

1997 EXPLORATION REPORT

FOR

**GALLOWAI METAL MINING CORPORATION**

**FORT STEELE MINING DIVISION**

BRITISH COLUMBIA

For: -

**THE R. H. STANFIELD GROUP**

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*THIS REPORT ADDRESSES THE GALLOWAI BUL RIVER PROPERTY IN WHICH GALLOWAI METAL MINING CORPORATION HOLDS A 50% INTEREST. IN ADDITION, THE REPORT OUTLINES THE TOTAL PROPERTY KNOWN AS THE STANFIELD GROUP HOLDINGS, IN WHICH GALLOWAI METAL MINING CORPORATION OWNS AN OVERALL 30% INTEREST.*

*ONLY THOSE AREAS WITHIN THE TOTAL STANFIELD GROUP HOLDINGS THAT WILL BE SUBJECTED TO THE EXPENDITURE OF EXPLORATION FUNDS BY GALLOWAI METAL MINING CORPORATION ARE INDIVIDUALLY ADDRESSED HEREIN.*

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*The Geology Sections of this Report have been prepared by:-*

**MASTER MINERAL RESOURCE SERVICES  
LIMITED**

*and permission has been given for the inclusion of such material in this Report.*

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*This Document entitled:  
1997 Exploration Report for*

**GALLOWAI METAL MINING CORPORATION,  
FORT STEELE MINING DIVISION, BRITISH COLUMBIA**

*is an update of that of August 16, 1996 entitled:*

**1996 Exploration Report for Gallowai Metal Mining Corporation,  
Fort Steele Mining Division, British Columbia".**

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# SECTION I. GENERAL

## 1.1 INTRODUCTION

Precious & General Metals (PGM), in association with other groups, has been retained by the Stanfield Group since 1987 to assist in the ongoing exploration towards development of various mineral showings prevalent throughout the Stanfield Holdings. Master Mineral Resource Services Ltd. (MMRS) of Calgary, Alberta was engaged to assist with geological interpretation and development and use of computer modelling techniques for a more effective exploration of the total area. This report has been prepared on the basis of the studies of the Stanfield Group and the efforts of their consultant teams.

The contained report outlines the general geology of the Stanfield Holdings and individually addresses the Claim Groups known as the **Gallowai Bul River** and **Big Bear**, as well as other showings within the greater Claims area controlled by the **Stanfield Group**. The report outlines and costs an exploration programme for each area with the assumption that "in-house" staff and equipment will be used where such is available. A concluding overall cost summary is provided.

**Gallowai Metal Mining Corporation (Gallowai)**, together with Bul River Mineral Corporation Ltd. (Bul River), jointly own 60% of the Claims Area controlled by Fort Steele Mineral Corporation Ltd. (Fort Steele) and Zeus Mineral Corporation Ltd. (Zeus). This Claims Area is referred to as the Stanfield Holdings. **Gallowai** and Bul River, under separate agreement, each control fifty percent of the area covering the Bull River (Dalton) Mine previously operated in the early nineteen seventies by Placid Oil Company. This property, known as the Gallowai Bul River Group, is addressed in Section 2.2 of this Report.

Subordinate to **Gallowai**, further companies of the Stanfield Group - Big Bear Metal Mining Corporation (Big Bear), Giant Steeples Mineral Corporation (Giant) and White Cat Metal Mining Corporation (White Cat) - have, through separate agreements with **Gallowai** and Bul River, individually acquired the rights to the **Gallowai / Bul River** 60% ownership in Claim Groups totalling four 20 unit claims each. The Big Bear Group is addressed in Sections 2.3 of this Report whereas Giant Steeples and White Cat are not covered by any Gallowai exploration programme. These subordinate companies, through exploration and development, will be able to earn up to a 60% interest in any other named area within the total Stanfield Holdings - see Figure 4.

THE  
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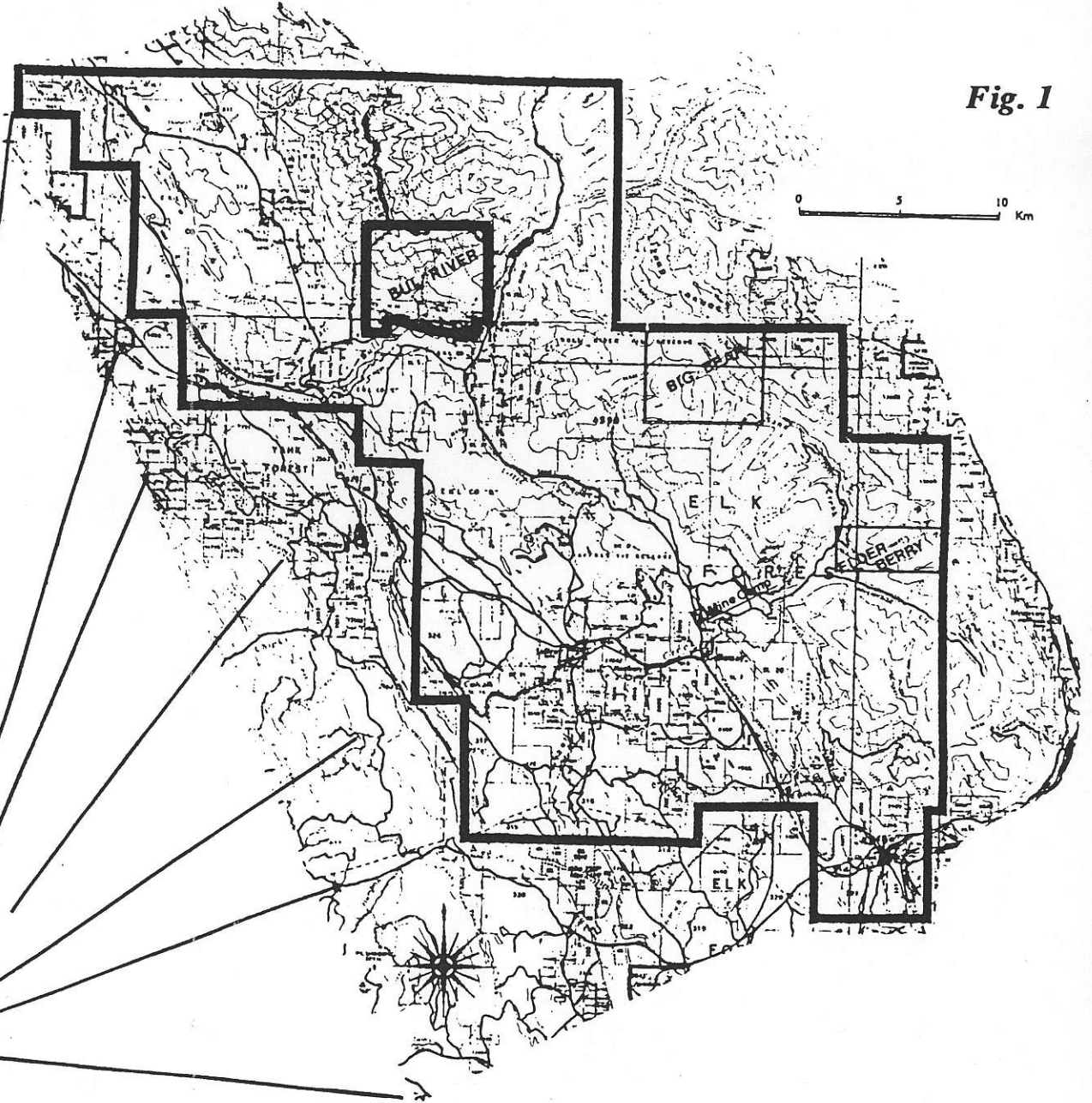
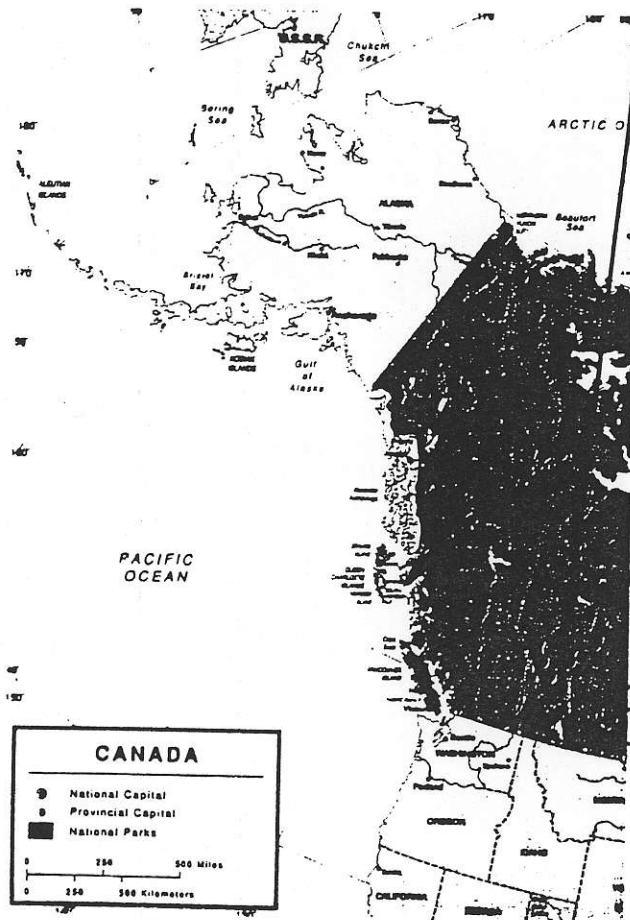


Fig. 1

LOCATION AND CLAIM AREA

Fig. 1

Certain exclusions to the foregoing may be summarised as:

- ① Management reserves the right to allow the subordinate companies to enter into appropriate agreements to co-explore each others Claims Groups and likewise,
- ② through implicit exploration agreements, to conduct exploration on:
  - .① The Zeus Group, comprising Mineral Claims, Steeples No. 1 and No. 2;
  - .② The Gallowai owned Elderberry Group comprising the Mineral Claims known as Elderberry No. 13 and No. 14 and lastly,
  - .③ The Fort Steele Group comprising Mineral Claims, Cedar No. 8 and No. 10.
- ③ Giant Steeples and White Cat are excluded, by virtue of an earlier agreement between the principles within the Stanfield Group, from engaging in exploration activities within the Gallowai Group (Elderberry), the Fort Steele Group ("G" and Great Western) and the Zeus Group (Copper King), unless the previous agreements are adapted to so permit.

**It should be noted that the Bul River owned "Gallowai Bul River" area has already been subjected to preliminary and secondary stage exploration programmes that have realized the existence of sufficient quantities of Copper, Silver and Gold mineralization to permit consideration of an operating decision. All companies subordinate to Gallowai and Bul River are therefore expressly excluded from entering into any partnership arrangement on the Gallowai Bul River Property.**

## 1.2 LOCATION AND ACCESSIBILITY

The Stanfield Holdings, situated totally within the Fort Steele Mining Division of Southeast British Columbia - see Figure 1 - extend from south of the Town of Elko in a northwesterly direction to just south of the Town of Fort Steele, and easterly from the Town of Warden on the Kootenay River in the Rocky Mountain Trench to just east of the Lizard Range. The Lizard Range is a section of the Front Range that forms the westerly limit of the Eastern Rocky Mountains.

Access to the claims is achieved via the Provincial Airport at Cranbrook approximately 54 kilometres to the west and thence by Provincial Highway No. 3 to Galloway. Alternatively, the community of Galloway sits astride the east-west Highway No. 3 facilitating ease of access from Alberta through the Crows Nest Pass or from Vancouver to the west. The present exploration and staff camp lies approximately 2 kilometres by Forestry Road to the north of Galloway.

The claims straddle the Canadian Pacific Railways main line which traverses the southern and southwesterly sections of the Stanfield Holdings. More than sufficient power to service any foreseen operations is available from British Columbia Hydro which generates hydro power at the Aberfeldie Station immediately to the east of the Gallowai Bul River Group claims in the central northern section of the Holdings.



The readily replaceable rail transportation system, previously utilised by Placid Oil for concentrate shipping, the ease of road access, the in-place service industry and the availability of housing at reasonable prices, will considerably reduce the infrastructural costs normally associated with the development of any mining operation. Given the existence of such an infrastructure, a lower grade deposit than those typically being worked in non third world countries may be considered economic.

### 1.3 PROPERTY

Figure 1, provides an approximation of the total area comprising the Stanfield Holdings now 60% conjointly owned by **Gallowai** and Bul River and 40% conjointly by Fort Steele and Zeus. The Big Bear, Giant Steeples and White Cat "Buy-in" Claim Groups are identified on Figure 4. All known mineral zones, claim groups or mineral leases are listed in Table 1 - Section 1.6 of this Report.

The contiguous claims encompass an area of significant metalliferous mineralization approximating 700 sq. km.

### 1.4 TOPOGRAPHY & GEOMORPHOLOGY

The Stanfield Holdings cover an area of 700 square kilometres within the southern Rocky Mountain Trench and adjacent eastern margins incorporating the Kootenay River System and portions of the Western edge of the Rocky Mountain System, comprising the Steeples and Lizard Front Ranges.

The two terrane have distinct geomorphological features. Geologic and gravity data suggest that the Trench has been depressed along longitudinal normal stepped faults. Within the Trench are structural lows filled mainly by sediments of Cenozoic Age. Near the edges of the Trench, outcrops of Precambrian to Paleozoic formations are not uncommon. Subsequent to block faulting, erosion and filling of the Trench by Eocene time, thrust faulting and subsequent normal faulting was responsible for the complex stratigraphy of the Precambrian and Paleozoic strata. In Pleistocene time the Trench was modified by glaciation causing an irregular bottom surface and the basin filled with thousands of feet of glacial debris. The edges of the Trench were also modified by glaciofluvial action and later partly covered by colluvium.

The other type of terrane is part of the Rocky Mountains and consists essentially of the Steeples and Lizard Ranges.

### 1.5 EXPLORATION HISTORY - STANFIELD GROUP

Overleaf, Table II provides an itemised History of significant events throughout the Stanfield Group exploration years in the Fort Steele Mining District of south eastern British Columbia. These activities

have been conducted over the total claim holdings, but the most significant expenditures have been incurred in the area of the Gallowai Bul Mine - previously known as the Dalton Mine of Placid Oil Corporation.

Mining activities have taken place in the area of the Gallowai Bul River claims since the late 1800's some of which are itemised below..

**TABLE I: HISTORICAL MINING ACTIVITIES ON STANFIELD GROUP PROPERTIES**

NAME	LOCATION UTM $N/E$	MINERAL S	DESCRIPTION	REFERENCE
Old Abe	5,485,500N 616,500E	Cu, Pb, Ag	Veins and Dykes in Aldridge Argillite. Trenches and Adits	1899 - MEMPR Annual Rep. P658
Central Adit	5,484,900N 617,050E	Cu, Ag	Veins and Dykes. Adit	1898 - MEMPR Annual Rep. P1005
Dalton	5,484,500N 617,000E	Cu, Ag, Au	Veins in Shear Zones in Aldridge and Subcropping. Two Open Pits	1969 - MEMPR Geol. Exp & Mining. P348
Copper King	5,486,000N 619,500E	Cu, Pb, Ag	Veins and Dykes in Aldridge Argillite and Quartzite adits	1898 MEMPR 1006 1925 MEMPR p228 1972 MEMPR p64
Trilby Group	5,484,600N 620,000E	Pb, Cu, Ag	Veins and Dykes in Aldridge Argillites	1898 MEMPR 1005 1925 MEMPR p229
Eagle Plume	5,493,000N 608,800E	Cu, Au, Ag	Vein in Kitchener Limestone and Siltite	1927 MEMPR p127
Bull River Iron	5,485,150N 622,550E	Fe	Hematite filled fissures in Kitchener Dolomites	1920 MMRP p117/118
Viking	5,480,600 624,000E	Cu, Pb, Ag	Vein in Creston green Siltites	
Great Western	5,480,500N 624,900E	Pb, Zn	Vein in Aldridge Argillites	1926 MEMPR pp244-246
Dean	5,473,000N 628,800E	Cu, Ag	Vein in Aldridge Argillite	1898 MEMPR 1003
Empire Strathcona	5,473,600N 630,850E	Cu, Ag	Vein in Aldridge Argillite	1898 p1002 1929 p298 1930 p 243/244
Burt	5,474,200N 632,500E	Pb, Zn, Ag, Au	Vein in Aldridge Argillites	1937 p42/42

Finally, Mr. R. H. Stanfield purchased the Dalton Mine assets from Placid Oil Corporation on March 5, 1976. At that time, Placid were quoting Underground Ore Reserves of:

732,492 tons at 1.94 % Copper

(at cut off grade and thickness of 1.0% and 4 feet respectively).

(Although values of up to 0.57 ounces per ton of Gold - *Placid Core Logs and Assay Reports* - were intersected by Placid diamond drills, no consideration was given to gold or silver in reserve calculations probably because Gold was being officially held at US\$ 35 /oz at that time).

**TABLE II: EXPLORATION HISTORY - STANFIELD GROUP**

Year	Event
1952	1st Claim Holding - with Private Syndicate took control of mineral claim groups near Galloway, Fort Steele mining Division, British Columbia.
1958	Commenced active exploration - mapping and compass surveying. <b>Acquisition of first two Cats (D7's) - one since sold.</b> 1st Roadwork - Mountain #1 - Burt Group Reopened Adits - Mountain #1 - Strathcona Empire Reopened Rimrock Adits
1958/59	<b>First Camp Cabins constructed</b>
1959	Rental of third Cat 1960
1959	First Air Drill and Diamond Drill Contracts
1960	Machine Shops constructed
May 26, 1969	<b>Fort Steele Mineral Corporation Ltd - INCORPORATED</b>
1970/71	Major expansion of Claim Holdings
1971	Placid Oil commenced production at Bull River
1974	Placid Oil closed down Bull River
1974	Underground Drilling at Rimrock - Wescore Drilling Ltd Contract
July 1, 1975	5 Diamond Holes - Wescore - O.K.Claims
Mar 5, 1976	<b>Purchased assets (Mill and Mine Lands) from Placid Oil.</b> Records of 49,280 feet of Diamond Drilling at Bull River of which 22,599 feet of logs and core were received.
Apr 10, 1976	12 Diamond Drill Holes - Wescore
Mar 17, 1977	<b>Bul River Mineral Corporation Ltd - INCORPORATED</b>
Dec 15, 1977	<b>Zeus Mineral Corporation Ltd. - INCORPORATED</b>
Jan 16, 1978	Commencement of G Zone Adit - Mtn #4 - 1100 feet.
Feb 28, 1979	<b>1st Billing Date for Company Owned Diamond Drill.</b>
Apr 28, 1979	5 Diamond Drill Holes on Cedar 8 and Cedar 10
1979	Underground Diamond Drilling at G Zone
1980	Commenced Copper King exploration - 12,862ft Diamond Drilling
Dec 2, 1980	<b>Gallowai Metal Mining Corporation - INCORPORATED</b>
1981	Major Drilling programme for Reserves Expansion at Bull River commences - 18,811ft Diamond Drill Holes.
1982	Continuation of Reserves augmentation at Bul River - 10,564ft of DDr. Holes
1983	Porcupine Hill Drilling - 3,474ft
1984	3,400ft of Diamond Drilling. 2,850ft of Percussion Drilling
1985	219ft of Diamond Drilling. 2,951ft of Percussion Drilling
1986	8,688ft of DDr; 1,813ft of Percussion.
1987	9,361ft of Ddr; 9,227ft of Perc.
1988	4,883ft of Ddr; 6,028ft of Perc.
Aug 31, 1988	<b>Big Bear Metal Mining Corporation - INCORPORATED</b>
Sep 8, 1988	<b>Giant Steeples Mineral Corporation - INCORPORATED</b>
Oct 20, 1988	<b>White Cat Metal Mining Corporation - INCORPORATED</b>
1989	17,336ft of Ddr; 4,486ft of Perc.
1990	20,579ft of Ddr; 7,427ft of Perc.
1991	12,809ft of Ddr;
1992	9,354ft of Ddr.
1993	6,260ft of Ddr.
1994	1,334ft of Ddr; 1,370ft of Perc.
1995	8,068ft of Ddr
1996	

## 1.6 GEOLOGY and MINERALOGY

The Stanfield Holdings are divided into four major tectono-stratigraphic domains. The Murray Lake fault trending NW separates the Rocky Mountain Trench on the west half of the property from the western Rocky Mountains on the east half of the property. The Rocky Mountains, within the Stanfield property, are then further segmented into three major domains by East trending reverse fault systems. (see Figure 2 "Tectonic Domains")

The northerly Steeples Domain is separated by the left lateral reverse south dipping Bull Canyon Fault from the Sandy Creek Domain which itself is separated from the Broadwood Anticline Domain by the Sand Creek Fault.

Most of the Rocky Mountain portions on the property are part of the Lizard segment of the Hosmer Thrust, the structurally highest portion of the southern Rocky Mountain. One theory is that most of the major thrust faults of this area (including the Dibble and Bull Canyon) are splays from the underlying Hosmer Thrust. However, there is strong evidence that the Dibble Fault is a portion of a more ancient break extending across the Trench to form the Moyie-Dibble system and then turning ESE as the Lizard Fault - see Figure 2.

In the area of the Stanfield property, the Rocky Mountain Trench was formed by block faulting along longitudinal normal faults - see Figure 3. The interior of the Trench was structurally controlled and modified by cross structures such as the Moyie-Dibble system that caused the formation of large structural lows (detected by gravity) e.g. at Jaffray on the property. The structure of the Trench was modified and covered by infill material, especially during and after the Pleistocene glaciation. The Hosmer Thrust prior to glaciation, caused modification on the eastern rim of the Trench and within the western Rocky Mountains. The Upper Sand Creek thrust fault trends NW within the Sand Creek Domain and has thrust the Precambrian west of the fault (backlimb of the Nappe) over the overturned Devonian and Mississippian strata east of the fault (the forelimb of the Nappe). Subsequently the Paleozoic sediments from the Trench were thrust over the Precambrian west of the Upper Sand Creek fault. Then the whole western edge of the Rocky Mountains was block faulted by the Murray Lake Fault system.

Of major economic interest on the property are the Middle Proterozoic (Precambrian) metasediments of the Lower Purcell Supergroup. This includes argillites and quartzites of the Aldridge and Creston Formations, and the meta-diorite sills and dykes of the middle Proterozoic Moyie Sill. In addition Late Cretaceous quartz monzonite and granodiorite intrusive, and the carbonate beds of the Purcell Supergroup and the Devonian may be host rocks to the mineralization described below.

Fig. 2

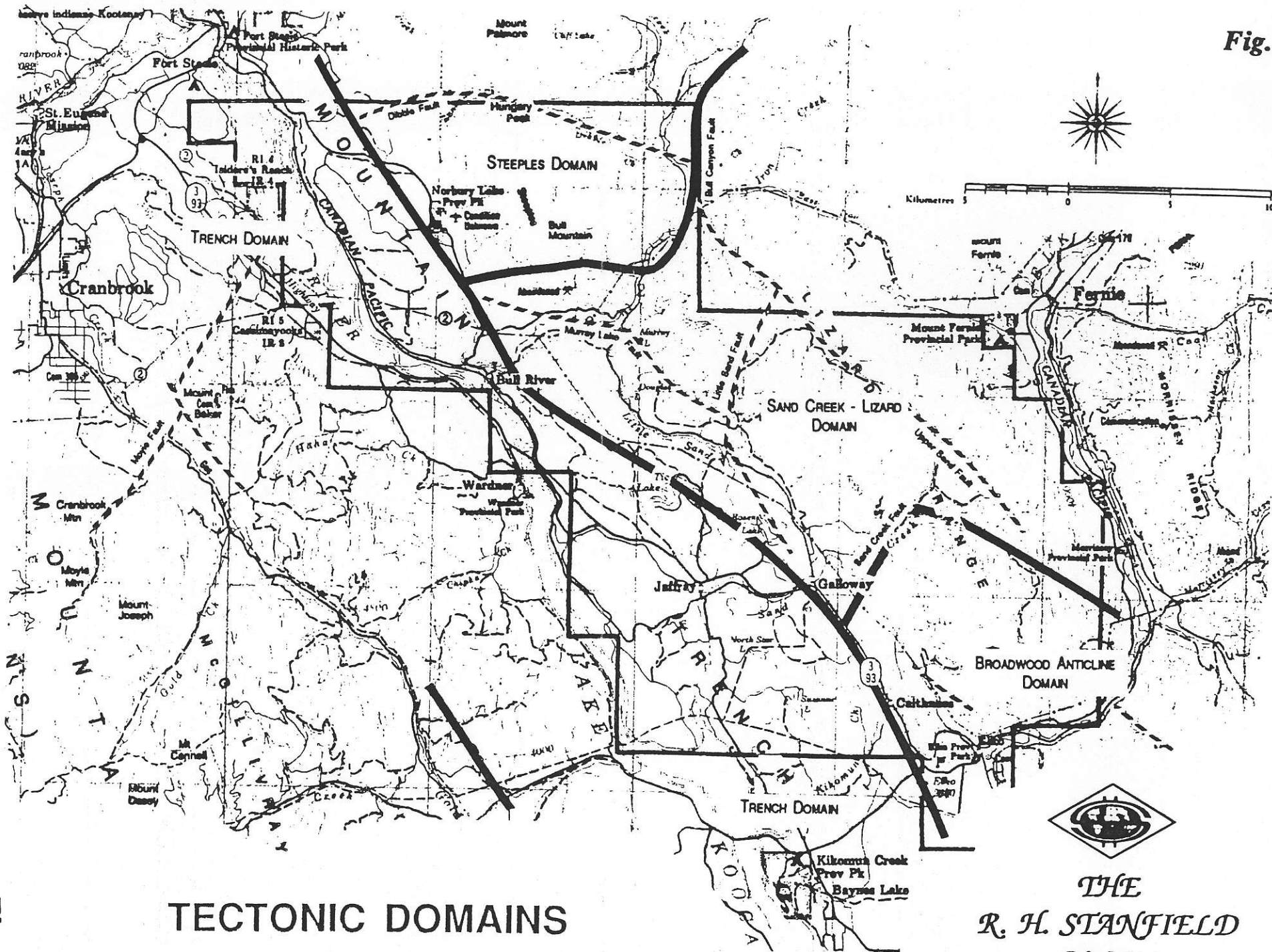


Fig. 2

# TECTONIC DOMAINS

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GROUP

The rationale behind targets for exploration and development can be explained first by describing the types of mineralization found on the property and in surrounding areas with identical geology:

i. **GALLOWAI BUL RIVER MINE TYPE:**

Mainly quartz-carbonate-sulphide vein systems in shear zone envelopes parallel to the present Trench with dips ranging from 30° to 60°. Widths range from a few centimetres to tens of metres. Vein systems can be stringers (horse tails) to fairly massive. Sulphides are chalcopyrite, pyrite, pyrrhotite, with minor galena and arsenopyrite. Quartz is the major gangue mineral ranging from 10 to 90% by weight. Carbonates are mainly dolomite and siderite. Host rocks are either partly silicified and chloritised argillites, argillaceous quartzites and quartzites of the Aldridge formation. Pyrite and pyrrhotite up to 10 - 15% by weight are common in the host rock argillites and argillaceous quartzites occurring as conformable (to bedding) discontinuous stringers, and veinlets.

Sills and dykes of meta-diorite are common but their relationship to mineralization is not yet clear. The Bull River Mine was in production in the nineteen seventies producing copper concentrates, silver as a major and gold (from the chalcopyrite lattice) as a minor bi-product. **All areas of Aldridge and Creston formations have potential for this type of mineralization.**

ii. **SULLIVAN TYPE OF MASSIVE SULPHIDE ORE BODIES:**

These are characterized by mainly conformable (to bedding) massive sulphides (up to 100 metres thick) within the Aldridge formation. Sulphides are galena, sphalerite, pyrrhotite mainly, with zones of massive pyrite. Zoning of sulphides is common, so is alteration such as chloritization and tourmaline. The host rock lithology is very similar to the Bul River Mine.

iii. **QUARTZ-LODE TYPE SULPHIDE MINERALIZATION:**

Associated with small Late Cretaceous quartz Monzonite and granodiorite intrusive.

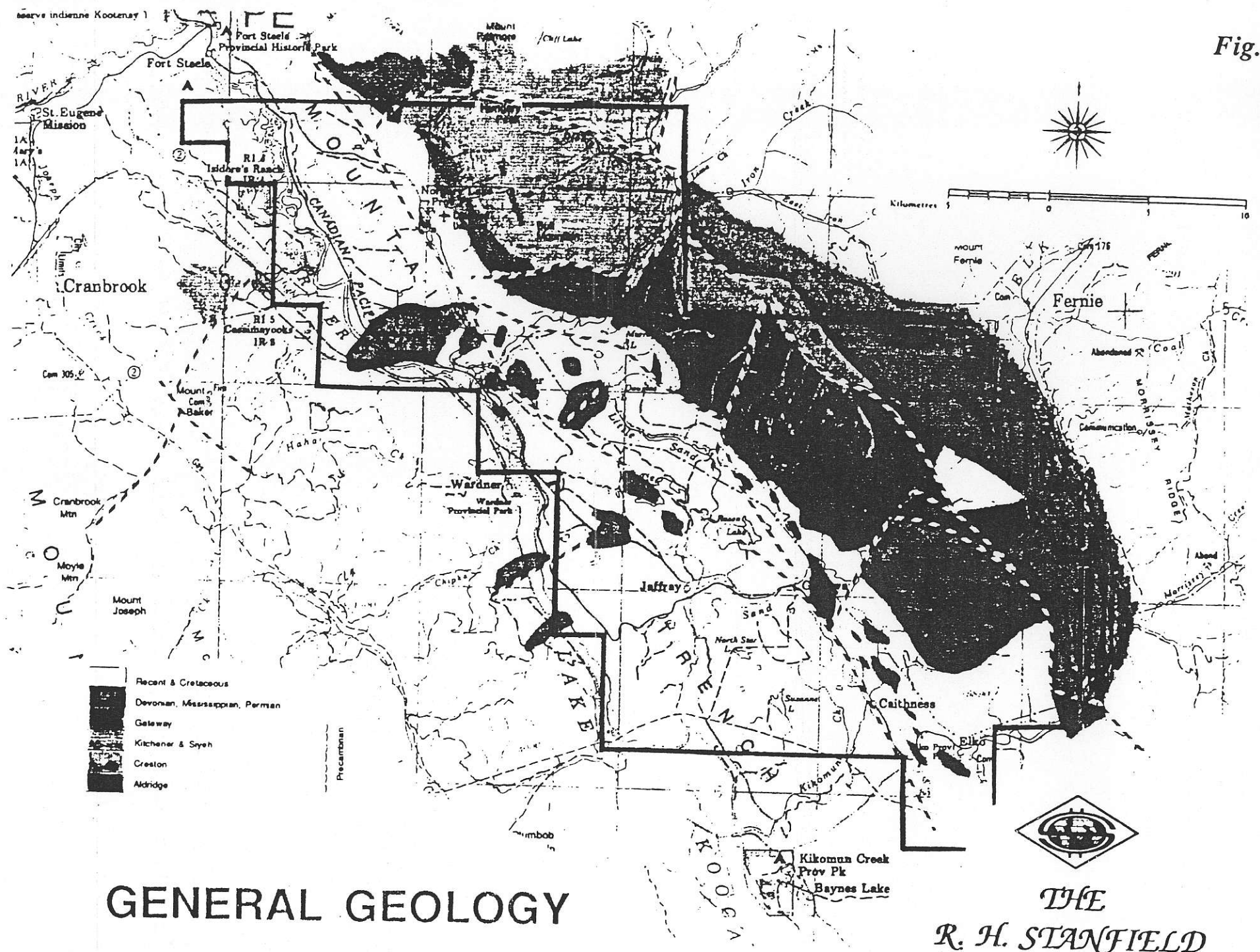
iv. **ST. EUGENE ESTELLA TYPE - VEIN TYPE PB/ZN WITH ASSOCIATED MAJOR STRUCTURE:**

These are found within the Aldridge, Creston and within the Lower Cambrian. The sulphides are mainly Galena-Sphalerite. Minor pyrite, pyrrhotite, magnetite and chalcopyrite occur and some silicification of wall rock has been noted.

v. **PB/ZN MINERALIZATION IN THE CARBONATES:** of the Kitchener formation and the Devonian cover rocks east of Bull River valley.

vi. **IRON FORMATIONS:** in the Lower Purcell group.

Fig. 3



# GENERAL GEOLOGY

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Fig. 3

The Structural Geology and the knowledge of mode of occurrence of the major types of ore mineralization in the area, suggests that the major structures in the area played an important part in the mode of origin of most or all of these types.

Most or all of the major fault systems in the area follow the locus of older structures that actually controlled the patterns of deposition, volcanism and erosion in the middle-late Proterozoic and early Paleozoic formations that form part of the tectono-stratigraphic domains. For example, the Moyie-Dibble Fault System forms the flanks and in places coincides with the Dibble Creek Monocline. This Monocline is a very ancient feature that formed the northern rim of "Montania", a Tectonic high in Paleozoic time and probably earlier. These types of structure would control both sedimentation and volcanism in the ancient basins of deposition which in turn control formation of syngenetic sulphides.

**TABLE III: LISTING OF MINERAL FINDS ON THE STANFIELD HOLDINGS**

Mineral Lease	Claims	Elements	Zone Name	Contiguous Group Name and Reference
68, 69	Steeple 11 - 14	Cu, Au, Ag Fe, Pb, Zn	Gallowai Bul River	Bul River
	Steeple 1 Steeple 2	Cu, Ag Cu, Ag, Pb	Trilby Copper King	Zeus
	Cedar 10 Cedar 8	Pb, Au, Ag Pb, Ag	Great Western G-Zone	Fort Steele
	Cedar 11 & 13 Dogwood 17 & 19	Cu, Fe(?)	Mag Anom Tom	Big Bear
	Elderberry 13, 14 Elderberry 14	Cu, Ba, Pb, Ag Cu, Pb(?)	Elderberry "V"	Gallowai
	Steeple 30 Steeple 37, 39, 40	Cu, Ag, Au	Giant, Box Anomaly	Giant
	Elderberry 4 & 3 Elderberry 1 Elderberry 2	Cu, Ag, Au Cu Cu	Rimrock Old Workings	White Cat
3540  11812	Dogwood 10, 11 Cedar 3, Dogwood 10 Dogwood 3 & 5 Dogwood 9 & 10 Dogwood 11 Cedar 3 & 5 Dogwood 9 & 10 Dogwood 8 Dogwood 10 Dogwood 13	Pb, Zn, Ag Cu, Au, Ag Cu, Ba, Ag Au, Ag, Cu, Pb Pb, Ag, Au Cu, Ag, Au Au, Ag, Cu, Pb Cu, Fe Cu, Ag(?) Cu, Fe(?)	Burt Zone Dean Zone Don Zone Empire "OK" Zone Rex Zone Strathcona Treasure "W" Zone "X" Zone	Stanfield Claims

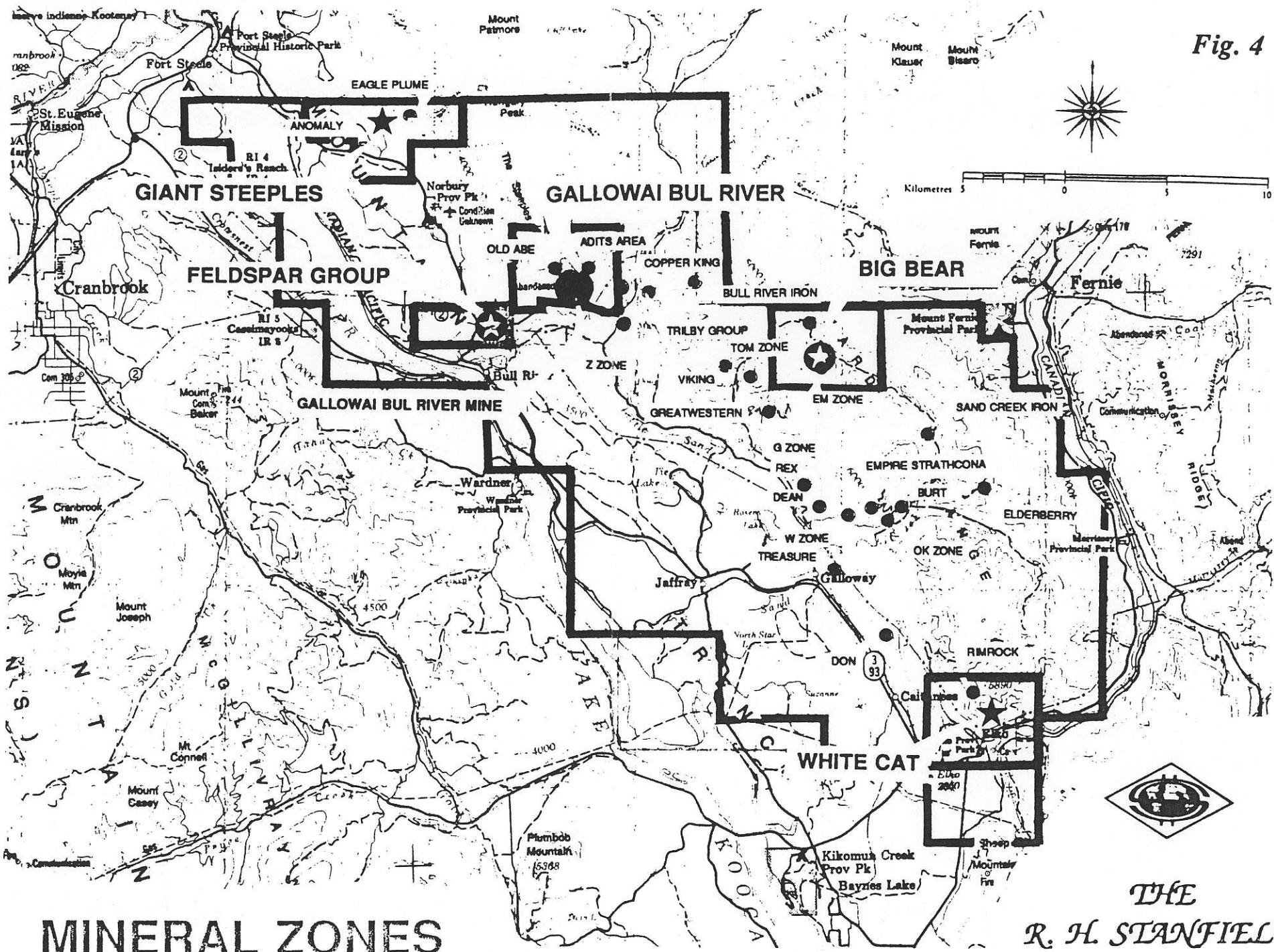


In addition, understanding the very nature of the fault mechanism provides clues to the location of mineral deposits. It is highly probable that the major fault system could have provided the "plumbing" system for the migration of ore-bearing fluids. However, certain portions of the fault systems, e.g. Dibble Fault in the Steeples Range was "lubricated" by Devonian gypsum formation on its footwall side. The relative lack of porosity would hinder migration of ore fluids. Contrarily, in the Steeples Range the variability in thickness of the Devonian Strata can be explained by block faulting parallel to the Dibble Creek Monocline (and Fault). These faults are not apparent on the surface but may have caused thinning of Devonian cover over the Aldridge and Creston rocks making it easier to locate mineralization in these rocks.

Migration and deposition of mineralized fluids depends on the porosity (and permeability) within the structures. Tension features will have greater porosity and therefore, Normal Faults may be better targets. Additionally, transverse or angle faults (of relatively steep dip) from the major structures may be sites of shear stress with accompanying increased porosity.

The Stanfield Holdings are characterised by favourable stratigraphy, structural geology and the presence of proven mineral deposits. The modes of occurrence of these deposits are determining factors in formation of hypotheses to their mode of origins and the establishment of geological models. These hypotheses are continually being tested and modified through our exploration programmes.

Fig. 4



MINERAL ZONES

THE  
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GROUP

## SECTION II. DETAILED

### 2.1 OVERVIEW

All mineralized structures on the property are being subjected to further exploration to determine their extent, their relationship one to the other and to the thrust zones, and to ascertain the existence of other major replacement structures similar to the Sullivan deposits. Again, it is emphasized that the rock types on the property are conducive to the hosting of more "Sullivan-type" replacement ore bodies.

Presently, the most clearly defined mineralized area is the **Gallowai Bul River Group** where sufficient proven reserves exist to allow consideration for a recommencement of mining operations. Other subsidiary companies of the Stanfield Group are excluded from any activity in this area.

The many mineralized zones of the Stanfield Holdings all demand further exploration to varying degrees. These zones, listed in Table 1, are individually addressed in the appropriate following subsections which briefly outline and cost explicit exploration work to examine the potential of each such zone. However, it has become apparent to the Stanfield Group over the years of their exploration, that the zones should not be viewed as "stand alone" programmes. Running from the west-central claims on the northern boundary in a southeasterly direction and exiting in the area of Elko in the far south of the Stanfield Holdings, the easterly margin of the Rocky Mountain Trench provides an immense target for all exploration. From the north to the south, mineral zones such as the Giant, Old Abe (on the Gallowai Bul River Claims), with the Bul River itself, Trilby, Viking and Great Western forming an easterly offshooting trend, through the Rex, Dean, Treasure, Don and various unnamed showings on the White Cat claims may all be associated wholly or partially with the Trench. All are predominantly copper bearing with silver and/or gold by-products where sampling has been carried out and all are hosted in Aldridge Argillite to the north of the Sand Creek system or in younger precambrian to the south of the Sand.

It is considered that the Trench is a massive system exhibiting bench or lystric faulting on its margins with any one of the parallel bench faults being capable of extending to the depths necessary to permit fluids from an underlying magmatic system to percolate upwards. The fact that all occurrences bear markedly similar characteristics attests to such a possibility.

In essence, the wealth of high grade vein systems throughout the Stanfield Holdings combined with favourable host rock and structural conditions augers well for the discovery of massive sulphide (copper, zinc, lead) deposits with associated gold and silver values.

The Stanfield Group completed the previously planned multi-array geophysics programme over the entire Holdings in July and August of 1997. To-date, only preliminary results have been made available to the Group on the area covering the Tailings and River at the Gallowai Bul River site. It is apparent that a significant deep seated intrusive will be encountered in this area which may prove to be the source of mineralization at Gallowai Bul River. Final results of all areas are eagerly awaited.

## 2.2 GALLOWAI BUL RIVER GROUP

### 2.2.1 Introduction

The **Gallowai Bul River Group** is situated in the North Central Section of the Stanfield Holdings, some 20 kilometres north of Galloway. The claims encompass the previous Bull River Operation of Placid Oil, adjacent to the Bull River on the east side of the Rocky Mountain Trench, on the westerly slopes of the Lizard Range and on terrain identified as being part of the Sand Creek / Lizard Domain - see Figure 2.

Placid Oil's Bull River Operation provided three years of Open Pit Copper / Silver production from a six year reserve base in the early 1970's involving the supergene enrichment zones of a major copper occurrence. Since the discovery in the Stanfield Drill Cores of high gold values at depth below the Placid workings, it became apparent that Placid may have lost considerable Gold to the Tailings from non-cupriferous host minerals in the deeper cuts of their Open Pits. The Tailings have therefore, been subjected to an exhaustive drill and pit programme to determine their worth for inclusion in a renewed mining programme by **Gallowai Bul River**.

The total exploration programme at **Gallowai Bul River** has been designed to lead as quickly as possible to the permitting and development of an Underground 750 tonnes per day mining operation with expansion during the first full year of mining to 1500 tonnes per day with Tailings retreatment.

### 2.2.2 Geology and Mineral Reserves

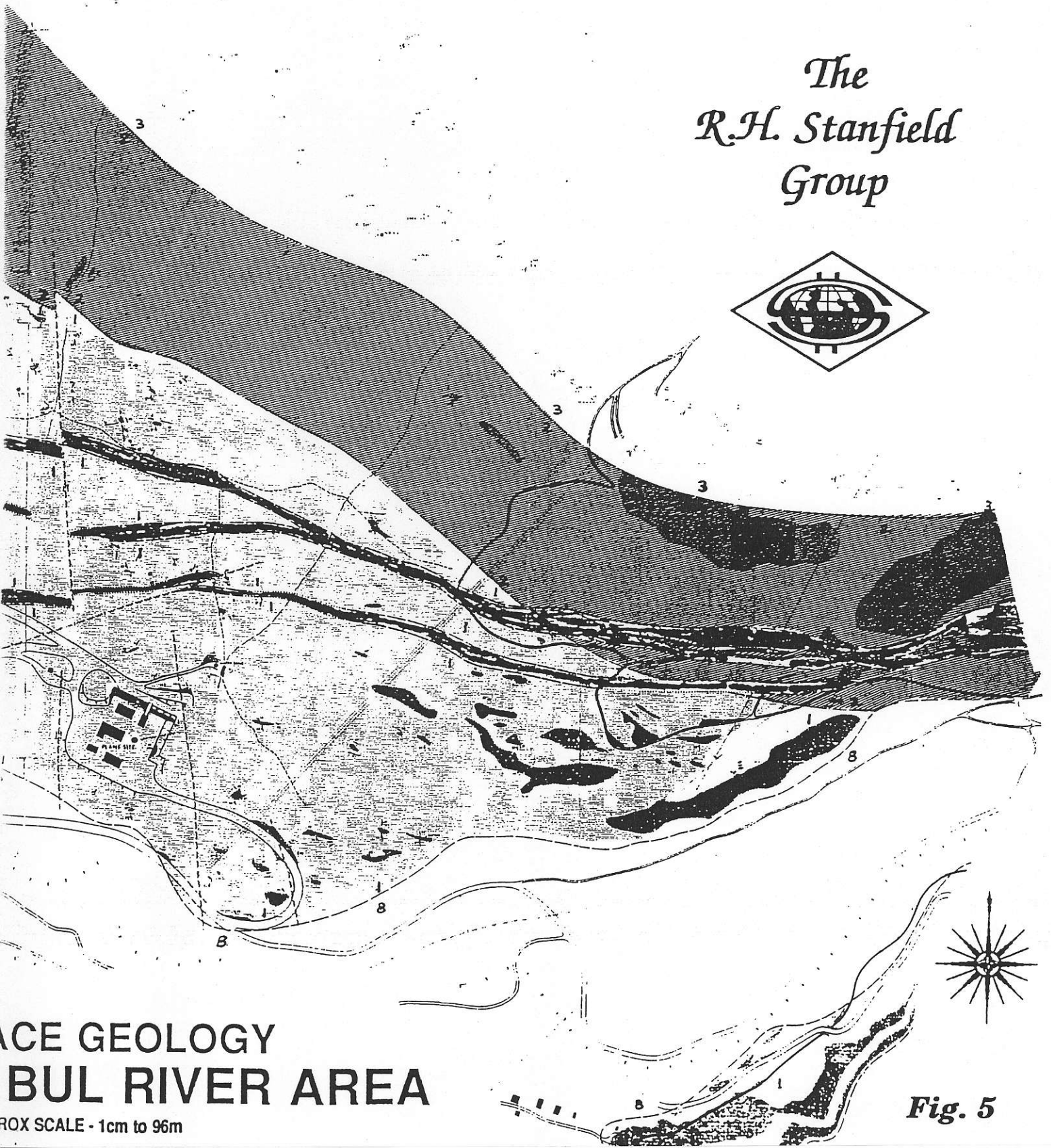
The Gallowai Bul River Property straddles the contact between the Rocky Mountain Trench and the western edge of the Rocky Mountains. The site lies within the Sand Creek tectono-stratigraphic Domain on the southern flank of the Steeples Range. Overburden consists of Pleistocene glaciofluvial and colluvial sediments. Metasediments of the Precambrian Aldridge and Creston, with intrusions of Moyie sills and dykes, outcrop on the property.

The Aldridge formation at the Gallowai Bul River Property contains several mineralized shear zones traceable in open pits and diamond drilling. The cumulative strike length of mineralization exceeds two kilometres. Vein systems within the shear zones are mineralized by chalcopyrite, pyrrhotite, pyrite with quartz, calcite and/or siderite as major gangue minerals with gold occurring in association with the quartz gangue and in the lattice of the sulphide minerals. The veins contain silver, cadmium, lead, copper and gold.

Most recent assays from the massive chalcopyritic zones have been carried out at the University of Munich (Member of the Circle of International Labs) under the control of Professor Dr. K. Weber-

# GALLOWAI BUL RIVER MINE

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**FACE GEOLOGY  
BUL RIVER AREA**

PROX SCALE - 1cm to 96m

**Fig. 5**

Diefenbach with check assays completed at his discretion by a variety of European laboratories. Company files contain additional assaying data from work carried out by laboratories in England, Canada and the United States. The Stanfield Group will continue to use the services of their German Assayers for precious metal assays until their in-house assay facilities are constructed and made operational. The Stanfield Group has recently completed the purchase of a complete Assay Laboratory (equipment less glass-ware) from the United States and will soon be constructing a facility at the Gallowai Camp Site to begin operations. This laboratory will be used for metallic and non-metallic (feldspar) analyses on all areas of interest to the Group.

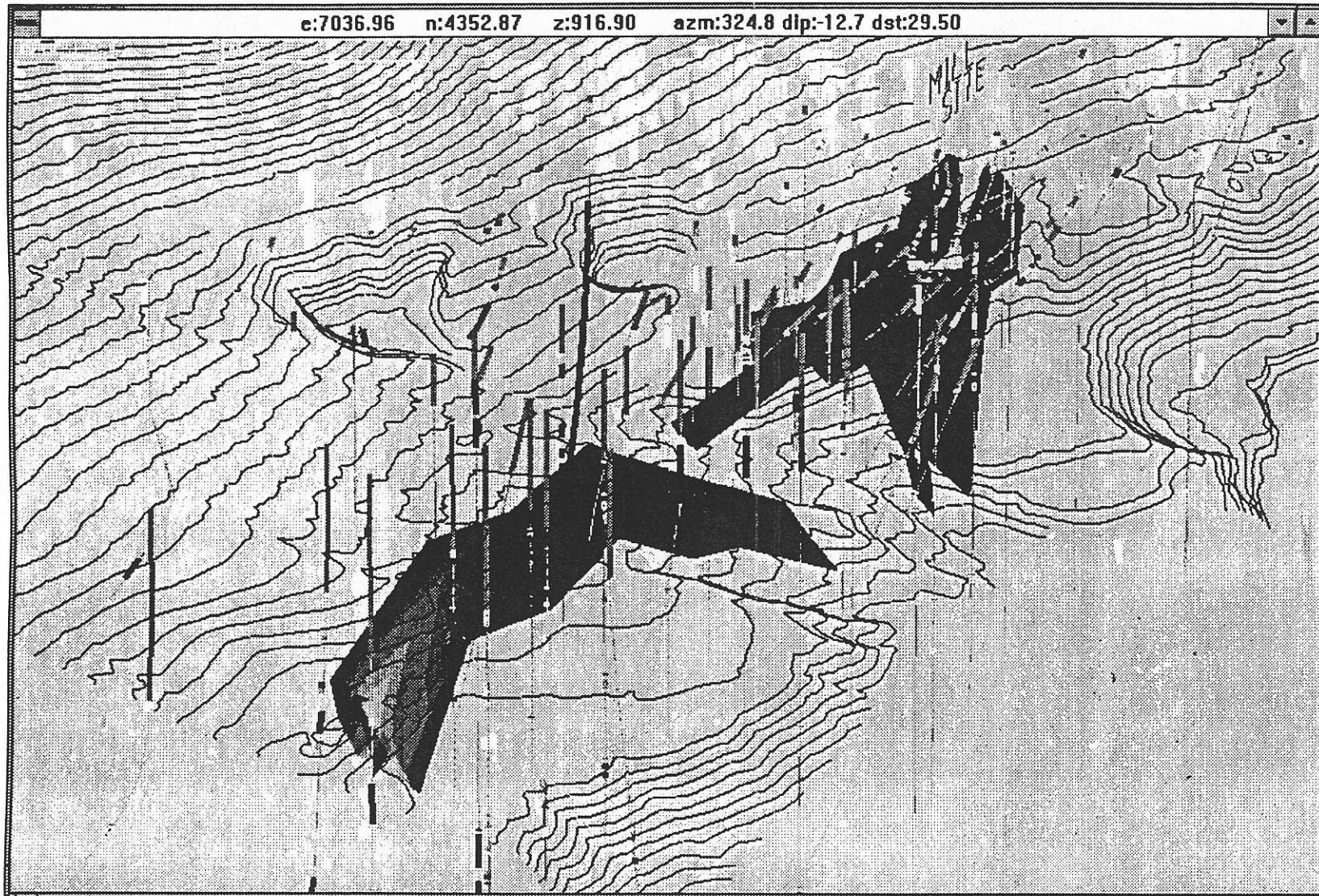
In late 1990, a mineral deposit reserve calculation was commenced by MMRS initially addressing only that tonnage recoverable through an adit mine access some 50 metres below the existing concentrator site. This study utilised the industry standard "Cross Section Method" in calculating tonnages of vein type mineralisation whose boundaries are defined as:

- i) presence of significant sulphides, excluding conformable (to host rock bedding) pyrite and pyrrhotite,
- ii) gangue minerals which are predominantly quartz and carbonate where fracturing or brecciation has occurred,
- iii) bornite and/or chalcopyrite predominant,
- iv) quartz systems separating massive sulphides for free gold potential.

The MMRS Mineral Deposit Reserve (that is tonnage only calculations) recognized under the terms Drill Proven, Drill Possible, Drill Indicated and Drill Inferred to reflect varying geological confidence levels, total 8.7 Million Tons broken down as shown in the following tabulation.

**TABLE IV: GALLOWAI BUL RIVER MINERAL DEPOSIT RESERVES**

RESERVE AREA	RESERVE TYPE	TONNAGE ( <i>SHORT</i> )
EAST	Drill Proven Drill Indicated Drill Inferred	1.8 million 0.5 million Open laterally and at depth
CENTRAL	Drill Possible Drill Indicated Drill Inferred	0.6 million 0.3 million Open at depth
WESTERN	Drill Proven Drill Indicated Drill Inferred Depth/West	0.5 million 4.0 million 1.0 million Open laterally and at depth



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PRELIMINARY COMPUTER GENERATED  
MINERAL DEPOSIT MODEL

Drill Proven and Drill Indicated categories in the Eastern and Central portions are categorised using the number and distance between intersections. A method was devised using a cross section factor which is the ratio of the number of intersections to the mean distance between intersections in that cross section. A block factor was then calculated as the arithmetic average of cross section factors in the two cross sections defining the block. Block factor thresholds were then used to categorise the reserves.

The above method outlined the 500,000 tons designated as Drill Proven for the Western reserves. The term Drill Indicated in the western reserves is not based on the same criteria as the eastern and central portions because in-filling drilling and core logging has not yet been completed, but a continuity is assumed, based on the very large widths of mineral intersections in the drill holes completed and examined.

The term Possible is used where cross section mineralised intersections cannot be directly extended up or downdip because of lack of drill information, but where there is geological evidence from adjacent cross sections and/or level plans that extensions do occur.

### 2.2.3 Grade Estimates

Metallurgical Studies conducted for the Company by the University of Munich have determined that precious metals are associated with chalcopyrite ( $\text{CuFeS}_2$ ), pyrrhotite ( $\text{Fe}_{1-x}\text{S}$ ), pyrite ( $\text{FeS}$ ), arsenopyrite ( $\text{FeAsS}$ ) and subordinate sulphides and carbonates of covellite ( $\text{CuS}$ ), chalcocite ( $\text{Cu}_2\text{S}$ ), digenite ( $\text{Cu}_2\text{S}$ ), sphalerite ( $\text{ZnS}$ ) and siderite ( $\text{FeCO}_3$ ). Free gold, that is gold in quartz was also recognized.

Munich Assays used by a previous consultant for reserve determination, indicate the Gallowai Bul River massive copper veins as averaging:

**2.25% Copper, 1.06 oz per tonne Silver and 0.35 oz per tonne Gold**

Company records acquired with the purchase of the Placid Oil Assets including the Placid Drill Core shows that the previous operators probably only split and assayed core when it was apparent from eye-balling that the copper content of the intersections warranted such expenditure. Ongoing Gallowai Bul River diamond drilling has clearly demonstrated the existence on the property of *en echelon* structures that may be Quartz, Copper or Iron Sulphide predominant or any combination thereof - Drill Hole 1.91 intersected seven separate and distinct vein systems. Through sectional plotting of this and other holes, the company consultants have been able to determine where such non-cupriferous intersections should have been made in the Placid Drilling. Core re-examination and re-logging has shown many such non-assayed sections in Placids Core.



Grade estimates will follow completion of drill assays which has currently not been undertaken. Visual criteria are presently used to demarcate hanging and footwall margins of the mineral deposit. P&GM and MMRS will also be examining the total vein structures within their shear envelopes to determine the overall property potential for gold that may be recoverable through "VAT" leaching methods utilising lower cost Bulk Mining methods. Much knowledge is being gleaned from the presently advancing underground Decline, commenced in the fall of 1996, which is providing first hand detail of rock competency which will largely determine dilution factors to be used in the calculation of recoverable grades for full milling and/or VAT leach operations.

The Company has also shown the Tailings from the earlier open pit operation to contain significant gold and silver values which result from the existing Mill's inability to recover anything other than Copper and its entrapped accompanying metals; any pyrrhotite hosted precious metals would be depressed to Tailings during flotation while any free gold, flattened during crushing and grinding and not finding a gravity circuit, would have been washed straight to tails. It is considered that any recovery of values from the existing tailings will only be considered when underground mining progresses towards the tailings area necessitating its removal. At such a time it becomes worthwhile to retreat the tails prior to re-depositing them either underground as back-fill or at some other tailings site.

#### **2.2.4 Exploration Programme**

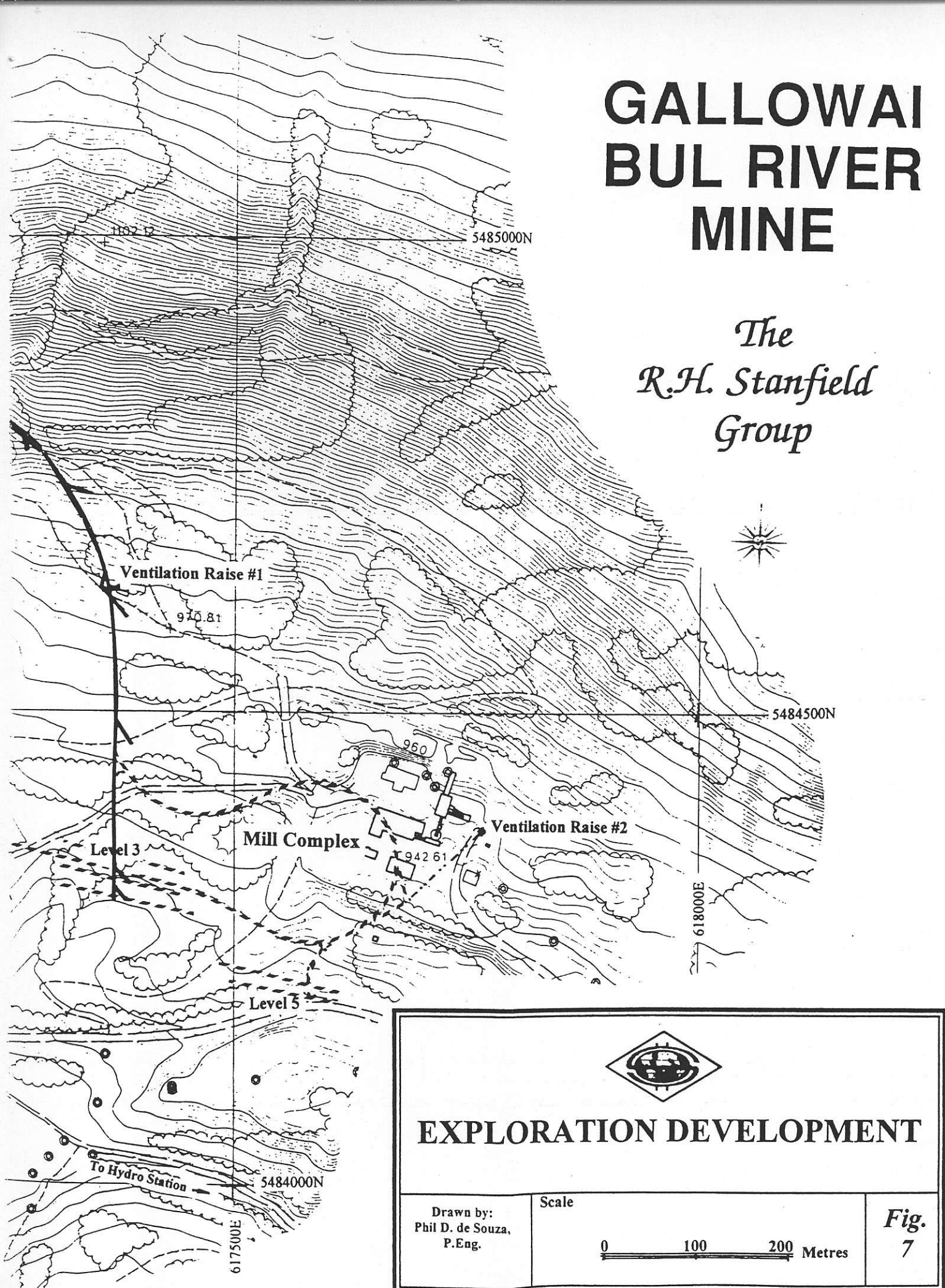
The underground access alluded to in previous Offerings is now underway. Initial activities commenced upon Mines Ministry approval of the company submission dated June 4, 1996. Approval was received in September and the mining of the Portal commenced in October.

With the exception of the mineralization located immediately below and adjacent to the Open Pit walls, all the **Gallowai Bul River** Tonnages determined to-date must be accepted as Mineral Deposit "Drill Reserves" only. As mentioned under 1.5 (Exploration History - Stanfield Group), the Stanfield Group purchased "Ore Reserves" among the total assets from Placid Oil of 732,492 tons grading 1.94% Copper. These Reserves may only be categorized as "Ore" under the economic conditions of market price and total operating costs prevalent at the time of Placids operation. The Stanfield Group correctly includes these reserves as Mineral Inventory and they are included in the present Mineral Reserves being quoted by the company.

Due to the delay in the completion of the drill core assays (and re-assays as determined necessary) mentioned in previous Offering documentation, the underground access will be used not only to obtain bulk samples for metallurgical testing, but also to allow for the detailed examination of the veins transversely and longitudinally to minimise incorrect assessments of precious metals content that may result from nugget effects. Through intersection of the veins on Level 3 and Level 5 - see Figure 7 - **Gallowai Bul River** will have a significantly greater comfort level in their reserves and in the results of the metallurgical testing for Mill Plant design. The total zones to be tested will include the massive

# GALLOWAI BUL RIVER MINE

*The  
R.H. Stanfield  
Group*



## EXPLORATION DEVELOPMENT

Drawn by:  
Phil D. de Souza,  
P.Eng.

Scale

0 100 200 Metres

*Fig.*  
7

sulphide zones which form the bulk of those quoted reserves as well as some of the minor quartz predominant and pyrrhotite predominant veins that have been delineated in the Stanfield drilling programmes.

Diamond and Percussion Drilling will continue to examine overburden depths, bedrock competence, ore continuities and to better define the mineral extensions intersected towards the west of the **Gallowai Bul River** property. Drilling will also provide better definition of the links between the deep western extensions of the veins and the central and eastern areas for better positioning of the underground access.

Deep northerly inclined holes must be drilled from above Pit #1 and to the east to examine the northerly lying east/west trending, south dipping dykes. These dykes were subject to a cursory examination by Placid prior to discovering the pit zones that they later mined. Hole locations without any back-up detail was missing from the information purchased by the Stanfield Group from Placid. Likewise, no core from this early drill programme exists at the mine site. A short adit above Pit #1 was cleared out during 1997 and mapped and sampled. The dykes were closely examined on surface and also sampled. Assays of Copper, Lead and Silver returned values of 0.29%, 0.54% and 4.9% for Copper; 1.29%, 9.4% and 9.8% for Lead and 2.32 oz/tonne, 2.73 oz/tonne and 2.80 oz/tonne silver. The fact that these orders of return are found within veins associated with the dykes - which appear to be no different to the dykes seen at the Copper King (see following section of this report) - ensures that further exploration work must be undertaken. The decline presently being driven from the westerly Pit #2 north of Pit #1 towards the Mill will allow for underground drilling to examine the dykes along their strike where accessible. These programmes are all addressed under this section of the Exploration Report.

### 2.2.5 Costs

Costs incurred to date on equipment purchases (scooptrams, trucks, drills, steels, pipes, support - timber and rockbolt, buildings, safety supplies and contractor payments for Portal construction and initial mining) total some **\$5.5 million**. Mining continues, using direct labour as opposed to an individual Contractor, and will continue for at least another year. This time will include the mining of the decline to below the planned #5 Level, the mining of a Second Access/Ventilation Way, and the mining of bulk tonnages on both the #3 and #5 Levels.

Continuing exploration costs to be incurred at **Gallowai Bul River** to a point allowing for a production decision to be made are given overleaf.

Additional costs at **Gallowai Bul River** may be summarised as:

i) Continuation of 5.5m x 4.5m Decline at \$3500/m .....	4,500,000
ii) Two Alimak ventilation raises (central and east) .....	750,000
iii) Bulk Sample Mining - drifting/slashing/raising .....	2,500,000
iv) Bulk Testing - collection/transportation/ lab scale/pilot/reporting .....	2,500,000
v) Equipment/Power Costs (Scooptrams, Trucks, Jumbos, Drills, Fans, Ducting, Pumps, Pipes, Electricity etc) .....	1,500,000
vi) Buildings (maintenance facilities, stores, office, conveniences) .....	750,000
vii) Underground Diamond Drilling at 20\$/ft - allowance .....	300,000
viii) Surface Diamond Drilling - west .....	1,100,000
ix) Surface Diamond Drilling - east and dykes to Copper King .....	1,500,000
x) Road access development and maintenance .....	750,000
xi) Management, sampling/assaying and overheads @ 10% .....	<u>1,365,000</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$15,015,000</u></b>

## 2.3 ZEUS GROUP

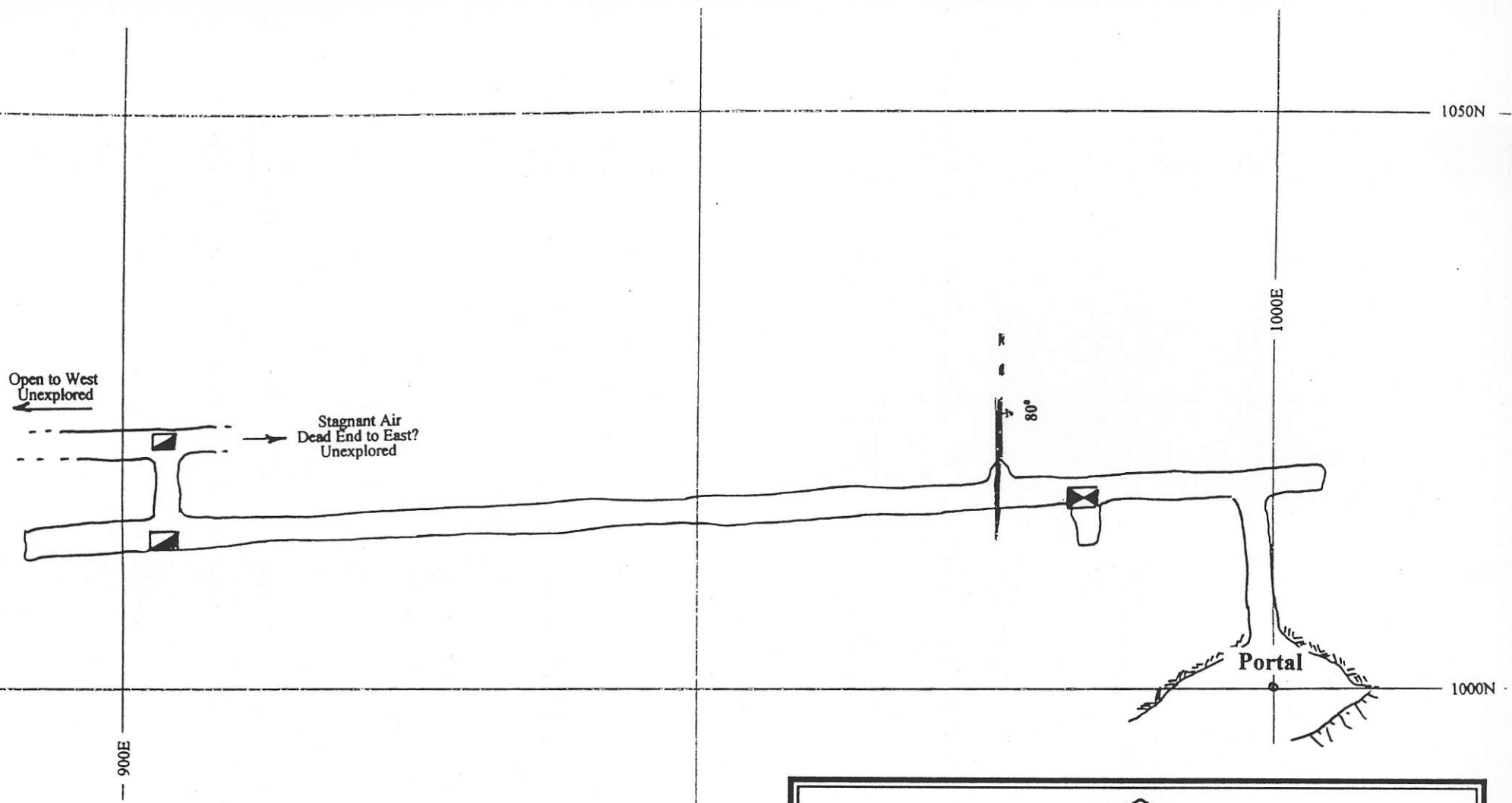
### 2.3.1 Copper King Zone

This Zone has seen sporadic exploration since 1898 when first recorded on an Annual Report to the Minister of Energy, Mines and Petroleum Resources, British Columbia. The writer has examined the front section of a major adit which intersects a vertical shaft driven on a near vertical vein to surface and to depth (unknown depth). Two other shafts in the immediate area may be better classified as trenches - one contains water so may be of little depth while the other is clear but of untested depth. Following the introduction of ventilation to the main adit, closer examination may reveal an intersection between this second "shaft" and the adit. The vein is reported to host Copper/Silver/Lead mineralization and follows a well defined shear zone. Overleaf, a map shows the location and extent of the workings examined by the writer

The Gallowai funded surficial mapping conducted by the University of Munich, determined that the block of terrain hosting the Bull River, Old Abe (Bull River Adits) and the Copper King, all lying on the southern flank of the Steeples is correctly an overthrust segment of the Sand Creek/Lizard Domain [see Figure 2]. Most Copper King exploration therefore, due to its proximity to the Gallowai Bul River property, will be derived from easterly strike extension exploration at Gallowai Bul River for which see the Gallowai Bul River section of this report.

Strikes and dips of the Bul River and Copper King, together with the mineral assemblages found at each allow for the reasonable assumption that a connection between the two exists. Further, due solely to the known and reported mineralogy of the Old Abe and Trilby Groups (*the Trilby, to the east of the Aberfeldie Dam on Mountain #7, is reported in documents at the EMPR, BC but has never been accurately located by the writer. It reportedly contains Lead, Copper and Silver which is an exact match to the mineralization at the dykes behind the Gallowai Bul River Mine.*) which, allowing for elevation differences, apparently lie on strike extensions of the Gallowai Bul River - Copper King sequence, it is likely that an association exists between all four occurrences. A recently completed multi array helicopter borne geophysical programme was flown in part to explore this latter possibility. This latest airborne geophysics, completed in August of this year, will fill in the gap between the separate programmes flown in the early nineties. Unfortunately, the degree of pyritisation in the host aldridge formation effectively masks any clear vein signature and greater reliance must be given in this area to direct Diamond Drilling.

Given that the Gallowai Bul River area is more correctly a massive shear zone hosting individual veins or vein swarms, then it is quite correct to link the Old Abe, Adits Area and Copper King with the Gallowai Bul River deposit. BR2.88/89 was drilled from the eastern end of the Gallowai Bul River systems at a shallow angle to try and locate the dykes on which the Copper King exists and add to Gallowai's knowledge of the Gallowai Bul River shear zone. Previously logged siliceous zones have now been identified as extremely fine grained dykes. A later hole, BR6.89, was drilled in 1989 at the




**LEGEND**


Shaft Down

Shaft Up/Down

Cross Vein



## COPPER KING ADIT

Drawn by: <b>Phil D. de Souza,</b> P.Eng.	Scale <div style="text-align: center;">  </div>	<i>Fig.</i> <b>8</b>
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**Fig. 8**

950E

Copper King site, but due to topographic difficulties was collared too high. Although it intersected several stringers no mineralization of merit was encountered. Two further holes from our earlier programme remain to be drilled, re-accessing the zones, rehabilitation of the existing workings for mapping and assaying is warranted. Such work will augment a step-out easterly drilling programme from the Gallowai Bul River mine area designed to obtain depth mineralization data from the east - west trending dykes lying north of the open pits. Dyke intersections made in the decline workings at Gallowai Bul River show significant lead with pyrite and chalcopyrite disseminated throughout the dyke. The underground dykes express themselves as out crops on the surface - these outcrops should all be channelled and assayed for total minerals to aid in their better identification when intersected below surface. These additional programmes are included in the total programme developed for Gallowai Bul River.

Recommended Copper King programme costs:

i) Re-construction of eroded roads to the adit and shafts - difficult terrain . . . . .	\$ 100,000
ii) Establishment of diesel compressor, air line and compressed air ventilation systems . . . . .	45,000
iii) GPS location and underground surveying and mapping . . . . .	8,000
iv) Channel sampling, preparation and assaying . . . . .	2,000
v) 2 Holes @ 500m per and 150\$/M . . . . .	150,000
vi) Management, Sampling and Overheads @ 10% . . . . .	<u>30,500</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>335,500</u></b>

## 2.4 BIG BEAR GROUP

### 2.4.1 Introduction

The Big Bear Group Claims comprise Cedar 11 and 13 and Dogwood 18 and 20. They are situated in the northeastern section of the Stanfield Group claim area, within the Lizard Range of the eastern Rocky Mountain System. The claims are accessed by existing forestry and exploration roads that extend eastward from the Mine Exploration Camp that is located one and a half miles north of Galloway. The roads pass either south of Mountain No. 1 and thence northward into the Sand Creek Valley or, between Mountains No. 4/No. 5 and No. 6 north of the Camp through the Little Sand Creek Valley. For illustration see Figures 7 and 8.

The Big Bear claims cover Valley No. 45, the upper part of Sand Creek Valley and Valley No. 4 Cirque which opens into Sand Creek Valley as it passes east of the Lizard Range peaks that flank the eastern margin of the Rocky Mountain Trench.

### 2.4.2 Exploration Area Geology and Mineralogy

Aldridge Argillites are the recognized host rock in southeast BC for world class ore bodies such as the Sullivan, Estella, Kootenay King, St. Eugene and Bull River Mine (Placid Oil). These Argillites outcrop throughout the area and are in places, overlain by Creston Argillites. Figure 9 has been developed from previous studies by Price and McMeehan of the Geological Survey of Canada together with extensive ground geological examinations by a Stanfield team of international geologists.

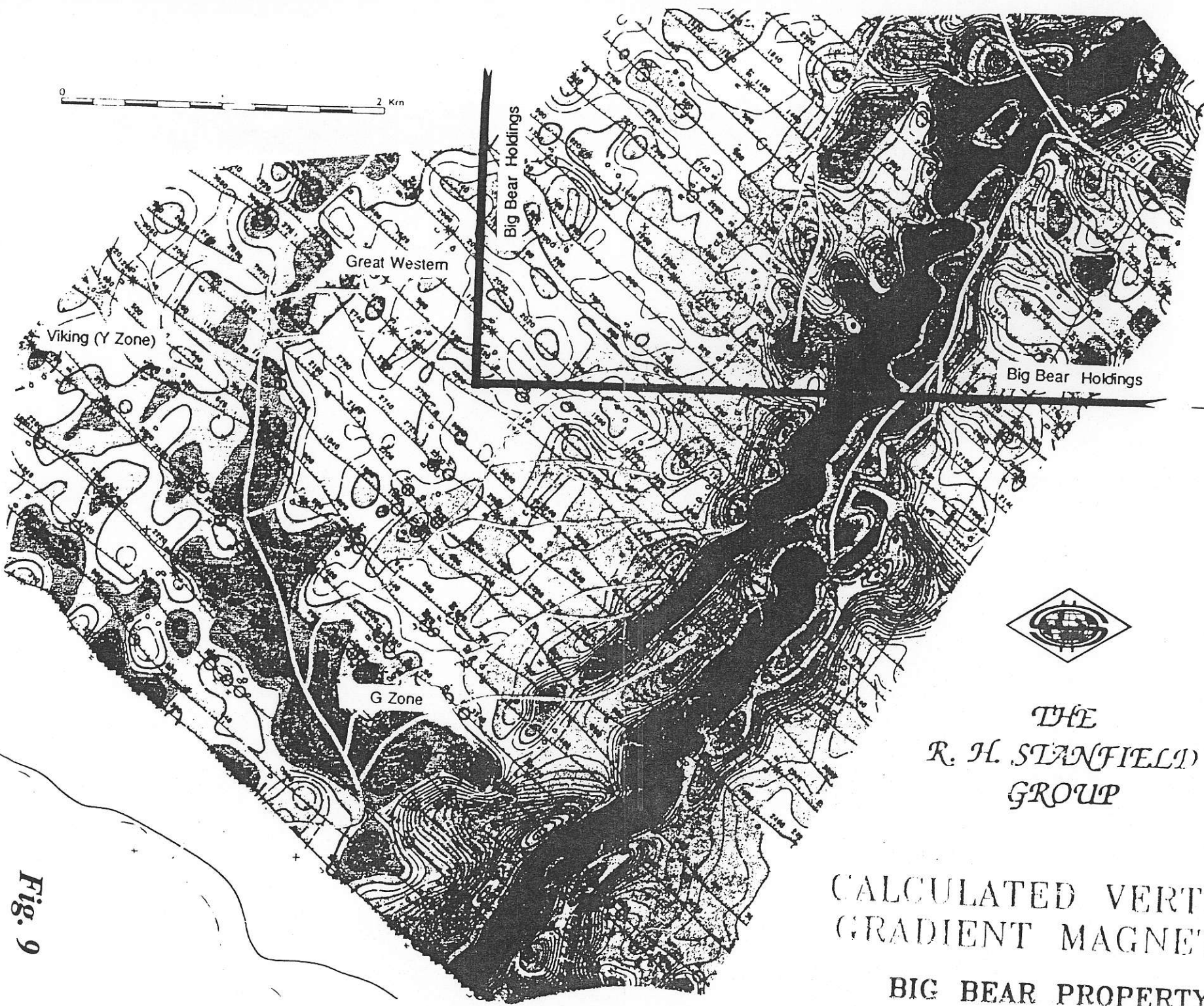
The Aldridge shows many examples throughout the area of recrystallised Pyrite, Pyrrhotite, Galena, etc. which together with the multitudes of quartz veinlets is a strong indicator of hydrothermal activity.

Gallowai financed a major ground geological mapping programme in 1989 which provided detailed information on the structures and tectonics of this area. Significant samples of the secondary copper mineral malachite were found at the base of Ridge 45 in Valley No. 5 which may identify a structure sub-cropping the scree in the area. (Copper is prevalent throughout the western flank of the Lizards).

A major mafic dyke was identified on the south flank of Mountain No. 4 and can be traced to the peak and on to Ridge No. 34 where it is cut by a fault system (see Figure 9). Mafic float can be found from the northerly point of Valley No. 4 Cirque (north ridge) to the major south dipping fault that occurs just north of the northerly peak of Mountain No. 4. It is probable that the dyke subcrops below the glacial till.



Fig. 9



THE  
R. H. STANFIELD  
GROUP

CALCULATED VERTICAL  
GRADIENT MAGNETICS  
BIG BEAR PROPERTY

Fig. 9

The Dyke has been intersected by diamond drilling below the G Zone for which see Section 2.4.9 of this report. Even if the dyke was not the conduit for ore generating fluids, the proven relationship at St. Eugene, Bull River, G Zone, etc. of mafic dykes to mineral occurrences underscores the fact that any underlying igneous activity, given the right conditions, is capable of generating major hydrothermal convective movement. This results in the recrystallization of ionic matter into blebs of pyrite, chalcopyrite, pyrrhotite, galena with or without precious metals along amenable sediments such as the Aldridge or into tension fractures created by tectonic movements.

Quartz veins outcropping on Ridge No. 45 and Ridge No. 34 lie close to (and are probably associated with) the EM Anomaly referred to below. They lie variously parallel and at right angles to the Dyke Structure mentioned above in a form of stockworks. Similar quartz veining (with sulphides) has assayed positively for precious metals in this area as evidenced at Bull River Mine. Quartz veins on the West and South faces of Mountain No. 4 have been proven to contain major silver with Galena (see G Zone and Great Western Zone in Section 2.4).

A Multi Array Heli-borne programme was flown, as recommended in our previous exploration programme, in late 1992 and early 1993 and we show in Figure 8, "Big Bear Area - Calculated Vertical Gradient Magnetics" one of the more exceptional results. A striking correlation is obtained between the geophysics programme, ground mapping and the earlier Government of Canada EM shown in earlier reports.

The Mafic Dyke seems to be a faulted extension of the EM Anomaly and is somehow associated with a parallel structure of southeasterly dip which may turn out to be the signature of the G Zone. At its southerly end, the dyke is near vertical to northwesterly in dip becoming distinctly northwesterly in dip to the north of the faulted extension. At the extreme northerly end, the dyke has either become shallower in dip or has become (or emanated from) a low angle intrusive which itself is faulted off from the southerly trending dyke. Computer enhancement techniques will provide further details from ongoing studies.

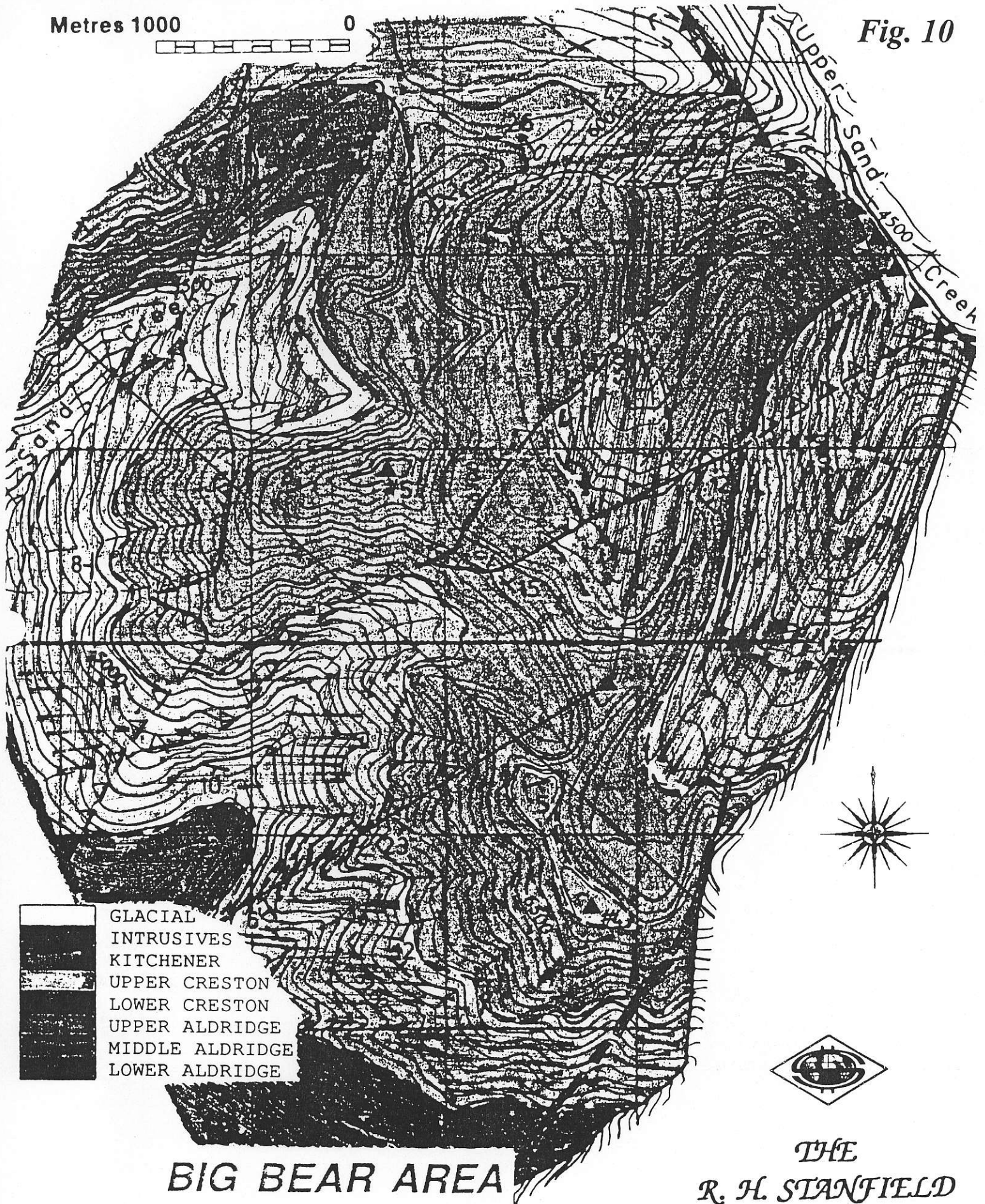
The new results obtained have clearly vindicated the position taken by the company whilst seeking its permit to construct a road into the area. This road must be pushed through at the earliest opportunity, and drilling must commence.

Additionally, the airborne programme has shown what could conceivably be the trace of a major fault extending from the northern most point of the dyke striking west northwesterly into the Gallowai Bul River area of significant mineralization. This is again subject to enhancement programmes and must be better examined using IP or closed loop EM techniques. Obviously, if this is determined to be the case, then the possibilities for finding more Gallowai Bul River type mineralization is enormously enhanced.

Metres 1000



Fig. 10



- GLACIAL
- INTRUSIVES
- KITCHENER
- UPPER CRESTON
- LOWER CRESTON
- UPPER ALDRIDGE
- MIDDLE ALDRIDGE
- LOWER ALDRIDGE



# BIG BEAR AREA

# GEOLOGY

THE  
R. H. STANFIELD  
GROUP

### 2.4.3 Exploration Programme

A three-phase Exploration Programme covering the Cedar and Dogwood Big Bear Claims is suggested, with each succeeding phase being dependent upon the preceding one. This programme, outlined and costed below, should be undertaken in conjunction with a further programme to cover the area between the Big Bear Claims and the "G" / Great Western Zones referred to as the EM Extension Zone in this report. Costs for the extension programme are outlined in the total Big Bear Costs.

### 2.4.4 Costs

#### PHASE I: Tom Zone Extension and EM Anomaly

i) Closed Loop Max - min Ground EM survey on areas from north of the dyke westerly towards Gallowai Bul River .....	\$ 200,000
ii) Close spaced Max - min or IP on selected areas from (i) .....	100,000
iii) Two x 300m Diamond Drill holes from north of Tom Zone .....	100,000
iv) Access Road into Dyke area as per permit .....	350,000
v) 8 x 100m Rotary Drill Holes .....	132,000
vi) 4 x 1000m Diamond Drill Holes as per permit application .....	660,000
vii) Management, Sampling, Assaying and overheads @ 10% .....	<u>154,200</u>
<b>TOTAL ESTIMATED, PHASE I</b>	<b><u>\$1,542,000</u></b>

#### PHASE II: Northeastward Extension of "G" Zone towards the EM Anomaly plus greater detail of Tom Zone

i) Trenching above and to north of "G" Zone .....	\$ 15,000
ii) Percussion drilling above "G" Zone to north .....	100,000
iii) Detailed mapping from G Zone to EM Zone to include the area between the G Zone and Dyke .....	35,000

iv) Trenching above Tom Zone and westerly towards Gallowai Bul River .....	15,000
v) Percussion drilling along Tom Strike .....	150,000
vi) Six Diamond Drill holes for geophysical depth delineation from E & W of Ridge No. 4 Cirque West .....	1,000,000
vii) Management, Sampling, Assaying and overheads @ 10% .....	<u>131,500</u>
<b>TOTAL ESTIMATED, PHASE II</b>	<b><u>\$1,446,500</u></b>

**EM EXTENSION ZONES:**

It is recommended that some two million dollars be allocated for the overall examination of the influence of the EM anomaly with/and the "G"/Great Western systems.

**TOTAL ESTIMATED, EXTENSION** **\$ 2,000,000**

**TOTAL PROGRAMME:**

PHASE I.....	1,542,000
PHASE II .....	1,446,500
EM EXTENSION ZONE .....	<u>2,000,000</u>
	<b><u>\$ 4,988,500</u></b>

## 2.5 FORT STEELE GROUP

### 2.5.1. "G" Zone

During 1997, the Stanfield Group placed a high priority on programmes for the G Zone. Precious & General Metals completed a report for the re-opening of the caved adit for underground diamond drilling purposes and submitted it to the approval agencies in July of this year. Approval was granted for this "low impact" underground work in August. An underground programme was considered in preference to any significant surface work due to the high visibility of the zone on the southwest facing slope of the Lizard Front Range, the steepness of the terrain making access difficult (and highly visible) and the fact that the adit already exists provides for a reasonably cost effective program.

#### **General**

This Zone is associated with four other identified zones occurring on the flanks of Mountains 4, 5 and 6 of the Lizard Front Range to the immediate north of the Gallowai Exploration Camp. These zones are the EM Anomaly (Mountain #4) and Tom (Mountain #5) to the north, and the Great Western (Mountain #4) and Viking (Mountain #6) zones to the west north west. In large part, the planned underground drilling program is to determine the association of these zones with the G and to identify any other lead silver structures which are almost impossible to identify from ariel geophysics.

The "G" Zone occurs in a shear zone situated on the western flank of Mountain No. 4 in the middle section of the Western Rocky Mountains between the two regional lineaments identified as the Bull Canyon Fault and the Sand Creek Fault. It is at an elevation of 1209 metres. Samples assaying 84% Lead and 42 oz/ton of Silver were obtained from surface showings and from the recently driven adit in the footwall of the vein. Stub raises from the adit intersected the vein which exhibits an erratic strike from north 20° to north 75° east and dips from vertical to 74° to the southeast.

The G Zone and the Viking and Great Western mineralized zones are within the Sand Creek Section of the Sand Creek-Lizard Range tectono stratigraphic domain of the middle section of the Western Rocky mountains. In this section the west dipping Precambrian Purcell Series forms the overturned forelimb that has been thrust northeastward over the overturned Devonian-Mississippian strata of the Lizard Range forelimb. This forelimb is the other section of the Sand Creek-Lizard range tectono stratigraphic domain.

The data from the DIGHEM airborne geophysical survey shows that within the Sand Creek Section the Aldridge Formation of argillaceous sediments has a distinctly lower resistivity than the younger Creston Formation. This demarcation is sharp and distinct with all the frequencies used in the survey. It also coincides closely with the NW trending Aldridge-Creston contact traced to the surface on the

geology maps. The difference in resistivity cannot be explained at this time because the lithology of the sediments on both sides of the geological contact are not that obviously different.

A distinct aeromagnetic anomaly was located in the same DIGMEM airborne survey. It strikes NE across the geological and major structural trends in this block. It however does coincide very closely with the western edge of an embayment in the Aldridge-Creston contact, and the Creston Formation is not found east of this anomaly, but the Aldridge is in direct contact with the Devonian-Mississippian Formations of the Lizard Range to the north. This suggests that the aeromagnetic anomaly is associated with a major fault. Preliminary geological data indicates the presence of migmatitic rocks adjacent to this break suggesting a deep crustal break.

All of these mineralized zones are close or at the contact between the sharply different resistivity zones. Their easterly strike tends to be at a large angle to the NW Aldridge-Creston contact trace and to the resistivity boundary. The Great Western and the Viking are associated with embayments in the resistivity boundary similar to the aeromagnetic boundary, although these resistivity embayments do not show strong magnetic susceptibility changes. These embayments can be a result of erosion, but may also be due to the intersection of structural features that could have facilitated emplacement of mineral deposits.

Drilling through and across these structures and potential embayments is recommended to locate mineralized shear zones and determine the complex stratigraphy and structure in this area.

### **Program**

Recent examination showed the adit to be blocked by a cave-in some 10 meters beyond the second raise. The ground is heavy and has a high degree of lead mineralization at the cave-in point. It is quite probable that the roof of the adit where it was mined to close to the mineralized shear, has tried to stabilize itself by breaking back to the footwall of that overlying structure. Any further underground exploration would be undertaken further into the footwall of the vein - at least ten metres (as the shear is near vertical) - with short stub crosscuts being driven back to the vein for access and assay. The only "new" mining planned at present will be the mining of Safety Bays at 60 metre centres on the left hand (north) wall, the mining of at least one diamond drill chamber at the extreme end of the adit and a second chamber at the half way point in the adit.

The existing Portal has been cleared with all scree and old timber stacked at the southerly end of the platform outside the adit entrance. The cave-in some 40 metres into the adit was cleared and the adit re-timbered for maintenance of access. Following a site inspection by Mr. Steven E. Wuschke, P.Eng., District Manager/Engineer, Regional Operations, Health and Safety Branch, on June 18, 1997 and in accordance with his Inspectors Report of June 19, 1997 covering the "G Zone" inspection,

scaling and rock bolting will be conducted from the portal throughout the whole length of the adit and new timbers placed between the existing timber sets in the tunnel - this is presently being undertaken. Raises are being bulkheaded.

Following the work undertaken to date, the adit was surveyed preparatory to geological mapping and overleaf a reduction of the "G" Zone map is provided. Until such time as the two survey stations outside the Portal have been established using GPS techniques, the grid shown is arbitrary based on 00.00N and 00.00E at Station G1 on the platform outside the adit.

A ring drill diamond programme has been laid out to cover the ground ahead and to the northeast and south west of the adit from the in-bye drill station using a Boyles U2 (or equivalent) drill pulling BQ size core. Rings will be drilled firstly at -25° followed by 0° and -45°. Retreating to the centrally located station a similar pattern of holes will be drilled whose spacing and direction will be largely resultant from the results of the in-bye drill programme. At this time, a total of eighteen holes in the three rings is planned from the in-bye chamber to depths of three hundred to one thousand feet (100 to 300 metres) for a total of 11,000 feet (3,300 metres). It may be expected that an additional 5,000 feet (1500 metres) of diamond drilling may be drilled from the central chamber.

### Costs

Significant expense has already been incurred by the Stanfield Group during 1997 at the G Zone. Costs include labour, materials transportation, timber, rockbolts, rental for diesel compressors and scooptram, ventilation ducting, drillrods, explosives etcetera. Costs to-date have totalled some \$250,000. Additional costs to be incurred to ready the adit for diamond drilling may be expected to double that sum.

Costs for the preliminary exploration are:

#### PHASE I

i) Rehabilitation of access road . . . . .	\$ 10,000
ii) Surface preparations for rehabilitation (collar timbering) . . . . .	25,000
ii) Equipment Rentals . . . . .	100,000
iii) Rehabilitate adit in footwall - timbering, bolting . . . . .	150,000
iv) Mining Safety Bays and Drill Chambers . . . . .	250,000
v) Piping (air, water), ventilation (fan and ducting) . . . . .	15,000
vi) Labour and supervision . . . . .	81,000
vi) Management, Sampling and Assaying at 10% . . . . .	<u>63,100</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$694,100</u></b>



**PHASE II**

i) Purchase of underground diamond drill - (see GeneralSection) . . . . .	\$ 0
ii) In-bye drilling - 11,000 feet at \$20 per foot . . . . .	220,000
iii) Central drilling - 5,000 feet at \$20 /ft . . . . .	100,000
iv) Labour and supervision . . . . .	200,000
v) Management, Sampling, Assaying and overheads @ 10% . . . . .	<u>52,000</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$572,000</u></b>

**PHASE III**

To be planned resultant from the programmes above.

Based on the strength of the zone, an underground programme is likely.

<b><u>TOTAL PROGRAMME ESTIMATE</u></b>	<b><u>\$1,266,100</u></b>
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**2.5.2 Great Western Zone**

A strongly mineralized vein on the northwesterly flank of Mountain No. 5 at an elevation of 1280 metres above sea level in the Lizard Range has provided a surface sample assaying 6.85% Lead, 8.84 oz/ton Silver and 0.005 oz/ton Gold. The vein exposed through a 30 metre adit strikes into the mountain at S85°E and dips towards the south within a host rock of argillaceous quartzite of the Aldridge Formation.

The earlier developed exploration programme for this zone has been adapted to augment that on the Viking - see 2.4.7 previous - now considered to be the up dip and westerly extension of this Great Western system - see Fig. 8.

The recent multi array heli-borne geophysical programme flown at the end of 1992 ties this area geophysically into the Steeples, which were flown in 1990. As the Viking (see following section of this report), the Great Western shows up as a "questionable anomaly" but the measured strike and dip of the structure tie it in perfectly with the Viking on the opposite side of the valley. Importantly, several other "questionable anomalies" exactly on strike with the Great Western were also evident which

provides targets for trenching and future drilling. A ground geophysics programme consisting of Closed Loop "Max-Min" EM or IP should now be conducted in this region as, apart from the direct link with the Viking, more complex associations will be found between this zone and the "G", Tom and Big Bear. Adaptations to this programme will ensue as results of the geophysics are obtained.

i) Conduct a Max-min closed loop EM survey (inc line cutting) @ 1km per line and 100m line spacing - severe topography .....	\$ 50,000
ii) Trench and sample along strike .....	15,000
iii) Construct access roads on the steep terrain above the showing for (ii) above and for Rotary Drilling to areas identified through (i) .....	500,000
iv) Rehabilitate adit and channel sample .....	5,000
v) Three surface diamond drill holes to intersect vein 200 metres below adit level - using truck mounted rig .....	285,000
vi) Allowance for annual access maintenance - 2 yr cost .....	45,000
vii) Management, Sampling, Assaying and overheads @ 10% .....	<u>85,000</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>935,000</u></b>

## 2.6 MOUNTAIN N<sup>o</sup>1 GROUP

### 2.6.1 Introduction

Mountain N<sup>o</sup>1 on the Stanfield Group Claims contains three showings of note that have previously been addressed individually. It becomes clearer with ongoing exploration that the zones are probably themselves linked (whether pre or post mineralization remains to be seen) to such an extent that any programme addressing one zone may materially change the knowledge of another. The "X" Zone, which also is found on Mountain N<sup>o</sup>1, is considered to be sufficiently removed spatially as to remain separate for the purpose of this exploration document.

The southern and western faces of Mountain No1, are covered by the Stanfield Group's Dogwood Claim Group (#1A). The BURT ZONE, the EMPIRE- STRATHCONA MINE, and the OK ZONE are all strong mineralized zones appearing in this Group which straddles the Sand Creek -Lizard Range Domain of the Rocky Mountain tectono-stratigraphic Province, and the Rocky Mountain Trench Province - see Section 1.6. The latter Province is very large, but at and near this location both it and particularly the Sand Creek Domain are sites of extremely favourable geology and structure.

Most importantly, within this portion of the two tectono-stratigraphic Provinces the bedrock is mostly of the Aldridge and Creston meta-sedimentary Formations and the Moyie dykes and sills. This suite of rocks hosts several past and present mineral producers in the area, including the Bul River Mine and the Sullivan Deposit.

The above mentioned deposits are mineralised vein systems within shear zones that may be part of deep seated regional crustal breaks. Such structures tap deep zones in the crust, and provide plumbing system for mineralised fluids. Strike and dip continuity on such deposits tend to be fairly extensive, with terminations over short distances only due to younger offsets (faults) which at many times can be recognised as separate deposits. This geologic model is of great interest to the Stanfield Group, and it is pursuing an exploration program to determine if one or all of the deposits in this area are part of a regional structure. Specifically the programs are designed to determine the strike and dip extensions of the known deposits, and to locate geophysical-geochemical anomalies that can be subsequently traced to bedrock sources that represent the strike and or dip offsets of the known mineral deposits mentioned above.

The results of a recent drilling program near the BURT Zone revealed the presence of a thick sequence of carbonate rocks that had been subjected to contact metamorphism. This is an indication of the presence of intrusive rocks. In this area the Proterozoic age metasediments have been thrust over the younger Paleozoic carbonate sequence. The drilling obviously penetrated through the Proterozoic into the Paleozoic sequence, and the Paleozoic sediments appear to have been in contact with intrusives (hot magma) that penetrated to this level of the crust at a much later date

(Cretaceous?). Up to this time such younger intrusives were not suspected in this area, and their presence suggests that this area has greater potential for vein type mineralisation, and other types of mineralisation associated with such intrusive masses.

### 2.6.2. Empire Strathcona Zone

This structure of average 1.8m width comprises a fissure vein striking NNW - SSE and dipping at 75 degrees to the southwest. Where exposed on the westward side of the Lizard Mountains, the vein can be traced for 300 metres, where it has been opened up by adits at elevations of 1,350, 1,308, 1,270 and 1,185 metres above sea level.

Mr. Alfred R. Allen P.Eng., previous consultant to the R.H. Stanfield Group provides the most accurate description of the Empire Strathcona Adits which are now, with the exception of the top most, inaccessible. Mr. Allen reports:

*The fissure vein is composed of quartz, siderite and calcite in which stringers, blebs and irregular bunches of chalcopyrite occur with minor pyrite and pyrrhotite.*

*Number 1 Adit (1,350 metres) is 38 metres below the top of a ridge. It is directed 40 metres southeasterly on the vein, which at this location is 5.5 metres wide at the portal. Within the tunnel a short crosscut exposes the footwall of the vein.*

*A large open cut (1,308 metres) has been excavated 50 metres below the tunnel where the exposed vein is 1.8 metres wide.*

*A second adit (1,270 metres) is located on the vein 38 metres below the open cut. The portal is caved but the vein is exposed by a large open pit which is 1.4 metres wide. Thirty metres lower, there is another short tunnel caved at the portal.*

*At elevation 1,204 metres, the number four (adit) crosscut was driven 45 metres north 80° east through overburden to bedrock and a further 27 metres on the vein where it is 3 metres wide.*

*A drift was directed 6 metres north where a winze was sunk 11 metres on the vein. A drift was also driven southeasterly for 12 metres from where a small stope was excavated on the vein.*

Drilling has, to date, indicated a strike extension to +/- 1000 metres where a hole cut through a nine metre thick section. When allowing for the angle of contact with the ore body, indicating a true width in excess of 3 metres, and assuming a strike length of 500 metres and vein extensions of 15 metres above and below the extreme adits, with a density factor of 0.3m<sup>3</sup>/ton, mineral deposit reserves of +/- 1,000,00 tons may be inferred. Grades of up to 0.4 oz/ton Gold, one to six percent Copper and 0.53 to 2.0 oz/ton Silver have been assayed.

A two-phase programme incorporating surface drilling and underground exploration, which is a direct reflection of the difficulty of conducting extensive surface exploration in this highly environmentally sensitive area, is clearly warranted.

**PHASE I: Surface and Preparatory**

i) Conduct IP across vein extended strike. 100 metre line spacing and 1km lengths (2000\$/km inc cutting) .....	\$ 40,000
ii) Six holes, 30m off strike to the S.W. for strike extension .....	45,000
iii) Two rows of ten holes each further S.W. to intersect the structure 150 and 300 metres below surface .....	850,000
iv) Rehabilitate the 1,185 and 1,308 metre levels, map and assay .....	20,000
v) Annual maintenance on access road .....	120,000
iv) Management, Assaying and overheads @10% .....	<u>107,500</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$ 1,182,500</u></b>

**PHASE II: Underground**

i) Permitting for underground exploration .....	\$ 750,000
ii) Extend both adits to 1,000 metres (@ \$650/M) .....	1,115,000
iii) Raise from 1,185 to 1,308 to surface (approximately 300m @ 1.8m X 1.8m & \$525/M) .....	160,000
iv) Connect 1,185 & 1,308 at portal + 500m and Portal + 750m .....	130,000
v) Stub Raise X 2 from 1,308m level .....	100,000
vi) Cross cut 90m to SW of 1,185m level at 1,000m (\$650/M) .....	60,000
vii) Horizontal and deep hole drill (ring) from end of cross cut (\$100m) .....	200,000
viii) Sampling, Assaying, Management and overheads @ 10% .....	251,500
ix) Contingencies for underground work (15% of total) .....	<u>377,250</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$ 3,143,750</u></b>

**TOTAL EMPIRE STRATHCONA PROGRAMME****\$ 4,326,250**

### 2.6.3. Burt Zone

A narrow high grade Lead, Zinc and Silver vein occurs about 4 kilometres due east of the Treasure Zone on the southwest flank of Mountain No. 1 of the Lizard Range. One assayed sample was reportedly taken from a three quarter metre wide section of the vein and found to contain 6.5% Lead, 3.4% Zinc and 0.9 oz/ton of Silver. The vein, as indicated from trenches, strikes to the northeast for a distance of over 600 metres and dips from near-vertical to seventy five degrees dip. Two adits and some trenching that had previously exposed the vein have since caved in.

It is considered that any proposed new underground programme is premature at this stage, as findings to date have indicated the existence of very heavy, difficult ground conditions. Such conditions would suggest that exceptionally high expenses would be required per metre of advance. However, the reportedly 600 plus metres long adit should be reopened to allow for channel sampling and full geological appraisal of this area. Gallowai has yet to determine how this zone may interconnect with the other zones outcropping on Mountain No. 1. Together, the Burt, Empire Strathcona and O.K Zones make for a very promising exploration area.

i) Clear grid lines and conduct EM and IP Surveys .....	\$ 60,000
ii) Maintain road access annually @ 3yr cost over that to Empire .....	15,000
iii) Rehabilitate caved adits (muck out), timber as necessary .....	200,000
iv) Extensive surface drilling to intersect structure at 100 and 300m below surface .....	800,000
v) Management, Sampling and Assaying and overheads @ 10% .....	<u>107,500</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$ 1,182,500</u></b>

### 2.6.4. The O. K. Zone

This Zone is located 6 kilometres ENE of the Burt Zone on the southern flank of Mountain No. 1 in the Lizard Range, to the north of Sand Creek. The vein strikes E - W, has an apparent dip near vertical towards the south and is twelve metres wide at its widest exposure. In this area an assay of 42.8% Lead, 20 oz/ton Silver, 0.01 oz/ton of Gold with minor Copper and Zinc values was obtained. A parallel vein 100m upslope, i.e. +/- 50m on plan to the north, has also been identified. These structures are interpreted as comprising a major hinge fault zone. Host rock for the vein comprises Aldridge argillite formation of Precambrian age, which contains disseminated pyrite and galena.

The strength of the structure and the high silver/lead values obtained from grab samples make this a high interest target for renewed exploration. New access difficulties arising from the application of the new Forest Practice Code of British Columbia will create difficulties in conducting much of a surface exploration programme.

i) Clear and survey by closed loop EM and IP (inc cutting) .....	\$ 60,000
ii) Maintain access annually (3yr cost) and extend access to anomals .....	75,000
iii) Trench and sample along strike defined from geophysics .....	25,000
iv) Surface drill to intersect vein at 100, 300 and 500m below surface from stations below the defined subcrop to the south .....	1,500,000
v) Management, Sampling, Assaying and overheads @ 10% .....	<u>166,000</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$ 1,826,000</u></b>

## 2.7 OTHER STANFIELD CLAIMS AREA

### 2.7.1 Viking Zone

The Viking occurrence at an elevation of 1661 metres on Mountain #6 north of Little Sand Creek, comprises an adit driven at N62°W for a distance of 10 metres after which it turns with the vein onto a bearing of N22°W. At the face, the zone comprises a strong 1 metre wide quartz vein with much siderite and limonite (secondary iron minerals) with significant galena (Lead) and the Copper minerals malachite and chalcopyrite - the British Columbia Minfile data base suggests that Silver is also present in the showing. The vein outcrop, located on the boundary of Balsam No. 9 with Cedar No. 12, is hosted in Middle Proterozoic Precambrian Creston siltites/argillites.

Due to access problems, (i.e. there are no roads in the area to the northwest of Little Sand Creek), very little work has as yet been carried out by Gallowai on this property. Initial exploration restricted to surface geological mapping was carried out in 1989 and 1990, followed in 1992/93 with a Heliborne Geophysical Programme as a continuation to the earlier Steeples programme. The Viking shows itself on the geophysicists map as a "questionable anomaly" which also accurately locates the showing across the valley from the Great Western - see Figure 8, Calculated Vertical Gradient Magnetism, Big Bear Property.

The most recent geological interpretations of the Lizard Front Range show a fault previously assumed within the Little Sand valley to in fact curve to an east - west direction and pass to the north of the Viking Zone. This gives further credence to our contention that, notwithstanding the fact that the Viking and Great Western zones are hosted by different lithologies, they are in fact different expressions of the same structure outcropping on either side of Little Sand. Slight strike variations could be the result of an updip warping which would be considered a normal occurrence.

An examination of Fig. 8 shows there to be a line of "questionable anomalies" crossing Little Sand. Gallowai's consultants give a higher rating to the anomalies due to the fact that they clearly (spatially) locate both the Viking and Great Western Zones. Fig. 8 is a plot of Calculated Vertical Magnetic Gradients, but the anomalies marked with an asterisk are in fact representative of the complete array of geophysics flown simultaneously. The high quartz content of both the zones would register as a high resistivity / low conductivity zone, whereas high sulphides (particularly chalcopyrite, pyrite and pyrrhotite) would be exactly the opposite. The high ratio of Quartz to Sulphide in both showings provides a distinct quartz vein signature. On the same basis, this structure can also be shown as continuing to the east of the Great Western as further anomalies are recognized along strike by the geophysics. It appears that the structure hinges into/against the major northeast - southwest anomaly shown on Fig.8.

It is considered that great potential for Base and Precious Metals exists in the one kilometre distance between the Viking and Great Western Zones underneath the more recent screens.



It is essential that Closed Loop EM or IP be conducted between the Great Western and the Viking to better delineate the vein system.

i) Advance road access to the outcrop .....	15,000
ii) Maintain access annually (from Forestry maintained access off Galloway Logging Trunk Road). 3 yr cost .....	48,000
iii) IP Survey up and down slope. 100m line spacing and 1km/line - no line cutting necessary .....	30,000
vi) Trench across located subcrops - additional access required .....	120,000
v) Short Diamond Drill Holes from Truck Mounted Rig - six 200 metre holes at 100\$/M .....	120,000
vi) Management, Sampling, Assaying and overheads @ 10% .....	<u>33,300</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>363,300</u></b>

### **2.7.2. Rex and Dean Zones**

Proximity and semblance dictate that these zones must be addressed as one.

The Rex comprises a dual system of veins outcropping in Aldridge argillite. Vein No. 1 strikes at N65°W, with an apparent dip of 70° to the southwest while Vein No. 2, a series of quartz stringers stockworking with Vein No. 1 strikes N42°E and dips almost vertically. It should be remembered that the St. Eugene Mine, an exceptional producer, was essentially a stockwork. Strong Copper mineralization is evident in hand specimens from Vein No. 1, with the oxidized minerals malachite and azurite being predominant. Chalcopyrite and cuprite are the main primary minerals. An assay yielding 2.39% Copper, 1.7 oz/ton Silver and 0.01 oz/ton Gold was recorded from a random grab sample. A selected chalcopyrite sample from the shaft taken in 1995 yielded a high gold value. Depth extension must be examined for primary Copper and overall potential for Gold.

The Dean Zone is also a two vein system containing Copper, Silver & Gold mineralization outcropping in the proximity of the eastern Trench boundary 1.5kms south of and conforming to the Rex Zone. Vein DZ1, dips variously from 85° north to 85° south as noted from an adit driven 25 metres on a bearing N80°E. A vertical vein, DZ2, strikes N60°W in a Trench exposure yielded an assay of 0.5% Copper with traces of Gold and Silver from a sample taken across a 1.5m width. A channel sample from inside the Adit taken in 1995 yielded 0.26 oz/ton.

The following exploration is recommended:

i) Induced Polarization (IP) and/or closed loop horizontal max-min ElectroMagnetic (EM) survey (inc. cutting) linking zones .....	\$ 150,000
ii) Trench and sample both systems @ \$30,000 per zone .....	60,000
iii) From drill stations @ 300m spacing parallel to strike of strongest structure, drill three holes per to intersect vein at 300, 600 and 900m .....	1,476,000
iv) Drill 2 flat holes from three 300m spaced stations to DZ2 from H/W to intersect DZ2 at 200 and 300m below surface. ....	934,500
v) Drill 2 angle holes to DZ1 (to east of DZ2) to intersect vein at 200 and 300m below surface (3 stations at 2 holes/station) .....	934,500
vi) Management, Sampling, Assaying and overheads @ 10% .....	<u>355,500</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>3,910,500</u></b>

### 2.7.3. Treasure Zone

A Copper, Silver, & Gold bearing vein outcrops in the Rocky Mountain Trench about 3 kilometres due south of the Dean Zone. The vein contains mainly pyrrhotite and pyrite with evidence of chalcopyrite. Calcitic casts of removed pyrite crystals - some in excess of 3cm - are abundant. The main vein, hosted in Aldridge Argillite, strikes variously from N97°E to N120°E and appears to dip at +/- seventy degrees towards the north - difficult to determine without an accurate survey of the apparent crosscuts on each level to the main vein. In the fall of 1992, the three Adits comprising the Treasure Zone were entered and mapped. The three Adits have a level interval of about 23 metres and average 2 metres in height and 1.7 metres in width. The main vein is apparently cut off by a very low lying (thrust) fault dipping to the south and appears to be intersected in each adit by another fault/vein showing siderite and limonite in a quartz matrix. Until more work is undertaken, it will not be easy to determine the true merit of the Treasure Zone. However, it is considered that the +/-N130°E striking intersecting vein could well be an up-dip expression of one of the east boundary trench faults.

Access difficulties, which would entail a significant degree of co-operation from the surface rights holder, continue to hamper a reasonable exploration programme on this zone. The Company did attempt in 1992 to diamond drill on the perceived extension of this zone but were unable to gather any information due to overburden problems.

The following low level programme is recommended if approvals can be obtained:

i) Clear, Trench and sample .....	\$ 100,000
ii) Closed Loop Max-min EM or IP survey at 100m line spacing and 1km/line for 1km north and south of showing to determine also the continuity of the northwesterly/southeasterly structure .....	40,000
iii) Drill to intersect at 100 and 300m below surface, Budget 10 Holes - will require Percussion Drilling to set Casings .....	360,000
iv) Management, Sampling and Assaying .....	<u>50,000</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>550,000</u></b>

#### 2.7.4. Don Zone

The vein evidences a 60 degree southwesterly dip, is approximately ten metres wide and strikes north-westerly. Assays show Copper, Silver and Gold which are held in a matrix of quartz, siderite and barite, the whole hosted in upper Precambrian Gateway argillites. The Don Zone outcrops in the floor of the Rocky Mountain Trench approximately 8 kilometres southeast of the Treasure Zone and has been stoped just below the surface.

Dependent on a ground geophysical programme to determine the extent of the zone, a programme of surface diamond drilling may be followed by an underground programme. This will also assist in determining whether the near-surface exposure is an entrapment under a previously impermeable cap or if the zone is, in fact, a near-vertical emplacement ore body. Each of these two postulates has been given independently by two separate previous consulting groups. An open inclined shaft driven at about minus 70° immediately to the south of the open stope appears sufficiently structurally sound to facilitate access. This entrance should be examined and mapped. There is no sign from surface of any level intersections and the present consultants have not been able to find any details of previous work conducted on this zone.

It is known that the zone was held in the 1950's by Canadian Collieries who reported a diamond drill intersection of plus thirty feet in Chalcopyrite and Argentiferous mineralization - a report not seen first hand by P&GM. It is nevertheless clear that the zone is a major occurrence, with mineralization being traceable in exposure and percussion drill hole for in excess of 1 mile.

i) Ground closed loop EM Max-min along strike to north and south . . . . .	\$ 50,000
ii) Extensive IP survey with lines at 100m intervals, 1km per line and 1km north and south of zone . . . . .	30,000
iii) Underground mapping/channelling through inclined shaft access - crane and cage rental etcetera . . . . .	100,000
iv) Percussion Programme for Casing Setting in deep O/B areas . . . . .	252,000
v) Drilling from stations 400 metres from the vein to intersect at 100, 300 and 500 metre depths (300m between stations) . . . . .	1,968,000
vi) Management, Sampling, Assaying and overheads @ 10% . . . . .	<u>240,000</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>2,640,000</u></b>

#### 2.7.5. GALLOWAI - Elderberry Zone

The Elderberry Group containing Barite, Copper, Lead and Silver mineralization is situated centrally in the eastern section of the total holdings, some 10 kilometres northeast of Galloway and between 1350 and 1500 metres above sea level, in the Lizard Range due east of the confluence of Whimster Creek with Sand Creek.

Little work has been carried out by Gallowai on this extremely complex area as emphasis has been placed on higher priority targets. However, this copper/barite shear zone within the Gateway system of precambrian age merits a degree of exploration to better define the zone. This area of confluence between the Sand and Whimster Creeks is the geological setting for the confluence of the Sand and Moyie Thrust faults. Overthrusting and lateral fault movements bring Precambrian, Mississippian and Devonian strata into extremely complex associations. Any exploration programme of the Elderberry showing has to examine the inter-relationships between the various lithologies before a true understanding, and evaluation, of the Elderberry can be obtained.

The existence of the deposit is indicated from surficial geological observations plus minor trenching uphill and along strike where the System has been uncovered for a road access. Assay results conducted by Loring Laboratories in Calgary provide an average of 91.2% Barite at a specific gravity of 4.2%. No tonnage estimates have been made to date.

Ground stripping along strike should commence as soon as funds are available to facilitate trenching, assaying and drilling. It is recommended that two lines of drill holes at 100 metre spacing be drilled from the hanging wall side of the vein to intersect the vein at +/- 50 and +/- 150 metres below outcrop. In addition, a minimum of three step-out holes should be drilled from the hanging wall to intersect the vein at a depth of at least 900 metres below outcrop, to determine the vein's continuity and examine the mineralogy at depth. The area will be covered by the multi-array airborne addressed in Section 2.4.13 of this report.

i) Ground clearance, mapping and trenching .....	\$ 55,000
ii) Grid cutting and closed loop Max-min ground EM over best 1km <sup>2</sup> from (ii) above @ 100m line spacing .....	35,000
iii) Allowance for annual maintenance of access ways .....	120,000
iv) 15 holes, totalling 4,350 metres @ \$165/M .....	717,750
v) Sampling, Assaying and Management @ 10% .....	<u>92,775</u>
<b>TOTAL ESTIMATED</b>	<b><u>\$ 1,020,525</u></b>

## 2.7.6. Anomalous Zones

### "W" Zone

This significant anomaly was identified by the Apex Airborne Survey work. It is located in the Rocky Mountain trench adjacent to its eastern boundary, east-southeast of the Rex Zone by about 1 km and west-northwest of the Empire Strathcona system. It is easily accessible from existing Stanfield Group roads but lies within an area of dense, young forest growth.

The strength of the anomaly is such as to demand a programme of geophysics to provide better definition of the anomaly. The "general programme" will cover this area with the multi system airborne survey to complement that flown over the Steeples in the winter of 1990/91. From such a programme, a ground IP survey will be commenced from which trenching and preliminary diamond drilling will be laid out.

i) Closed loop max-min EM with Line Cutting .....	\$ 30,000
ii) IP Survey along EM line cuts .....	30,000
iii) GPS Survey to tie into Exploration Camp established Base .....	50,000
iv) Back hoe trenching through overburden and scree .....	35,000
v) Minimum 4 sets of 2 diamond drill holes per set to examine any delineated occurrence at 200 and 400m initially .....	480,000
vi) Access maintenance - 3yr cost .....	24,000
vii) Management, Sampling, Assaying and overheads @ 10% .....	<u>64,900</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>713,900</u></b>

### "X" Zone

The "X" Zone has been identified on the basis of the low-level Electromagnetic Survey flown by Apex Airborne for Gallowai in 1983 and has since been subjected to a preliminary mapping exercise by the Stanfield Group. The Zone (see Figure 4) lies at an elevation of 1,740 metres above sea level on the south flank of Ridge No. 2 overlooking the Upper Sand Creek Valley, and would appear to result from the confluence of two semi-parallel faults, one striking at true north sixty degrees west and the other at true north 80/85 degrees west. The Zone is accessible by a forestry road that requires minimal upgrading for use in a preliminary exploration programme. The Gallowai "X" Zone could possibly be the Sand Creek Iron deposit as labelled on the MinFiles Map for the Stanfield Claims Area.

i) Reestablishment of bridge across Sand Creek and Upgrading of existing forestry road .....	\$ 75,000
ii) Maintenance of access through Sand Creek from W Zone .....	36,000
iii) Ground IP for Fault definition and Zone interpretation - no line cutting. Lines at 100 metre spacing and 1km each .....	30,000

iv) Detailed geological mapping & trenching . . . . .	75,000
v) Stream bed sediments programme from north down the Sand Creek and tributary streams . . . . .	60,000
vi) 2 X 400m Diamond drill holes to intersect both faults at depth near confluence point . . . . .	128,000
vii) Management, Sampling, Assaying and overheads @ 10% . . . . .	<u>40,400</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>444,400</u></b>

### "Z" Zone

The "Z" Zone is an interesting double peaked anomaly located through the Stanfield Groups Apex Airborne Electromagnetic Survey flown in June of 1982. The recently flown multi purpose survey across the Steeples did not cover the area sufficiently across the Bull River to provide back-up data for this occurrence although there were indications of an increasing Total Field Magnetic value with coincidental very low Resistivity values near the edge of the 1990/91 area in the region of the earlier Apex identified area.

This area must be flown with the multi purpose array used in 1990/91 (for which costing is covered in the general programme). It is believed that sufficiently strong evidence already exists from the two above mentioned programmes, as well as from detailed library research on the area, to allow for the commencement of additional ground programmes to compliment the airborne.

i) Re-opening of old logging roads to base of Mtn No. 7 . . . . .	\$ 15,000
ii) Ground IP and line cutting - 500 metre line spacing initially on north/south grid from boundary of Aspen 9 / Balsam 12 to boundary of Balsam 12/11 . . . . .	24,000
iii) Closed Loop Max-min ground EM over best 1km <sup>2</sup> from (iii) above at 100m line spacing . . . . .	16,500
iv) Four hole Percussion programme on selected targets . . . . .	66,000

v) Pitting along defined shallow occurrences . . . . .	25,000
vi) Four Hole Diamond Drill deep programme to ascertain depth potential of area, bed rock type etc., . . . . .	384,000
vii) Management, Sampling, Assaying and overheads @ 10% . . . . .	<u>53,050</u>
<b>TOTAL ESTIMATED</b>	<b>\$ <u>583,550</u></b>

**2.7.7. General Programmes**

The success of the Multi-array geophysical programme flown by the Stanfield Group in the winter of 1990/91 ensured that the remaining areas of the property be flown to better understand the complex geology of the area. This was conducted in July and August of this year with additional lines being flown over previously examined areas to provide greater detail definition. Preliminary maps provided by Dighem show great promise and seem to show a major intrusive lying immediately south of the Gallowai Bul River property. Once final maps have been provided - early October - the Stanfield geological consultant, Mr Master, will determine what other programs will be undertaken resultant from the Dighem work.

It is however still recommended that detailed data be gathered from Seismic surveys to better define the eastern margin of the Trench where sulphide mineralization may be expected. For this purpose, lines should be shot in an east west direction from the base of the Front Range or Steeples to the western limit of the Stanfield Holdings. Additionally, the area of the Pickering Hills (immediately south of the Gallowai Bul River property) should be examined in a north south direction to ascertain the position of the various post and pre trench faults that congregate in that area.

- i) Seismic. An average of \$5,000 per km is applied to all areas to account for the permitting and line cutting and data provision for the programme.

Line N0S	Claim Steeples 60 - Steeples 30	Length 12.5km
N1S	Steeples 34 - Steeples 14	12.5
N2S	Aspen 17 - Balsam 9	17.5
N3S	Aspen 2 - Cedar 5	12.5
N4S	Aspen 2S - Elderberry 8	17.5
N5S	Balsam 10S - Elderberry 1	20.0
S14A4W	Steeples 14 - Aspen 4	12.0
S11A2E	Steeples 11 - Aspen 2	<u>12.0</u>
	<b>TOTAL KM FOR SEISMIC</b>	<b><u>116.5</u></b>



@ COST / KM	\$ 5000.00	\$ 582,500
ii) Management and Overheads @ 10%		<u>58,250</u>
<b>ESTIMATED SEISMIC COST</b>		<b>\$ <u>640,750</u></b>
iii) Underground Diamond Drill (Electric/Diesel)		\$ 120,000
iv) Allowance for infill Seismic		145,000
v) Allowance for ground IP and/or EM over selected areas from above to include Line Cutting		300,000
vi) Permitting for Road Accesses for ground work		50,000
vii) Allowance for road access construction and maintenance		500,000
viii) Allowance for Percussion Drilling for contour geochemical multi element analyses		500,000
ix) Allowance for percussion setting of casing in deep O/b areas		250,000
x) 6000m Diamond Drill allowance on selected targets		960,000
xi) Management, Sampling, Assaying and overheads @ 15% non airborne and non-seismic cost		<u>402,000</u>
<b>TOTAL ESTIMATED</b>		<b>\$ <u>3,227,000</u></b>
<b>TOTAL ESTIMATED GENERAL PROGRAMME</b>		<b>\$ <u>3,867,750</u></b>

## SECTION III. EXPENSE SUMMARY

<b>GROUP HOLDINGS</b>	<b>ZONE</b>	<b>ESTIMATED COST (\$Canadian)</b>
<b>Gallowai Bul River</b>	Bull River, Old Abe and Adits	15,015,000
<b>Zeus Group</b>	Copper King	336,000
<b>Big Bear</b>	Tom, Mag and Extension	4,989,000
<b>Fort Steele Group</b>	G Zone	1,266,000
	Great Western	935,000
<b>Mountain N°1 Group</b>	Empire Strathcona	4,326,000
	Burt	1,183,000
	O. K.	1,826,000
<b>Other Stanfield Claims Area</b>	Viking	363,000
	Rex and Dean	3,911,000
	Treasure	550,000
	Don	2,640,000
	Elderberry (Gallowai Group)	1,021,000
	Anomalous W, X and Z	1,742,000
	General	3,868,000
<b>TOTAL PROGRAMME ESTIMATED COST</b>		<b>43,969,000</b>

NOTE:- TOTALS MAY NOT SUMMATE DUE TO ROUNDING

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## CERTIFICATE

September 22, 1997

I, Phil D. de Souza, certify that:

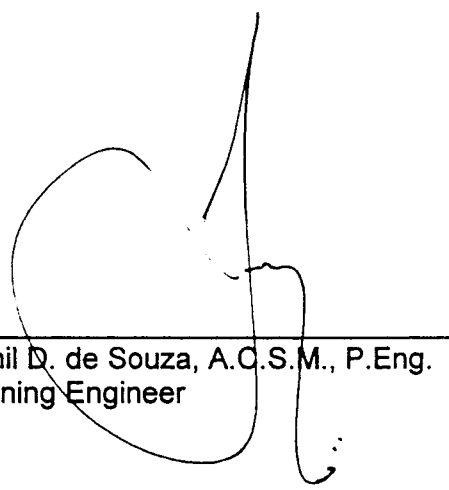
I am a graduate of the Camborne School of Mines, Cornwall, England and that I hold the degree of ACSM First Class in Mining Engineering therefrom.

I am a member of the Canadian Institute of Mining and Metallurgy and a member of the American Institute of Mining, Metallurgical and Processing Engineers.

I am a licensed Professional Engineer of the provinces of Alberta, British Columbia and Ontario, Canada and have been practising my profession for the past thirty years.

The 1996 Exploration Report is based on site inspections, and from Precious & General Metals and associated groups' direct project involvement since 1987.

I certify that neither I nor my Associates or Partners hold any interest or securities in any of the four corporations owning an interest in the properties, nor do I, or we, expect to receive any, directly or indirectly.



Phil D. de Souza, A.C.S.M., P.Eng.  
Mining Engineer

