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GEOLOGICAL AND GEOCHEMICAL REMARTNON THE

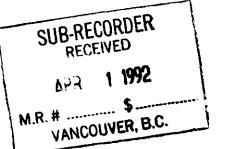
CVS COPPER PROSPECT

KAMLOOPS MINING DIVISION, B.C.

N.T.S. 92 I/7W

BY

A.G. TROUP, P.Eng.



February 1992

CLAIMS WORKED									
CLAIM NAMES	UNITS	RECORD NUMBERS	ANNIVERSARIES						
CVS-1 - 6	120	9963 - 9968	MAY 10,11,12						
CS 1 - 6	6	9922 - 9927	APRIL 29						

LOCATION:50°22' North Latitude<br/>120°52' West LongitudeOWNER:Copper Valley SyndicateOPERATOR:Aucumo Resources Ltd.CONTRACTOR:Archean Engineering Ltd.

GEOLOGICAL BRANCH ASSESSMENT REPORT

# GEOLOGOICAL AND GEOCHEMICAL REPORT ON THE CVS COPPER PROSPECT KAMLOOPS MINING DIVISION, B.C.

#### SUMMARY:

The CVS copper prospect is located in south central British Columbia, on the southeast side of the Guischon batholith, seven kilometers south of the Highmont Copper Mine. In May and August 1991, the writer supervised detailed stream sediment sampling and reconnaissance mapping surveys over the property.

The property, comprised of six 20 unit mineral claims and six two post mineral claims, was staked to cover a strong copper geochemical anomaly indicated on the National Geochemical Reconnaissance Map Series given in GSC Open File 866.

The claim block straddles a major structure that may have controlled the emplacement of the Valley Copper, Lornex, and Highmont ore bodies. During the mapping program, copper mineralization comprised of chalcocite, bornite, and minor chalcopyrite was observed at several locations on the claims.

A total of 46 stream sediment samples and two rock chip samples were collected from property sites. Copper content of the stream sediment samples was extremely anomalous suggesting that copper mineralization is widespread over the property. A single sample taken from a malachite stained shear zone on the CVS-2 claim assayed greater than 1.0% copper.

The results of the this work program are extremely encouraging and suggest that the CVS claims may have potential for hosting bulk tonnage porphyry copper mineralization. Additional exploration is recommended.

# GEOLOGICAL AND GEOCHEMICAL REPORT ON THE CVS COPPER PROSPECT KAMLOOPS MINING DIVISION, B.C.

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GEOCHEMICAL RESULTS CERTIFICATES

### GEOLOGICAL AND GEOCHEMICAL REPORT ON THE CVS COPPER PROSPECT KAMLOOPS MINING DIVISION, B.C.

#### **1.0 INTRODUCTION:**

In May 1991, Archean Engineering was contracted to complete a reconnaissance assessment of the CVS copper property in south central British Columbia. The program consisted of detailed stream sediment sampling, reconnaissance mapping and prospecting. The geochemical survey was carried out in May by a four person crew based at the Copper Valley Motel in Merritt. Mapping and prospecting was carried out in August by a two person crew working from a camp on the property.

#### 1.1 LOCATION AND ACCESS:

The CVS copper prospect is located in south central British Columbia on the southeast side of the Guischon batholith, seven kilometers south of the Highmont Copper Mine. The centre of the property is definded by latitude 50°21'N and longitude 120°55'W.

The claims are located 25 kilometers north of the community of Merritt. Good access to the centre of the property is provided by the Pimanus-Tyner fire access road which intersects Highway 8 approximately nine kilometers west of Merritt. A network of logging haul roads provide additional access to most parts of the property.

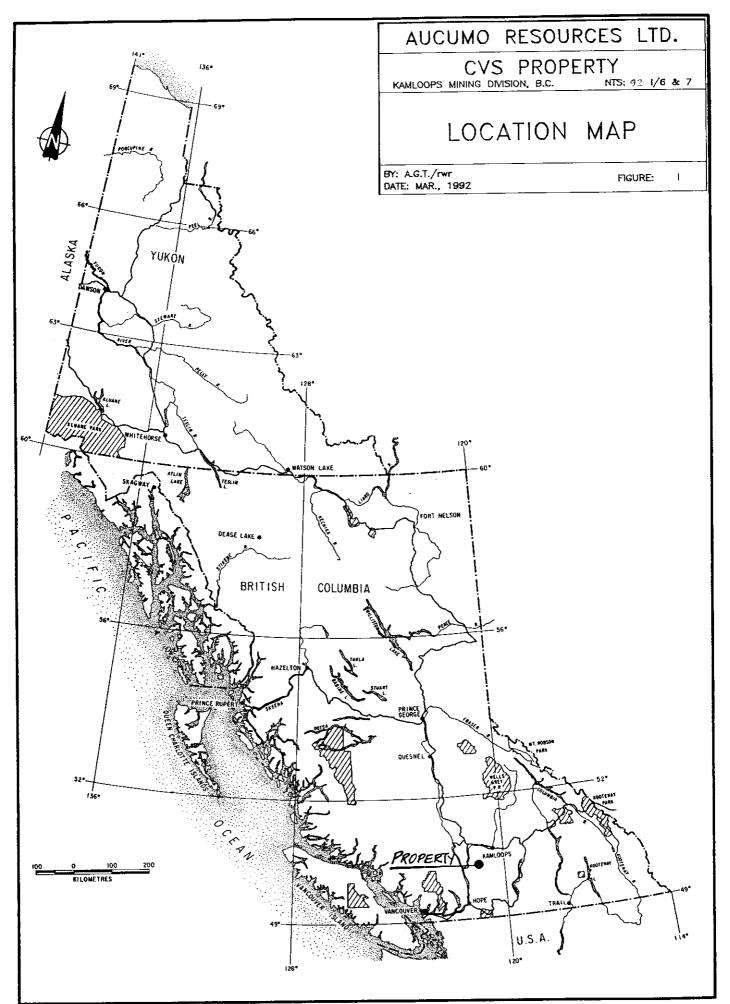
#### 1.2 PHYSIOGRAPHY, VEGETATION AND CLIMATE:

The property is located in a plateau like area in the Interior Plateau physiographic region of British Columbia. Relief over most of the property is very gentle with elevations ranging from 1280 metres to 1,500 metres. The southeastern corner of the claims extend over the Broom Creek canyon where topography is moderately rugged with slopes up to 30° along the 125 metre high canyon walls.

An extensive 30 metre thick blanket of glacial ground moraine covers most of the property. Rock exposures account for less than 1% of the property and are confined to creek beds, abandoned meltwater channels and the flanks and crests of hills.

Timber is predominantly lodgepole pine which is well spaced allowing easy movement through the forest. Scattered patches of aspen and birch occur on south and west facing slopes, and spruce, fir and mountain alder grow in damp areas along streams and swamps. The entire property is very rapidly being logged and the extensive clear-cut areas and accompanying haul-road networks provide excellent access to most of the claims.

The climate is typical of the southern interior, with warm, dry summers and moderately long cold winters. Temperatures range from in excess of 30°C in August to minus 30°C in January. The average annual precipitation is 31 cm with most of this falling as snow in late fall, winter and early spring. The snow-free period lasts from late April to mid-November, but due to the light snowfall geophysics and drilling can be carried out throughout the winter.



# 1.3 PROPERTY INFORMATION:

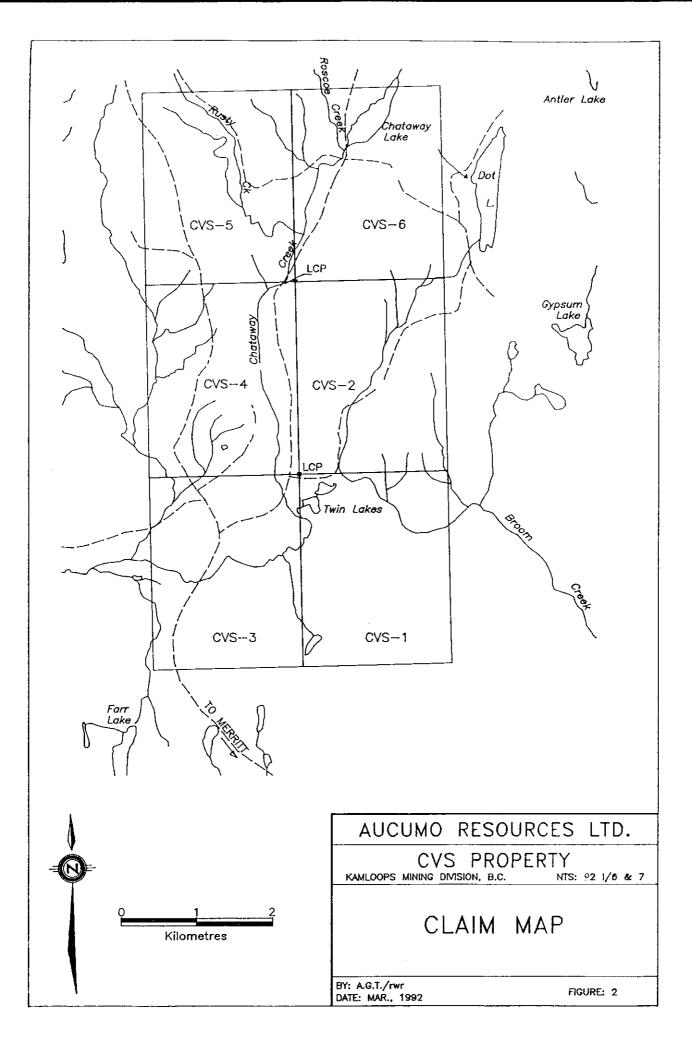
The property is located in the Kamloops Mining Division and is comprised of six 20 unit mineral claims and six two post claims. The claims were staked in 1991. Pertinent claim information is given in Table 1.

		TABLE 1	
		LIST OF CLAIMS	
CLAIM	UNITS	RECORD NUMBER	ANNIVERSARY
CS 1	1	9922	April 29
CS 2	1	9923	April 29
CS 3	1	9924	April 29
CS 4	1	9925	April 29
CS 5	1	9926	April 29
CS 6	1	9927	April 29
CVS-1	20	9963	May 10
CVS-2	20	9964	May 11
CVS-3	20	9965	May 10
CVS-4	20	9966	May 11
CVS-5	20	9967	May 12
CVS-6	20	9968	May 12

#### **1.4** HISTORY:

The CVS copper prospect is situated in the Highland Valley porphyry copper camp approximately 65 kilometers southwest of Kamloops and 35 kilometers north of Merritt. Exploration for copper mineralization commenced in 1887 when chalcocite ore grading 7.0% Cu was discovered at the Aberdeen Mine four kilometers southeast of the present property. The nearby Vimy Mine was discovered in 1920 and small high grade shipments were made until 1927. In 1957 economic porphyry copper mineralization was discovered at the Bethleham Copper Mine located 15 kilometers to the northwest. Since then five world class deposits containing nearly two billion tonnes of ore grading 0.45% copper equivalent have been discovered in the These include three past producer; Bethleham, Lornex, and camp. Highmont with combined production of 600 million tonnes; the J.A. Zone with reserves of 250 million tonnes; and Valley Copper, Canada's largest copper producer currenly being mined at 125,000 tonnes per day, with reserves of 775 million tonnes.

The area of the present property was staked by the Chataway Mining Syndicate in 1956 and the property was maintained and worked until the late 1970's. Work by Chataway successfully located four copper showings but exploration was hampered by an extensive blanket of glacial till. Since 1980 the area has been staked intermittently by a number of individuals. In 1991 the present CVS claims were staked by Gonzalez, Troup and Walcott.



# 1.5 WORK DONE BY ARCHEAN ENGINEERING LTD. IN 1991:

The following field work was completed by Archean Engineering Ltd. during the period from May 13 to August 5, 1991:

(a) Stream sediment sampling was carried out over the entire property.

(b) Prospecting and reconnaissance geologic mapping was carried out over the entire property.

(c) Rock chip samples were taken over two showings examined on the property.

#### 2.0 REGIONAL GEOLOGY:

The CVS property is underlain by rocks of the Upper Triassic Guichon Creek batholith. The batholith is eliptical in plan measuring 60 km north-south by 25 km east-west. It intrudes sedimentary and volcanic rocks belonging to the Permain Cache Formation and the overlying Upper Triassic Nicola Creek of the Jurassic Ashcroft Formation Formation. Sediments unconformably overlie the intrusive rocks at a number of locations and to the north are covered by volcanic flows and tuffs of the Eocene Kamloops Group.

The Guichon batholith consists of a number of concentric phases which in a general way decrease in grain size and increase in mafic content from the central core to the outer margin. The principal phases of the batholith from youngest to oldest are: the Bethsaida Phase quartz monzonite-granodiorite, the Bethleham Phase granodiorite, the Highland Valley Phase granodiorite, and the Border Phase quartz diorite-granodiorite. The principal Cu-Mo deposits are situated within and along the margins of the younger Bethsaida or Bethleham Phase rocks. The geology of the Guichon Batholith is discussed by McMillan in CIMM Special Vol. 15 (1976), and has been published as B.C. Preliminary Map 30 (1978).

#### 2.1 PROPERTY GEOLOGY:

Outcrop over the property is minimal, probably less than one per cent. Mapping is hindered by an extensive blanket of glacial till that covers most of the property.

The claims are situated over rocks of the Guichon Batholith complex. B.C. Preliminary Map 30 shows the property to be underlain by the Chataway variety of the Highland Valley Phase in contact with Bethleham and Bethsaida Phase rocks near the west border. During the current program a considerable quantity of angular Bethsaida float was found up to one km east of the mapped contact, suggesting that this important contact may be situated much further east than previously believed.

A high level airborne magnetometer survey flown in 1972 shows the property to straddle a north-northwest trending magnetometer gradient. North of the property this magnetic feature passes along the eastern border of the Highmont, Lornex and Valley Copper ore bodies. Geologic mapping in the vicinity of these known deposits has shown this magnetic gradient to to be spacially associated with the contact between the Bethsaida and Bethleham phases of the Batholith. Outcrop and float exposures observed during the present program suggest this is also true on the CVS property. The Chataway granodiorite member of the Highland Valley Phase is the most prominent rock unit found over the property. This unit outcrops at a number of locations over the southeast and eastern portions of the property (Figure 3). It can be quite variable in composition. It is medium grained, 2-3mm, and is comprised of quartz 15-20%, plagioclase and orthoclase 50-60% in about equal proportions, and mafics 20-25%. It is characterized by short stubby hornblende crystals that are generally more abundant than biotite.

The Bethsaida Phase granodiorite is seen in outcrop and float over the western portion of the property. It is a medium grained 2-4mm rock, comprised of quartz 20-35%, plagioclase and orthoclase 50-60% and mafics 15-25%. Biotite is more abundant than hornblende and may be up to 5mm across.

The Bethleham Phase granodiorite was observed only over the southcentral and southwest corner of the property. It is a medium grained, slightly porphyritic rock, averaging 1-2mm with quartz and feldspar phenochrysts to 4mm. It is comprised of quartz 15-20%, plagioclase and orthoclase 50-60% and mafics 25%. Mafics are primarily hornblende.

A quartz porphyry dyke is exposed as angular boulders in trenches and road cuts near the northwest corner of the property. The body is up to 100 metres in width and strikes northwest. Quartz eyes up to 5mm across occur suspended in a fine grained pale grey matrix. This rock is often altered and occasionally stained with malachite. It is possibly a younger member of the Bethsaida Phase.

#### 2.2 ECONOMIC GEOLOGY:

Previous exploration has located a number of copper showings over and immediately adjacent to the CVS property. Mineralization is comprised of chalcocite, chalcopyrite and bornite and is associated with altered shears and faults. The more important showings are described briefly below.

#### SHO-11 SHOWING (Minfile 92ISE020)

The SHO-11 showing is situated on claim CVS-2 in Broom Creek Valley approximately 700 metres north of Twin Lakes. Here heavy malachite lenses occur along narrow northwest trending shears within an extensive zone of kaolin, seracite and chlorite alteration developed along a wide north-south crushed zone. Drilling in 1967 is reported to have intersected copper values of up to 5.4% over 10 feet withing a 20 foot wide shear zone. A grab sample taken from a surface trench during the present program assayed greater than 1.0% Cu.

#### MOSS-4 SHOWING (Minfile 92ISE060)

The MOSS-4 showing is located along the Pimainus-Tyner logging haul road near the north end of claim CVS-4. Trenching in 1972 here exposed a number of Chataway granodiorite boulders mineralized with bornite and chalcopyrite. The source of the mineralization was never located.

### SKY-7 SHOWING (Minfile 92ISE062)

The SKY-7 showing is located two kilometers west of Chataway Lake near the north end of claim CVS-5. Moderate to extreme propylitic alteration occurs over a broad north-south zone along the contact between Chataway and Bethleham Phase granodiorite. In 1967 a diamond drill hold interescted 1.5 feet of massive chalcocite at the margin of a zone of propylitic alteration.

### ROSCOE CREEK SHOWING

The ROSCOE CREEK showing is located on claim CVS-6 immediately east of Roscoe Creek and just west of Chataway Lake. Here considerable spotty malachite occurs widespread over moderately altered Chataway granodiorite. Previous exploration tested this area with two adits but apparently was unsuccessful. During the present program a chip sample taken from a cluster of malachite stained boulders assayed 0.048% Cu, but ICP analysis on the same sample indicated a copper content of 5,440 ppm.

### THREE CREEKS AREA SHOWING (Minfile 9218E092)

The THREE CREEKS showing is located at the junction of three creeks in the north central portion of claim CVS-5. Sparse amounts of malachite and chalocite are seen over an area 600 metres in width, in weakly altered Bethsaida granodiorite, near a northwest trending, 100 metre wide quartz porphyry dyke. In 1965 grab samples from surface trenches assayed 0.14% and 0.60% Cu but nearby diamond drill holes were unmineralized. A diamond drill hole drilled 700 metres to the northwest encountered 125 metres of intensely altered quartz-porphyry-dyke. The hole was weakly mineralized over its entire length with hematite, chalcocite, chalcopyrite and traces of bornite and molybdenite.

#### 3.0 GEOCHEMISTRY:

In May 1991 Archean Engineering Ltd was contracted to carry out a reconnaissance stream sediment sampling survey over the CVS A total of 46 samples of active stream sediment were claims. taken from first, second and third order streams on the The samples were sent to Chemex labs in North property. There they were oven dried, sieved to minus 80 mesh Vancouver. analysed by routine ICP-AES methods for and 32 elements including Cu and Mo after digestion with hot aqua-regia. Two rock chip samples were pulverized and screened to minus 150 mesh, then analysed for gold by the FA-AA method, for copper by wet chemistry and for 32 elements by ICP-AES techniques after hot aqua-regia digestion.

Copper and molybdenum values in stream sediment are shown on Figure 4 at a scale of 1:10,000. The results show the streams draining this property to be carrying extremely high Cu concentrations. Copper values range up to 1,035 ppm with a third of the samples containing more than 400 ppm Cu. The results suggest that copper mineralization is widespread on the CVS property.

A single rock chip sample taken over the SHO-11 showing assayed greater than 1.0% copper and contained 0.11% tungsten.

#### 4.0 DISCUSSIONS AND CONCLUSIONS:

The results of work completed to date over the CVS property may be summarized as follows:

(a) The property is located over an area of favourable geology immediately south of the Highland Valley porphyry copper camp. Three of the rock units hosting economic mineralization at the Bethleham Copper, Valley Copper, Lornex, and Highmont mines are present on the property.

(b) A high level airborne magnetometer survey flown in 1972 shows the property to straddle a major structure that may have controlled the emplacement of the Valley Copper, Lornex and Highmont ore bodies.

(c) A Stream sediment survey completed by AUCUMO Resources in 1991 shows very high Cu concentrations in streams draining the property suggesting the presence of widespread mineralization.

(d) Although previous exploration was hampered by an extensive blanket of glacial till, five widely spaced showings were discovered on the property.

#### 5.0 RECOMMENDATIONS:

The results discussed above are extremely encouraging and suggest that the CVS property has potential for hosting a bulk tonnage, porphyry copper deposit. A two phase exploration program entailing induced polarization over target areas, followed by diamond drilling is recommended.

Respectfully submitted at Vancouver, British Columbia,

A. Lerup

A.G. Troup P.Eng.

#### 6.0 REFERENCES:

British Columbia Aeromagnetic Map Series (1972): Energy, Mines and Resources Canada, Ashcroft, B.C., NTS 921.

McMillan, W.J. (1978):Geology of the Guischon Creek Batholith, B.C. Ministry of Energy Mines and Petroleum Resources, Preliminary Map 30.

McMillan, W.J. (1976):Geology and Genesis of the Highland Valley Ore Deposits and the Guischon Creek Batholith, CIM Special Volume 15, pp. 85-119.

Minfile No's.:092ISE017,18,19,20,23,24,60,62,63,69 & 92. (1990). Britith Columbia, Ministry of Energy Mines and Petroleum Resources, Minfile Report.

National Geochemical Reconnaissance 1:250,000 Map Series, (1982): Ashcroft, B.C., GSC Open File 866.

Osatenko, M.J., & Jones, M.B., (1976): Valley Copper, CIM Special Volume 15, pp. 130-162.

Reed, A.J., & Jambor, J.L., (1976): Highmont, CIM Special Volume 15, pp. 163-181.

Waldner, M.W., Smith, G.D., & Willis, R.D., (1976): Lornex, CIM Special Volume 15, pp. 120-129.

#### 7.0 STATEMENT OF QUALIFICATIONS:

I, Arthur G. Troup, do hereby certify that:

- 1) I am a consulting geologist with Archean Engineering Ltd. of 3605 Creery Avenue, West Vancouver, B.C.
- 2) I am a graduate of McMaster University in Hamilton, Ontario with an M.Sc. in Geology.
- 3) I am a registered member of the Association of Professional Engineers of the Province of British Columbia.
- 4) I have practiced my profession in Canada and abroad since 1964.
- 5) I recommended and supervised the geological and geochemical programs discussed in the accompanying report.

Dated at Vancouver, British Columbia, this 28th day of February 1992.

A. Terup

Arthur G. Troup, P.Eng.

#### 8.0 COST STATEMENT:

STAKING, PROSPECTING, GEOCHEMICAL SURVEY AND GEOLOGICAL MAPPING 22 April - 31 August 1991

# GENERAL COST

FOOD & ACCOMMODATION: 6pers., 33mdays @ \$35.35 FUEL:	\$ 1,166.55 209.57
SUPPLIES & SUNDRY:	289.27
RENTALS:	
Aucumo Field Equipment, 33mdays @ \$15 \$ 495.00	
Adder 4wd Jimmy, 5days @ \$88.56 442.80	
Archean Vehicle 6days @ \$97.72 586.32	
PEW 4wd Truck, 4days @ \$113.50 454.00	<u>1,978.12</u>
TOTAL GENERAL COST:	\$ <u>3,643.51</u>

# **REPORT & FIELD PREPARATION COST**

DRAFTING:	\$ 1,640.00
RESEARCH & PROJECT PREPARATION:	487.50
REPORT WRITING:	2,275.00
TOTAL REPORT & FIELD PREPARATION COST:	\$ <u>4,402.50</u>

# STAKING COST

SALARIES & WAGES: 5pers.,	12mdays @ \$266.67	\$ 3,200.00
RECORDING FEES:		630.00
GENERAL COST APPORTIONED:	(12/33 X \$3,643.51)	<u>1,324.91</u>
TOTAL STAKING COST:		\$ <u>5,154.91</u>

#### PROSPECTING & GEOCHEMICAL SURVEY COST

SALARIES & WAGES: 5pers., 13mdays @ \$259.62	\$ 3,375.00
ASSAYS & ANALYSES - Chemex Labs:	
2 Rock for Au,Cu,32-el. ICP @ \$29.43 \$ 58.85	
2 Rock for Cu, Wo3 @ \$21.35 42.70	
45 Silt for 32-el. ICP @ \$9.36 <u>421.25</u>	522.80
GENERAL COST APPORTIONED: (13/33 X \$3,643.51)	\$ 1,435.32
REPORT & FIELD PREPARATION (13/21 X \$4,402.50)	<u>2,725.36</u>
TOTAL PROSPECTING & GEOCHEMICAL SURVEY COST:	\$ <u>8,058.48</u>

### GEOLOGICAL MAPPING COST

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SALARIES & WAGES: 2pers., 8mdays @ \$250 \$	2,000.00
GENERAL COST APPORTIONED: (8/33 X \$3,643.51)	883.28
REPORT & FIELD PREPARATION COST: (8/21 X \$4,402.50)	<u>1,677.14</u>
TOTAL GEOLOGICAL MAPPING COST: \$	4,560.42

APPENDIX

GEOCHEMICAL RESULTS CERTIFICATES



# **Chemex Labs Ltd.**

Analytical Chemists \* Geochemists \* Registered Assayers 212 Brooksbank Ave., North Vancouver British Columbia, Canada V7J 2C1 PHONE: 604-984-0221 To: ARCHEAN ENGINEERING LIMITED

3605 CREERY AVE. WEST VANCOUVER, B.C. V7V 2M3

Page Number 1 Total Pages 1 Certificate Date29-MAR-92 Invoice No. I-9212660 P.O. Number : Account :

Project : CVS Comments: ATTN: ART TROUP CC: SPURLIN EDWARDS

				CERTIFICATE OF ANALYSIS							
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# **Chemex Labs Ltd.**

Analytical Chemists \* Geochemists \* Registered Assayers 212 Brooksbank Ave., North Vancouver British Columbia, Canada V7J 2C1 PHONE: 604-984-0221

To: ARCHEAN ENGINEERING LIMITED

3605 CREERY AVE. WEST VANCOUVER, B.C. V7V 2M3

Project : CVS Comments: :ATTN:A.TROUP

Page Number 1-A Total Pages 1 Certificate Date26-AUG-91 Invoice No. I-9120058 P.O. Number : Account :

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# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers 212 Brooksbank Ave., North Vancouver British Columbia, Canada V7J 2C1 PHONE: 604-984-0221 To: ARCHEAN ENGINEERING LIMITED

3605 CREERY AVE. WEST VANCOUVER, B.C. V7V 2M3

Project : CVS Comments: :ATTN:A.TROUP Page Number 1-B Total Pages 1 Certificate Date26-AUG-91 Invoice No. I-9120058 P.O. Number : Account :

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# Chemex Labs Ltd. Analytical Chemists \* Geochemists \* Registered Assayers

212 Brocksbank Ave., North Vancouver British Columbia, Canada V7J 2C1 PHONE: 604-984-0221

ARCHEAN ENGINEERING LIMITED T′

3605 CREERY AVE. NORTH VANCOUVER, BC V7V 2M3

Invoice No. :19114414 P.O. Number

COPPER VALLEY SYND. Project : COPPER VALLEY Comments: ATTN: A. TROUP

										CERTIFICATE OF ANALYSIS A9114414								
SAMPLE	PREP CODE	Na %	Ni ppm	P	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	D D D	V ppm	W ppm	Zn ppm				
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28-6 28-7	201 238 201 238	0.02 0.03	9 10	1230 1190	4 2	< 5 < 5	4 5	100 148	0.10 0,14	< 10 < 10	< 10 < 10	68 73	< 10 < 10	50 56				
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# **Chemex Labs Ltd.**

Analytical Chemists \* Geochemists \* Registered Assayers 212 Brooksbank Ave., North Vancouver British Columbia, Canada V7J 2C1 PHONE: 604-984-0221 TO ARCHEAN ENGINEERING LIMITED

3605 CREERY AVE. NORTH VANCOUVER, BC V7V 2M3

Project : COPPER VALLEY SYND, Comments: ATTN: A. TROUP Page Numb<sup>r</sup> '-A Total Pages , Certificate Date: 09-MAY-91 Invoice No. : 19114414 P.O. Number :

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SAMPLE DESCRIPTION	PRE		Ag	Al %	As ppm	Ba ppm	Be PPm	Bi PPm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe १	Ga ppm	Eg	K §	La ppm	Mg %	Mn ppa	Mo ppm
CS-1 CS-2 CS-3 CS-4 CS-5	201 201 201 201 201 201	238 238 238	< 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2	0.86 3.42 2.64 0.95 0.69	< 5 < 5 < 5 < 5 < 5 < 5	300 300 90	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 2 2 4 < 2 2 2	1.37 1.72 1.81	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	3 9 11 4 3	10 29 22 11 11	60 412 637 105 43	1.34 3.54 3.21 1.17 1.52	< 10 10 < 10 < 10 < 10 < 10	< 1 < 1 < 1 < 1 < 1 < 1	0.06 0.21 0.15 0.08 0.04	10 10 10 10	0.17 0.50 0.53 0.25 0.15	75 775 3260 125 125	5 1 1 < 1 < 1 < 1
CS-6 CS-7	201 201	238 238	< 0.2 < 0.2	1.90 2.40	< 5 5	400 410	< 0.5 < 0.5	2 2	1.20 1.56	< 0.5 < 0.5	9 9	23 21	258 300	2.95 2.02	10 10	< 1 < 1	0.07 0.07	20 20	0.38 0.63	1110 240	< 1
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CERTIFICATION:



# **Chemex Labs Ltd.**

Analytical Chemists \* Geochemists \* Registered Assayers 212 Brooksbank Ave., North Vancouver British Columbia, Canada V7J 2C1 PHONE: 604-984-0221

**RCHEAN ENGINEERING LIMITED** To.

3605 CREERY AVE. NORTH VANCOUVER, BC V7V 2M3

Page Numbe -A Total Pages ,1 Certificate Date: 22-MAY-91 Invoice No. : 19114909 P.O. Number :

Project : COPPER VALLEY Comments: ATTN: ART TROUP

										CE	CATE	OF A	SIS	A9114909						
SAMPLE DESCRIPTION	PREP CODE	Ag ppm	Al %	As ppm	Ba Ppm	Be	Bi Ppm	Ca ¥	Cd	Co ppm	Cr ppm	Cu ppn	Fe %	Ga ppm	ppa Hg	K ¥	La ppm	Mg t	Mn ppm	Mo Mo
CS-08 CS-09 CS-10 CS-11 CS-12	203 205 203 205 201 298 201 298 203 205	< 0.2 0.2 < 0.2	1.30 1.67 0.95 3.53 3.16	< 5 5 < 5 < 5 10	170 160 90 260 260	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	2 < 2 < 2 < 2 < 2 < 2 < 2	0.82 1.24 0.26 1.32 2.93	0.5 0.5 0.5 0.5 < 0.5	4 5 2 7	244 77 6 25 41	125 370 7 199 793	1.68 2.02 1.09 1.14 3.12	20 20 10 < 10 < 10	< 1 2 < 1 < 1 3	0.06 0.06 0.03 0.14 0.09	10 30 < 10 < 10 20	0.31 0.27 0.11 0.25 0.33	185 760 150 120 915	2 1 < 1 3
28-13 28-14 28-15 28-16 28-17	201 298 203 205 201 298 201 298 201 298	5 < 0.2 6 < 0.2 6 < 0.2	3.19 1.67 2.62 2.74 1.68	< 5 < 5 < 5 < 5 5	210 130 120 160 270	1.0 0.5 1.0 < 0.5 0.5	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	0.95 1.99 0.54 1.51 0.89	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	7 2 7 9 6	32 25 18 18 18	229 391 87 174 213	3.61 1.10 2.68 2.95 2.14	20 < 10 20 10 10	< 1 < 1 < 1 < 1 < 1 < 1	0.08 0.03 0.06 0.09 0.04	10 20 10 10 10	0,45 0,19 0.30 0.86 0.34	210 30 680 340 335	< 1 4 1 < 1 2
8-18 25-19 25-20 25-21 25-22	203 205 201 298 217 298 201 298 201 298	0.2 0.2 0.2 0.2	4.58 1.52 0.43 0.60 0.93	< 5 < 5 < 5 5 < 5	370 380 430 130 180	< 0.5 < 0.5 < 0.5 1.0 0.5	< 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1.16 0.71 2.76 0.53 0.88	< 0,5 < 0,5 < 0,5 < 0,5 < 0,5 < 0,5	12 5 3 4 5	51 15 41 17 15	263 367 549 72 98	6.78 1.94 0.81 3.24 2.54	10 10 < 10 10 10	< 1 < 1 < 1 < 1 < 1 < 1	0.08 0.05 0.05 0.03 0.03	30 20 10 10 10	0.31 0.23 0.18 0.14 0.22	450 340 305 215 660	3 2 4 1 4
28-23 28-24 28-25 28-26 28-27	217 29 217 29 203 20 203 20 203 20 201 29	8 < 0.2 5 < 0.2 5 < 0.2	0.24 1.04 1.72 0.80 3.01	<.5 10 < 5 < 5 < 5 < 5	190 380 420 200 370	< 0.5 1.0 < 0.5 < 0.5 0.5	<pre>&lt; 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</pre>	3.52 1.91 0.98 0.49 1.13	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	1 6 4 3 4	44 28 50 102 20	29 114 208 68 1035	0.47 4.50 1.75 1.33 2.69	< 10 < 10 10 < 10 10	< 1 < 1 < 1 < 1 < 1	0.03 0.03 0.07 0.04 0.08	< 10 10 10 40	0.11 0.24 0.25 0.14 0.24	85 2430 800 860 140	4 3 2 2 < 1
C8-29 C8-30 C8-31 C8-32 C8-33	203 20 201 29 201 29 217 29 203 20	8 0.2 8 0.2 8 < 0.2	2.24 2.85 2.90 1.44 3.22	< 5 < 5 < 5 < 5 < 5 < 5	150 200 140 150 270	< 0.5 < 0.5 0.5 0.5 < 0.5	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	0.82 0.37 0.38 2.32 1.41	< 0,5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	6 3 4 2 10	139 14 15 31 84	174 274 84 437 281	2.15 1.68 1.52 0.99 3.53	10 10 10 < 10 < 10 < 10	< 1 < 1 < 1 < 1 < 1 < 1	0.11 0.03 0.04 0.06 0.08	20 20 10 40 20	0.31 0.22 0.24 0.21 0.37	595 55 75 215 2070	1 < 1 2 3
C8-34 C8-35 C8-36 C8-37 C8-38	217 29 201 29 203 20 201 29 201 29 201 29	8 < 0.2 5 < 0.2 8 < 0.2	1.67 2.28 1.57 2.42 1.89	< 5 < 5 < 5 < 5 < 5 < 5	150 570 420 390 260	< 0.5 < 0.5 < 0.5	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	1.47 1.85 2.57 1.03 0.79	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	6 6 4 7 5	72 17 47 22 22	198 440 524 69 496	2.89 2.55 1.77 3.53 1.39	< 10 < 10 < 10 < 10 < 10 < 10	1 < 1 < 1 < 1 < 1 < 1	0.04 0.09 0.06 0.10 0.09	10 30 20 10 10	0.31 0.37 0.32 0.44 0.24	345 1490 720 1220 330	2 2 2 4 1
C8-39 C8-40 C8-41 C8-42 C8-43	201 29 203 20 203 20 203 20 203 20 203 20	5 < 0.2 5 < 0.2 5 < 0.2	1.60 5.23 2.75 1.44 2.80	< 5 < 5 5 < 5 < 5 < 5	300 550 250 1350 160	< 0.5 0.5 < 0.5	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	0.89 1.60 2.27 1.85 2.09	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 0.5	5 7 4 20 5	15 36 26 19 42	452 951 786 285 416	2.17 3.07 1.92 5.33 2.08	10 10 10 < 10 10	< 1 < 1 1 1 < 1	0.06 0.15 0.13 0.09 0.09	20 50 50 20 30	0,21 0,50 0,37 0,28 0,35	560 185 290 >10000 545	2 2 1 31 1
CS-44 CS-45 CS-46	203 20 217 29 217 29	8 < 0.2	1.51 2.65 1.49	< 5 < 5 < 5	260 200 170	< 0.5	< 2 < 2 < 2	1.28 1.19 2.85	< 0.5 < 0.5 < 0.5	7 6 4	102 47 39	120 343 881	5.83 2.55 1.47	< 10 10 < 10	< 1 < 1 < 1	0.04 0.07 0.02	10 20 50	0.38 0.33 0.18	425 870 155	5 1 < 1
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SAMPLE DESCRIPTION	PREP CODE	Na %	Ni ppm	pba bba	Pb pp≣	Sb ppm	Sc ppm	Sr ppm	Ti t	Tl ppm	ppm.	V PPm	M M	Zn ppm		
CS-08 CS-09 CS-10 CS-11 CS-12	203 205 203 205 201 298 201 298 203 205	0.04	7 12 3 9 20	480 640 340 1040 700	2 4 < 2 < 2 10	5 10 < 5 5 10	2 3 1 4 7	69 24 116	0.09 0.07 0.08 0.04 0.07	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	42 68 29 15 85	< 10 < 10 < 10 < 10 < 10 < 10	24 26 50 244 20		
CS-13 CS-14 CS-15 CS-16 CS-17	201 298 203 205 201 298 201 298 201 298 201 298	0.02 0.02 0.02	15 11 17, 10 8	330 690 610 990 750	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	5 < 5 5 < 5 < 5 < 5	7 3 2 5 4	120 42 148	0.16 0.03 0.15 0.15 0.08	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	76 118 82 87 52	< 10 < 10 < 10 < 10 < 10 < 10	28 44 70 36 28		
CS-18 CS-19 CS-20 CS-21 CS-22	203 205 201 298 217 298 201 298 201 298 201 298	0.01 0.02 0.01	15 7 14 5 5	330 450 700 690 840	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	5 < 5 < 5 < 5 < 5 < 5	10 4 1 2	66 215 40	0.12 0.06 0.02 0.05 0.06	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	129 45 30 113 74	< 10 < 10 < 10 < 10 < 10 < 10	32 26 28 28 28 26		
C8-23 C9-24 C9-25 C8-26 C8-27	217 298 217 298 203 205 203 205 201 298	0.02	4 7 8 5 13	1190 1370 450 340 310	< 2 < 2 < 2 < 2 < 2 < 2 < 2 < 2	< 5 < 5 < 5 < 5 < 5 < 5	< 1 2 3 1 8	124	0.01 0.03 0.05 0.03 0.09	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	81 58 28 27 41	< 10 < 10 < 10 < 10 < 10 < 10	52 38 40 24 40	· · · · · · · · · · · · · · · · · · ·	
CS-29 CS-30 CS-31 CS-32 CS-33	203 205 201 298 201 298 217 298 203 205	0.02 0.05 0.02	13 10 10 8 16	540 150 130 790 850	< 2 6 4 2 < 2	< 5 < 5 < 5 < 5 < 5 < 5	4 4 2 7	62 29 35 131 75	0.11 0.10 0.13 0.02 0.09	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	55 39 31 41 79	< 10 < 10 < 10 < 10 < 10 < 10	52 32 26 128 60		
C8-34 C8-35 C8-36 C8-37 C8-38	217 298 201 298 203 205 201 298 201 298	0.02 0.02 0.04	10 12 10 10 10	930 930 980 500 640	< 2 2 2 < 2 < 2 < 2	< 5 < 5 < 5 < 5 < 5 < 5	3 5 3 4 3	67 151 161 83 56	0.06 0.05 0.04 0.11 0.08	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	83 54 45 39 41	< 10 < 10 < 10 < 10 < 10 < 10	106 56 50 64 44		
CS-39 CS-40 CS-41 CS-42 CS-42 CS-43	201 294 203 205 203 205 203 205 203 205	5 0.02 5 0.02 5 0.02	10 16 12 10 12	680 600 950 1620 820	< 2 < 2 < 2 < 2 < 2 < 2 < 2	< 5 < 5 < 5 < 5 < 5 < 5	3 13 6 3 5	57 104 121 185 115	0.07 0.07 0.04 0.03 0.08	< 10 < 10 < 10 < 10 < 10 < 10	< 10 < 10 < 10 < 10 < 10 < 10	66 48 36 59 46	< 10 < 10 < 10 < 10 < 10 < 10	48 82 92 132 64		<u> </u>
C8-44 C8-45 C8-46	203 203 217 294 217 294	8 0.02	8 15 12	500 610 1050	< 2 < 2 < 2	< 5 < 5 < 5	3 6 3	152 81 148	0.14 0.07 0.03	< 10 < 10 < 10	< 10 < 10 < 10	203 57 72	< 10 < 10 < 10	50 54 148		
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