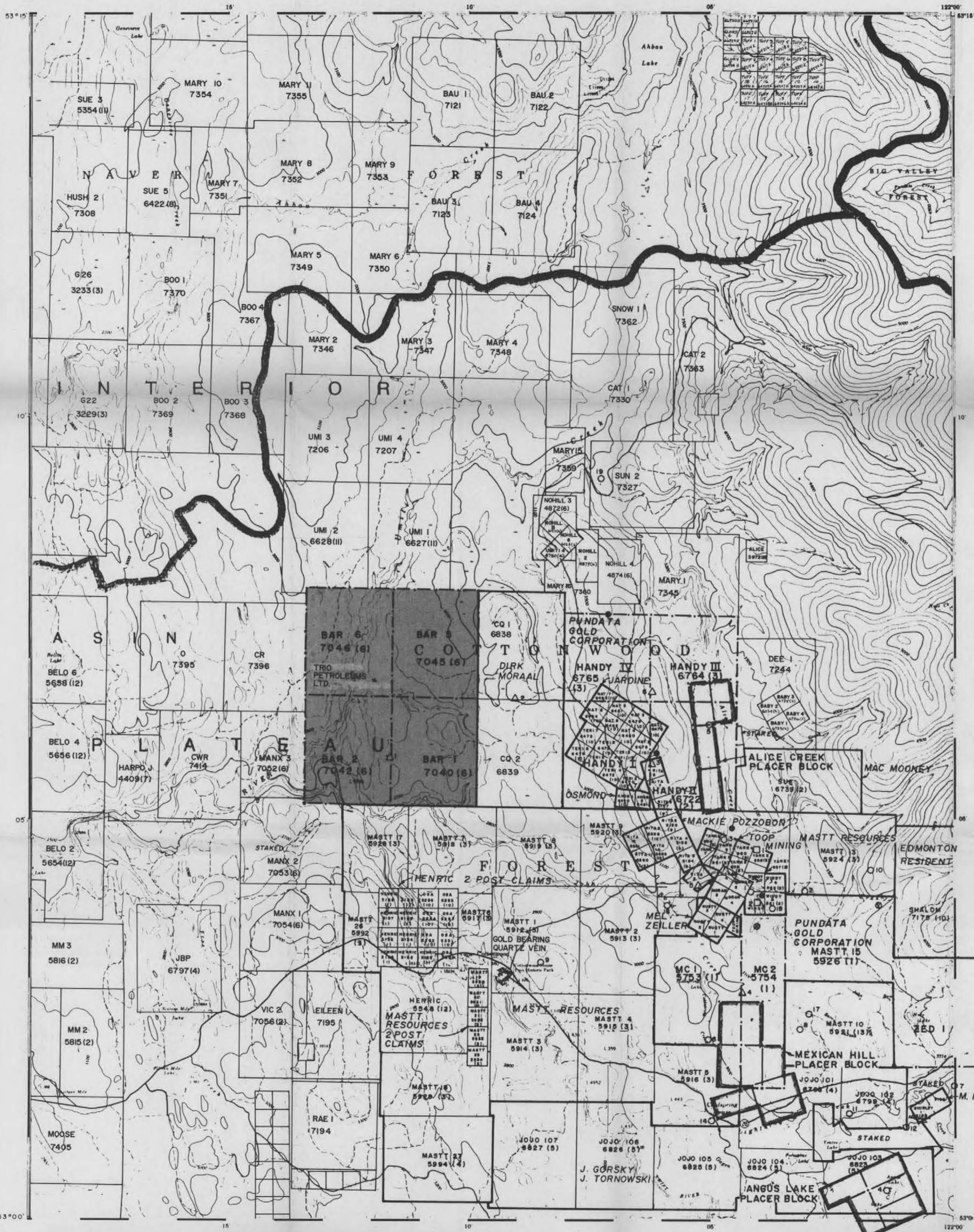
— GLACIAL GROOVE

— SCARP ALONG RAISED MELT-WATER CHANNEL

▨ BAR M VLF EM ANOMALY (APPROX. LOCATION)

14,986

Foxview MANAGEMENT LIMITED	
TEC PETROLEUMS LTD.	
BAR CLAIMS COTTONWOOD GOLD CAMP <i>Scale 1:20,000</i>	
DATE: JUNE/86	SCALE: 1km 3km 5km
DWN. BY: T.P.Q.	DWG. NO.: 3



LEGEND

- Hardrock claim
 - Placer lease
 - PLACER
 - 1 Toop Mine
 - 2 Golden Wing
 - 3 Poschner
 - 4 Angus Lake Block
 - 5 Alice Creek Block
 - 6 S. MacDonald Testing
 - 7 Mc Guire Leases
 - 8 Hanleys Leases
 - 9 Mastt Resources (Taylor Bros.)
 - 10 Smit - Osmond
 - 11 Handover Mining
 - 12 Slades Pit
 - 14 Jardines
 - 15 Mexican Hill
 - 16 Morris Brothers (240' hole)
 - 17 Hanleys Shaft
 - 18 "Cottonwood Jims" (Toop)
 - 19 Hernia Hill
 - △ HARDROCK
 - 1 Bar Anomaly / Grid
 - 2 CO Claims (common line)
 - 3 Osmond Pit
 - 4 MC Claims
 - 5 M. Pozzobon DDH (84')
 - 6 Handy Claims
 - 7 Pozzobon's DDH Qtz. vein
 - REPORTED SULPHIDE OCCURRENCE
 - 1 Toops Churn Drill Hole
 - 2 Sulphides and Graphite in Toop Placer
 - FERROCRETE
 - ⊗ SURFACE GOLD SHOWING IN BEDROCK
 - PUNDATA GOLD CORPORATION
 - Hardrock
 - Placer
- NOTE:** Location of claim boundaries, size of claim blocks and ownership, are not guaranteed.

14,986

TRIO PETROLEUMS LTD.

**BAR GROUP & CLAIM MAP
COTTONWOOD AREA**

CARIBOO MINING DIVISION, BRITISH COLUMBIA

Technical Work By: FOXVIEW MANAGEMENT LTD. Murray A. Reed Ph.D., R.Eng.	Scale: 1" = 100,000'
Date: Feb. 1988 Reviser: JUNE/88	Drawn By: P.J.M. Figure No. 2

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