

680389

REPORT  
ON  
GEOLOGY, GEOCHEMISTRY, TRENCHING, INDUCED POLARIZATION  
AND DIAMOND DRILLING  
WATSON BAR PROJECT

CONFIDENTIAL

CLINTON MINING DIVISION, BRITISH COLUMBIA

Latitude 51° 03' North

Longitude 122° 03' West

FOR

CYPRUS GOLD (CANADA) LTD.

by

RUDOLF M. DURFELD, B.Sc

ALVIN W. JACKSON, B.Sc.

February 1990

Williams Lake, B.C.

## 1A. SUMMARY AND CONCLUSIONS

The Watson Bar property, comprised of 444 mineral claim units (27,000 acres), is located in southwestern British Columbia. The property is accessible by 70 kilometers of all weather gravel road from the community of Lillooet. Cyprus recognized the Watson Bar property as having potential to host an economic epithermal disseminated and/or lode gold deposit and in 1987 acquired the Watson Bar property by option.

The geology of the Watson Bar property is dominated by northwest trending splays of the Fraser River fault which have juxtaposed Lower Cretaceous Age sediments of the Jackass Mountain group with Lower Cretaceous intermediate volcanic and volcanoclastic units of the Spences Bridge Group and rhyolitic to dacitic volcanic and clastic rocks of Eocene Age. Lower Cretaceous sediments and volcanics are locally intruded by irregular stocks and related dykes of probable Upper Cretaceous to Tertiary Age. All the lithologies are cut by granite dykes and sills of probable Tertiary Age.

The regional structure in the property area is conformable to the north, northwesterly trend of the main splays of the Fraser River Fault and show bedding aligned in this direction with shallow southerly dips. Local folding on northeast to

southwest fold axis documents compression and extension from northwest to southeast which locally thickens the sedimentary lithologies.

The central portion of the Watson Bar property covers a large area of hydrothermal alteration. Carbonate alteration is ubiquitous throughout this area as fracture fillings and/or disseminations. Phyllic alteration as secondary sericite and lesser argillic alteration as secondary kaolinite is present as large bleached zones within the larger carbonate zone. Silicification occurs as fracture fillings and pervasive replacement of the rock. Quartz veining shows banded open textures and cavities are often lined with well developed quartz crystals. Sulphide mineralization as pyrite, arsenopyrite, galena, sphalerite, stibnite and cinnibar was noted in the silicified zones. Visible gold mineralization has been observed within the banded quartz veins in the area of zone V, IX and X. The style of hydrothermal alteration, silicification, sulphide mineralization and gold in quartz veins indicates that the Watson Bar property is an epithermal gold target.

Evaluation of the Watson Bar property to date has included soil sampling (6432 samples), Induced Polarization surveys (35 km), trenching (2.1 km and 200 pits) and 1772 meters of diamond drilling. Geological mapping and drill core logging

was conducted concurrent with these surveys.

The work to date has shown zones (V, VIII, IX, X) with significant gold mineralization as being sourced by banded quartz sulphide veins. Zone V, which was evaluated by trenching and diamond drilling returned trench assays up to 2.35 oz/T gold over 1.5 meters, with a broader section .38 oz/T gold over 16 meters. Diamond drill hole was WB 89-1, twenty meters downdip, intersected .58 oz/t gold over 5 meters. Additional drilling down dip and on strike has indicated this zone to be lensoid.

Zones VIII, IX and X were identified by follow-up deep soil pitting and trenching of arsenic, mercury and gold in soil anomalies. Limited trenching and rock sampling of quartz sulphide veins in these zones has returned gold values of up to 18000 ppb (.53 oz/T) in zone IX, up to 1550 ppb in zone VIII and 6200 ppb (.18 oz/T) in zone X. Zones VIII, IX, and X have not been tested by diamond drilling.

The strong association of gold with mercury and arsenic values has been clearly demonstrated on the Watson Bar property. Therefore areas of high mercury and arsenic in soil and/or rock, particularly in silicified and altered areas warrant detailed follow-up by deep soil sampling and/or trenching. This is particularly the case for zones IV, XII and XIII.

A staged exploration program is recommended in this report to further evaluate the potential of the Watson Bar property to host an economic epithermal gold deposit.

## 1B. RECOMMENDATIONS

### STAGE I

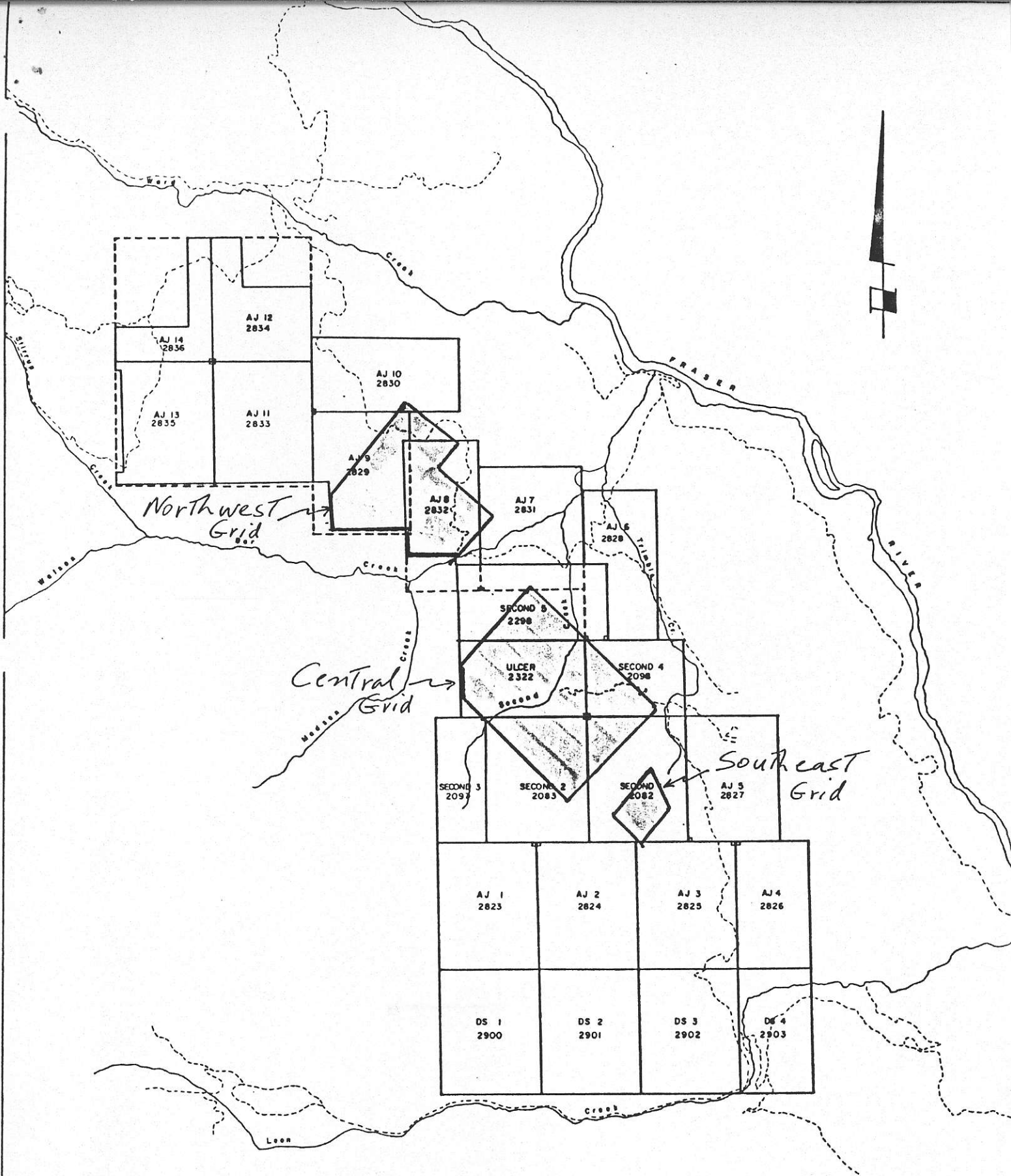
The objective of the stage I program would be to evaluate the potential of the auriferous quartz vein zones (VIII, IX, X). Where possible limited trenching should be conducted to confirm trends on these zones, followed by a combination of diamond and reverse circulation drilling. The estimated cost of the stage 1 program would be \$175,000 dollars and would include 2000 feet of diamond drilling and 3000 feet of reverse circulation drilling.

### STAGE II

Contingent upon favourable results from the Stage 1 program the Stage II program should consist of an expanded drilling program on the favourable areas defined by the stage I program. In conjunction with the diamond drilling ongoing exploration by way of trenching and deep soil sampling should be

conducted in zones IV, XI, XII and XIII to define additional areas warranting drill testing.

Costs of the stage II program will vary according to the number of targets tested, but would be in the order of at least \$500,000 which would allow for 8,000 to 10,000 feet of diamond drilling and additional trenching.



**CYPRUS GOLD**  
(Canada) Ltd.













**WATSON BAR PROPERTY  
CLAIM MAP**




DRAWN BY	SCALE 1:100,000
DATE	MAP No. 2

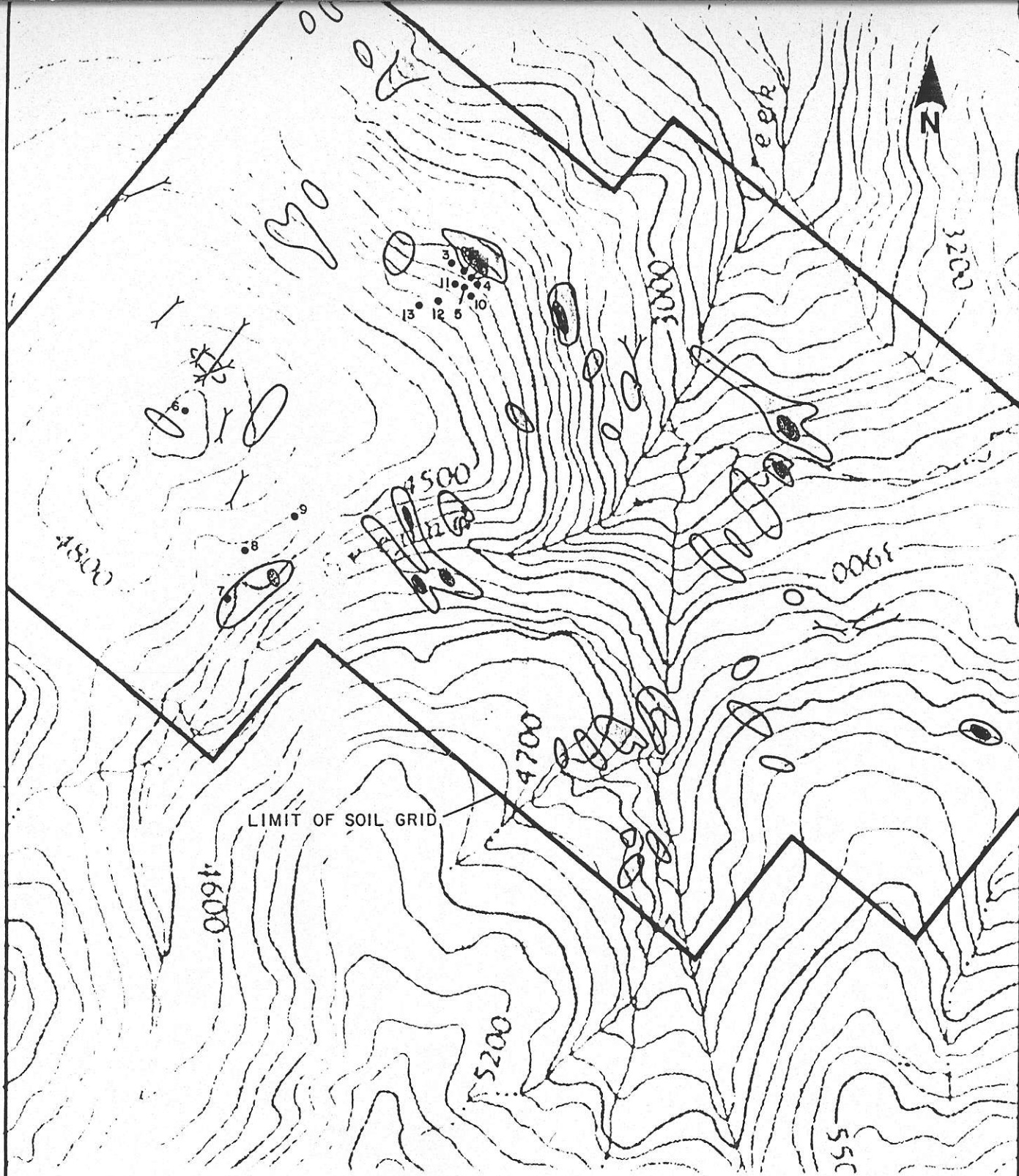


**LEGEND:**


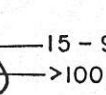


- |   |                   |   |              |
|---|-------------------|---|--------------|
|  | Quartz porphyry   |  | Contact      |
|  | Feldspar porphyry |  | Fault        |
|  | Granodiorite      |  | 1989 D.D.H.  |
|  | Siltstone         |  | Trench       |
|  | Siltstone         |  | Sandstone    |
|   |                   |  | Conglomerate |
|   |                   |  | Andesite     |

 <b>CYPBUS GOLD</b> (Canada) Ltd.	
<b>WATSON BAR PROJECT</b> <b>GÉOLOGIE</b>	
DRAWN DATE	SCALE FIG. No.




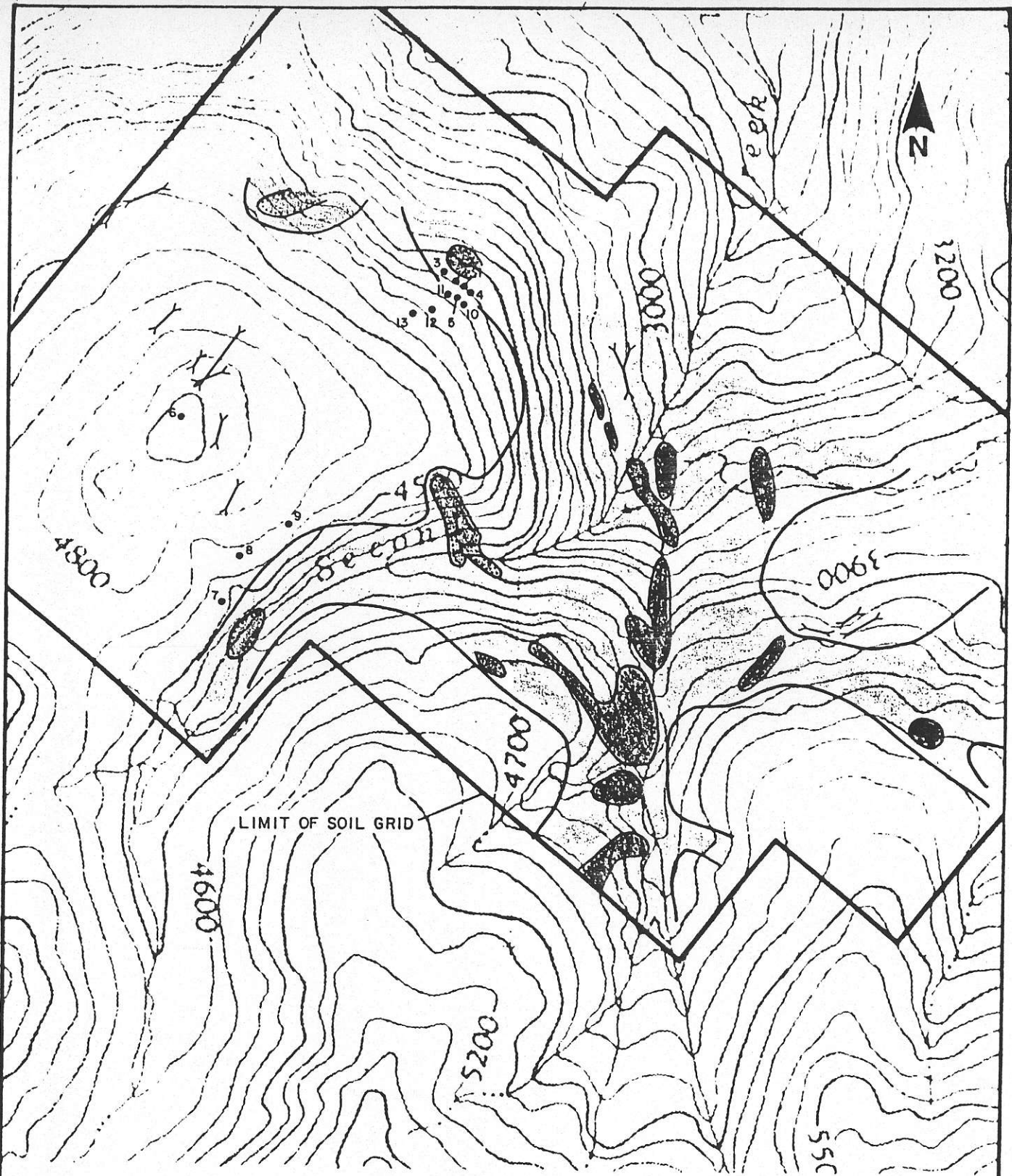


**LEGEND:**

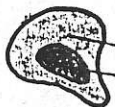
-  15 - 99ppb Au
-  >100ppb Au
-  1989 D.D.H.
-  Trench



	
<b>WATSON BAR PROJECT</b> <b>GOLD IN SOIL</b>	
DRAWN	SCALE
DATE	FIG. No.



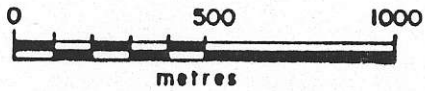
**LEGEND:**



140 - 1000 ppb Hg  
 >1000 ppb Hg

• 1989 D.D.H.

— Trench

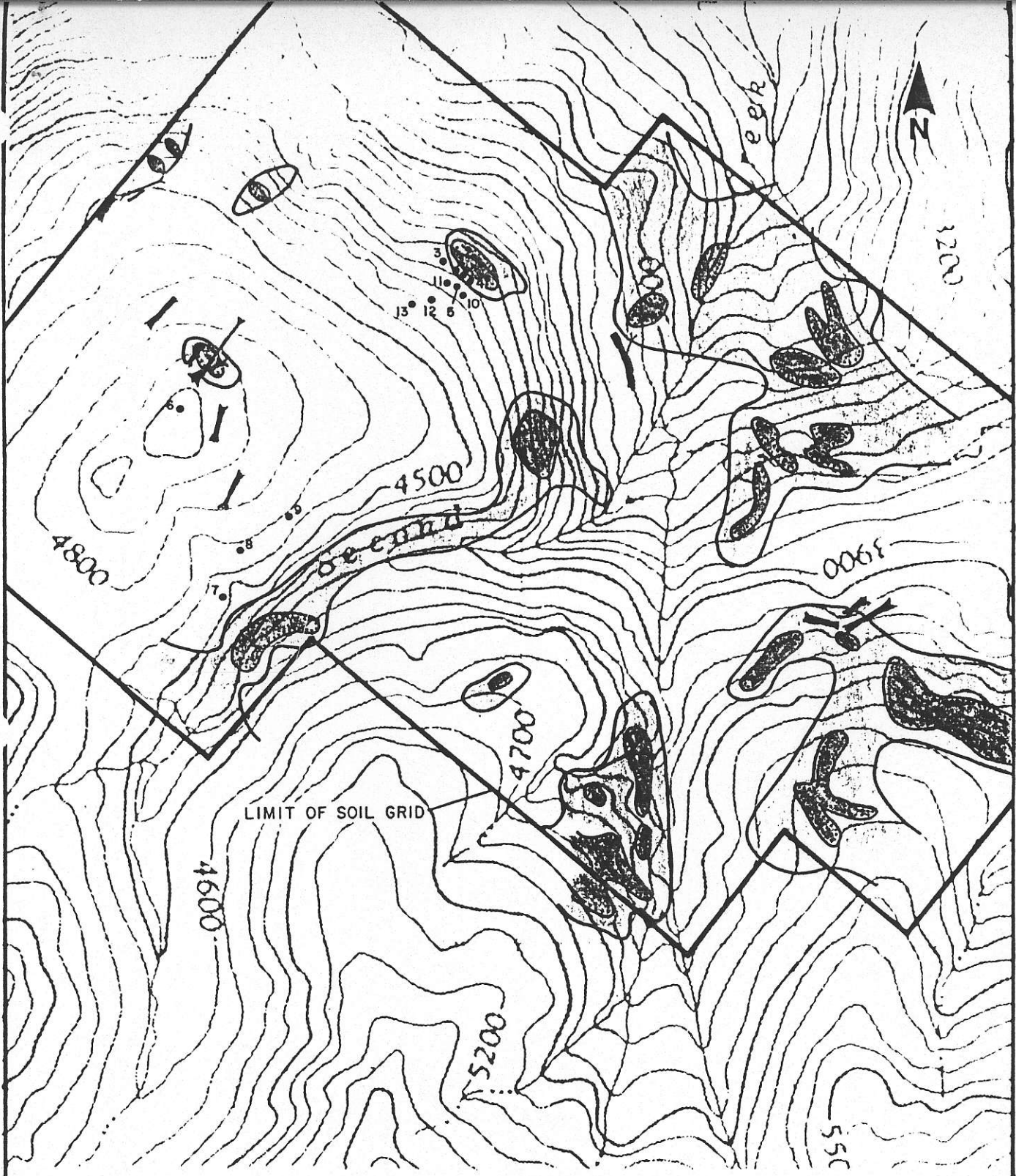


**CYPRUS GOLD**  
 (Canada) Ltd.


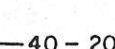


**WATSON BAR PROJECT**  
**MERCURY IN SOIL**

DRAWN  
 DATE

SCALE  
 FIG. No.



**LEGEND:**

-  40 - 200ppm As
-  >200 ppm As
-  1989 D.D.H.
-  Trench

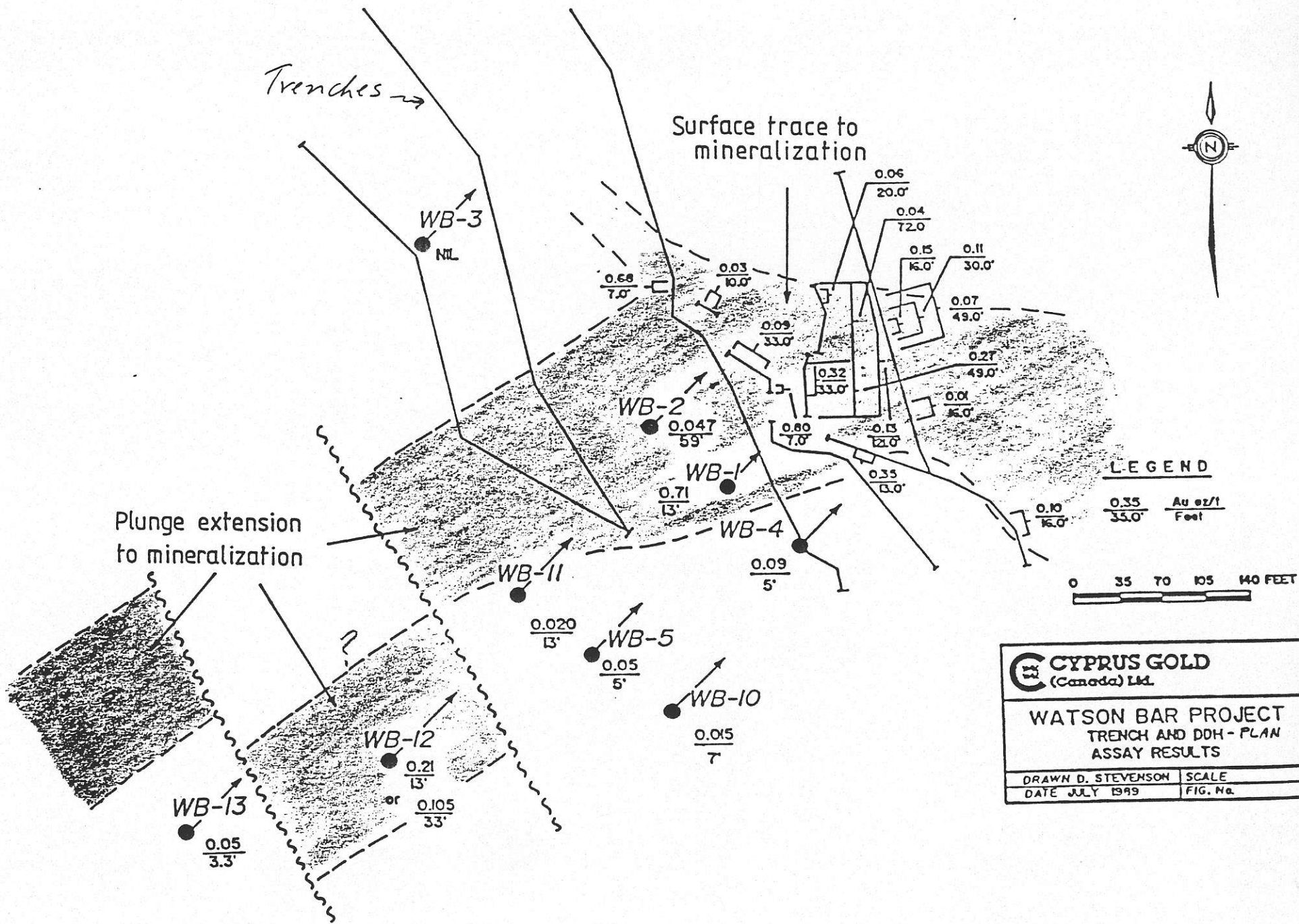


**CYPRUS GOLD**  
(Canada) Ltd.

**WATSON BAR PROJECT**  
**ARSENIC IN SOIL**

DRAWN  
DATE

SCALE  
FIG. No.



anomalies in conjunction with weak gold, mercury and arsenic in soil anomalies. This drilling intersected a thick section of argillite and sandstone overlain by conglomerate. The conglomerate was strongly argillically altered with minor quartz-calcite veins throughout. A one metre section in WB 89-9 returned weakly anomalous gold (.014 oz/T).

## 7. DISCUSSION

Work to date on the Watson Bar property has been successful in identifying four separate areas with significant gold mineralization in bedrock, only one of which has been tested by drilling to date. The nature of the mineralization and the associated mercury-arsenic-antimony geochemistry indicate that this is a high level epithermal gold target. Mercury is the most widespread strongly anomalous element, with values in soil of several thousand to 20,000 ppb being common. Arsenic values are not as widespread and more closely reflect the known zones of silicification and gold mineralization. It is probable that the extensive development of arsenic oxides has resulted in relative enrichment of gold at the bedrock-soils interface, with subsequent depletion of gold in the surface soils.

Work to date has shown that even relatively low gold values in soil (40 ppb) can be significant, particularly if associated with anomalous arsenic and mercury.

To date, fourteen zones of interest have been identified by soil and rock geochemistry. Again, these zones are characterized by all or a combination of the elements, gold, arsenic and mercury to a lesser extent Cu, Pb, Zn, Ag and/or antimony. Twelve of the fourteen zones have either coincident and/or peripheral chargeability and/or resistivity anomalies.

The following summarizes the status of each of the zones indicated to date, with the zones hosting significant gold mineralization in bedrock being described first:

#### Zone V

Zone V, which is also referred to as the Main Zone, has been extensively trenched and drill tested by nine holes. This zone was discovered by trenching in late 1988. Grades of 0.13 oz/T Au over 121 feet were encountered in one trench with a higher grade section within this interval averaging 0.38 oz/T Au over 16 meters. Nine diamond drill holes tested the Main Zone along 465 feet of strike and a vertical depth

of 460 feet. Hole 1 which intersected the auriferous horizon below the surface high grade zone encountered 0.58 oz/T Au and 1.6 oz/T Ag over 5 metres (16 feet). Results from adjacent holes suggest the mineralized zone has a strike length of less than 400 feet but potential at depth as the horizon is interpreted to plunge to the southwest. Hole 12 which intersected 0.21 oz/T gold and 0.34 oz/T silver over 4 metres (13 feet) occurs 350 feet behind hole 1. This interval is part of a wider interval which averaged 0.105 oz/T Au and 0.25 oz/T Ag over 33 feet.

Auriferous veining at the Main Zone consists of stratabound, weathered and banded quartz veins and stockworks hosted within shallow southwesterly dipping graphitic siltstone. The graphitic siltstone unit in turn is hosted within a similarly dipping thick sandstone - siltstone sequence. Disseminated and fracture filling pyrite, arsenopyrite, galena and sphalerite are the dominant sulphide minerals within the veins. These veins are similar to those present at Blackdome Mine in terms of texture and mineralogy. However, veins at Blackdome are northeasterly striking, near vertical and are hosted within Eocene felsic volcanics.

Although potential exists for continuation of this mineralization down plunge to the southwest, further drilling should be deferred pending evaluation of several of the other high priority targets.

Zone VIII

Zone VIII, also known as the Camp Zone, returned anomalous values of up to 1458 ppb Au, 1175 ppm As and 2000 ppb Hg in soils. The largest soil anomaly in this zone is 2300 feet in length and up to 500 feet in width. Trenching and deep soil sampling in this area has greatly enhanced the anomalous sites. Chip sampling of silicified feldspar porphyry and banded quartz vein rubble at the bottom of the trenches returned assays of up to 1550 ppb gold (0.05 oz/T), 11875 ppm arsenic and 100,000 ppb mercury. This area does not have coincident chargeability or resistivity anomalies, but does flank a weak resistivity high which trends northwesterly along the full length of the geochemical anomaly.

Zone IX, XI

Soil sampling of the main logging road in the area of Zone IX and XI returned values of 2550 ppb Au, 575 ppm As and 1875 ppb mercury. Follow-up trenching along the side of the main logging road revealed several well mineralized quartz-sulfide veins trending northwesterly with steep dips. Vein mineralization has been partially exposed over a width of 5-6 metres. Analysis of the vein material returned several



values in the 0.20 to .30 oz/t gold range, with a high value of .53 oz/T gold (18,000 ppb). Arsenic values were high, up to 7%, with mercury being up to 5000 ppb. The location of the vein exposure is such, on the main logging road, that it will be difficult to evaluate by trenching. However, it may be possible to trench this area early in the spring when the road is closed to trucks over breakup. This zone will require drilling to properly evaluate it.

### Zone X

Zone X, also known as the LCP showing, was discovered as a quartz vein shear during the follow-up of several one to two line gold-arsenic-mercury soil anomalies. Values of 45 ppb gold, 913 ppm arsenic and 935 ppb mercury were noted in the soils. Mapping and trenching has uncovered several banded quartz veins up to 1 metre thick that are hosted within a graphitic siltstone. The strongest vein shows a westerly strike with steep southerly and northerly dips. In the area of the vein, discontinuous mineralization was encountered for a strike length of 650 feet and a width of 80 feet. Values of up to 0.18 oz/T gold, 11.3% arsenic and 3375 ppb mercury were encountered in this mineralized area. A very strong chargeability anomaly lies peripheral to this mineralization, with an associated strong arsenic in soil

anomaly. Zone X by way of these arsenic and chargeability anomalies is essentially continuous with zone X11 located 2300 feet to the southeast, and zone X111, 1000 to 1500 feet to the south.

Further evaluation of this area would involve drilling on the presently identified mineralization, and then progressing onto the adjoining strong arsenic geochem and coincident Induced Polarization chargeability anomalies.

Gold mineralization has not been found in place on the following zones, but the geochemical expression and alteration present, suggests they are targets warranting trenching and possibly drilling. These zones are described in order of priority as:

#### Zone XII

Zone XII is located 2300 feet along strike to the southeast of Zone X. Soil values in this area are up to 250 ppb Au, 8950 ppm As and 9635 ppb mercury. This 400 meter by 200 meter arsenic in soil anomaly coincides with a strong chargeability and weak resistivity anomaly. Zone XII has not

been followed up on the ground to date. In terms of geophysics and geochemistry, this anomaly is one of several which are similar to Zone V or the Main Zone and is considered a priority target. The location of this strongly anomalous zone along strike from the gold mineralization located in zone X increases the priority of this anomaly. Trenching should be conducted initially on this zone, followed by drilling.

### Zone XIII

Zone XIII is located approximately 1000 feet south of Zone X and consists of a strong arsenic-mercury in soil anomaly with spotty gold values. The arsenic anomaly is 300 meters in length and 100-200 meters across in the strongest section of it. The more northern series of anomalies lies peripheral to and partially overlap a quartz porphyry appendage of the main granodioritic stock whose center is located 2000 feet to the west. This soil anomaly has a weak chargeability and very strong resistivity anomaly associated with it. The quartz porphyry appendage is intruding into a sandstone and siltstone sequence. Trenching and drilling are necessary to fully evaluate this anomaly.

#### Zone IV

Zone IV occurs in the upper drainage of East Second Creek. Zone IV is localized along the contact between the granodiorite and Jackass Mountain Group Greywacke. Silicification in the granodiorite consists of a stockwork of chalcedony veins separated by sericitized rock. In the greywacke silicification consists of both veining and pervasive silicification. Chalcedony veins are mineralized with minor quantities of pyrite and traces of chalcopyrite, stibnite and rare arsenopyrite. The strongest arsenic anomaly ranges from several hundred to 22000 ppm As over an area of 300 meters x 200 meters. A strong I.P. chargeability anomaly is coincident with this geochem anomaly. Corresponding mercury values are from several hundred to 100,000 ppb. Very limited follow up work has been completed on this anomaly and trenching is necessary as an initial follow-up.

#### Zone I

Zone I encompasses an easterly trending zone measuring 1,000 metres by 150 metres (Map 3B). At the eastern end, the zone is terminated by the West Second Creek Fault while the western end appears to merge into Zone II. Much of Zone I is

well exposed on the southerly facing precipitous slope above West Second Creek; however, the western portion of the zone is poorly exposed.

The zone occurs mostly in Jackass Mountain Group greywackes, although an easterly trending series of feldspar porphyry dykes cuts through the core of the zone. Large areas of breccia occur in the greywacke. These breccias vary from crackle breccias to those consisting of rotated subangular fragments. All of the breccias are clast supported and cemented by varying amounts of chalcedony, limonite and carbonate. The clasts are intensely sericitized and silicified to such an extent that recognition of the original rock type is often difficult.

Chalcedonic quartz veins and stock works ranging from a few centimetres to 1.5 metres are common. Three directions of veining are common: northerly, northeasterly and easterly. The veins often contain dark grey streaks caused by very fine-grained pyrite and arsenopyrite. Rock assays from these veins have returned generally low values in gold, with some of the better ones being up to 460 ppb. However, they are strongly anomalous in arsenic and mercury.

The potential for this zone is for increased gold

mineralization with depth. Diamond drilling would be necessary to evaluate this potential.

#### Zone VII

Zone VII is found 2300 feet to the west of Zone V and is 650 feet long by up to 450 feet wide. Values of up to 40 ppb Au, 525 As and 1280 ppb mercury were detected in soil samples. On line 8600E semi-continuous anomalous gold in soil values were encountered for 450 feet downslope. The highest values of 28 rock samples taken from this area were 18 ppb Au, 675 ppm As and 1600 ppb mercury. This soil anomaly does have a coincident strong chargeability and a weaker resistivity anomaly. Prospecting in this area has located several small outcrops of silicified and carbonate altered sinter. No trenching has been done due to steep topography. Chargeability and resistivity results suggest this zone may be a continuation of Zone V.

#### Zone XIV

Zone XIV is found 2600 feet to the northwest of Zone V. Four single line anomalies span an area of 1300 feet by 400 feet. Gold values range from 15 ppb to 49 ppb while arsenic values are up to 57 ppm, and mercury up to 8125 ppb. One

anomaly has continuous anomalous gold values for 330 feet and is open to the northwest. This same anomaly has an associated weak to moderate resistivity but no chargeability anomaly. No followup work has been done in this area.