

NIS 82 E/2

MINNOVA Inc.

1990 ANNUAL REPORT

BRENDA-OKANAGAN JOINT VENTURE

823454

SUMMARY AND HIGHLIGHTS

The Brenda - Minnova Joint Venture has now completed its second year and in the process has evaluated a great many potential ventures within and close to the JV area. Of these, four projects continue as active exploration targets into 1991, although they will be compared closely with several new acquisitions under consideration before funding is committed. A total of \$1,441,100 has been expended on exploration to date.

Seven projects were active in 1990 of which three saw drilling. Figure 1 shows the breakdown of the expenditures while Figure 2 compares this with 1989 expenditures. It is apparent that the proportion of funds spent on drilling increased significantly in 1990, however it is still well short of the 50% or so which we would like to see. This problem will be addressed in formulating the 1991 plans.

A summary of the projects is as follows:

- Last Chance* target is epithermal gold related to NW trending, Hg rich structures. Favourable host for bulk tonnage is present, but targets are not developing. A limited amount of target generation work remains to be done.
- Clapper* porphyry potential was evaluated and eliminated. No further work planned.
- Wart* presence of gold confirmed but no targets with tonnage potential were found. Claims have been kept in good standing while strong activity continues on the adjacent Elk property (Fairfield/Placer).

Richter several occurrences of anomalous gold associated with intrusive activity point to porphyry or skarn potential. Given this model, remaining areas of the property can be rapidly evaluated.

Rainbow precious metal values were returned from the Midway Mine area where a Mesozoic porphyry intrudes thrust related serpentine, however tonnage potential was eliminated. Several bulk tonnage epithermal targets remain to be tested.

Athelstan high grade veins with limited past production are postulated to be leakage features from a larger listwanite system within serpentines at shallow depths below. Drill testing planned for 1991.

General numerous submittals continue to be received and evaluated. Particular emphasis has been placed on porphyry and related targets in Nicola rocks.

1990 PROJECT EXPENDITURES Summary by Work Type

<u>PROJECT</u>	<u>GEOL</u>	<u>GEOPH</u>	<u>GEOCH</u>	<u>DRILL</u>	<u>LINE</u>	<u>TRENCH</u>	<u>HOTELS</u>	<u>OPTIONS</u>	<u>*OTHER</u>	<u>TOTAL</u>	<u>% OF BUDGET</u>
LAST CHANCE	22.9	0.0	17.8	56.9	3.5	9.5	5.4	0.0	0.4	116.4	16%
CLAPPER	2.8	7.6	1.7	0.0	0.0	0.0	0.5	0.0	0.0	12.6	2%
WART	4.6	9.0	7.3	0.0	0.0	0.0	1.0	0.0	0.4	22.2	3%
FERROUX	1.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.6	2.7	0%
RICHTER	48.0	12.8	15.8	50.7	0.0	0.0	9.3	0.0	1.5	138.1	19%
GENERAL	57.4	0.1	6.9	0.5	0.0	0.0	2.0	0.0	0.0	66.8	9%
TAM O'SHANTER	74.3	50.1	42.9	89.3	9.2	10.0	10.3	38.0	11.9	336.0	47%
ATH - JACKPOT	1.7	0.0	1.0	0.0	3.3	0.0	0.2	10.5	0.1	16.8	2%
TOTALS	212.9	79.6	94.0	197.4	16.0	19.5	28.7	48.5	14.9	711.5	
%	30%	11%	13%	28%	2%	3%	4%	7%	2%		

DIRECT EXPENDITURES	=	\$711,530
ADMINISTRATION	=	\$79,564
TOTAL	=	\$791,094

* includes property maintenance, staking, etc.

Figure 1.

ANALYSIS OF EXPENDITURES By Work Type

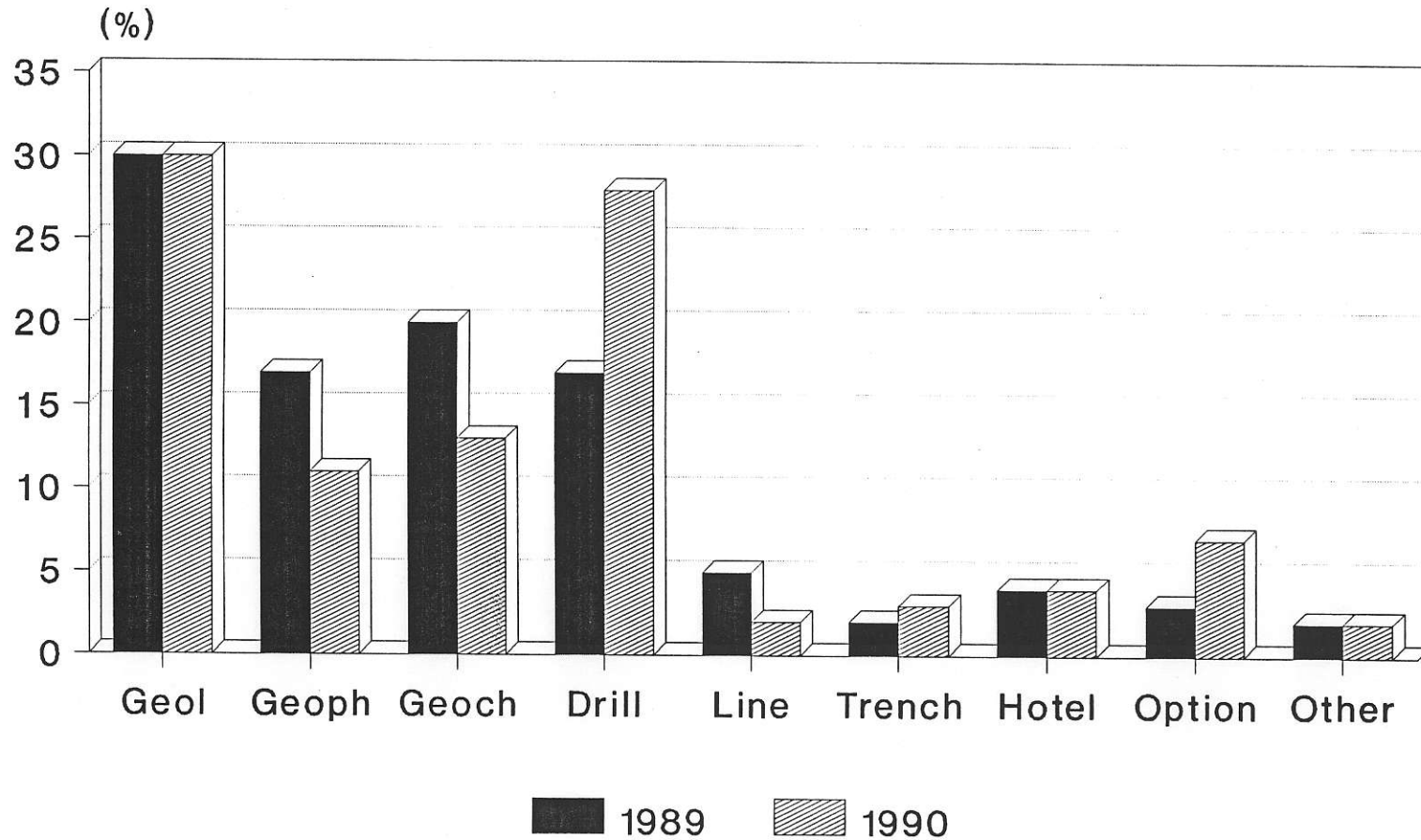


Figure 2.

LAST CHANCE

PN 622

C.J. Clayton

INTRODUCTION

The Last Chance property consists of the LC Group (contiguous LC 1-4 claims, 71 units) and the separate LC 5 claim (20 units). It is located approximately 18 km north-northwest of the western end of Kamloops Lake. High mercury values and other metals (Au, Cu, Ag) occur in Nicola Group and Ashcroft Formation rocks proximal to major north-northwest trending structures that control Sabiston Creek and Carabine Creek near Kamloops Lake. These major structures trend across the northerly LC Group and may control mineralisation in this area. On the southern LC 5 claim argillic alteration is prevalent along lahar cliffs proximal to a large breccia pipe in Eocene volcanics. Chalcedonic veining within the breccia pipe may indicate a precious metal bearing epithermal system at depth.

1990 PROGRAM

Work by Minnova during 1990 extended the existing LC grid to the southeast. Trenching on the LC grid was followed by three diamond drill holes. A grid was also established on the southern LC 5 claim to cover strong argillicly altered cliffs in the vicinity of the breccia pipe

Linecutting - *6.0 line km on LC grid extensions*
8.5 line km on SR grid

- Geology*
 - *1:2500 scale mapping and sampling of the LC grid extensions and SR grid.*
 - *1:5000 contour mapping and sampling around breccia pipe.*
- Geochemistry*
 - *13 rock samples taken from LC grid, 41 from SR grid; 54 were analyzed for Cu, Pb, Zn, Ag, As, Sb, Au, Hg; 41 for trace elements and major oxides.*
 - *112 rock samples from 21 trenches.*
 - *137 drill core samples.*
 - *592 soil samples from LC grid, SR grid and contour sampling analyzed for Cu, Pb, Zn, Ag, As, Sb, Au, Hg*
- Trenching*
 - *454 metres, 21 trenches*
- Drilling*
 - *three holes totalling 614.9 metres*

RESULTS

Mapping and trenching during 1990 successfully defined the contact between the basaltic/andesitic breccia, and the chert pebble conglomerate to the southeast on the LC grid. Precious metal values obtained from rock samples returned low gold values ranging from 1 - 12 ppb, and silver from 0.2 to 2.7 ppm. An anomalous zone of Hg in soils from the 1989 program was further extended to the southwest across much of the 1990 grid area. This feature roughly parallels the breccia/conglomerate contact. Arsenic results were not useful over the 1990 grid extensions. Trenching helped define the volcanic/conglomerate contact and one sample of conglomerate from trench TR90-5 taken near the volcanic contact was found to contain 5000 ppb Au (1.8 g/t, 0.053 oz/t). Mercury values in this trench reached 250000 ppb. Silver and base metal values, however, were low. Results of drilling were disappointing with the highest Au value of 29 ppb. Hg values, however, reached as high as 893750 ppb.

Compilation of results from the 1990 program and previous programs indicates a large northwest trending structure may be present roughly 500m to 1km northeast of the 1989 and 1990 grids. This may be an extension of the Carabine Creek fault.

RECOMMENDATIONS

1. A short (1 week) reconnaissance mapping and sampling program to precisely locate the structure indicated by airborne geophysics is recommended.
2. Depending on results of above, extend LC grid to cover this area.
3. Soil sample and run ground geophysics (mag/VLF) over this area.
4. Extend grid lines from the SR grid to cover the entire breccia pipe and detail sample this area.
5. Trenching and/or drill best targets.

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **LAST CHANGE**

PROJECT NO. **622**

GEOLOGY

Salaries	\$16,210		
Travel Expenses	\$241		
Contract Payments	\$0		
Field Expenses	\$6,467		
Analyses	\$0	\$22,918	20%

GEOPHYSICS

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$54	\$54	0%

GEOCHEMISTRY

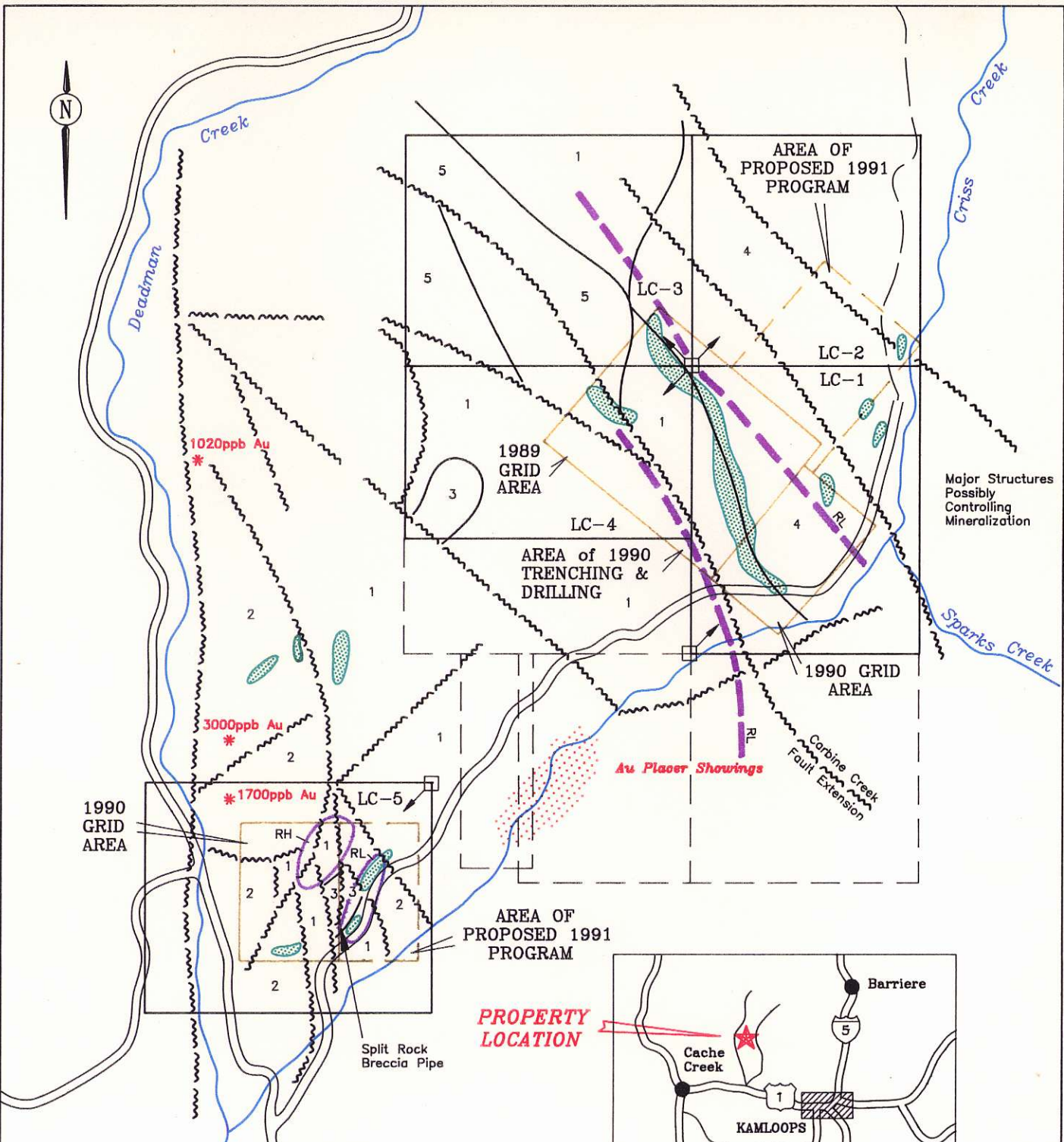
Salaries	\$2,841		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$1,984		
Analyses	\$12,947	\$17,772	15%

DRILLING

Salaries	\$5,454		
Travel Expenses	\$0		
Contract Payments	\$45,513		
Field Expenses	\$2,161		
Analyses	\$3,814	\$56,942	49%

<i>Line Cutting</i>		\$3,500	3%
<i>Trenching</i>		\$9,473	8%
<i>Hotels and Meals</i>		\$5,350	5%
<i>Option Payments</i>		\$0	0%
<i>Property Maintenance</i>		\$400	0%
<i>Other</i>		\$0	0%

TOTAL EXPENDITURES **\$116,409**



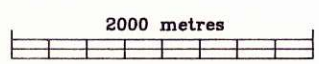
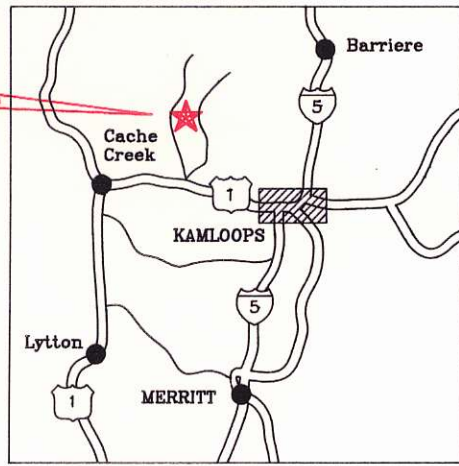
1990
GRID
AREA

AREA OF
PROPOSED 1991
PROGRAM

LEGEND

- 5 Basaltic or Felsic Dykes (MIOCENE)
- 4 Conglomerate and Sandstone (MIOCENE)
- 3 Basalt Breccia and Flows (MIOCENE)
- 2 Kamloops Group (EOCENE)
- 1 Nicola Volcanics and Sediments (TRIASSIC)
- * 1989 Heavy Mineral Sample Location
- Soil Anomaly
- RH,RL Resistivity (High,Low)

PROPERTY
LOCATION



LAST CHANCE PROPERTY
1991 WORK PROPOSAL

CJC/sg

JANUARY 1991

CLAPPER

PN 642

C.J. Clayton

INTRODUCTION

The Clapper property, consisting of 68 units straddling the Coquihalla Highway 29 km north of Merritt, is situated within the Nicola Mining Division. The north-south trending Clapperton Fault is thought to have the same sources of mineralisation as the Swakum Mountain vein/skarn system a few kilometres to the west. The 1989 program consisted of an airborne geophysical survey, heavy mineral sampling, and detailed mapping and sampling of shear zones. Results were generally poor with only low gold values returned.

1990 PROGRAM

Minnova's 1990 exploration program consisted of seven reconnaissance I.P. and magnetometer lines, and soil sampling.

- | | | |
|---------------------|---|---|
| <i>Geochemistry</i> | - | <i>106 contour soil samples analyzed for Ag, As, Ba, Cu, Pb, Zn, Sb, and Au.</i> |
| <i>Geophysics</i> | - | <i>seven reconnaissance I.P. and magnetometer lines using pole/dipole electrode array</i> |

RESULTS

Several magnetic highs were defined by the ground survey coinciding with airborne magnetic highs associated with Nicola intrusives. Soil geochemistry in these areas did not show any elevated values. Anomalous Au in soils (to 50 ppb Au) were found at the northern end of reconnaissance line 3. A weak coincident I.P. chargeability anomaly (20 mV/V) was found in this area.

RECOMMENDATIONS

The lack of alkalic porphyry-style alteration zones in the area suggests that no system is present on the Clapper property. Gold mineralisation that does occur appears associated with shear zones and is generally low-grade, sporadic and on a centimetre-scale. Results of the 1990 I.P., magnetometer, and soil sampling program do not warrant any further work on the property. The property should be dropped.

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **CLAPPER**

PROJECT NO. **642**

GEOLOGY

Salaries	\$1,907		
Travel Expenses	\$5		
Contract Payments	\$0		
Field Expenses	\$889		
Analyses	\$0	\$2,801	22%

GEOPHYSICS

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$7,551		
Field Expenses	\$10	\$7,560	60%

GEOCHEMISTRY

Salaries	\$524		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$51		
Analyses	\$1,133	\$1,708	14%

DRILLING

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0		
Analyses	\$0	\$0	0%

<i>Line Cutting</i>		\$0	0%
<i>Trenching</i>		\$0	0%
<i>Hotels and Meals</i>		\$525	4%
<i>Option Payments</i>		\$0	0%
<i>Property Maintenance</i>		\$0	0%
<i>Other</i>		\$0	0%

TOTAL EXPENDITURES **\$12,594**

WART PROPERTY

PN 643

C.J. Clayton

INTRODUCTION

The Wart Group is situated within the Similkameen Mining Division of south-central British Columbia, straddling the Okanagan Connector Highway approximately 36 kilometres southeast of Merritt. Interest in the property was stimulated in 1989 by trenching of the Elk claims to the south, operated by Fairfield Minerals/Placer Dome. Anomalous gold values on that property were returned from clay, sericite, pyrite alteration zones associated with quartz veining. Reconnaissance work continued in 1990 on the property to assess the potential of the area as a gold target.

1990 PROGRAM

Minnova's 1990 exploration program consisted of airborne geophysics (magnetometer and VLF) in the early part of the year, followed by contour soil sampling, continued heavy mineral sampling of stream sediments, and rock sampling of areas exposed by construction work along the Okanagan Connector Highway.

- Geology* - *sampling of clay altered fault/shear zones exposed in new roadcuts.*
- *reconnaissance scale (1:10000) mapping and sampling of available outcrop in the north west part of the group.*
- Geochemistry* - *19 rock samples were taken; 18 were analyzed for a 12 trace element ICP, 1 for trace elements and major oxides.*
- *106 contour soil samples analyzed for Ag, As, Cu, K, Mn, Mo, Na, Ni, Pb, Sb, Zn, Cr, and Au.*
- Geophysics* - *approximately 117 line kilometres of airborne geophysics was flown covering the entire property.*

RESULTS

Sampling of outcrop exposure in the northern part of the property failed to produce any significant results. Two rock samples taken from a shear/fault zone in the southeastern corner of the claims near the clover leaf off ramp returned anomalous values (Au to 1110 ppb, Ag to 19.4 ppm, As to 9857 ppm, Pb to 110 ppm, Sb to 46 ppm, Zn to 405 ppm, and Cr to 141).

Heavy mineral sampling did not reveal any areas warranting further follow-up, nor did contour soil sampling, the highest Au value being 40 ppb. Other pathfinder elements were not useful.

RECOMMENDATIONS

1. Assessment should be filed for one year to retain the property while Fairfield/Placer Dome continue work on the Elk claims.
2. Should the Elk property produce no further encouraging results it is recommended the Wart claims be allowed to lapse.

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **WART**

PROJECT NO. **643**

GEOLOGY

Salaries	\$2,638		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$1,937		
Analyses	\$0	\$4,575	21%

GEOPHYSICS

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$8,950		
Field Expenses	\$0	\$8,950	40%

GEOCHEMISTRY

Salaries	\$1,359		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$282		
Analyses	\$5,633	\$7,274	33%

DRILLING

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0		
Analyses	\$0	\$0	0%

<i>Line Cutting</i>	\$0	0%
<i>Trenching</i>	\$0	0%
<i>Hotels and Meals</i>	\$966	4%
<i>Option Payments</i>	\$0	0%
<i>Property Maintenance</i>	\$430	2%
<i>Other</i>	\$0	0%

TOTAL EXPENDITURES \$22,195

RICHTER

PN 656

C.J. Clayton

INTRODUCTION

The Richter property, consisting of 212 contiguous claim units, is situated within the Osoyoos Mining Division between Oliver and Keremeos, B.C. Palaeozoic meta-volcanics and meta-sediments intruded by Mesozoic plutons underlie the area. It was staked in 1988 to cover several multi-elemental heavy mineral anomalies. Work in 1989 resulted in the identification of several potential drill targets within strongly albitized and quartz vein stockwork zones proximal to Mesozoic intrusions.

Gold mineralisation appears associated with zones of albite alteration. Albite alteration and albitite dyke have been important ore indicators in other regions such as the Bralorne area, and the Abitibi-Lake Chicobi area. Skarn potential must also be considered on the Richter property as satellite intrusions from larger plutonic bodies are found near wide bands of calcareous sediments.

1990 PROGRAM

The 1990 program consisted of mapping and litho-geochemical sampling of unmapped grid areas, further follow-up of heavy mineral anomalies, and further reconnaissance scale mapping. Four diamond drill holes were drilled on the Testalinden Grid in the 'Albite Zone' area to test its potential.

- Linecutting* - *1.1 line km on Longhorn grid*
- Geology* - *1:2500 scale mapping and sampling of the Reed Lake Grid; 1:1000 scale mapping and sampling of the 'Albite Zone'; preliminary 1:1000 scale mapping of Longhorn grid.*
 - *1:10000 reconnaissance traverses following up HM anomalies, and in areas flanking Mesozoic intrusions.*
- Geochemistry* - *100 rock samples taken from Reed Lake grid; 24 rock samples from 'Albite Zone' area; 12 rock samples from Longhorn grid area; 38 rock samples from reconnaissance mapping and sampling.*
 - *164 drill core samples.*
 - *444 soil samples from Longhorn grid and reconnaissance sampling.*
- Geophysics* - *10.0 line km Induced Polarization*
- Drilling* - *four holes totalling 462.46 metres*

RESULTS

Mapping on the Reed Lake grid failed to generate any drill targets. However, a small intrusion just to the north of the grid was sampled as part of the reconnaissance program and did show elevated levels of gold (to 238 ppb Au). Geochemical sampling (both soil and rock) of the Longhorn grid area showed several anomalous results. Preliminary mapping indicates the grid to be underlain by a feldspar porphyritic intrusion bordered by injection breccia and mafic hornfelsed rocks.

Drilling of the Testalinden Grid was disappointing. The 'Albite Zone' was found to be a thin (<20 metres) tabular body with erratic Au values obtained from core samples, the highest value being 226 ppb from the albitized rock itself and 0.66 g/t Au

from a quartz vein. Drilling of an I.P. anomaly on the eastern portion of the grid returned consistently low Au values (maximum 54 ppb Au) but elevated Ag and As values (to 6.8 ppm Ag, to 705 ppm As) were reported. This zone contains pyrrhotite, pyrite, and marcasite and is the likely cause of the anomaly in this area.

Contour soil geochemistry and heavy mineral samples taken from streams draining the eastern region between Ridge grid and Reed Lake grid were anomalous (52 and 59 micrograms Au in heavy mineral sample). Also present here is a small intrusion. This area has not been evaluated in detail as yet.

RECOMMENDATIONS

1. Reconnaissance mapping and sampling of the eastern region between Ridge grid and Reed Lake grid.
2. Mapping and rock sampling of the Longhorn grid area should be completed.
3. The Reed Lake grid should be extended to the north to cover the intrusion in this area.

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **RICHTER**

PROJECT NO. **656**

GEOLOGY

Salaries	\$35,383		
Travel Expenses	\$264		
Contract Payments	\$0		
Field Expenses	\$12,384		
Analyses	\$0	\$48,031	35%

GEOPHYSICS

Salaries	\$273		
Travel Expenses	\$0		
Contract Payments	\$12,530		
Field Expenses	\$35	\$12,837	9%

GEOCHEMISTRY

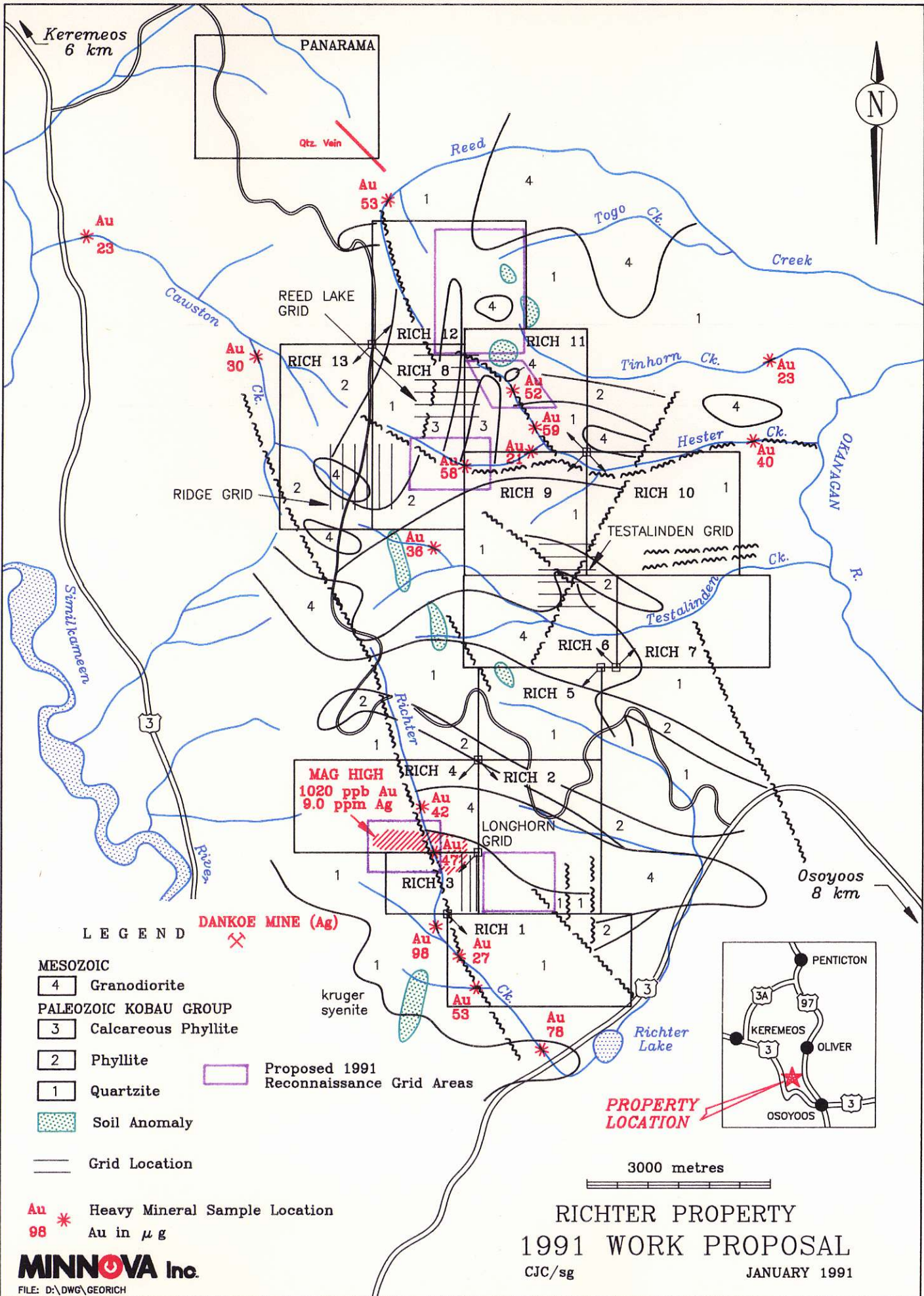
Salaries	\$6,826		
Travel Expenses	\$78		
Contract Payments	\$0		
Field Expenses	\$1,247		
Analyses	\$7,635	\$15,786	11%

DRILLING

Salaries	\$7,543		
Travel Expenses	\$0		
Contract Payments	\$35,271		
Field Expenses	\$4,278		
Analyses	\$3,637	\$50,728	37%

<i>Line Cutting</i>	\$0	0%
<i>Trenching</i>	\$0	0%
<i>Hotels and Meals</i>	\$9,281	7%
<i>Option Payments</i>	\$0	0%
<i>Property Maintenance</i>	\$1,470	1%
<i>Other</i>	\$0	0%

TOTAL EXPENDITURES **\$138,133**



LEGEND

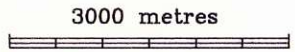
- MESOZOIC**
- 4 Granodiorite
- PALEOZOIC KOBALU GROUP**
- 3 Calcareous Phyllite
 - 2 Phyllite
 - 1 Quartzite
- Soil Anomaly
- Grid Location

DANKOE MINE (Ag)

Proposed 1991
Reconnaissance Grid Areas

Au * Heavy Mineral Sample Location
Au 98 * Au in μg

PROPERTY LOCATION



RICHTER PROPERTY
1991 WORK PROPOSAL
CJC/sg
JANUARY 1991

BRENDA GENERAL

PN 658, 624

I. D. Pirie

INTRODUCTION

The Brenda General budget is designed to allow reconnaissance work and property examinations within the Brenda JV area. Project number 624 covers work done within the original Discovery JV area (S. Okanagan only). PN 658 covers everything else. Discovery, although the JV is no longer active, still holds a residual interest in the Richter, Ferroux, Gil and Dusty Mac properties should they ever go into production.

1990 WORK PROGRAMME

Work under the Brenda General budget in 1990 almost exclusively involved property examinations. A very large number of submittals were received, the highlights of which are listed below. Some compilation work was also carried out for the Nicola belt and the Greenwood area.

PROPERTIES REVIEWED

<u>Properties</u>	<u>Vendor</u>	<u>Comments</u>
Stump	Leishman	Tertiary shear with anomalous Cu, Ag and Au. Stump Lake area. Not rec.

Sadim	Vanco	Au in veins related to N-S Nicola structures near Aspen Grove. Limited tonnage potential. Not rec.
Cinderella	various	Craigmont style target near Merritt. Too grass roots.
Makaoo		Afton target in Kamloops subdivision. Unworkable.
Maymac		Possible skarn adjacent to Rainbow-Tam O'Shanter. Battle Mountain picked it up.
Franklin Camp	Seraphim	Old Union Mine area, excluding mine itself. Narrow veins, limited tonnage potential.
Athelstan-Jackpot	Dyakowski	Listwanite-gold target south of Phoenix pit. Excellent concept, never tested. Optioned (PN 666).
Dentonia Mine	Stewart	Discrete veins, low tonnage potential. Not rec.
Wildrose		Small property on the border of Rainbow-Tam O'Shanter. Massive py-cpy veins with Au. May relate to Tam area anomalies. No action taken in meantime.

Croesus		Skarn showing near Greenwood. Low PM's and BM's. Not rec.
Lucky	Peto	Porphyry prospect NE of Princeton. Much previous work. Nice system but low grade and poor location (farmland). Not rec.
Ophir - Ken	Bombini	Adjacent to Ath-Jack. If exploration concept works there, will be worth acquiring. No action in the meantime.
Siwash		Adjacent to Fairfield/Placer play. Porphyry potential eliminated. Good high grade vein potential but low tonnage prospects therefore not rec.
Riverside	Rock Ck. Res.	Tertiary veins and breccias near Rock Creek. Also listwanite affinities. Interesting results. Monitoring.
Oro Denora	Kettle R. Res.	Skarn east of Phoenix. Many showings, past production. Needs modern exploration effort. Bid made but Canamax outbid.

Four Metals	Bahris	Vein system in Kobau of N. Washington. Some skarn potential. Evaluated thoroughly but see limited tonnage potential. Not rec.
Dickens-Deadman	Dickens	Three properties on Deadman River structure between Kamloops Lake and Vidette. Still under review.
Midway	Robertson	Several claim blocks staked on Mag highs near Midway. Very grass roots. No action taken at this time.
Whipsaw	Worldwide	Long known porphyry near Princeton. Large system, Cu-Mo, peripheral Au potential. Under review.

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **BRENDA GENERAL**

PROJECT NO. **658**

GEOLOGY

Salaries	\$30,188		
Travel Expenses	\$1,737		
Contract Payments	\$350		
Field Expenses	\$14,740		
Analyses	\$0	\$47,015	87%

GEOPHYSICS

Salaries	\$82		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0	\$82	0%

GEOCHEMISTRY

Salaries	\$2,141		
Travel Expenses	\$78		
Contract Payments	\$0		
Field Expenses	\$222		
Analyses	\$2,695	\$5,136	9%

DRILLING

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0		
Analyses	\$0	\$0	0%

<i>Line Cutting</i>		\$0	0%
<i>Trenching</i>		\$0	0%
<i>Hotels and Meals</i>		\$1,883	3%
<i>Option Payments</i>		\$0	0%
<i>Property Maintenance</i>		\$0	0%
<i>Other</i>		\$0	0%

TOTAL EXPENDITURES

\$54,116

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **DISCOVERY**

PROJECT NO. **624**

GEOLOGY

Salaries	\$3,418		
Travel Expenses	\$0		
Contract Payments	\$6,077		
Field Expenses	\$194		
Analyses	\$0	\$9,689	84%

GEOPHYSICS

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0	\$0	0%

GEOCHEMISTRY

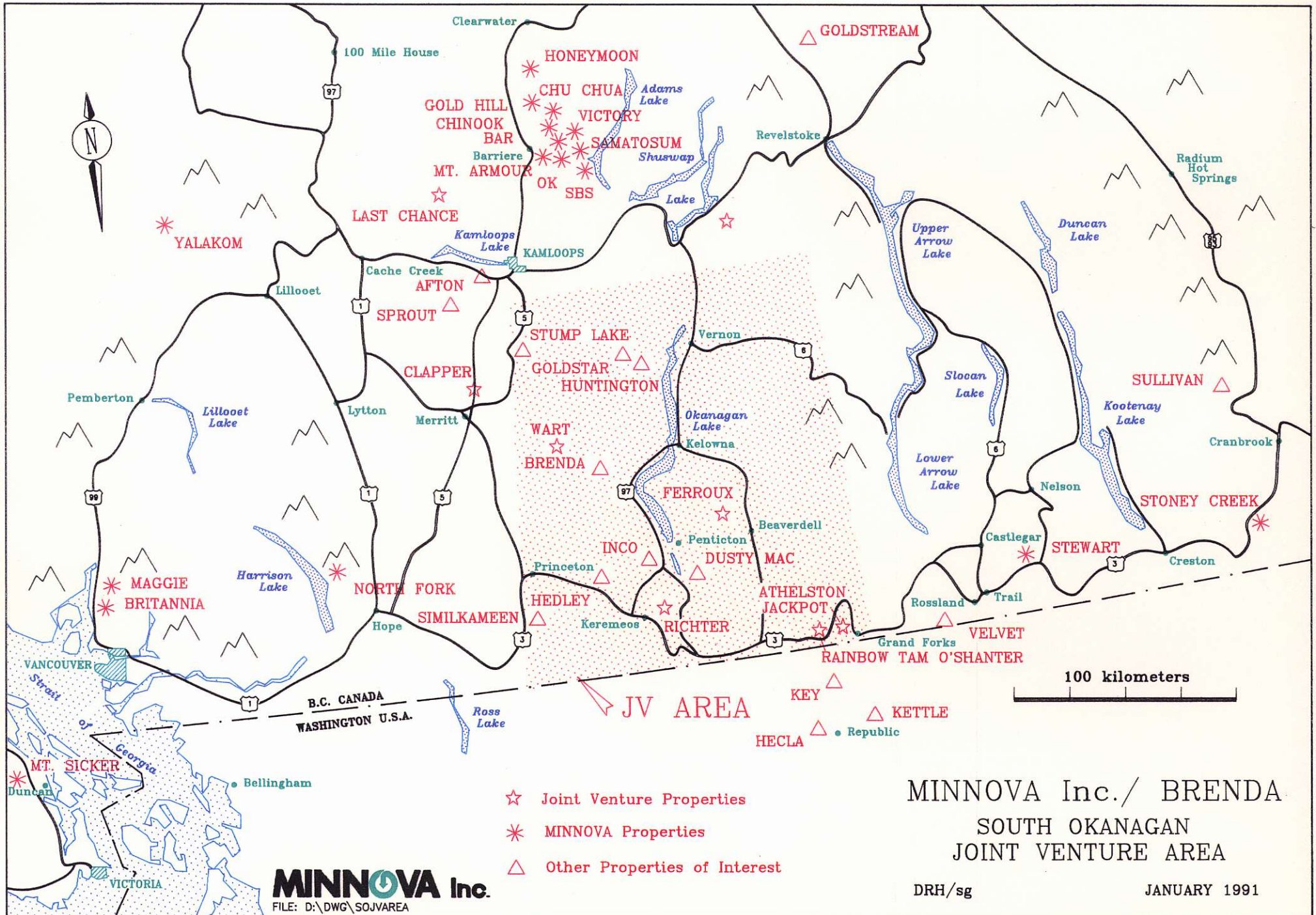
Salaries	\$225		
Travel Expenses	\$0		
Contract Payments	\$1,067		
Field Expenses	\$0		
Analyses	\$463	\$1,755	15%

DRILLING

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0		
Analyses	\$0	\$0	0%

<i>Line Cutting</i>	\$0	0%
<i>Trenching</i>	\$0	0%
<i>Hotels and Meals</i>	\$142	1%
<i>Option Payments</i>	\$0	0%
<i>Property Maintenance</i>	\$0	0%
<i>Other</i>	\$0	0%

TOTAL EXPENDITURES **\$11,585**



- ☆ Joint Venture Properties
- * MINNOVA Properties
- △ Other Properties of Interest

MINNOVA Inc./ BRENDAA
 SOUTH OKANAGAN
 JOINT VENTURE AREA

DRH/sg

JANUARY 1991

MINNOVA Inc.
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RAINBOW - TAM O'SHANTER

PN 661

Ian D. Pirie

INTRODUCTION

The Rainbow - Tam O'Shanter property is part of the Brenda JV. It was optioned in January of 1990 to cover a large part of the Tertiary Toroda Graben west of the town of Greenwood. The rocks on the 300+ unit property hold significant potential for skarn, porphyry and epithermal mineralization.

The property is under option from Dentonia Resources and Kettle River Resources and a small portion of it is subject to an underlying agreement with D. Moore ("the Moore Option"). Minnova was attracted to it by past results from work done by various operators who had various parts (but never all) of the property at various times. In addition, a 1989 heavy mineral stream sediment survey had highlighted several of the property's drainages.

1990 PROGRAM

Work by Minnova in 1990 was concentrated in the Midway Mine and Tam O'Shanter areas of the property with only limited reconnaissance work elsewhere. It consisted of the following:

<i>Linecutting</i>	-	<i>52.3 km on the Midway and Tam grids</i>
<i>Geology</i>	-	<i>52 km</i>
<i>Geophysics</i>	-	<i>45.8 km Mag and VLF</i>

<i>Geochemistry</i>	-	<i>2189 soils 272 lithos</i>
<i>Trenching</i>	-	<i>411 m in 9 trenches - Midway area</i>
<i>Drilling</i>	-	<i>1171 m in 7 holes - Midway area</i>
<i>Assays & Geochem.</i>	-	<i>374 samples from trenching and drilling</i>

RESULTS

Surface work in the Midway mine area produced both soil and rock geochemical anomalies related to an altered and mineralized quartz-feldspar porphyry intrusion. This intrusion believed to be of Jurassic age, cuts Late Paleozoic sediments and volcanics and an extensive serpentine unit marking a pre-Triassic thrust fault. Drilling and trenching of anomalies produced a 2.8 g/t Au, 218 g/t Ag and 0.33% Zn over 4.5 m (trench) and 0.33 g/t Au and 52.7 g/T Ag over 10.5 m (drill hole) as well as numerous other altered and mineralized zones. However, no potentially economic discoveries were made.

Also intersected in drilling were strong, northeast trending Tertiary structures which remain to fully tested.

Work in the Tam O'Shanter area was centred around the Deadwood fault, a strong NW trending Tertiary structure. Silicification and clay alteration related to this structure has permeated both basement (Paleozoic) and Tertiary sediments and volcanics. A typical epithermal signature of anomalous Sb, As, and Mo is present and precious metal values are locally anomalous (Au to 2070 ppb). An unexplained gold in soil anomaly is also present and will be further evaluated in 1991.

RECOMMENDATIONS

1. *Follow up epithermal targets in the Tam O'Shanter area.*
2. *Further evaluate Tertiary structures in the Midway area and test for skarn potential at the Phoenix stratigraphic level.*
3. *Evaluate Tertiary structures on the rest of the property.*

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **RAINBOW**

PROJECT NO. **661**

GEOLOGY

Salaries	\$48,552		
Travel Expenses	\$1,718		
Contract Payments	\$0		
Field Expenses	\$24,061		
Analyses	\$0	\$74,331	22%

GEOPHYSICS

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$50,076		
Field Expenses	\$0	\$50,076	15%

GEOCHEMISTRY

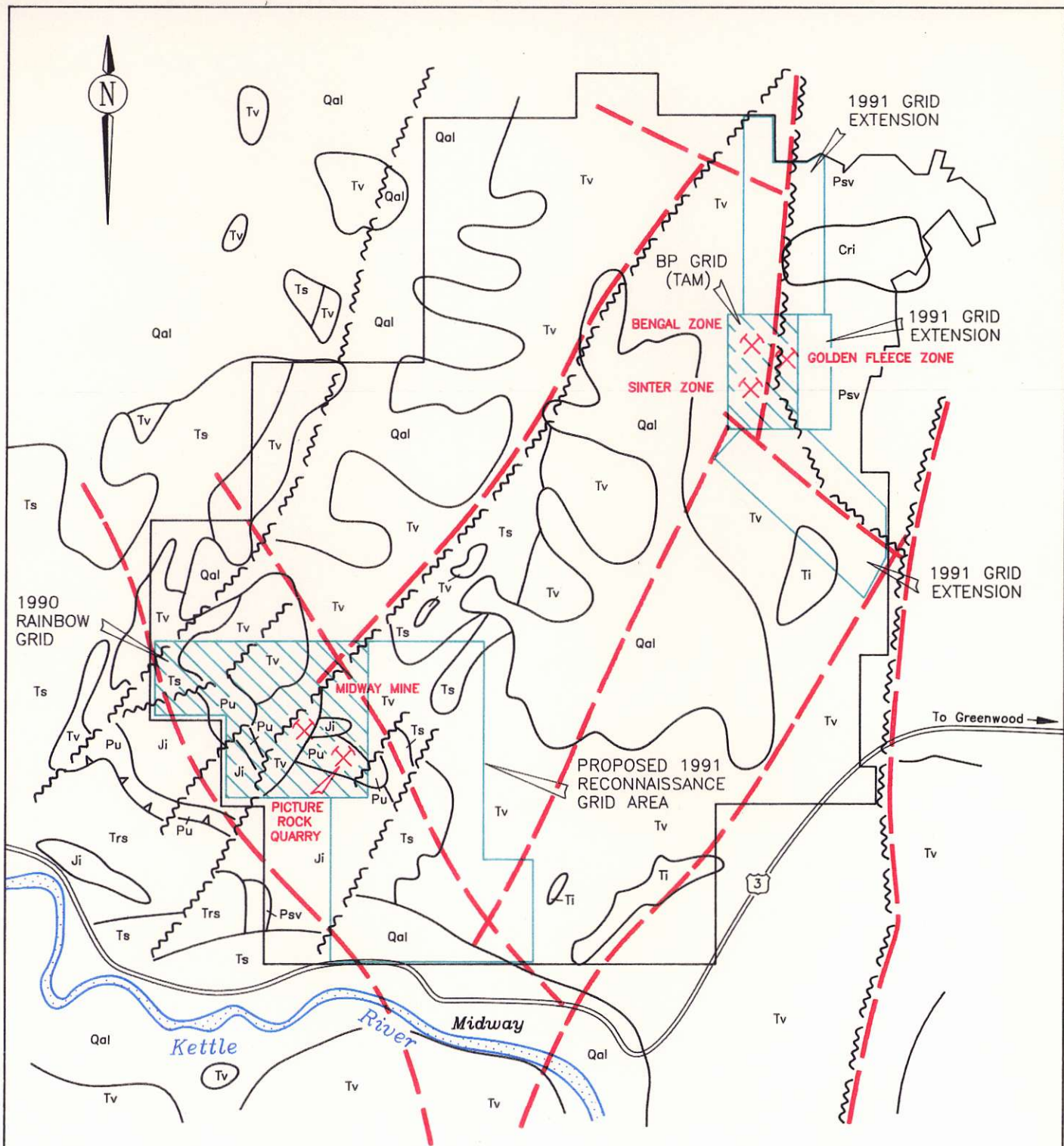
Salaries	\$10,313		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$1,399		
Analyses	\$31,177	\$42,889	13%

DRILLING

Salaries	\$11,078		
Travel Expenses	\$0		
Contract Payments	\$68,434		
Field Expenses	\$4,598		
Analyses	\$5,233	\$89,343	27%

<i>Line Cutting</i>	\$9,200	3%
<i>Trenching</i>	\$10,000	3%
<i>Hotels and Meals</i>	\$10,276	3%
<i>Option Payments</i>	\$38,000	11%
<i>Property Maintenance</i>	\$4,770	1%
<i>Other (property acquisition)</i>	\$7,134	2%

TOTAL EXPENDITURES **\$336,019**



LEGEND

- | | | | |
|-----|---|-------|--------------------|
| Qal | Quaternary Alluvium | ~~~~~ | Major Faults |
| Tv | Tertiary Volcanics | --- | Aeromag Structures |
| Ts | Tertiary Sediments | | |
| Cri | Cretaceous (Nelson) Intrusives | | |
| Ji | Jurassic Intrusives | | |
| Trs | Triassic Sediments (Brooklyn Formation) | | |
| Psv | Permian Sediments & Volcanics (Knob Hill Group) | | |
| Pu | Permian Ultramafics (Knob Hill Group) | | |



RAINBOW-TAM O'SHANTER
PROPERTY GEOLOGY

ATHELSTAN-JACKPOT

PN 666

C.J. Clayton

INTRODUCTION

The Athelstan-Jackpot property is situated within the Greenwood Mining Division of south-central British Columbia, approximately 9 km east-southeast of Greenwood, 4 km southeast of Phoenix, and 12 road km northwest of Grand Forks, B.C. The property was acquired around the middle of the 1990 field season and covers an area that has been worked intermittently in the past. Exploration of the property has become more active in recent years. Gold is associated with massive arsenopyrite and pyrite lenses within carbonate altered serpentinite (listwanite) forming large tabular lodes, as well as smaller vein-like mineralised zones. The base of the serpentinite is defined by the Lind Creek Thrust, an east-northeast trending, shallow north dipping fault. Mineralising solutions are thought to have moved along the basal thrust and upward along steep northeast trending faults that intersect the thrust.

1990 PROGRAM

As the property was acquired only recently Minnova's 1990 exploration program consisted of re-establishing the 1986 grid, reconnaissance geological mapping, and sampling of surface showings and outcrops.

- | | | |
|--------------------|---|---|
| <i>Linecutting</i> | - | <i>approximately 25 km of existing grid was re-established and re-picketed at 25 m intervals.</i> |
| <i>Geology</i> | - | <i>1:2000 mapping of 8 km of grid</i> |

Geochemistry - 32 rock samples were taken; 17 were analyzed for a 12 element ICP (Ag, As, Cu, Mn, Mo, Na, Ni, Pb, Sb, Zn, Cr) +Au, 15 for trace elements and major oxides.

RESULTS

Mapping of the area indicated that several previously outlined magnetic anomalies were the result of strongly magnetic serpentinite zones. Not surprisingly, several soil geochemical anomalies (Au, As) coincided with the Athelstan and Jackpot workings within listwanite zones. One sample of quartz vein material from an old working returned values of 4.2 g/t Au (0.123 oz/t) and 16.5 ppm Ag. Another sample of a carbonate-clay altered shear/fault zone within listwanite returned 2.71 g/t Au (0.079 oz/t) over approximately 0.5 metres.

Many of the old pits, shafts, and workings were located and mapped in but not sampled in great detail as the immediate ground surrounding the openings was considered unstable and unsafe at this time.

RECOMMENDATIONS

1. A program of systematic, representative sampling and mapping (1:1000) of all old surface workings is recommended. This will provide a better understanding of the nature of mineralisation in the area, as well as providing information about mechanisms that may have a controlling influence on where mineralisation occurs.

2. Magnetometer and VLF surveys are suggested to provide information on structure and stratigraphy in the area. A brief compilation of 1990 mapping and previous VLF geophysics shows that many of the old workings occur in areas of shear/fault zones having coincident east-northeast trending VLF conductor axes. This may be important in further exploration in other areas of the property.
3. Soil sampling and litho-geochemical sampling should be conducted over the re-established grid. Orientation surveys over mineralised and unmineralised areas may be advisable to determine an appropriate suite of elements for analysis, and for determining background values in the area.
4. Drilling of the best target areas will naturally follow the exploration program. The intersection of the steep northeast trending structures with the basal thrust is an excellent target area.

PROJECT EXPENDITURE SUMMARY

1990

PROJECT NAME: **ATHELSTAN**

PROJECT NO. **666**

GEOLOGY

Salaries	\$1,408		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$305		
Analyses	\$0	\$1,713	10%

GEOPHYSICS

Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0	\$0	0%

GEOCHEMISTRY

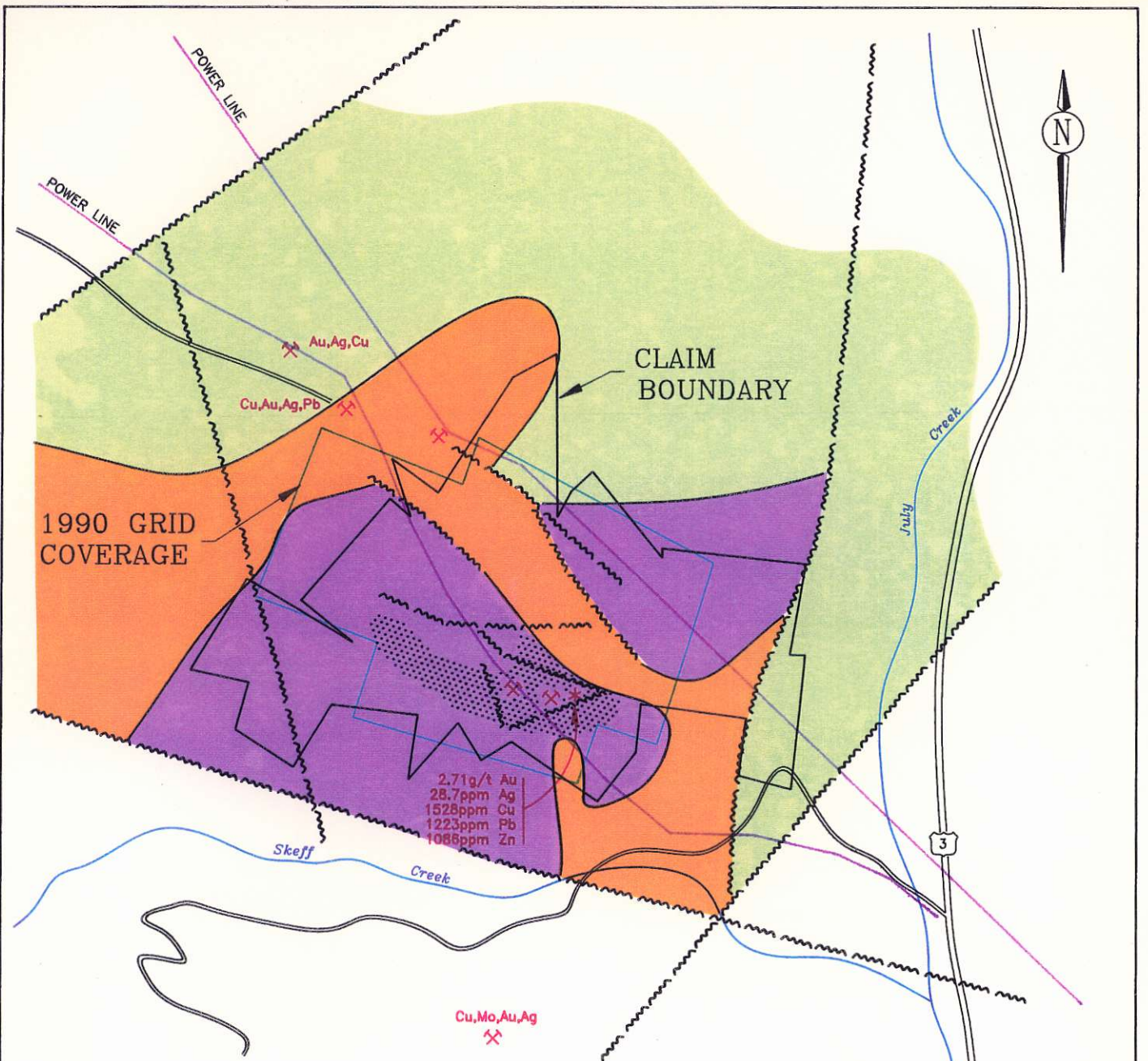
Salaries	\$319		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0		
Analyses	\$633	\$952	6%

DRILLING






Salaries	\$0		
Travel Expenses	\$0		
Contract Payments	\$0		
Field Expenses	\$0		
Analyses	\$0	\$0	0%

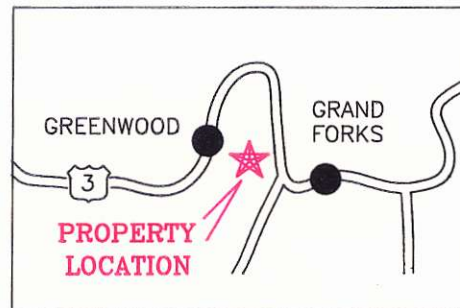
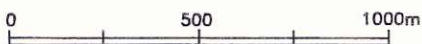
<i>Line Cutting</i>		\$3,300	20%
<i>Trenching</i>		\$0	0%
<i>Hotels and Meals</i>		\$187	1%
<i>Option Payments</i>		\$10,530	63%
<i>Property Maintenance</i>		\$85	1%
<i>Other</i>		\$0	0%

TOTAL EXPENDITURES **\$16,767**



LEGEND

-  Permo-Carboniferous Attwood Group; Metamorphosed Basalts & Andesites
-  Cretaceous Ultramafics; Serpentinite, Pyroxenite
-  Cretaceous Ultramafics; Listwanite
-  Triassic Diorite, Gabbro Diorite, Ophiolite Gabbro
-  1990 Rock Sample Location



ATHELSTAN-JACKPOT PROPERTY
1990 WORK SUMMARY

CJC/sg

JANUARY 1991