

**GEOPHYSICAL  
ASSESSMENT REPORT  
GOLD KEY CLAIM GROUP  
KAMLOOPS MINING DIVISION**

**June 15, 1996**

**M. S. Morrison, B.Sc.**

214170

DATE RECEIVED

JUN 24 1996

**GEOPHYSICAL**  
**ASSESSMENT REPORT**

on the

**GOLD KEY CLAIM GROUP**  
**KAMLOOPS LAKE AREA**  
**KAMLOOPS MINING DIVISION**

by

MURRAY S. MORRISON, B.Sc.

**CLAIMS:** Golden Lime 1&2, Gold Key 1-14, 16, 17 and Gold Key 15 FR  
(19 units).

**LOCATION:** The Gold Key Claim Group is situated 2 km south of Kamloops  
Lake, 25 km due west of Kamloops, B.C.

Lat. 50°43'; Long. 120°41';

N.T.S.: 92-I-10E

**OWNER:** Murray Morrison

**OPERATOR:** Murray Morrison

**DATE STARTED:** March 20, 1996

**DATE COMPLETED:** March 21, 1996

FILMED

**GEOLOGICAL SURVEY BRANCH**  
**ASSESSMENT REPORT**

Kelowna, B.C.

June 15, 1996

24,470

## TABLE OF CONTENTS

	<u>PAGE</u>
Summary	1
Introduction	4
Location and Access	6
Physical Features and Climate	8
Claim Status	9
History	11
Regional Geology and Mineralization	12
Property Geology and Mineralization	14a
Introduction	14a
Summary	14a
Gold Key 7 Rhyolite Dyke	16
Ground Magnetometer Survey	18
Grid	18
Program	18
Results	18
Discussion	22
Conclusions and Recommendations	26
References	28
Appendix A Statement of Qualifications	30
Appendix B Statement of Expenditures	31

## ILLUSTRATIONS

Figure 1	Location Map (British Columbia)	3
Figure 2	Claims and Access	7
Figure 3	Regional Geology - Savona Mercury Belt	14
Figure GK-96-1	Ground Magnetometer Survey	21
	Gold Key 7 & 8 Mineral Claims	
Figure GK-96-2	Geology	17
	Gold Key 7 & 8 Mineral Claims	
Map GK-95-1	Mineral Claims, Access, Faulting and Replacement Zones Gold Key Claim Group	in pocket

## SUMMARY

The Gold Key Claim Group located 2 to 3 km south of Kamloops Lake, or 25 km due west of Kamloops hosts several carbonate/silica replacement zones within Upper Triassic Nicola Group volcano-clastic metasediments. The zones are believed to represent the upper (low temperature) horizons of strong late Cretaceous(?), or Early Tertiary(?) epithermal systems that could contain precious metal values at depth.

The property, owned by the writer, overlies ground previously covered by the Brussels Claim Group. The Brussels Claim Group was explored over a period of eleven years by Placer Development (1981-84), Goldstone Explorations Ltd. (1984-88) and the writer, (1989-92).

Placer Development conducted a widely-spaced soil geochemical survey in 1981, and discovered several areas across the property with elevated mercury, arsenic, antimony and gold values. Placer Development carried out limited follow-up work and allowed their option to lapse in 1984. During 1984, lithogeochemical samples collected by Goldstone Explorations Ltd. yielded elevated values for the same elements that were discovered by Placer Development. In 1985 a Reverse Circulation Percussion drilling program carried out by Goldstone Explorations tested five widely separated targets across the property with one drill hole each. Two strong zones of carbonate/silica replacement were drilled over lengths of 80 metres, proving the size and strength of the zones, but precious metal values were found to be negligible and Goldstone Explorations abandoned the property in 1988.

A series of geochemical, geophysical (magnetometer) and geological surveys were conducted over the property by the writer from 1989 until 1992, and five key areas considered worthy of detailed exploration were identified.

A detailed geological mapping and sampling program was conducted over the Golden Lime 1 replacement zone in 1993 and in 1995 four more zones were mapped and sampled in detail.

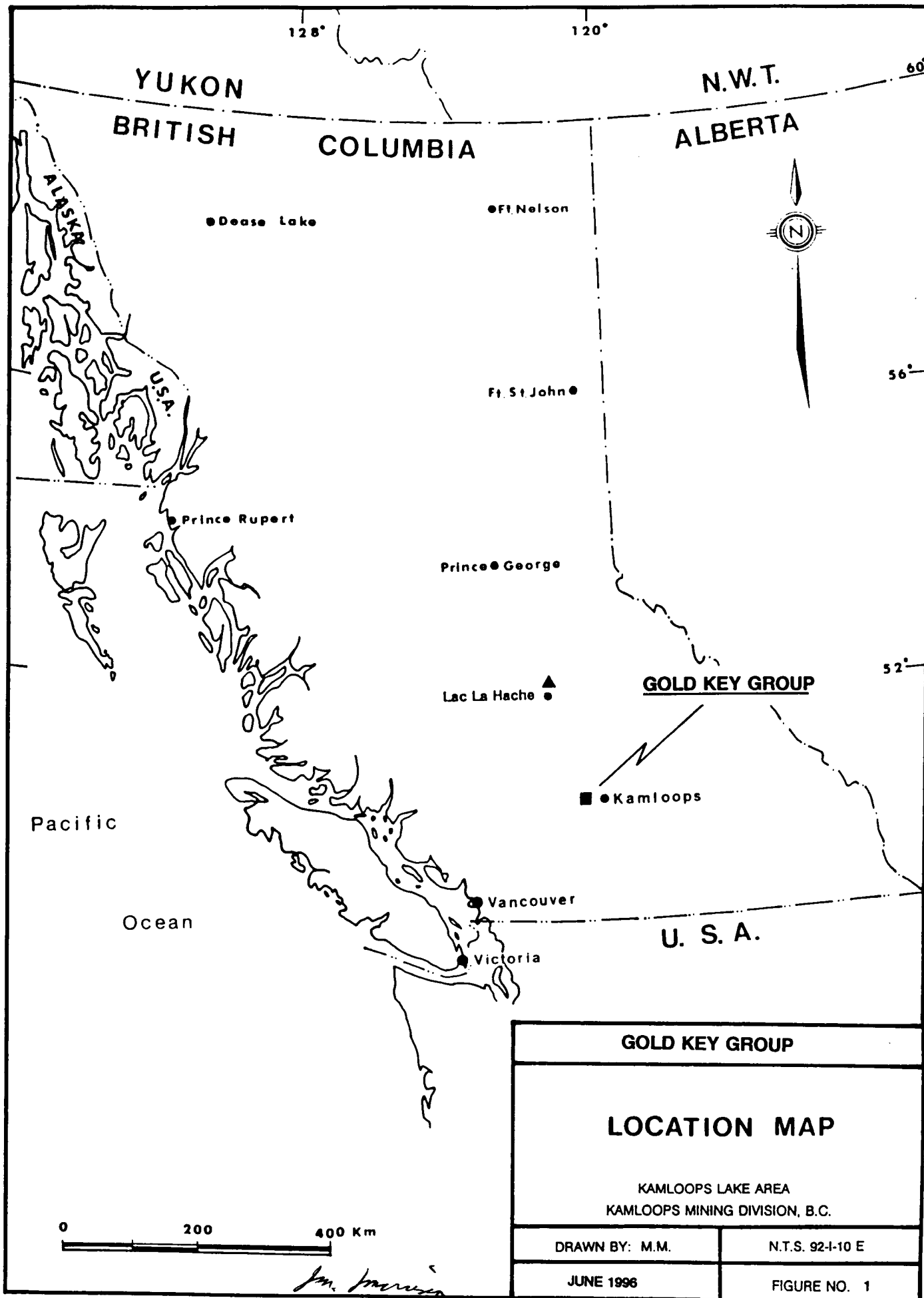
**SUMMARY** continued

The 1995 lithogeochemical sampling proved that only the uppermost horizons of the replacement zones (epithermal systems) have been exposed by erosion and that drilling will be required to test the zones for possible economic precious metal values at moderate depths.

The Newmont Showing, located immediately west of the Gold Key 5 mineral claim, is an example of a precious metal deposit that is associated with a relatively small carbonate replacement zone. A 1 metre wide shear zone at the Newmont Showing has been infilled with late quartz and chalcedony veins which contain 3 g/tonne gold and up to 180 g/tonne silver.

Several of the carbonate/silica replacement zones on the Gold Key Claim Group are much larger than that at the Newmont Showing and four have been selected for a Reverse Circulation Percussion drilling program to test for precious-metal-bearing siliceous stockwork "feeder" zones that could occur below the carbonate replacement zones.

This year's ground magnetometer survey conducted over the rhyolite dyke and related carbonate replacement zone on the Gold Key 7 mineral claim confirmed that this replacement zone can be considered among the five largest replacement zones on the property.



## INTRODUCTION

This report, written for government assessment work requirements, discusses the results of a ground magnetometer survey conducted over portions of the Gold Key 7 & 8 mineral claims by the writer during March, 1996.

The Gold Key 7 & 8 mineral claims are just 2 of a total 19 contiguous 2-post mineral claims which make up the Gold Key Claim Group. The Gold Key Claim Group is located 2 to 3 km south of Kamloops Lake, 25 km due west of Kamloops, B.C., and is owned by the writer, M. Morrison, of Kelowna, B.C.

Several zones of carbonate/silica replacement occur within faulted metasediments of the Upper Triassic Nicola Group on the property. These zones have been the focus of attempts to find epithermal precious metal deposits over a period of 15 years of exploration. So far, only moderately elevated concentrations of gold, silver, mercury, arsenic and antimony have been found.

A detailed study of the large replacement zone on the Golden Lime 1 mineral claim was undertaken in 1993, and further studies were made of replacement zones on the Gold Key 1, 3, 5 and 7 mineral claims in 1995 (see Morrison, 1993 & 95). This year the replacement zone on the Gold Key 7 mineral claim was selected for a detailed ground magnetometer survey. It was hoped that the survey would distinguish the low magnetics of the replacement zone from the higher magnetics of the surrounding volcanoclastic metasediments and that this distinction could be recognized and projected into areas covered by overburden.

The magnetic values obtained during this year's survey are displayed and contoured on Figure GK-96-1, while the geology of the survey area is illustrated on Figure GK-96-2. Both maps, drawn at a scale of 1:1250, accompany this report.

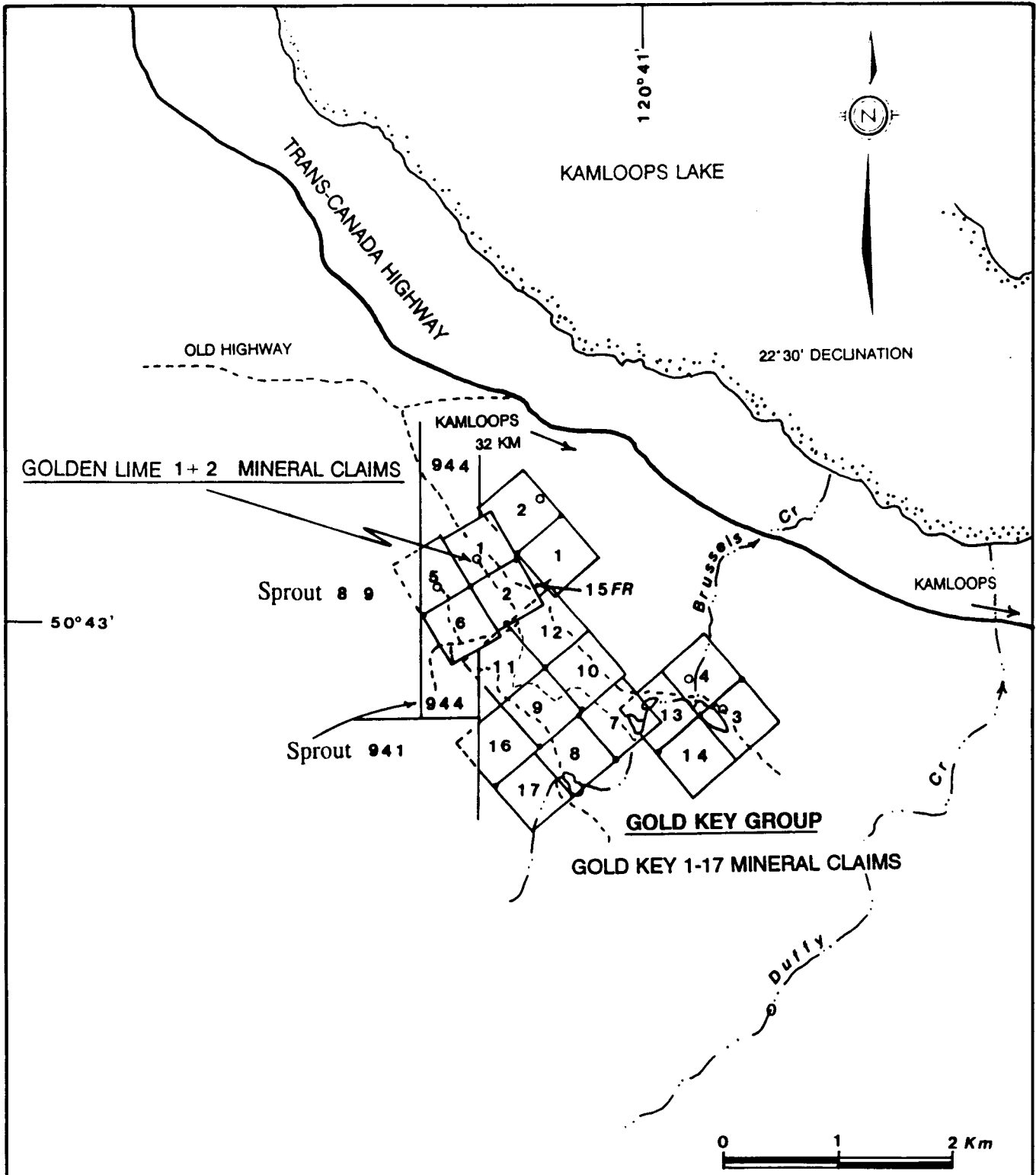


**INTRODUCTION** continued

Map GK-95-1 which accompanied the 1995 Assessment Report has been reproduced for this report, because it clearly illustrates the relationship between faulting and the replacement zones on the Gold Key property.

## LOCATION AND ACCESS

The Gold Key Claim Group lies 2 to 3 km south of Kamloops Lake, or 1 to 2 km south of the Trans-Canada Highway, 25 km due west of Kamloops, B.C. (Lat. 50°43'; Long. 120°41'; N.T.S. Map 92-I-10E). Access to the property is via a segment of old highway which leaves the Trans-Canada Highway at a point 32 km west of Kamloops, or 3 km southeast of the Savona Highway Lookout. An access road runs south 1 km from the old highway to the Gold Key Claim Group and several dirt roads give access to most areas of the Claim Group as illustrated on the Map GK-95-1.



**LEGEND**

- ACCESS ROADS, DIRT
- INTERMITTENT CREEKS
- LAKES
- REVERSE CIRCULATION DRILL HOLES (1985)
- LEGAL CORNER POSTS

<b>GOLD KEY GROUP</b>	
<b>CLAIMS AND ACCESS</b>	
Kamloops Lake Area Kamloops Mining Division, B.C.	
Drawn by: M.M.	N.T.S. 92-I-10E
JUNE 1996	Figure No. 2

*John Morrison*

## PHYSICAL FEATURES AND CLIMATE

The Gold Key Claim Group with an average elevation of 600 metres above sea level lies 2 to 3 km south of Kamloops Lake (350m elv.). The property features low relief with rounded rocky ridges and shallow, gravel-filled valleys. An exception to the rolling topography is a 150 metre bluff which crosses the eastern side of the property from northwest to southeast.

Vegetation on the property is typical of that of the bunch grass and sagebrush-covered hills that surround Kamloops Lake. Large Ponderosa pine also dot the landscape, while Douglas fir are restricted to thick groves on northeastern slopes where moisture is better retained.

The climate immediately adjacent Kamloops Lake is semi-arid. Precipitation equals less than 30 cm per year; much of it falling as late spring rain. The winter snow pack rarely exceeds 25 cm, and generally covers the property from late November until early March.

Several small lakes, deepened by the building of earthen dams, supply water for grazing cattle during summer months. One of the larger lakes is Brussels Lake, located on the Gold Key 3 & 4 mineral claims.

**CLAIM STATUS**

The Gold Key Claim Group is comprised of 18 contiguous 2-post mineral claims and one fractional mineral claim all staked and owned by the writer, M. Morrison of Kelowna, B.C. The mineral claims are located near Savona, B.C. in the Kamloops Mining Division and are listed in the Table that follows:

<b><u>CLAIM NAME</u></b>	<b><u>UNITS</u></b>	<b><u>DATE OF RECORD</u></b>	<b><u>TENURE NUMBER</u></b>	<b><u>MINING DIVISION</u></b>	<b><u>EXPIRY* DATE</u></b>
Golden Lime 1	1	Mar. 16/81	216982	Kamloops	Mar. 16/97
Golden Lime 2	1	Mar. 16/81	216983	Kamloops	Mar. 16/97
Gold Key 1	1	May 15/94	325691	Kamloops	May 15/97
Gold Key 2	1	May 15/94	325692	Kamloops	May 15/97
Gold Key 3	1	May 15/94	325693	Kamloops	May 15/97
Gold Key 4	1	May 15/94	325694	Kamloops	May 15/97
Gold Key 5	1	May 15/94	325695	Kamloops	May 15/97
Gold Key 6	1	May 15/94	325696	Kamloops	May 15/97
Gold Key 7	1	May 15/94	325697	Kamloops	May 15/97
Gold Key 8	1	May 15/94	325698	Kamloops	May 15/97
Gold Key 9	1	Mar. 22/95	334413	Kamloops	Mar. 22/98
Gold Key 10	1	Mar. 22/95	334414	Kamloops	Mar. 22/98
Gold Key 11	1	Mar. 22/95	334415	Kamloops	Mar. 22/98
Gold Key 12	1	Mar. 22/95	334416	Kamloops	Mar. 22/98
Gold Key 13	1	Mar. 22/95	334417	Kamloops	Mar. 22/97
Gold Key 14	1	Mar. 22/95	334418	Kamloops	Mar. 22/97
Gold Key 15 FR.	1	Mar. 24/95	334805	Kamloops	Mar. 24/98
Gold Key 16	1	May 7/95	335438	Kamloops	May 7/97
Gold Key 17	1	May 7/95	335439	Kamloops	May 7/97

Note: the new Expiry Date is based on the acceptance of this report for Assessment Work Credits.

**CLAIM STATUS** continued

It should be recognized that the northwest corner of the Gold Key 5 mineral claim overlaps ground covered by the pre-existing Sprout 89 mineral claim, that the northwest corner of the Gold Key 11 mineral claim overlaps a portion of the Sprout 944 mineral claim, and that the northwest corner of the Gold Key 16 mineral claim overlaps a portion of the Sprout 941 mineral claim (see Map GK-95-1).

The Sprout mineral claims do not belong to the writer.

## HISTORY

The Golden Lime 1 & 2 and Brussels 1-11 mineral claims (now partially covered by the Gold Key 1-17 mineral claims) were staked by the writer in March and April 1981 to cover several large rusty carbonate/silica replacement zones found within Nicola Group rocks during routine prospecting.

The ground was transferred to Placer Development Ltd. soon after staking and during 1981 crews from Placer Development Ltd. conducted a widely spaced (25 x 100 to 250 metre) soil geochemical survey over the central portion of the property. Elements typical of epithermal systems (mercury, antimony and arsenic) were found to occur in moderate concentrations on the Brussels 3 & 4 mineral claims, and gold was found on the Brussels 1 & 3 mineral claims, but no drilling was done by Placer Development Ltd. and the mineral claims were returned to the writer in April, 1984.

The property was next optioned to Goldstone Exploration Ltd. of Vancouver in May 1984, and during May 1985 Goldstone Exploration conducted a widely spaced reverse circulation percussion drill program across the Brussels property (see drill hole locations on Map GK-95-1). Drill holes 85-1 and 85-4 encountered up to 80 metres of intensely carbonate and/or silica replaced Nicola metasediments, but no significant precious metal values were encountered during the drill program and in 1988 Goldstone Exploration allowed their option to lapse.

Since 1989 the writer has conducted a series of geochemical, geophysical (magnetometer) and geological surveys over portions of the Golden Lime 1 & 2 and Brussels 1-11 mineral claims in an attempt to develop drill targets on the property (see References).

The Brussels Claim Group was allowed to lapse in 1992, and portions of the ground have subsequently been restaked as the Gold Key 1-17 mineral claims by the writer in 1994 & 95.

**HISTORY** continued

Detailed geological mapping and lithochemical sampling was conducted over some of the larger replacement zones on the Gold Key 1, 3, 5 & 7 mineral claims by the writer in 1995 (Morrison, 1995).

**REGIONAL GEOLOGY AND MINERALIZATION**

The Savona Mercury Belt, illustrated on Figure 3 accompanying this report, extends 50 km from Criss Creek on the North, to Tunkwa Lake on the South. Several of the historic mercury occurrences are located within a 15 km radius of Savona near the western end of Kamloops Lake.

The map indicates that the mercury prospects occur within either Upper Triassic Nicola Group or Cretaceous(?) metavolcanics and metasediments that lie in close proximity to the Copper Creek Intrusions.

The mercury showings are all associated with carbonate replacement zones within highly faulted country rock. The mercury content at the Savona mercury prospects is generally much less than 0.1%, and non-economic. However, it is the large size of some of the carbonate replacement zones and the intensity of repeated faulting that suggests that the mercury prospects could represent the upper horizons of strong epithermal systems which could host precious metal deposits at depth.

Precious metals and base metals have been found within chalcedony and quartz veins cutting some of the replacement zones in the region, suggesting that at least some of the replacement zones do represent strong Late Cretaceous or Early Tertiary mineralized epithermal systems. Gold, in particular, has been found within quartz veins at Criss Creek (see Figure 3).











**REGIONAL GEOLOGY AND MINERALIZATION** continued

The Newmont Showing, discovered by Newmont Exploration geologists in 1982, immediately west of the Gold Key 5 mineral claim, represents another example of precious metal and base metal mineralization that occurs within sheared chalcedony and quartz veins associated with a carbonate replacement zone within Nicola Group metasediments. Sulphide minerals at the Newmont Showing include pyrite, galena, stibnite, sphalerite, arsenopyrite and tetrahedrite.

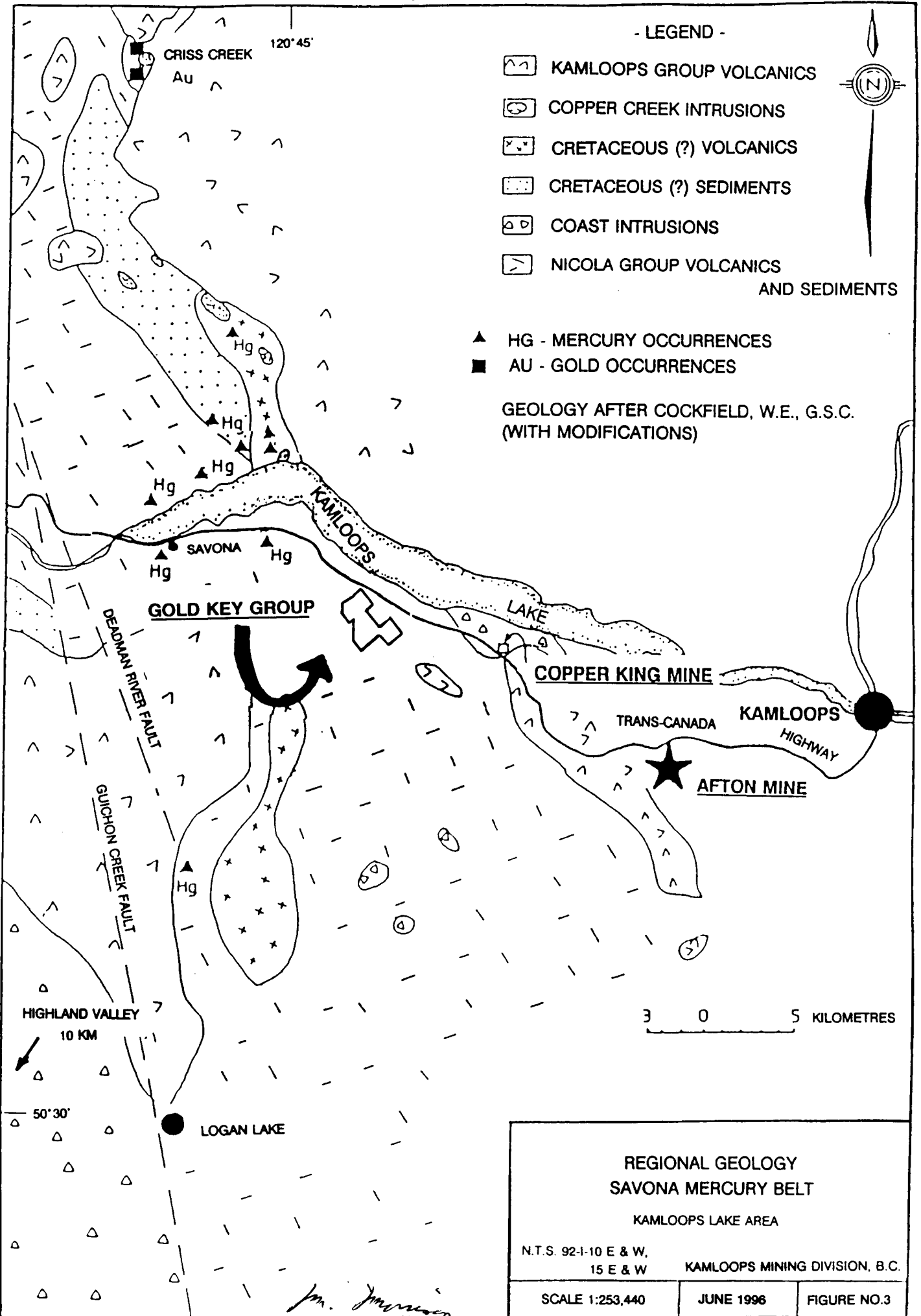
Another occurrence of anomalous gold (1755 ppb) and arsenic (400 ppm) values associated with a carbonate replacement zone is located on the Gold Key 2 mineral claim on a steep bluff above RCDH 83-5 (Map GK-95-1).

- LEGEND -

-  KAMLOOPS GROUP VOLCANICS
-  COPPER CREEK INTRUSIONS
-  CRETACEOUS (?) VOLCANICS
-  CRETACEOUS (?) SEDIMENTS
-  COAST INTRUSIONS
-  NICOLA GROUP VOLCANICS AND SEDIMENTS

-  HG - MERCURY OCCURRENCES
-  AU - GOLD OCCURRENCES

GEOLOGY AFTER COCKFIELD, W.E., G.S.C. (WITH MODIFICATIONS)



## **PROPERTY GEOLOGY AND MINERALIZATION**

### **Introduction**

The Gold Key Claim Group overlies portions of ground previously covered by the Brussels Claim Group as mentioned earlier in this report. During 1991 and 1992 the geology of the Brussels Claim Group was mapped at a scale of 1:2500 by the writer (Morrison, 1991 & 92) and much of the geological data outlined in the summary that follows was obtained during the earlier mapping programs.

### **Summary**

The Gold Key Claim Group is underlain by Upper Triassic Nicola Group metasediments comprised of volcano-clastic conglomerates with minor sandstone and siltstone interbeds. The metasediments (metamorphosed to the green-schist facies) appear to occur as a monoclinial sequence which crosses the property at an average 145 degrees. The metasediments dip vertically to steeply east, east of the Main Valley Fault, and moderately southwest, west of the Main Valley Fault. A broad drift-filled valley crossing the property in a northwesterly direction is believed to define the Main Valley Fault which separates the easterly dipping metasediments from the westerly dipping metasediments (see Map GK-95-1).

Late Cretaceous(?) or Early Tertiary(?), discordant, felsic dykes, with or without quartz-eye phenocrysts, intrude the metasediments at many locations across the property. Moderate to strong carbonate and/or silica replacement of the conglomerates and sandstones occurs adjacent the felsic dykes. Both the country rocks and the felsic dykes are often faulted and cut by 1 to 5%, banded, ankerite, dolomite, chalcedony and quartz veins. The felsic dykes are also often altered to pink carbonates, clay minerals and 10% pore space.

**PROPERTY GEOLOGY AND MINERALIZATION** continued**Summary** continued

A light green, highly siliceous, amorphous rock (possibly rhyolite) occurs as late dykes or irregular zones within the most intensely faulted replacement zones.

The most intensely faulted replacement zone on the property is located on the Golden Lime 1 mineral claim. This zone (the subject of a 1993 detailed study) falls within a northeast-striking fault zone which has been called the "Brussels Fault Zone" in earlier reports by the writer (Morrison, 1990, 1991). It is expected that the Brussels Fault Zone has allowed for the intrusion of felsic dykes, and that it has also served as a conduit for the hydrothermal solutions believed to have been responsible for the intense replacement of the metasediments on the Golden Lime 1 mineral claim.

The Brussels Fault Zone has been projected 550 metres southwest of the Main Golden Lime Replacement Zone by the writer (Morrison, 1990) to include the Newmont Showing where precious metal values are associated with base metals in a narrow quartz/chalcedony breccia zone which cuts through carbonate-replaced Nicola Group metasediments.

Further detail with regard to specific rock types, structural geology, faulting, alteration and mineralization may be found within the 1995 Assessment Report (Morrison, 1995) and will not be repeated here. However, the geology of the Gold Key 7 Rhyolite Dyke, over which this year's magnetometer survey was conducted, has been reproduced from the 1995 Assessment Report in the paragraphs that follow.

**PROPERTY GEOLOGY AND MINERALIZATION** continued**Gold Key 7 Rhyolite Dyke**

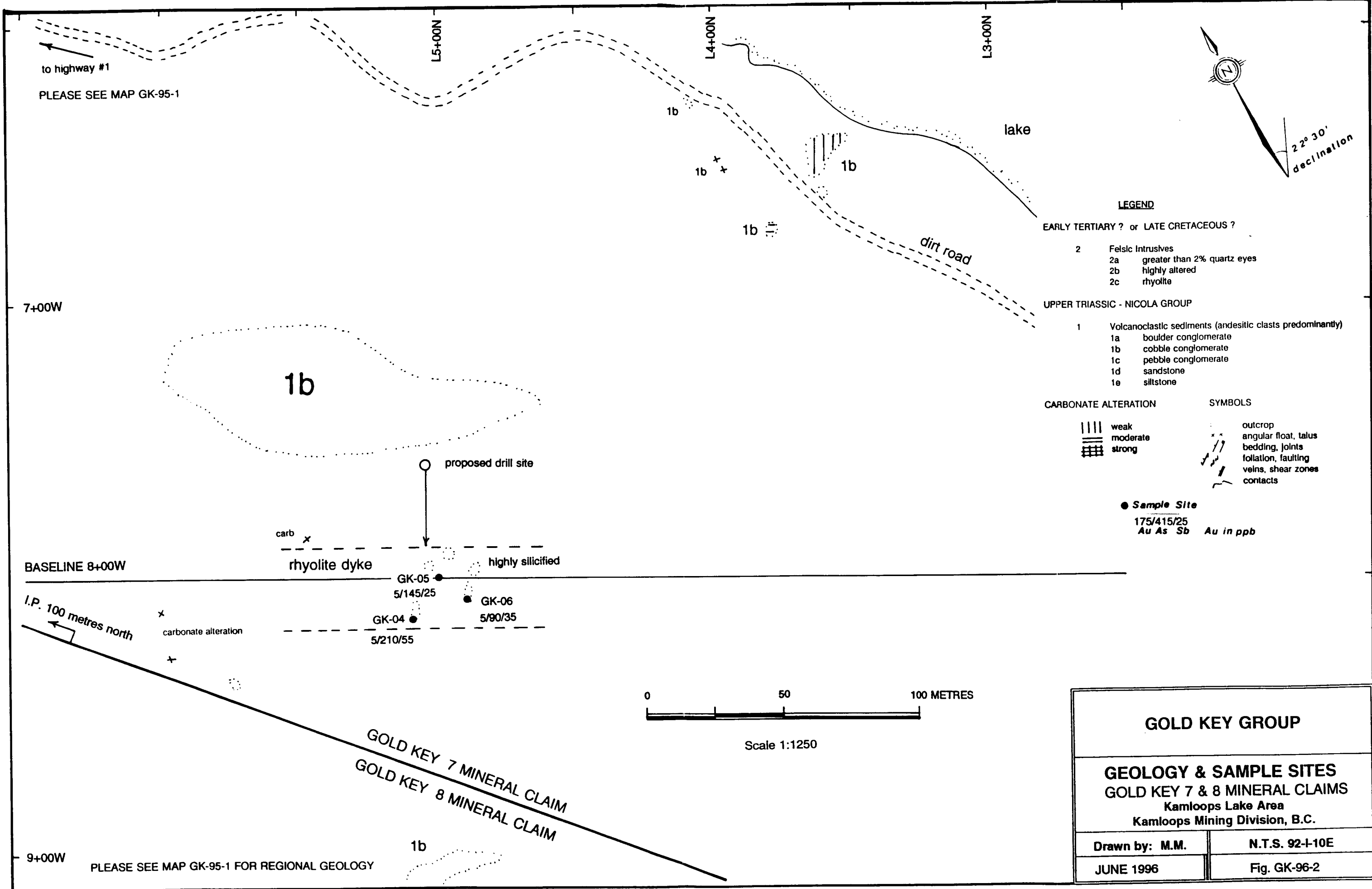
A 20 metre wide highly siliceous rhyolite dyke cuts through Nicola Group conglomerates near the western side of the Gold Key 7 mineral claim (see GK-96-1). The dyke which has been largely replaced by late silica is poorly exposed over a length of 35 metres.

Three samples of the dyke material were collected from the sites illustrated on Figure GK-96-2.

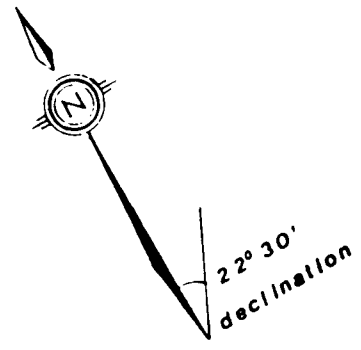
Sample GK-04: rock chips for this sample were collected from a 1 x 1 metre area of the dyke that contained 1/2 to 1% cinnabar. The sampled material was almost entirely replaced with late silica (70%). Late quartz and chalcedony veinlets made up 20% of the rock, while pore spaces equalled 5% and iron oxides 5%. This sample yielded elevated arsenic (210 ppm) and antimony (55 ppm) values.

Sample GK-05: the sample of dyke material making up sample GK-05 was like that of sample GK-04 in all respects except that it did not contain visible cinnabar. The sample yielded moderately elevated arsenic (145 ppm) and antimony (25 ppm) values.

Sample GK-06: the rock chips making up sample GK-06 were again like those of GK-04 & 05 except that the iron oxide content was less (3%). Sample GK-06 yielded modest arsenic (90 ppm) and antimony (35 ppm) values.

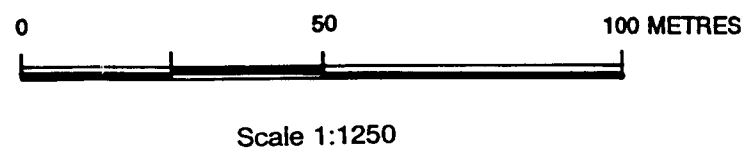


to highway #1  
PLEASE SEE MAP GK-95-1



- LEGEND**
- EARLY TERTIARY ? or LATE CRETACEOUS ?
- 2 Felsic Intrusives
    - 2a greater than 2% quartz eyes
    - 2b highly altered
    - 2c rhyolite
- UPPER TRIASSIC - NICOLA GROUP
- 1 Volcanoclastic sediments (andesitic clasts predominantly)
    - 1a boulder conglomerate
    - 1b cobble conglomerate
    - 1c pebble conglomerate
    - 1d sandstone
    - 1e siltstone

- CARBONATE ALTERATION
- weak
  - moderate
  - strong
- SYMBOLS
- outcrop
  - angular float, talus
  - bedding, joints
  - foliation, faulting
  - veins, shear zones
  - contacts
- Sample Site  
 175/415/25  
 Au As Sb Au in ppb



**GOLD KEY GROUP**

**GEOLOGY & SAMPLE SITES**  
**GOLD KEY 7 & 8 MINERAL CLAIMS**  
**Kamloops Lake Area**  
**Kamloops Mining Division, B.C.**

Drawn by: M.M.      N.T.S. 92-I-10E  
 JUNE 1996      Fig. GK-96-2

BASELINE 8+00W

I.P. 100 metres north

9+00W

PLEASE SEE MAP GK-95-1 FOR REGIONAL GEOLOGY

GOLD KEY 7 MINERAL CLAIM  
 GOLD KEY 8 MINERAL CLAIM

## GROUND MAGNETOMETER SURVEY

### Grid

A flagged Baseline centered over the rhyolite dyke on the Gold Key 7 mineral claim was established for a length of 400 metres at 300 degrees azimuth to cover the projected strike length of the dyke and related carbonate replacement. Flagged grid lines were then laid-out at 50 metre intervals perpendicular to the Baseline for 100 metres to the southwest and for 100 to 200 metres to the northeast, as illustrated on Figure GK-96-1. Stations were flagged at each 25 metre measure along the grid lines. A Topoline belt chain and a Silva Ranger compass were used to establish the 2.3 km of grid which was laid-out in conjunction with the ground magnetometer survey.

### Program

A Scintrex MF-2 Portable Fluxgate Magnetometer was used to survey the property. The magnetometer with a resolution of 5 gammas was considered suitable for the survey.

Baseline station values were established by making a double traverse along the baseline on a day of slight diurnal variation. The baseline stations were then corrected for diurnal variations, and the corrected values were used during the survey.

Looped traverses were made along pairs of grid lines, starting and ending at baseline stations (usually within ½ to 1 hour), and corrections were made to all values for diurnal variations. During this year's survey, intermediate readings were taken midway between all flagged grid stations in addition to the grid station readings to increase the detail of the survey. All of the corrected readings are plotted on the contoured magnetometer map, Figure GK-96-1, accompanying this report. A constant value of 50,000 gammas has been subtracted from all of the values on the maps for ease of plotting and clarity.

**GROUND MAGNETOMETER SURVEY** continued**Results**

Note: The following discussion refers to the magnetic values plotted on Figure GK-96-1. As mentioned earlier, a constant value of 50,000 gammas has been subtracted from all field readings for easier plotting on the maps.

The values obtained during the magnetic survey are displayed on Figure GK-96-1, and indicate a modest range from 1450 to 4990 gammas.

Most values of greater than 3000 gammas (up to 4990 gammas) were found to be coincident with outcrop of unaltered volcanoclastic conglomerate. For example, the magnetic high extending for 200 metres from L4+50N to L6+50N, 40 to 100 metres northeast of the Baseline, is coincident with a ridge of Nicola Group volcanoclastic conglomerate. Likewise, the high of 3360 gammas at the northwestern end of L5+00N is coincident with a ridge of similar rock. High magnetic values of 3300 to 3500 gammas at the northeastern end of L3+50N are also coincident with the same type of unaltered volcanoclastic conglomerate.

The high magnetic values (greater than 3000 gammas) on L2+50N northeast of the Baseline occur in an area covered by overburden, but these values may well indicate that the subcrop geology is comprised of unaltered volcanoclastic conglomerate.

It is possible that all of the region northeast of the Baseline with magnetic values of greater than 2500 gammas represents an area underlain by unaltered volcanoclastic conglomerate and that the variation of magnetic values from 2500 to 4990 gammas is simply a function of the depth of overburden.

Some of the single station magnetic lows throughout the survey area are coincident with shallow ravines or depressions. It seems that these depressions are infilled with more till than elsewhere and that the magnetic values of the underlying rock are partially masked.

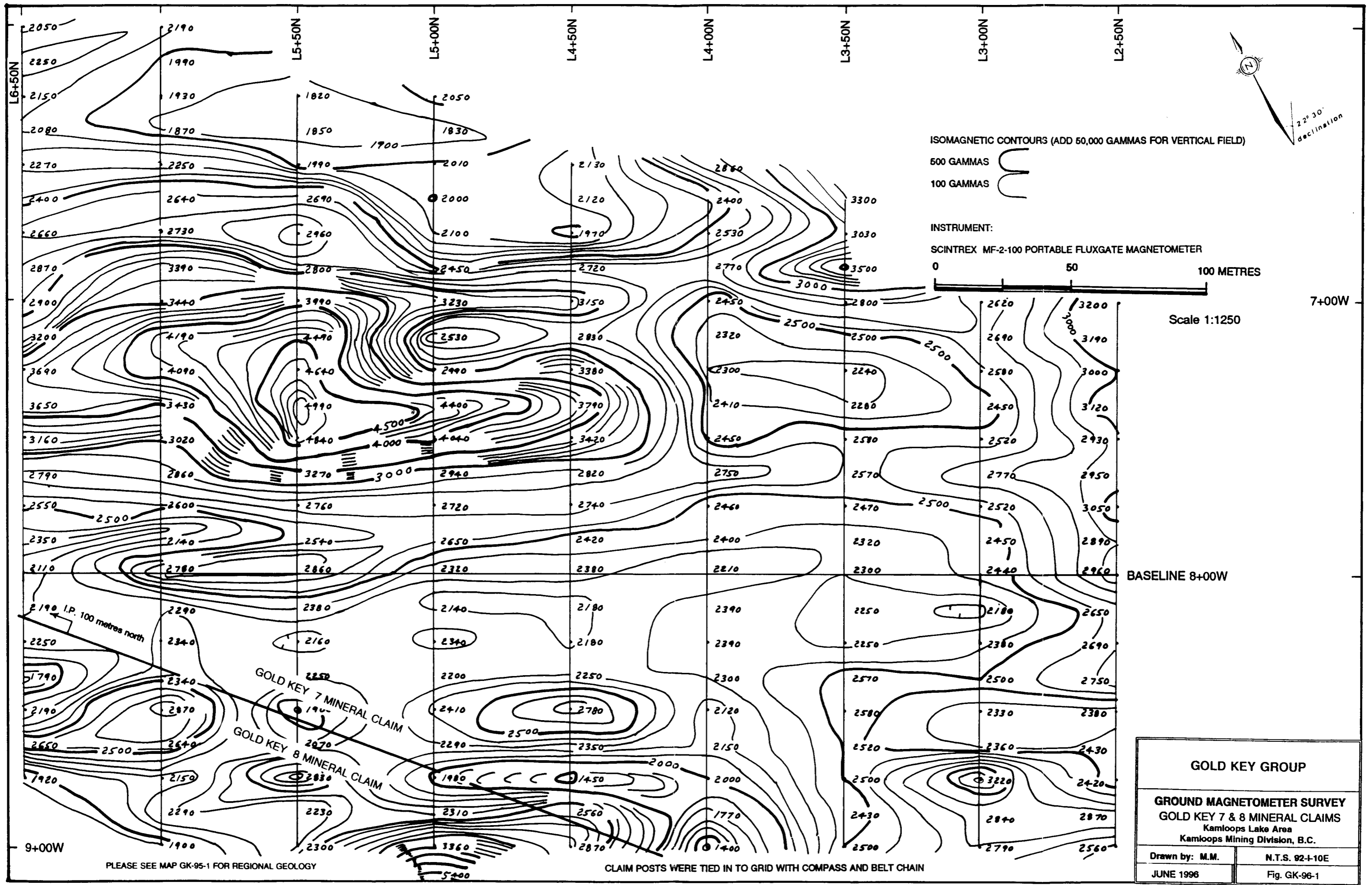


**GROUND MAGNETOMETER SURVEY** continued**Results** continued



Examples of such single station magnetic lows are: L3+00N at 7+15W, 2180 gammas; L4+50N at 6+75W, 1970 gammas; and L6+50N at 8+35W, 1790 gammas.

It was intended, at the commencement of the survey, that the Baseline be established along the expected strike length of the rhyolite dyke and zone of related carbonate replacement. During the survey, it was found that the Baseline does follow a trend of scattered float and poorly exposed outcroppings of carbonate replaced rock. It seems that the northeastern side of the zone of "low" magnetics (less than 2500 gammas) that extends from L3N at 8+00W to L6+50N at 8+00W does outline the rhyolite dyke and related zone of carbonate replacement. The zone appears to end at L3N to the south and it is interrupted at the Baseline on lines 5+50N and 6+00N near the north end of the survey area where values of 2860 and 2780 gammas were recorded, respectively. The bedrock on the southwestern side of this same broad magnetic low is covered by deep overburden and it is not possible to interpret anything about the geology on this portion of the property on the basis of the magnetometer survey.

A magnetic low (less than 2500 gammas) occurs between lines 3N and 4N, 75 metres northeast of the Baseline. This low interrupts the zone of high magnetics (greater than 3000 gammas) mentioned earlier that extends the length of the survey from L2+50N to L6+50N and is thought to represent unaltered volcanoclastic metasediments. The magnetic low could represent another zone of carbonate replacement of the metasediments or simply an area covered by deep overburden.



ISOMAGNETIC CONTOURS (ADD 50,000 GAMMAS FOR VERTICAL FIELD)

500 GAMMAS   
 100 GAMMAS 

INSTRUMENT:  
 SCINTREX MF-2-100 PORTABLE FLUXGATE MAGNETOMETER

0 50 100 METRES

Scale 1:1250

BASELINE 8+00W

**GOLD KEY GROUP**

**GROUND MAGNETOMETER SURVEY**  
**GOLD KEY 7 & 8 MINERAL CLAIMS**  
 Kamloops Lake Area  
 Kamloops Mining Division, B.C.

Drawn by: M.M.  
 JUNE 1996

N.T.S. 92+10E  
 Fig. GK-96-1

PLEASE SEE MAP GK-95-1 FOR REGIONAL GEOLOGY

CLAIM POSTS WERE TIED IN TO GRID WITH COMPASS AND BELT CHAIN

## DISCUSSION

The ground magnetometer survey conducted over the Gold Key 7 rhyolite dyke and related carbonate replacement zone provided data that can only be understood in conjunction with a knowledge of the immediate geology. There is not a sharp contrast between the magnetics of the replaced rock and the unaltered rock and if the geology was not known, the magnetometer survey would be difficult to interpret.

Although this year's ground magnetometer survey has not added much to a better understanding of the geology of the property previous work has indicated that the property has considerable exploration potential. The following paragraphs reproduced from the 1995 Assessment Report emphasize this potential.

It has been demonstrated over the years that there is a close association between faulting, late intrusive activity and the strong carbonate/silica replacement zones on the Gold Key Claim Group (see Map GK-95-1).

It is apparent that the Bluff Fault Zone, Main Valley Fault Zone and the Brussels Fault Zone have had a role in the development of all of the larger carbonate/silica replacement zones on the property. The intersection of the Brussels Fault Zone with northerly-striking fault zones, in particular, has resulted in some of the strongest replacement zones (eg. Golden Line 1 Showing and Gold Key 5 Showing).

It is thought that the late faults, cutting through the metasediments of the Triassic Nicola Group, have allowed for the intrusion of the Late Cretaceous(?) or Early Tertiary(?) felsic quartz-eye and amorphous rhyolite dykes and plugs. These high-level intrusions are believed to have been very volatile and it is thought that large volumes of hydrothermal solutions passing through the intruded metasediments have replaced the original mineral constituents with carbonate and/or silica. The degree of replacement has been governed not only by the degree of faulting and nearness to the intrusive activity, but also by the inherent porosity of the rock.

**DISCUSSION** continued

There is ample evidence at many sites across the property that there was repeated faulting and repeated introduction of hydrothermal solutions (ie. there are several phases of banded veining, brecciation, and mending by later veining).

It is thought that the highly volatile solutions brought with them elevated levels of mercury, arsenic, barium and antimony at many locations across the property. It is also believed that gold and silver were introduced into the carbonate replacement zones with late silica-rich phases of hydrothermal solutions, and that the precious metals at the Newmont Showing represent just such a situation.

After several years of study, it is believed that the main geological features of the Gold Key Claim Group are now fairly well understood. It is thought that at least some of the larger carbonate/silica replacement zones may have quartz-chalcedony stockwork "roots", and that some of these stockworks could host economic concentrations of precious metals. The Newmont Showing, although restricted in size, serves as an example of the type of mineralogy that might be found within the stockwork systems.

The mapping and sampling of the Golden Lime 1 replacement zone in 1993 and the Gold Key 1,3,5 and 7 replacement zones in 1995 has demonstrated that only the uppermost levels of each replacement zone has been eroded. The lithogeochemical analysis of several of these zones yielded elevated arsenic and antimony values typical of the highest levels of epithermal systems. Mercury content, although not analyzed in 1995, would be expected to be high also (eg. the rhyolite dyke on the Gold Key 7 mineral claim contains up to 1% cinnabar locally).

All five of the main replacement zones illustrated on Map GK-95-1 merit testing at depth with a drilling program. Any one of the replacement zones could be expected to have a precious-metal-bearing quartz stockwork feeder zone associated with it. It is recognized, in hindsight, that the 1985 drill holes were misdirected in seeking-out the roots of the epithermal systems. However, the drill holes did confirm the presence of large volumes of carbonate/silica replaced rock, and the strength of the epithermal systems in general.

**DISCUSSION** continued

Four drill sites have been selected from the six replacement/breccia zones listed below. The drill sites have been listed in order of priority as follows:

**Golden Lime 1 Replacement Zone**

Two inclined (-45°) drill holes should be drilled from north to south to depths of 60 metres to intercept the siliceous breccia zone that is exposed at the northern end of the carbonate replacement zone.

This drill site features very easy access.

**Gold Key 5 Replacement Zone**

Two inclined (-45°) drill holes should be drilled at 225 degrees azimuth (perpendicular to veining and bedding) to depths of 60 metres to test the Gold Key 5 replacement zone.

This zone is located just 150 metres from the Newmont precious - metal-bearing showing.

**Gold Key 7 Replacement Zone**

Two inclined (-45°) drill holes should be drilled from northeast to southwest to 60 metres depth to test the mineral content of the highly siliceous rhyolite dyke. The dyke contains up to 1% cinnabar and elevated arsenic and antimony values on surface.

**Gold Key 3 Replacement Zone**

Two inclined (-45°) drill holes should be drilled from north to south to depths of 60 metres to test the ankeritic-siliceous breccia zone that is exposed at surface.

**DISCUSSION** continued**Sample Site GK-12**

The poorly exposed highly siliceous rock at site GK-12 yielded 175 ppb gold and 415 ppm arsenic values. This site warrants further exploration with a trenching program.

**Gold Key 1 Breccia Zone**

The well developed breccia zone on the Gold Key 1 mineral claim is more difficult to access than others on the property. Drilling of this zone should await positive results elsewhere on the property.

## CONCLUSIONS AND RECOMMENDATIONS

The results of this year's ground magnetometer survey conducted over portions of the Gold Key 7 & 8 mineral claims, although subtle, appear to have outlined and extended the rhyolite dyke and related zone of carbonate replacement for a distance of 350 metres across the survey area.

The Gold Key 7 rhyolite dyke is just one of several exploration targets identified on the property as mentioned under the title Discussion.

The concluding statements of the 1995 Assessment Report are still valid and they are repeated in the paragraphs that follow.

It has been determined over the years that the large replacement zones occurring within metasediments of the Triassic Nicola Group on the Gold Key Claim Group are related to Late Cretaceous(?) or Early Tertiary(?) intrusives, and that the emplacement of these intrusives has been controlled by late faulting.

It is hypothesized that hydrothermal solutions related to the high-level, volatile intrusives have penetrated the faulted or inherently porous metasediments and have brought about the high degree of carbonate and silica replacement of the original mineral constituents. It is thought that these same hydrothermal solutions have introduced elevated levels of mercury, arsenic, barium and antimony into the metasediments.

There is evidence of repeated faulting of the rock and the repeated introduction of hydrothermal solutions into the rock. There is also evidence that the later phases were more siliceous, and at the Newmont Showing (located immediately west of the Gold Key 5 mineral claim) gold and silver were deposited with late quartz and chalcedony veining.

The 1995 mapping and sampling program was designed to prioritize and delineate drill targets at four of the larger replacement zones on the Gold Key Claim Group. It is believed that any

**CONCLUSIONS AND RECOMMENDATIONS** continued

one of these four zones or the large Golden Lime Zone, mapped in 1993 by the writer, could host epithermal precious metal deposits at moderate depths within quartz/chalcedony stockwork systems hidden below the exposed carbonate replacement zones.

Several easily accessible drill sites have been selected (see Discussion) and a low-cost Reverse Circulation Percussion Drilling Program is recommended to test for economic precious metals at moderate depths at all sites.

All drill chips from replacement zones or stockwork systems should be analyzed for gold, silver, arsenic, antimony and barium.

June 15, 1996  
Kelowna, B.C.

  
Murray Morrison, B.Sc.



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Wilmot, A.D. and Morrison, M.S.

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Vancouver Stock Exchange).

- \* Assessment Reports filed with the Ministry of Energy, Mines and  
Petroleum Resources of British Columbia.

APPENDIX ASTATEMENT OF QUALIFICATIONS

I, Murray Morrison, of the City of Kelowna, in the Province of British Columbia, do hereby state that:

1. I graduated from the University of British Columbia in 1969 with a B.Sc. Degree in Geology.
2. I have been working in all phases of mining exploration in Canada for the past twenty-six years.
3. During the past twenty-six years, I have intermittently held responsible positions as a geologist with various mineral exploration companies in Canada.
4. I have conducted several geological, geochemical, and geophysical surveys on mineral properties in Southern British Columbia during the past twenty-six years.
5. I conducted the Ground Magnetometer Survey outlined in this report.
6. I own a 100% interest in the Golden Lime 1-2, Gold Key 1-14, 16&17 and 15 FR mineral claims.

June 15, 1996  
Kelowna, B.C.

  
Murray Morrison - B.Sc.

APPENDIX BSTATEMENT OF EXPENDITURES - ON THE GOLD KEY CLAIM GROUP

Statement of Expenditures in connection with a Ground Magnetometer Survey carried out on the Gold Key Claim Group, located 25 km west of Kamloops, B.C. (N.T.S. Map 92-I-10E) for the year 1996.

GROUND MAGNETOMETER SURVEY (2.3 km)


M. Morrison, geologist	2 days @ \$300.00/day	\$ 600
Truck, 4 x 4 (including gasoline and insurance)	2 days @ \$75.00/day	150
Meals and Lodging	2 days @ \$70.00/day	140
Flagging and belt chain thread		15
Magnetometer rental	2 days @ \$25.00/day	<u>50</u>
	Sub-total:	\$ 955

REPORT PREPARATION COSTS

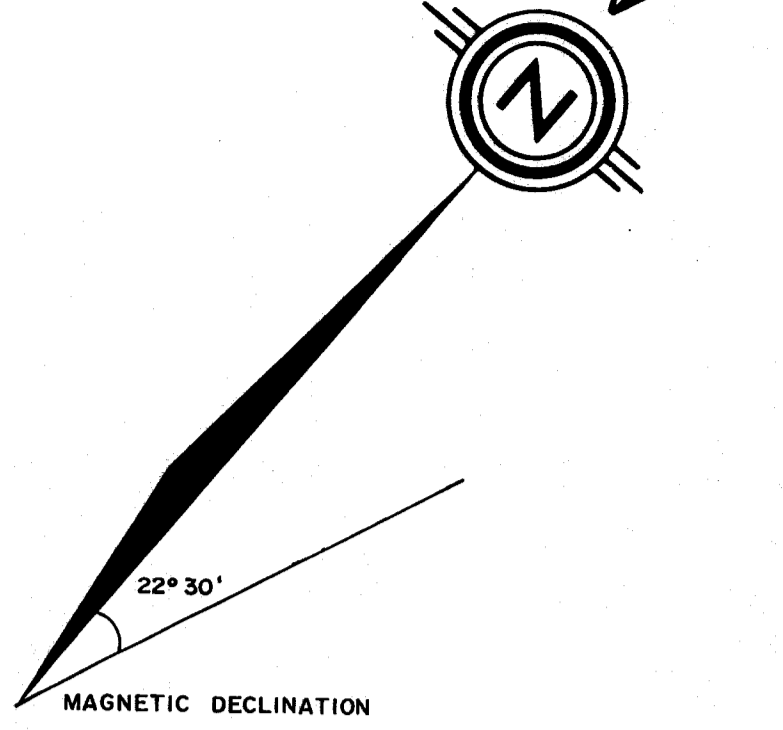
M. Morrison, geologist	1 day @ \$300.00/day	\$ 300
Drafting		53
Typing		107
Copying reports		<u>20</u>
	Sub-total:	\$ 480
	Grand Total:	\$ <u>1,435</u>

I hereby certify that the preceding statement is a true statement of monies expended in connection with the Ground Magnetometer Survey carried out March 20-21, 1996.

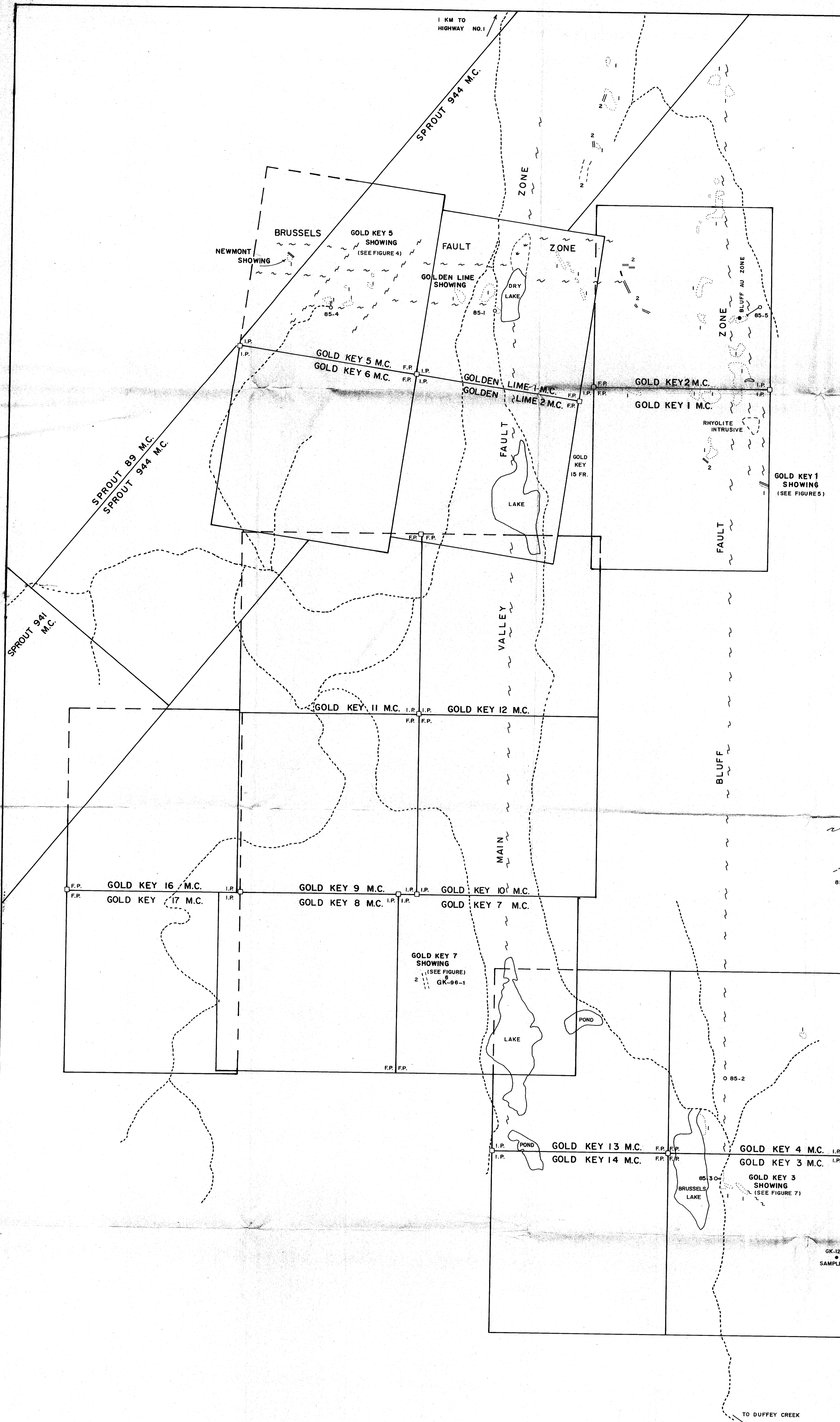
June 15, 1996  
Kelowna, B.C.

  
Murray Morrison - Geologist

24,470



1 KM TO  
HIGHWAY NO. 1



LEGEND

- 1 TRIASSIC - NICOLA GROUP - METASEDIMENTS (STRONG REPLACEMENT ZONES ONLY SHOWN ON MAP)
- 2 LATE FELSIC, QUARTZ-EYE DYKES
- INFERRED FAULTS
- OUTCROP
- ACCESS ROADS
- 85-5 O PERCUSSION DRILL HOLES - 1985



TO ACCOMPANY A GEOLOGICAL REPORT BY M. MORRISON

GOLD KEY CLAIM GROUP		
KAMLOOPS LAKE AREA KAMLOOPS MINING DIVISION B.C.		
MINERAL CLAIMS, ACCESS, FAULTING and REPLACEMENT ZONES		
GEOLOG BY: M.M.	AUGUST 1995	N.T.S. 92-1-10E
DRAWN BY: M.M.	SCALE 1:5000	MAP 6K-95-1