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# PANCONTINENTAL MINING LIMITED

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EXPLORATION DIVISION



PANCONTINENTAL MINING LIMITED

Report No:90/24

SUMMARY REPORT  
KINGSTON PROJECT, FIJI

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## CONTENTS

	Page
1. INTRODUCTION	1
2. GEOLOGICAL SETTING	1
3. EXPLORATION MODEL	2
4. EXPLORATION COMPLETED AND RESULTS	3
5. CONCLUSIONS	4
6. PROPOSED PROGRAM AND BUDGET	5

## FIGURES

	<u>Scale</u>	<u>Dwg. No.</u>
1. Location Plan	Reduced to 1:80,000	109/B/26
2. Diagrammatic Cross Section	-	109/D/33
3. Fiji Gold Model Cross Section	-	110/D/3
4. Banana Creek Prospect (SW) Geological Interpretation	Reduced to 1:2,800	109/D/34

## 1. INTRODUCTION

### Report Purpose

Pancontinental Mining Limited, through its wholly owned subsidiary Continental Resources (Fiji) Limited, is offering the Kingston gold exploration project in Fiji for joint venture. This report provides a summary of the project for interested parties.

### Location

The project area is located 25 km northeast of Nadi, close to the west coast of the main Fijian island of Viti Levu (Fig. 1). Although the terrain is rugged, most of the ridges consist of open grasslands. An exploration camp has been established at Navilawa Village, which can be reached by 4WD vehicle from Nadi. The Navilawa people are extremely friendly and supportive of the company's activities, and provide a semi-skilled workforce for the exploration programs. Mining activities at the Kingston copper-gold deposit near Navilawa during the 1930's and base metal exploration by Aquitaine in the 1970's have continued the mining association with the area. The Kingston project is located 35 km southwest of the large Emperor Goldmine at Vatukoula.

### Tenements

The project consists of two adjoining Special Prospecting Licences (SPLs). SPL 1218 (Kingston) covers 24 sq km and an application has been lodged to renew title to 30 June 1991 with a proposed annual expenditure commitment of F\$127,000. SPL 1290 (Koroinondamu) lies to the southeast of SPL 1218 covering 30 sq km. This licence has a current annual expenditure commitment of F\$40,000 and is due to be renewed on 30 September 1990.

### Joint Venture Summary

SPLs 1218 and 1290 are subject to a Joint Venture between Continental Resources (Fiji) Limited and Venture Exploration N.L. Continental has already earned a 51% ownership interest in the tenements, and as Venture has elected to dilute, Continental has the right but not the obligation to earn an 80% ownership interest in the tenements. Continental is Operator and Manager of the Joint Venture.

## 2. GEOLOGICAL SETTING

The Kingston project covers the central, northern, and eastern sections of an interpreted caldera (see Fig 2). The caldera walls are formed by units of the Ba Volcanic Group and the Koroimavua Volcanic Group. The intra-caldera units are of shoshonitic composition comprising trachyandesitic volcanics intruded by a monzonitic stock with associated late stage dyke swarms of basaltic, andesitic, monzonitic and felspar porphyry composition. The caldera has been intersected by a series of NNE, NE and easterly trending structures.

At Kingston, a telescoped multi-phase mineralised system is present. Deeper level porphyry Cu-Au mineralisation is hosted by monzonitic intrusives in the centre of the caldera, while to the northeast at the Banana Creek prospect a high level, low temperature < 260°C gold-bearing vein system (quartz-adularia-calcite) has been mapped over an area of 1400m x 400m. The vein system is open to the northeast where it approaches the caldera rim, which is a structural setting analogous to the Emperor Goldmine where the vein system occurs in faulted volcanics within the caldera margin.

### 3. EXPLORATION MODEL

Kingston lies within the Fiji Gold Trend which is a northeast-trending extensional fault zone across northern Viti Levu and Vanua Levu (the two main Fijian islands). Virtually all significant gold occurrences in Fiji occur along the Fiji Gold Trend in clusters surrounding igneous centres such as the Kingston caldera.

The main characteristics of these gold deposits/occurrences are:

- \* the gold is igneous hydrothermal (250°C - epithermal) in origin, introduced by the potassic, shoshonitic Tertiary intrusives which represent the feeders and latest phases of the volcanic rocks which dominate northern Fiji. Hydrous mineral phases (biotite, hornblende particularly) in the intrusives develop whenever the hydrothermal ore system has developed.
- \* gold is generally vein-controlled and can be restricted to narrow bonanza-grade lodes within weakly altered host rocks. Primary gold is fine-grained and can be in the following forms:
  - Gold-silver tellurides
  - Electrum
  - Native Gold
  - Pyrite Gold
  - Enargite-Luzonite Gold (only in high sulphur systems).
- \* commonly associated minerals are:
  - Quartz (crystalline near ore, hydrous silica forms away from ore)
  - Carbonate (often platy or birds-foot crystal forms)
  - Adularia - K feldspars
  - Pyrite
  - Roscoelite (green vanadium-titanium micas)
  - Smectite Clays
  - Barite (only in high sulphur systems)
- \* magnetite in the adjacent host rock has been converted to pyrite by the gold-bisulphide complex which carried the gold in the epithermal fluids but alteration selvages are commonly very narrow (less than 0.5 metre).

- \* because of the tensional structural environment and high fluid contents, the veins develop along both steep and flat-dipping structures. Structural intersections are most favourable for gold enrichment. Other structures which pre-date gold mineralisation and were filled with plasticine clays have dammed and controlled fluid-flows so that they have dramatic influences on ore development but are themselves, unmineralised controlling faults.
- \* gold ore can extend in a structural network over vertical depth ranges exceeding 1000 metres and laterally up to 5000 metres.

At Fiji's main gold producer, the Emperor Goldmine near Vatukoula which was discovered in 1932, most surface workings were very low grade but at 100 metres depth, grades of 2 ounces per tonne were not uncommon. Recorded production since 1935 has been 4.2 million ounces (135 tonnes) from 13.4 million tonnes - a recovered grade of 10 g/t Au. The total resource at Vatukoula is about 15 million tonnes averaging 12.5 g/t.

Figure 3 summarises the exploration model at Kingston with emphasis on the Banana Creek prospect.

More detailed analyses of the target/models has been made in a recent consultant's report which recommends a drilling program.

#### 4. EXPLORATION COMPLETED AND RESULTS

Exploration conducted by Continental Resources since 1986 has been directed towards the discovery of a major epithermal gold deposit, using the Emperor model as a guide.

The initial work focused on the Kingston/Central Ridge porphyry Cu-Au system where 14 reverse circulation drill holes (1,902m) were completed with a best intersection of 12m at 1.29 g/t Au in drill hole KRC 3. While this program was in progress, a reconnaissance geological mapping and drainage geochemical sampling program commenced, covering the entire area of SPL 1218 and later extending into SPL 1290. In addition, an airborne magnetic/radiometric survey was flown.

The reconnaissance program identified a number of prospects based on alteration/quartz veining/anomalous geochemistry which have been followed-up to varying degrees. By far the most significant of these is the **Banana Creek** prospect which is located in the eastern section of SPL 1218 and was discovered in May 1987 by conventional systematic drainage geochemistry and float mapping (Fig. 1). Stream sediment values ranged up to 0.26 g/t Au and rock float values to 12.6 g/t Au. Follow-up of these anomalies located an outcropping gold-bearing quartz vein system which had not been discovered by previous explorers. Initial rock chip sampling of the exposed veins over an area of approximately 400m x 200m confirmed an average grade of 6.2 g/t Au for the 55 samples collected. Further exploration has shown that the Banana Creek vein system has dimensions of 1400m x 400m and is open to the northeast. Although no drilling has been conducted to date, due to the relatively steep terrain an exposed vertical extent of at least 260m can be inferred for the vein system (see Fig. 4).

The quartz-adularia-calcite vein system is hosted by a monzonite intrusive which has been extensively intruded by a series of dyke swarms and cut by a number of fault sets. At least three vein sets are present, following either the dyke margins or faults. Individual veins reach a maximum width of 50cm and can be traced in outcrop for at least 40m, although it is inferred that the individual structures and possibly individual veins have strike lengths of up to 400m (Fig. 4). Zoning has been recognised in the system as evidenced by the change from a Au-Pb-Zn association in the topographically lowest SW extremity, to a Au-Ag-As-Hg association in the topographically highest NE extremity of the system. Also in the NE area at the Lutuyate Creek prospect near the inferred caldera wall, the vein system is in contact with a high sulphide pyrite-silica-sericite alteration system which is low in gold. Here the vein system is hosted by trachyandesitic volcanics.

A bulldozed track has been established to the vein system and a number of bulldozed contour trails established. The bulldozing has exposed many more veins than were interpreted from the natural outcrop distribution, but has shown that on average the gold grades are lower when channel samples are collected which include both quartz veins and wallrocks (eg. 8m at 2.05 g/t Au, 2m at 3.10 g/t Au).

## 5. CONCLUSIONS

The Emperor Goldmine exploration model fits well with the results achieved to date from the Kingston project area:

- \* the geological setting of the caldera and mineralisation/alteration patterns are appropriate.
- \* the strength and vertical extent of mineralisation is encouraging.
- \* the discovery of the gold bearing Banana Creek prospect and the mineralised flat-dipping structures (found only after bulldozing) shows that more prospects may be found and that these systems are strongly analogous with the Emperor orebodies.
- \* the discovery of hydrothermal chimney structures within the Lutuyate Creek alteration system supports the concept that mesothermal fluids developed at the central Kingston copper-gold mine, epithermal gold was deposited at Banana Creek prospect, and post-boiling steam vapours were vented at Lutuyate Creek prospect.

## 6. PROPOSED PROGRAM AND BUDGET

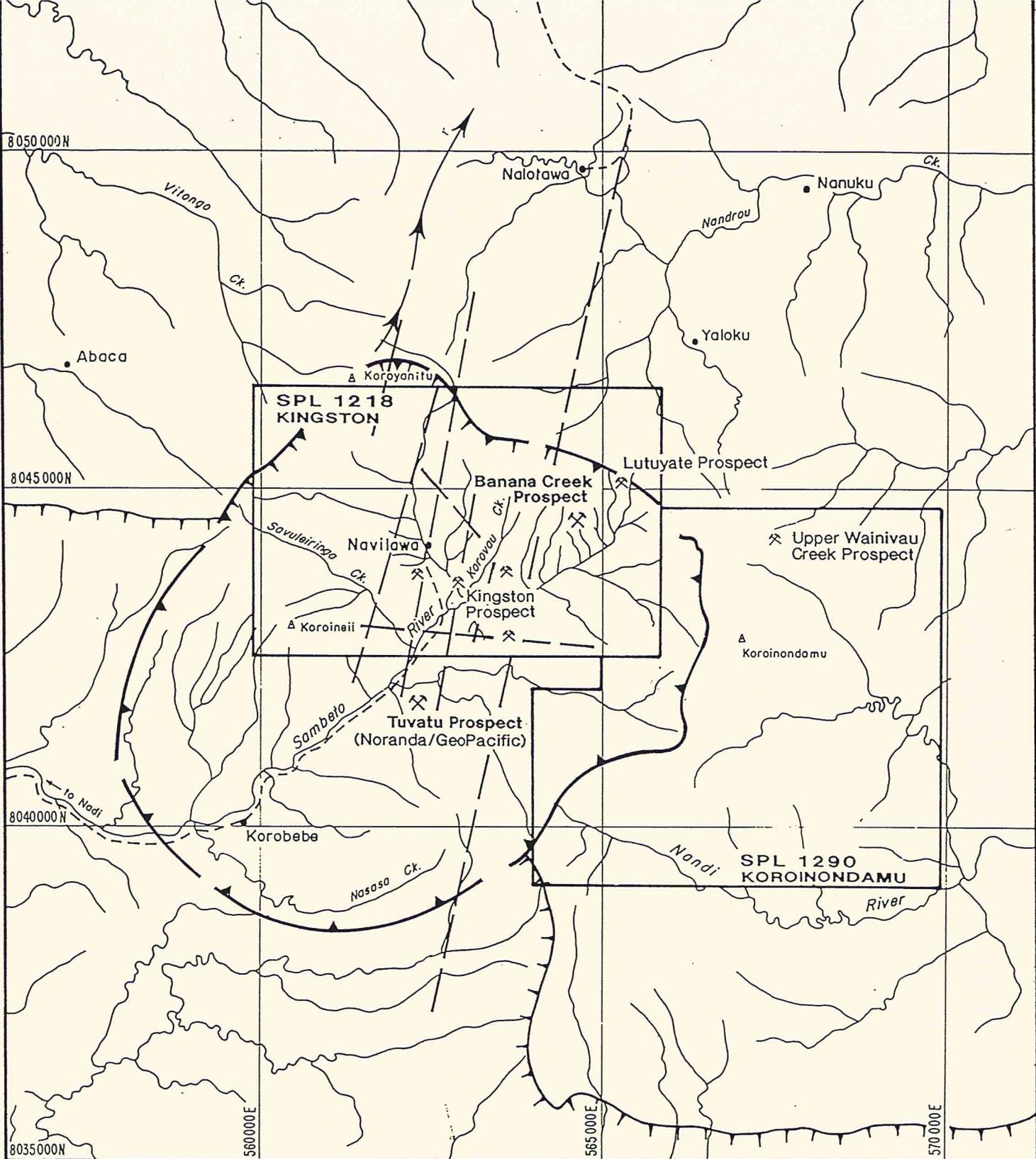
The next phase of exploration at Kingston is designed to conduct the first drilling program on the Banana Creek vein system, and to follow-up other less advanced targets. The program will also include the flying of colour aerial photography to assist in both the preparation of controlled topographic maps and in geological mapping/interpretation.

To assist the delineation of specific drill targets at Banana Creek, the vein system will be detail mapped with an emphasis on the structural controls on the various vein sets, vein mineralogy, vein chemistry, gold distribution, and alteration/chemical zonation.

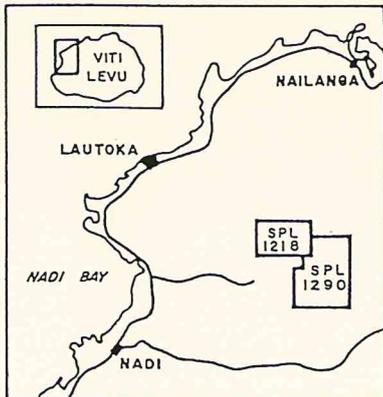
The first phase of drilling will be 2,000m of diamond drilling (8 x 250m holes) to test the grade, thickness and continuity of the quartz veins at depth. Important targets will include sub-surface flat veins which do not crop out. Detailed alteration/petrological/fluid inclusion studies will be conducted on the drill core to better understand the hydrothermal system and to use as a guide to ore.

The proposed budget of A\$500,000 includes:

	\$
* Aerial photography and topographic map preparation	20,000
* Structural mapping of Banana Creek vein system and associated laboratory studies	30,000
* Banana Creek first phase drilling program (2,000m core)	400,000
* Follow-up of less advanced targets on SPLs 1218 and 1290	50,000
	<hr/>
	A\$500,000
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LOCATION PLAN

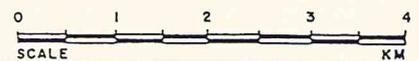


LEGEND

- Cliff
- Inferred caldera margin
- Ridge
- Gold prospect - major, minor
- Air photo linears
- River, creek
- Road - 4WD
- Village

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**KINGSTON PROJECT - FIJI**  
**SPL 1218 & 1290**  
**LOCATION PLAN**



Compiled RDM	Date July, 1990	Dwg. No. 109/B/26
Report No	Map Ref	Figure 1

Banana Creek  
epithermal Au  
vein system

Kingston Cu-Au  
porphyry system

MONZONITE

VOLCANICS

VOLCANICS

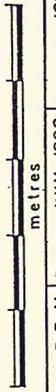
VOLCANICS

VOLCANICS

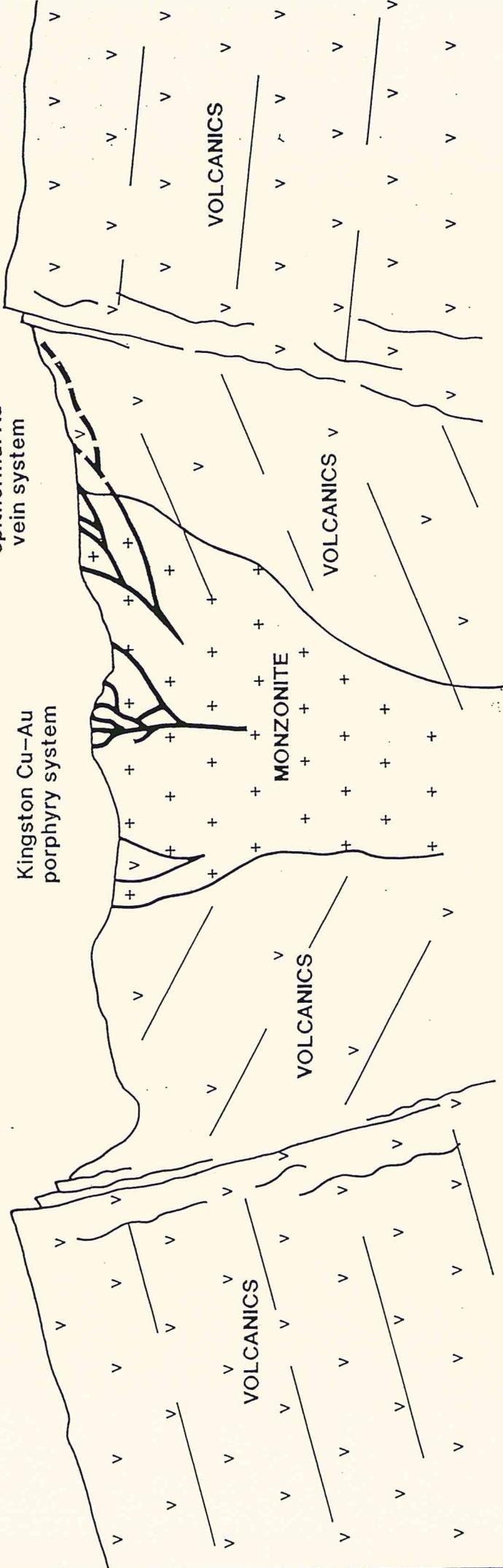
**PANCONTINENTAL MINING LIMITED**  
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**PANCON**

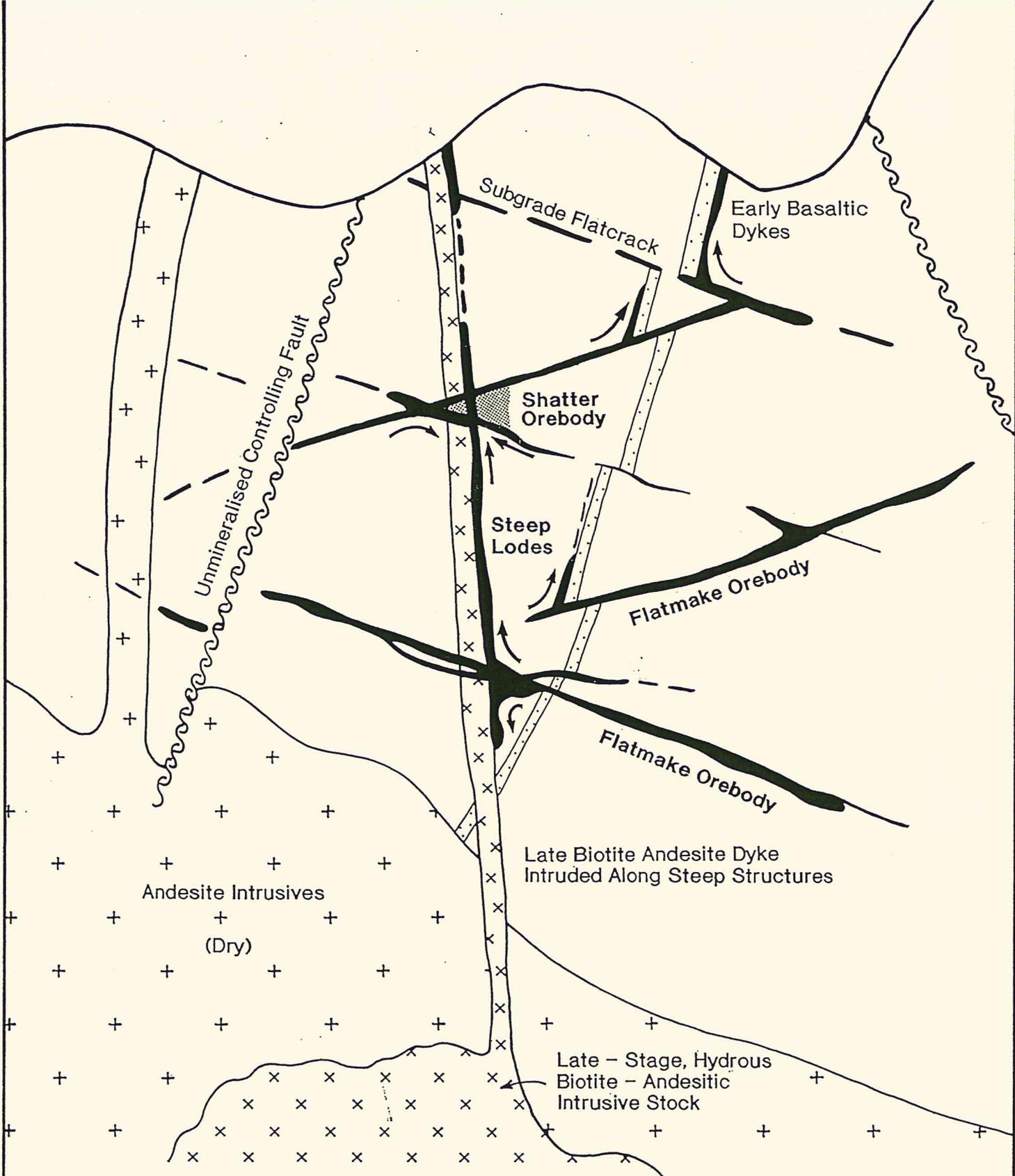
**KINGSTON PROJECT - FIJI**  
**DIAGRAMMATIC**  
**CROSS SECTION**

NOT TO SCALE



Compiled: R.D.M. Date: JULY, 1990 Dwg.No., 109/D/33  
Report No.: Map Ref.: **Figure 2**



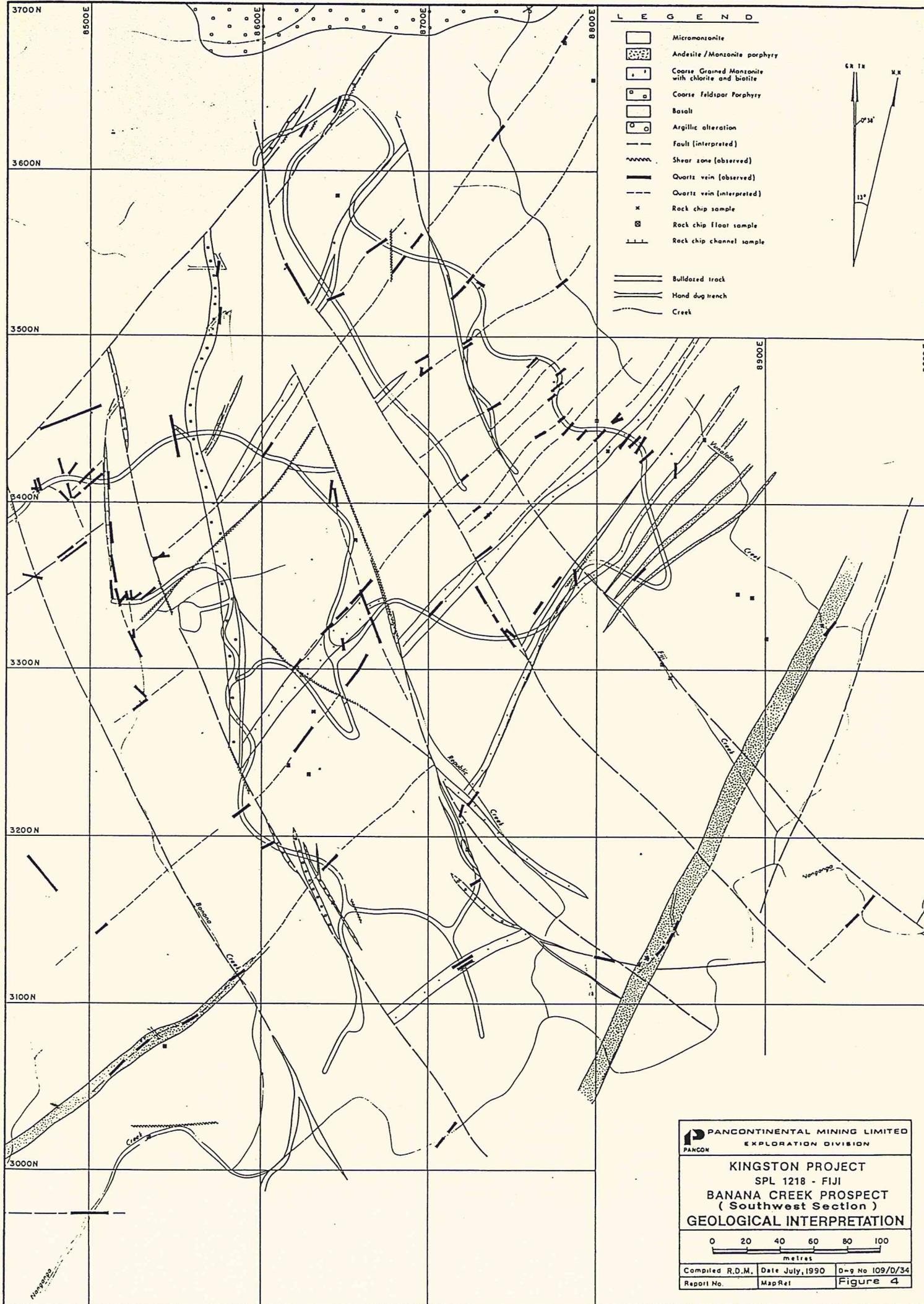


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**FIJI GOLD MODEL  
 CROSS SECTION**

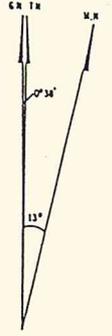
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**LEGEND**

- Micromonzonite
- Andesite / Monzonite porphyry
- Coarse Grained Monzonite with chlorite and biotite
- Coarse Feldspar Porphyry
- Basalt
- Argillic alteration
- Fault (interpreted)
- Shear zone (observed)
- Quartz vein (observed)
- Quartz vein (interpreted)
- Rock chip sample
- Rock chip floor sample
- Rock chip channel sample
- Bulldozed track
- Hand dug trench
- Creek



<b>PANCONTINENTAL MINING LIMITED</b> EXPLORATION DIVISION		
<b>KINGSTON PROJECT</b> SPL 1218 - FIJI <b>BANANA CREEK PROSPECT</b> ( Southwest Section ) <b>GEOLOGICAL INTERPRETATION</b>		
Compiled R.D.M.	Date July, 1990	Dwg No 109/D/34
Report No.	Map Ref	Figure 4