

W. G. STEVENSON & ASSOCIATES LIMITED

CONSULTING GEOLOGISTS

209 STOCK EXCHANGE BUILDING
475 HOWE STREET
VANCOUVER 1, B.C.

841579

August 24, 1972

Mr. L.F. Burton, President
Harrison Copper Mines Ltd. (N.P.L.)
107 West Broadway
Vancouver 10, B.C.

Re: Dave Cleveland and Logan mineral claims located near Headwaters
at Norrish Creek New Westminster Mining Division

Dear Mr. Burton:

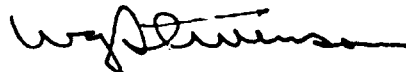
On August 19, 1972 in response to your request, I visited the subject property and reviewed the exploration that has been accomplished subsequent to the time I submitted my Geological Report of July 22, 1971 having to do with this property.

I have studied a letter dated July 7, 1971 by Mr. Richard J. Rongey who has reported on a Resistivity survey he conducted over a part of the property. The geophysical survey was conducted over 2 lines separated by 1000 feet, each only 600 feet long. There is no description of the type of equipment used in the Geophysical survey and it is my opinion that the program contributed little that could be used to appraise the mineralization or to position a diamond drill to test mineralization.

I have logged the core from diamond drill hole number 3 that was put down to a depth of 410 feet. This hole was positioned on one of the Rongey geophysical lines, 700 feet northeast of camp. The core from the diamond drill hole revealed a sequence of metamorphosed volcanic or metasediments, little altered, with only minor sulfide content.

Based on this review of the work that has been accomplished since my examination of July 1971, it is my judgment that neither the geophysical survey nor the diamond drill hole has appreciably altered the merits of the property.

Yours very truly,
W.G. STEVENSON & ASSOCIATES LTD.
Consulting Geologists



W.G. Stevenson P. Eng.

GEOLOGICAL REPORT
on the Dave, Cleveland and Logan Mineral Claims
located near the
headwaters of
Norrish Creek

New Westminster Mining Division

49° 17' North Latitude

122° 3' West Longitude

for

HARRISON COPPER MINES LTD. (N.P.L.)

W. G. Stevenson & Associates Ltd.

July 22, 1971.

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A P P E N D I X

A	Location Map	Scale 1" = 1.3 miles.
B	Geological Map	Scale 1" = 100 feet.
C	Data pertaining to mineral claims	
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F	Certificate of W.G.Stevenson, P.Eng.	

INTRODUCTION

On July 1, 2, 7 and 8 accompanied by Messrs. Sandy York and Ian Stark I made an examination of the property held by Harrison Copper Mines Ltd. 50 miles east of Vancouver. At the time of my examination a diamond drilling program was underway.

This report is designed to review the results of the past work and to propose a program of exploration to appraise the mineral potential of this property.

PROPERTY AND TITLE

Harrison Copper Mines Ltd. hold a block of mineral claims, Dave 1 - 40 Record Numbers 24877 - 24915, which were recorded November 5, 1970.

Some of these claims were staked in contravention with a block of 10 mineral claims, Cleveland 1, 2 and Logan 1 - 8, Record Numbers 23516, 23517 and 24818 - 24825, staked previously by Mr. Cleveland S. Lowry. According to information provided to me by Mr. H. Barry Hemsworth, Solicitor, Harrison Copper Mines Ltd., have acquired an option to purchase these 10 mineral claims subject to terms outlined in an agreement dated June 16, 1971.

I have attached a tabulation marked Appendix C of the data pertaining to these mineral claims as shown in the records of the Gold Commissioner's office here in Vancouver.

While on the property I examined one of the posts used to stake these mineral claims. This was the initial post of the Dave 1, 2, 11 and 12. This post was squared at the top, metal tags properly inscribed were affixed and a blazed line marked the direction to the next set of posts.

Based on my observations and on my review of the data in the B.C. Mining Recorder's office in Vancouver I believe these claims were properly staked and are valid.

LOCATION AND ACCESS

This property is located in the Douglas Provincial Forest near the headwaters of Norrish Creek 11 miles northeast of Dewdney, a station on the Canadian Pacific Railroad. More precisely it is positioned 49° 17' North Latitude 122° 3' West Longitude.

Access can be gained to the property from a Canadian Forest Products logging road which extends northerly along Norrish Creek to the claim block.

The Seneca property of Zenith Mining Corporation Ltd. which is undergoing active exploration by Cominco is positioned approximately 5 miles easterly.

HISTORY

Over the past 100 years prospectors have

been active in Southern British Columbia around Pitt and Harrison Lakes. Mineralization was recognized and mineral claims staked over the Seneca Prospect on Chehalis Creek sometime prior to 1944. In 1961 ore which assayed .12 Oz. Au., 4.45 oz Ag., 1.55% Cu., and 8.15% Zn., was shipped from an open cut. In 1944 and 1957 the Geological Survey of Canada published maps of this area drawn to a scale of 1" = 4 miles.

Copper was first discovered and claims located in Norrish Creek about 1969. In 1970 Harrison Copper Mines Ltd. staked adjoining mineral claims and acquired an option on the mineral claims staked in 1969.

During 1970 a B.C. Land Surveyor surveyed part of the Norrish Creek claim block and an airborne magnetic survey was conducted over these claims. During 1971 a ground magnetic and electromagnetic survey was conducted and a program of diamond drilling was initiated. To July 7, 1971, two drill holes had been completed.

GEOLOGY

As shown on Map 1151A drawn to a scale of 1" = 4 miles and published by the Geological Survey of Canada, the rock types over Norrish Creek and within the claim block are intrusive granodiorite, quartz diorite and diorite of Cretaceous age. On this map expanses of the Harrison Lake formation which is described as metamor-

phosed volcanic porphyry with minor breccia and with arkose members of Jurassic age are shown 5 miles north-erly and 6 miles southerly from the property.

Medium-grained diorite variably altered with chlorite and silica is exposed within the claim block. However peripheral to this intrusive body toward the west and south, fine grained dark blue to light grey acidic volcanic flows, porphyry, and tuff are exposed. These volcanics which I have classified as part of the Harrison Lake formation are not shown on Map 1151A.

Based on a megascopic study of several hand specimens and a microscopic study of 5 thin sections selected from rock types exposed on the surface within the claim block, I have determined that these rocks are a complex assemblage of volcanic flows, tuffs and breccias of rhyolite, andesite, and feldspar porphyry composition and texture. This formation is probably a roof pendant of the Harrison Lake formation overlying the younger Coast Range Batholith which has intruded the volcanics.

The areal extent of this roof pendant has not been determined. It can be traced continuously for over 500 feet north south and intermittently for 1500 feet east west, It appears to be delineated toward the north where diorite is exposed and where diorite is inferred from a ground magnetometer survey.

Within these volcanic rocks a parallel system of layering is exposed which strikes northwesterly and which dips gently toward the southwest. Steeply dipping shears and fault which trend east-westerly traverse these volcanic rocks and intersect the layering.

I have attached a map marked Appendix B which will show the geology and the location where rock specimens were collected, and samples collected for assay.

MINERALIZATION

Sulfide mineralization, predominantly pyrohotite and pyrite with variable amounts of chalcopyrite and associated black sooty copper oxides and sulfides is exposed on the surface within the volcanic rocks. Fifty-five feet southwest of the collar of diamond drill hole Number 2 a channel sample across 20 feet assayed 0.16% copper. Approximately 300 feet southeasterly two samples collected from a shallow cut assayed 2.92% and 3.92% copper. Eleven hundred feet easterly a sample from a mineralized outcrop assayed 0.1% copper.

Diamond drill hole Number 2 was drilled southwesterly at -35° to a depth of 329 feet. Mineralization was penetrated from 98 feet to $113\frac{1}{2}$. One assay over 2 feet showed 1.24% copper. The average assay calculated over $15\frac{1}{2}$ feet width is 0.53% copper. Core recovery over this interval was less than 40%, and sludge was not collected. The sulfides were disseminated

through the rock and associated with quartz stringers and blebs.

Diamond drill Hole Number 1 was drilled northwesterly at -45° to a depth of 175.5 feet. This hole penetrated a variety of volcanic rock types which contained negligible to sparse copper mineralization.

The Seneca property of Zenith Mining Corporation located 5 miles easterly has been classified as Kuroko type. These deposits in general contain relatively high grade gold, silver, copper, zinc and lead, with considerable pyrite. They occur strata bound in a relatively fresh unmetamorphosed volcanic environment. On the Seneca property a volcanic tuff horizon ten feet thick, part of the Harrison Lake formation, has been replaced by massive sulfides.

GEOCHEMISTRY

During July a reconnaissance geochemical program was initiated on the Harrison property. Nine soil samples and eight silt samples were collected. The sample locations are shown on the map marked Appendix B and the assay results are shown on Appendix D.

Based on an analysis of the geochemical data one of the soil samples contained anomalous amounts of copper and zinc, one other soil sample contained an anomalous amount of copper, none of the silt samples showed either copper, zinc, lead or silver in anomalous amounts.

CONCLUSIONS

1. On the Harrison Copper Mines property copper mineralization is exposed on the surface within a sequence of volcanic tuff and porphyry which dips gently toward the south and which is associated with steeply dipping westerly trending faults.
2. A drill hole has penetrated copper mineralization at a depth of 130 feet below the surface.
3. An area of mineralization has been recognized 1000 feet easterly from the main mineralization along the projection of the zone.
4. Bedrock adjacent to the highest grade copper mineralization exposed on the surface is masked by overburden.
5. The property has not been geologically mapped or prospected beyond the limits of known mineralization.
6. The lithologic or structural controls that have localized this mineralization have not been determined.
7. Based on my observations I would classify this mineralization of the Kuroko type.

RECOMMENDATIONS

I recommend a program of exploration on the Dave, Cleveland and Logan Mineral Claims. This should include the compilation of a base map to a scale of 1" = 500' from existing air photographs, the establishment of a base line with picket lines extended out at 400 foot intervals across the property. Geological mapping to include detailed lithographic studies, prospecting, a program of geochemical sampling and geophysical surveying with magnetometer and electromagnetometer should be initiated. In areas of interest an induced polarization survey should be conducted followed by trenching and diamond drilling if warranted.

COST ESTIMATE FOR PROPOSED EXPLORATION PROGRAM

PHASE NUMBER 1

1.	Compilation of base map	\$ 1,000.00
2.	Survey base line and establish picket lines	2,000.00
3.	Geological mapping	3,000.00
4.	Geophysical survey	5,000.00
5.	Supervision	3,000.00
6.	Contingencies @ 20%	<u>2,800.00</u>
	TOTAL	16,800.00

PHASE NUMBER 2

Based on results of exploration during Phase Number 1 additional exploration may be required.

Provision for dozer trenching, diamond drilling and supervision	<u>50,000.00</u>
TOTAL	<u><u>\$ 66,800.00</u></u>

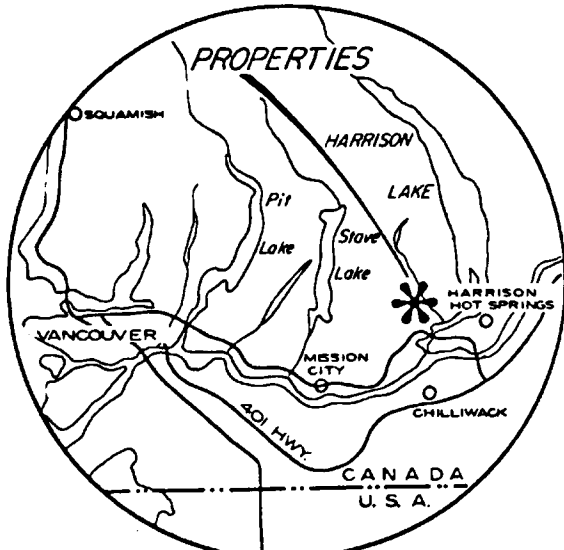
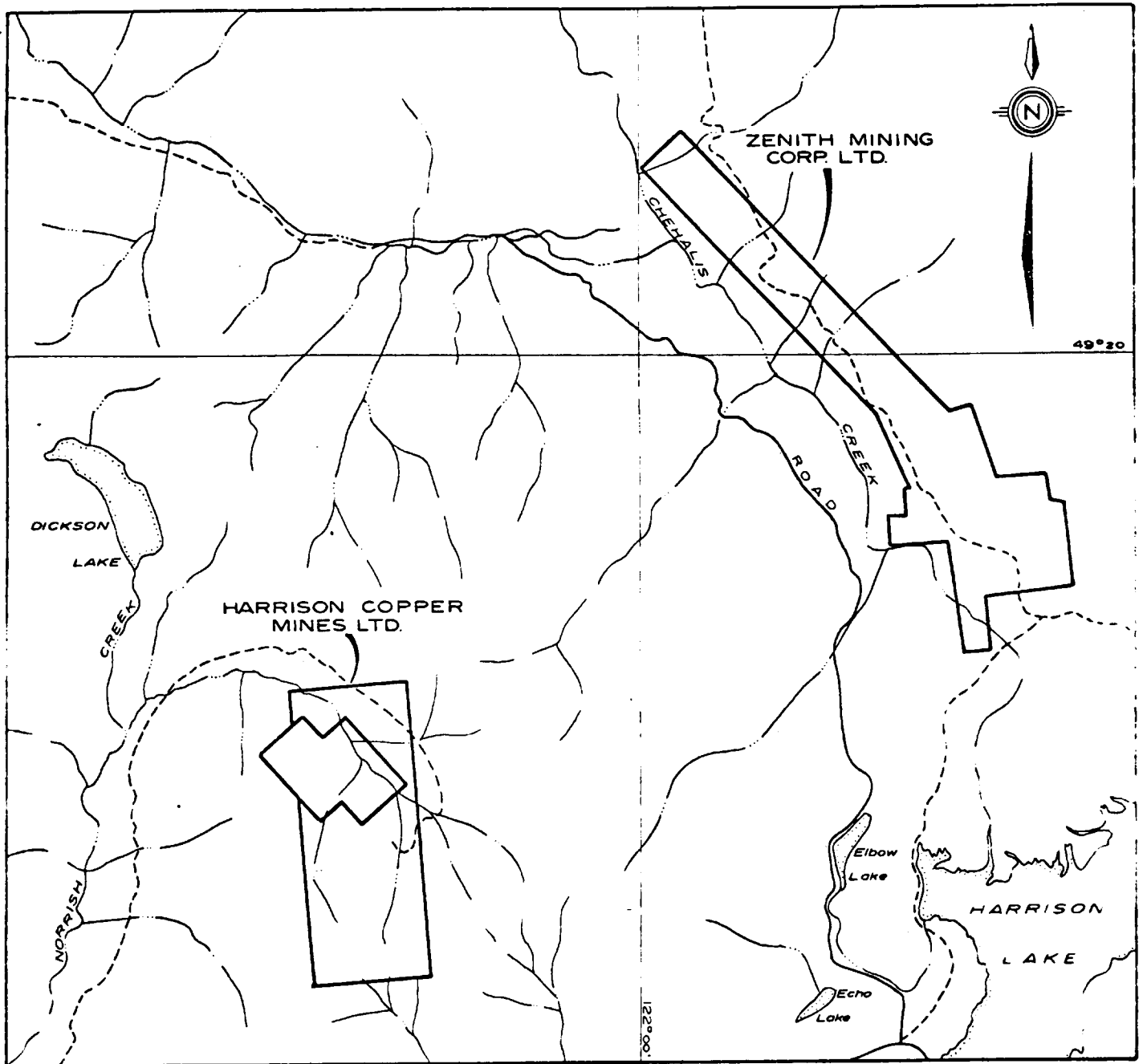
Respectfully submitted

W.G.STEVENSON & ASSOCIATES LIMITED



W.G.Stevenson, P.Eng.

Vancouver, British Columbia.
July 22, 1971.



APPENDIX A

HARRISON COPPER MINES LTD. (N.P.L.)
NEW WESTMINSTER M.D., B.C.

LOCATION MAP

SCALE IN MILES

0 1/2 1 2 3

111 V-107 W.C. STE. 5100A, 2, 11111

DATA PERTAINING TO DAVE, CLEVELAND & LOGAN MINERAL CLAIMS
 New Westminster Mining Division
 HARRISON COPPER MINES, LTD. (N.P.L.)
 To accompany report dated July 22, 1971

by

W. G. Stevenson & Associates Limited.

Claim Name	Record Number	Locator	Agent for	Date located	Date Recorded
Dave #1	24877	J. Forster	Anglo Quest	29 Oct. 1970	5 Nov. 1970
2	24878	"	Holdings Ltd.	"	"
3	24879	"	"	31 Oct. 1970	"
14	24890	"	"	"	"
15	24891	"	"	1 Nov. 1970	"
30	24906	"	"	"	"
31	24907	"	"	2 Nov. 1970	"
40	24916	"	"	"	"
Cleveland #1	23516	Norm McLeod		10 May 1970	12 May 1970
2	23517	"		"	"
Logan #1	24818	"		3 Oct. 1970	19 Oct. 1970
2	24819	"		"	"
3	24820	C.S. Eowry		10 Oct. 1970	"
4	24821	"		"	"
5	24822	"		14 Oct. 1970	"
6	24823	"		"	"
7	24824	"		24 Oct. 1970	2 Nov. 1970
8	24825	"		"	"

APPENDIX C

Lab No. 580G: Geochemical Analysis for Copper, Silver and Nickel

Mesh size: - 100

Analytical Method: Atomic Absorption
Digestion Method: $\text{HClO}_4 + \text{HNO}_3$

Sample Marked:	Width	Copper ppm	Silver ppm	Nickel ppm
54351	2'	195	1.2	
54352	20'	1600	2.0	
54353	20'	285	1.2	
54354	Spec.	2000+	5.5	17
54355	20'	105	1.5	
54356	Spec.	56	1.2	
54357	5'	46	1.5	
54358	5'	48	1.5	
54359	10'	112	1.2	
54360	Spec	56	1.2	
54361	Spec	68	1.5	
54362	Spec	80	1.2	
54363	Spec	60	1.2	
54364	Spec	250	1.7	
54365	Spec	980	1.5	

CREST LABORATORIES (B.C.) LTD.,

"F.C. Burgess"

F.C. Burgess
Chief Assayer

Lab.No.586G Geochemical analysis for Moly,Copper,Zinc,Silver,Nickel & Gold

Mesh Size: - 100
Analytical Method: Atomic Absorption & Colorimetric
Digestion Method: $\text{HClO}_4 + \text{HNO}_3$

Sample Marked:	Width	Copper ppm	Silver ppm	Zinc ppm	Nickel ppm	Molybdenum ppm	Gold ppm
54366	No.2 ddh	2'	2000+	4.0		10	-.03
54367	"	2'	2000+	4.0			
54368	"	2'	190	1.5			
54369	"	$\frac{1}{2}$	2000+	2.5			
54370	"	5	106				
54371	No.1 ddh	5	14				
54372	"	5	35				
54373	"	5	16				
54374	"	$4\frac{1}{2}$	9				
54375	No.2 ddh	5	12				
55026	"	10	9				
55027	"	10	5				
55028	"	5	31				
55029	"	1	57				
55030	Spec	2000+	4.5	160	7	50	-.03
55031	Spec	320			6		
55032	Spec	79					
55033	No.2 ddh	5	80				

Yours truly,
CREST LABORATORIES (B.C.) LTD.
"F.C.Burgess"

F.C.Burgess
Chief Assayer

CREST LABORATORIES (B.C.) LTD.

1068 HOMER STREET
VANCOUVER 3, B.C.
PHONE 688-8586

CREST LABORATORIES LTD.
7911 ARGYLL ROAD
EDMONTON 82, ALBERTA
PHONE 469-2391

CERTIFICATE OF ASSAY

TO W. G. Stevenson & Associates Ltd.,
475 Howe Street,
Vancouver, B.C.

July 19, 1971

Lab No. 2870

I hereby certify THAT THE FOLLOWING ARE THE RESULTS OF ASSAYS MADE BY US UPON THE HEREIN DESCRIBED SAMPLES.

MARKED	COPPER	MARKED	PERCENT	MARKED	PERCENT	MARKED	PERCENT
54366 C	1.24						
54367 C	0.96						
54369 C	0.32						
55030 C	2.92						
54354 C	0.26						

NOTE:
Rejects Retained One Month
Pulps Retained Three Months
Unless Otherwise Arranged.

F. C. Burgess

Registered Assayer, Province of British Columbia

APPENDIX D

CREST LABORATORIES (B.C.) LTD.

1068 HOMER STREET
VANCOUVER 3, B.C.
PHONE 688-8586

CREST LABORATORIES LTD.
7911 ARGYLL ROAD
EDMONTON 82, ALBERTA
PHONE 469-2391

CERTIFICATE OF ASSAY

TO Harrison Copper Mines Ltd.
..... 626 Howe Street
..... VANCOUVER, B.C.

July 7, 1971

Lab No. 2780

I hereby certify THAT THE FOLLOWING ARE THE RESULTS OF ASSAYS MADE BY US UPON THE HEREIN DESCRIBED SAMPLES.

MARKED	COPPER	MARKED	COPPER	MARKED	PERCENT	MARKED	PERCENT
	PERCENT		PERCENT				PERCENT
50501 C	0.01	50516 C	trace				
50502 C	0.04						
50503 C	0.01						
50504 C	0.04						
50505 C	trace						
50506 C	trace						
50507 C	trace						
50508 C	trace						
50509 C	trace						
50510 C	trace						
50511 C	trace						
50512 C	0.01						
50513 C	trace						
50514 C	trace						
50515 C	trace						

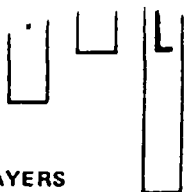
NOTE:

Rejects Retained One Month
Pulps Retained Three Months
Unless Otherwise Arranged.

F. P. Burgess

Registered Assayer; Province of British Columbia

APPENDIX D



Laboratories

325 HOWE STREET - VANCOUVER 1, B.C.

Division of



ASSAYERS
CHEMISTS
GEOCHEMISTS

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM **W.G. STEVENSON & ASSOCIATES**

REPORT NO.

V 10399

SAMPLE(S) OF **ROCK AND DRILLCORE (GEOCHEM)**

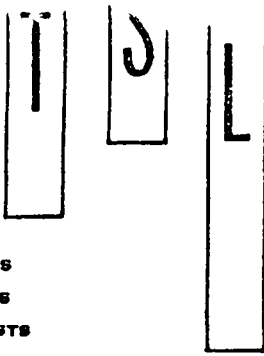
Sample No.	Width	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Mo ppm
H2-B8-1	7.0'	---	1.3	25	64	152	---	---	---
H2-B8-2	7.5'	---	1.4	13	54	175	---	---	---
H2-B9-1	5.0'	---	1.7	26	48	174	---	---	---
H2-B9-2	4.0'	---	1.8	374	56	192	---	---	---
H2-B10-1	7.0'	---	1.0	920	53	156	---	---	---
H2-B11-1	4.0'	---	1.4	23	47	157	---	---	---
H2-B11-2	3.5'	---	0.9	61	41	100	---	---	---
H2-B12-1	3.0'	---	1.7	35	55	177	---	---	---
H2-B13-1	3.5'	---	1.2	99	54	217	---	---	---
H2-B14-1	4.0'	---	0.8	13	47	105	---	---	---
H2-B15-1	5.0'	---	0.8	87	59	123	---	---	---
H2-B16-1	3.0'	---	1.9	1460	119	284	---	---	---
H2-B17-1	5.0'	---	2.2	95	158	457	---	---	---
O/C J	Spec	---	1.3	189	69	134	---	---	---
Unmarked	Spec	80	9.6	>10,000	131	1030	17	30	.35
Assay:									
Unmarked	Spec	---	---	3.92%	---	---	---	---	---

DATE July 21, 1971.

SIGNED _____

PULP AND REJECTS DISCARDED AFTER 3 MONTHS

APPENDIX D.



Laboratories Limited

325 HOWE STREET - VANCOUVER 1, B.C.

TELEX: 04-50613
CODE NAME: TSL-LABS-VCR.

TELEPHONE 688-3504
AREA CODE 604

ASSAYERS
CHEMISTS
GEOCHEMISTS

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM W. G. STEVENSON & ASSOCIATES

REPORT NO.
18982

SAMPLE(S) OF Soil & Silt

RESULTS IN PARTS PER MILLION

	SAMPLE No		(Cu)	(Pb)	(Zn)	(Ag)	Ni	Mo	Co
1	L 1	Silt	13	21	45	1.1			
2	L 2	"	20	25	66	.9			
3	L 3	"	15	22	42	.8			
4	L 4	"	12	18	32	1.6			
5	L 5	"	39	34	76	.8			
6	L 6	"	31	35	114	1.3			
7	L 7	"	27	30	66	1.0			
8	L 8	"	26	34	81	1.5			
9	S 1	Soil	109	40	101	1.5			
0	S 2	"	7	26	56	<.5			
1	S 3	"	11	34	74	.8			
2	S 4	"	12	37	104	.8			
3	S 5	"	20	43	123	.9			
4	S 6	"	18	47	67	.9			
5	S 7	"	20	35	99	1.2			
6	S 8	"	20	60	73	.6			
7	S 9	"	152	20	357	<.5			
8									
9									
0									

DATE July 21/71

SIGNED



N.B. Samples discarded after 3 months unless otherwise requested.

REFERENCES

To accompany report
by
W.G.Stevenson, P.Eng.
dated July 22, 1971.

- Cochrane, D.R. Airborne Survey Report
Geo-X-Surveys Ltd.
November 6, 1970.
- Cochrane, D.R. Notes on the Geochemical Geophysical
Orientation Survey
June 22, 1971.
- Cochrane, D.R. Magnetic Map, June 12,13, 1971.
- Cochrane, D.R. EM - 16 Map, June 15, 1971.
- Ronger, Richard J. Geophysical Investigations,
July 7, 1971.

C E R T I F I C A T E

I, William G. Stevenson, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geological Engineer with offices at Suite 209 Stock Exchange Building, 475 Howe Street, Vancouver 1, B.C.
2. THAT I am a graduate of the University of Utah 1946, with a Bachelor of Science Degree.
3. THAT I am a registered Professional Engineer in the Association in British Columbia.
4. THAT I have practised my profession for 23 years.
5. THAT I have no direct, indirect or contingent interest in the DAVE, CLEVELAND OR LOGAN MINERAL CLAIMS, or in the securities of Harrison Copper Mines, Ltd., nor do I intend to receive any such interest.
6. THAT this report dated July 22, 1971, is based on examinations I conducted during July, 1971, a study of published and unpublished maps and reports, and on discussions with colleagues.

DATED at Vancouver, British Columbia, this 22nd. day of July, 1971.

W.G. STEVENSON & ASSOCIATES LIMITED
Consulting Geologists



W.G. Stevenson, P.Eng.