

PROGRESS REPORT
ON THE
SILVER QUEEN MINE

OWEN LAKE PROJECT

(Summary Report - Phase III)

OMENICA MINING DIVISION, BRITISH COLUMBIA

- For -

Houston Metals Corporation
910 - 800 West Pender Street
Vancouver, B.C. V6C 2V6

by W.W. Cummings, P.Eng.

GEOLOGICAL BRANCH
ASSESSMENT REPORT, 1987

FILMED

16,715

PART 3 OF 3

TABLE OF CONTENTS

	<u>Page</u>
Introduction	2
Summary	2
Property Description	3
Access	3
History	3
Geology and Mineralization	4
Ore Reserves	5
Program Objectives	8
Program Report	9
(1) Surface Drilling - Camp Vein	9
(2) 2600 South Crosscut	10
(3) Underground Diamond Drilling	10
(4) 2590 Decline	11
(5) Metallurgical Studies	11
Conclusions and Recommendations	12
Costs	13

ILLUSTRATIONS

FIGURE NO.

1	Location Map		Page 1
2	Drilling Plan & Section - Camp Vein		Pocket
3	Longitudinal Section	1"=100'	Pocket
4	2590 Decline - Plan (sketch)	1"=200'	Pocket
5	2590 Decline - Section	1"=200'	Pocket
6	Phase III Drilling - 2600 South Crosscut		Pocket

APPENDICES

Appendix I	Certificate	14
Appendix II	References	15

INTRODUCTION

The Silver Queen mine at Owen Lake, south of Houston B.C. was staked in 1912 and explored at intervals, mainly in the late 20's and early 40's. Nadina Explorations Ltd. acquired the Crown-granted claims under an option with Canadian Exploration Ltd. and began exploration with an agreement in 1971 with Bralorne Can-Fer Resources and Pacific Petroleum. As the Bradina Joint Venture, the property was put into production with a 500 ton concentrator in 1972. Due to problems in both mine and mill, the operation was not profitable and closed in September 1973.

Programs carried out by New Nadina since 1973 began to show precious metal content of the ore increasing at depth and to the south, and that there was considerable ore to be explored in other veins on the property. During these later years, Frontier Explorations and its successor, Bulkley Silver, explored the Cole Lake series of veins. In 1986, gallium and germanium were found in samples from the veins and a sampling program confirmed the first results. This led to a major exploration program which was funded by the First Exploration Fund 1986, starting in November 1986. The program was initiated after an agreement between Houston Metals Corporation (successor to Bulkley Silver) and New Nadina Exploration combined the two properties into one for the first time.

Following on the results of Phase I, Phase II of the program was funded by First Exploration Fund 1987 and carried out in May, June and July 1987. This program was planned to explore the NG3 Vein and southern area of the mine by diamond drilling and development and to continue with minor exploration of the Switchback Vein and Portal Vein area.

Phase III of the Owen Lake project was funded by the First Exploration Fund 1987, with the objectives recommended at the end of Phase II. Priorities changed as the importance of the new vein in the Camp area emerged, and as the longer term planning of the mine development and funding evolved. Phase III was carried out in August, September and October 1987.

SUMMARY

The program produced good results, particularly in the Camp Vein drilling project. Extensive drilling is required yet, but the Camp No. 1 Vein averages 71 oz Ag/ton from surface to 300 feet below surface, over a five-foot width.

After extending the 2600 South Crosscut 300 feet, the NG3 Vein was finally found at about 150 feet from the face and the assay shows good silver, zinc and high germanium. The No. 3 extension is apparently cut off by a large fault system.

The decline location chosen was near the tailings pond at elevation 2590 feet - to go 3000 feet at -15%, intersecting the No. 3 Vein about 500 feet below the 2600 level. The decline will intersect at least three other veins.

The program was completed (financially) by October 15. Recommendations and budgets have been prepared for:

- (1) continuing the surface drilling on the Camp Vein
- (2) continuing the 2590 Decline
- (3) driving the "Bulkley" crosscut 4300 feet east on the 2600 level to intersect the Cole Lake Vein system
- (4) ongoing metallurgical environmental and marketing studies.

During the program, the following work was done:

2600 South Crosscut	-	324 feet
2590 Decline	-	195 feet plus (vert raise 52')
Underground Drilling	-	1660 feet
Surface Drilling	-	2518 feet.

The flow sheet and final report by Bacon Donaldson on metallurgy were received. Further work is also being done by Lakefield Research.

The ore reserves were re-calculated and are included in the report.

PROPERTY DESCRIPTION

The property consists of seventeen Crown-granted claims held by New Nadina Exploration under an option with Placer Development, and Claims held by location by New Nadina and Houston Metals. A list of claims is attached with expiry dates and ownership.

The property is in open rolling ranch land east of Owen Lake. Sufficient water is available from Wrinch Creek for mining, and from Owen Lake for operating a concentrator. Maximum relief from Owen Lake to the top of the Mine Hill is about 500 feet.

The outline of the Placer - New Nadine Crown-granted claim group was surveyed and tied to the survey of the mine workings, so that the location of current development and exploration is not in doubt. All of the Phase III work is on the Crown-granted claims, except for the 2600 South Crosscut and the underground diamond drilling from the Crosscut.

ACCESS

The property is 43 km from Highway 16 just west of Houston on all-weather gravel road. The road follows the Morice River for 27 km, then branches of south-easterly to Owen Lake and eventually to Francois Lake. The road is maintained for heavy logging traffic.

HISTORY

The development of the Silver Queen mine has been a slow process, starting with discovery of the main vein in Wrinch Creek canyon in 1912. Other veins were found, such as the Chisholm group of veins southwest of the Silver Queen mine and the Cole Vein system at Cole Lake east of the mine. These veins were explored near surface before 1924, and in 1928 the Owen Lake Mining and

Development Co. sank the Cole shaft and drove the Earl Adit - now the main haulage crosscut to intercept the main veins known as No. 1, No. 2 and No. 3 over 2500 feet from the portal. This level is at 2600 feet elevation, about 280 feet below the levels collared in Wrinch canyon, or about 500 feet below the outcrop of the No. 3 Vein on top of the hill.

Canadian Exploration Ltd. acquired the Crown-granted claims covering the Silver Queen and Chisholm Veins in 1941 and carried out exploration until 1947. In 1963 an option was granted to Nadina Explorations and the company or its successors have held and explored the property to this date. There were several exploration programs carried out by Nadina, Kennco and Northgate, up until the Bradina Joint Venture was formed in 1971. This group, consisting of Nadina Explorations, Bralorne Can-Fer Resources and Pacific Petroleum took the property into production in 1972 with a 500 ton per day concentrator. Due to poor production, mining and concentrator problems, the operation shut down in 1973.

Frontier Exploration Ltd. acquired the Cole Lake property in 1960 and carried out surface programs at intervals, proving up a series of veins very much like the veins north of Wrinch Creek in the Silver Queen property. This company was succeeded in 1977 by New Frontier Petroleum Ltd. and in 1980 by Bulkley Silver Resources Ltd. This latter company optioned the New Nadina property and, after reorganization as Houston Metals Corporation, began the present program in November 1986.

The B.C. Ministry of Energy, Mines and Petroleum Resources mapped the area in 1969 and the report by B.N. Church forms part of the Annual Report in 1969.

GEOLOGY AND MINERALIZATION

The property is underlain by a series of late Mesozoic to early Tertiary volcanic flows and pyroclastics, cut by a sill-like body of micro-diorite. Dykes cut the older rocks and are both pre and post-ore. The older volcanic rocks and the microdiorite sill are mainly exposed in the "Mine Hill" area north and south of Wrinch Creek and extending east to Cole Lake. Younger volcanics outcrop north and south of the mine area.

Mineralization is extensive over an area 2 1/2 miles long by 2 miles wide. Most of the explored occurrences are polymetallic veins in northwesterly fractures, sometimes combined with replacement in northerly striking shear zones. Alteration is intense in some areas, and as envelopes around veins, and some disseminated sulphide areas have been found by geophysical and geochemical surveys. Zoning is now known to occur: base metals increase toward the northwest and precious metals to the southeast (higher temperature). In addition, precious metals increase with depth.

Geology and mineralization are thoroughly covered in reports by Church (1960) and Dawson (1985). The diversity in mineralization, both laterally in veins, and from vein to vein, presents a metallurgical problem. The most important minerals are sphalerite, galena, tetrahedrite and tennantite, which account for zinc, lead, copper (and also arsenic and antimony). Chalcopyrite is occasionally found, as well as specular hematite, a hydrocarbon mineral, and a manganese-iron carbonate usually called rhodocrosite. The precious metals are

usually associated with the copper minerals tetrahedrite and tennantite, although in the south end of the mine, gold and silver may occur in pyrite.

The high erratic silver values in the Camp veins are due to the silver minerals proustite (silver arsenosulphide) and argentite (silver sulphide). Good base metal intersections in these veins do not carry high silver, unless the silver minerals are present.

Gallium and germanium occur independently in the ore, with the highest values to date being found in the red sphalerite-pyrite veins of the No. 3 extension NG3 area.

ORE RESERVES

The ore reserves have been calculated as in Ford (1982):

Proven - Exposed fully in workings or on surface, and projected 50 feet in each direction. (Only the No. 3 Vein has substantial tonnage in this category.)

Probable - or drill indicated - partially exposed or known from closely spaced drill holes, also 50 feet beyond proven ore.

Possible - inferred due to widely spaced, or few drill holes. No grade shown due to insufficient information.

(a) No. 3 Vein

The No. 3 Vein is the only one with extensive development, done mainly in the Nadina Exploration - Bradina Joint Venture era from 1967 to 1973. Diamond drilling done during this period was followed by an extensive program to evaluate the No. 3 Vein below the 2600 level in the Alinak raise area. All the available information was compiled by Campbell Resources Inc. in 1982 and a detailed ore reserve calculation was done. The tables from this report by G. Ford are attached as an appendix and the long section of the vein is Fig. 3 in the illustrations. The summary is as follows:

<u>Section</u>	<u>Tons</u>	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	
24500 - 26300	132,570	0.084	5.58	0.84	2.40	6.36	Above 2600 level
26400 - 27600	114,280	0.109	6.41	0.29	1.72	6.44	Above 2600 level
27800 - 28700	74,280	0.096	10.85	0.56	1.29	4.08	Above 2600 level
	<u>256,460</u>	0.122	8.04	0.39	0.97	7.38	Below 2600 level
Total diluted	577,590	0.108	7.51	0.49	1.49	6.53	

This total includes some tonnage in parallel veins, usually on the footwall side. Further drilling from the 2600 and 2880 levels would add substantial tonnage in the footwall zones.

(b) No. 3 Extension

This vein was followed in Phase II for 250 feet to the first diamond drill intersection. The face is still in ore and the next drill hole intersection is 200 feet south of the face. The grade and width were established by a weighted average of 22 chip samples (face or back). The width was diluted to a four-foot mining width. Possible ore was calculated to the next drill hole.

Proven - 4' wide x 250' long (diluted to mining width)
8200 tons at 0.08 oz Au/ton, 17.87 oz Ag/ton, 0.77% Cu, 0.75% Pb and 1.92% Zn.

Probable - 12,000 tons at same grade

Possible - extension to 29200 section - 20,000 tons.

Drilling in Phase III indicates that the zone may be terminated or offset by a major fault zone, and that the NG3 Vein may be the offset extension.

(c) Footwall Vein

Before the Houston Metals project, the Footwall Vein (or veins) was known mainly from drilling which was extended past the No. 3 Vein by mistake, or by finding that raises to surface did not match the vein exposed in trenching. In the Houston Metals project, sufficient work has been done to indicate major tonnage in the Footwall Vein and the need for more detailed drilling, some of which is currently being done. The reserves calculated on the Footwall Vein are shown superimposed on the No. 3 Vein longitudinal section (probable ore only).

<u>Block#</u>	<u>Tons</u>	<u>Grade Au</u>	<u>Ag</u>	<u>Cu%</u>	<u>Pb%</u>	<u>Zn%</u>	<u>Ge (ppm)</u>
1	47,500	?	6.53	?	?	6.67	? (Based on D.D.H.)
2	13,500	0.086	6.19	1.47	0.94	9.79	99 (50' Dr on 2600 lev)
3	25,875	0.037	15.62	1.68	0.57	3.32	24 (50' Dr - 2750 Elev. + D.D.H.)
4	7,000	0.05	7.48	2.06	0.72	5.39	166 (S. of Alimak Raise)
Total	86,875	0.06	9.18	1.50	0.80	6.16	50 (N. of Alimak Raise)

Total Probable 93,875 tons

Total Possible 86,225 tons

Average width 4.5 feet

(d) No. 2 Vein

This vein was known only from surface trenching and four diamond drill intersections. During Phase I, a crosscut to the vein on 2600 level showed good width and grade. This was followed by raising to the vein 150 feet of sub-drift and test-holing the walls. A large sample was taken for metallurgical testing.

	<u>Tons</u>	<u>Width</u>	<u>Grade</u>	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ge</u>
Probable ore	23,500	15 ft.		0.068	2.2	0.13	4.13	10.99	36
Possible ore	93,100	7 ft.		No grade					

(e) No. 5 Vein - Switchback Vein System

The Switchback Vein is known from a series of trenches which extend from the No. 5 - Portal Vein uphill on an easterly strike toward the No. 3 Vein. In Phase I, an 80 foot adit was driven on the No. 5 Vein at the 2600' elevation, and in Phase II an adit was driven at the 2870' elevation to reach the Switchback Vein. This was followed by surface drilling.

	<u>Tons</u>	<u>Width</u>	<u>Grade</u>	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ge</u>
Switchback - possible	37,500	3.75		0.08	2.03	0.38	1.04	10.05	44
No. 5 - probable	25,000	4.00		0.03	8.75	1.02	0.36	10.00	46

(f) Camp Vein System

In Phase III an intersection discovered in drilling to extend the No. 5 Vein was followed up and two or more veins with gold silver values have been drilled in three sections. The Camp Veins are typical rhodocrosite-sphalerite veins with the addition of proustite (ruby silver), argentite and tennantite. Current drilling is extending the veins north and south and a preliminary estimate of tonnage, is based on a 200 foot length and 5 foot width. The Camp No. 1 Vein has been drilled to 300 feet below the rock surface or about the 200 foot elevation. The Camp No. 2 Vein is not as well defined.

Based on two incomplete and one complete section:

<u>Drill-indicated tonnage</u>		<u>Grade</u>				
	<u>Tons</u>	<u>Au oz/T</u>	<u>Ag oz/T</u>	<u>Cu%</u>	<u>Pb%</u>	<u>Zn%</u>
Camp No. 1	25,000	0.03	71.05	0.23	1.01	2.98
Camp No. 2	12,500	(Grade tonnage not determined)				

(g) No. 1 Vein

Known from surface trenching and limited diamond drilling. The grade over a 600 foot length and 6.7 foot width is: 0.02 oz Au/T, 6.3 oz Ag/T, 0.66% Cu, 1.6% Lead, 5.3% Zn.

Possible ore reserve tonnage is 167,500 tons. If 50% is mineable, the tonnage will be 83,750 tons.

(h) NG3 Vein

Known only from surface drilling and one drill hole from Phase III underground. The assay from this hole is: 6 feet at 0.012 oz Au/T, 7.93

oz Ag/T, 1.08% Cu, 1.66% Pb, 12.60% Zn with 450 grams per ton Ge. This intersection is 150 feet from the face of the 2600 South Crosscut. Surface drill holes indicate higher values in precious metals below 2600 level.

Possible ore to 300 feet below the 2600 level is 100,000 tons.

(i) Cole Lake Veins

Surface exposures show typical low temperature rhodocrosite-barite-sphalerite veins with 5 to 8 oz Ag/T and 7 to 15% Pb-Zn. At least eight veins are exposed in trenching and limited diamond drilling.

Possible tonnage is estimated at 400,000 tons, with the precious metal content increasing at depth.

SUMMARY OF ORE RESERVES

(1) Proven and Probable (Drill Indicated) Ore

<u>Vein System</u>	<u>Tons</u>	<u>Grade</u>	<u>Au (oz/T)</u>	<u>Ag (oz/T)</u>	<u>Cu%</u>	<u>Pb%</u>	<u>Zn%</u>	<u>Ge ppm</u>
No. 3	577,590		0.108	7.51	0.49	1.49	6.53	?
No. 3 Ext.	20,200		0.08	17.87	0.77	0.75	1.92	72
Footwall	93,875		0.05	9.05	1.54	0.79	6.10	59
Camp No. 1	25,000		0.03	71.05	0.23	1.01	2.98	?
No. 2	23,500		0.06	2.20	0.13	4.13	10.99	36
No. 5	<u>25,000</u>		0.03	8.75	1.02	0.36	10.00	46
	765,165		0.09	9.93	0.62	1.41	6.49	

(2) Possible Ore

<u>Vein System</u>	<u>Tons</u>	
No. 3 Extension	20,000	
Footwall	86,225	
Camp No. 2	12,500	
No. 2 Vein	93,100	
Switchback	37,500	
No. 1 Vein	83,750	
NG3	100,000	
Cole Lake	<u>400,000</u>	
Total	833,075 tons	No grade assigned.

Total Proven, Probable and Possible: 1,598,240 tons

PROGRAM OBJECTIVES

As recommended at the end of Phase II, the objectives of Phase III were:

- (1) Continue the exploration of the Camp Vein system;
- (2) Drive the crosscut to the NG3 Vein (2600 South Crosscut);

- (3) Underground drilling:
 - (a) from the South Crosscut to continue the No. 3 Extension
 - (b) detail drilling of the Footwall Vein;
- (4) A decline from surface, with the final choice to depend on priorities and budget available:
 - (a) a 500 foot decline at Cole Lake for underground testing of the veins,
 - (b) a decline at the south end of the property with the long range target being the No. 3 extension and NG3 veins 200 feet below the 2600 level;
- (5) Continued metallurgical and environmental studies.

The budget was set at \$500,000.

PROGRAM REPORT

Surface drilling began in August, continuing the testing of the Camp Vein system. Vicore Mining Developments Ltd. began the extension of the 2600 South Crosscut August 16 and completed it at 323 feet September 7. The decline location was changed to the tailings pond area to intersect the No. 3 Vein below the Alimak Raise area, and site preparation began in early September. Actual rock work began September 4 and the timber sets were completed and filled by September 14. Underground drilling began September 15 in the 2600 South Crosscut.

Advance in the 2590 Decline began when timbering was complete and proceeded slowly due to the lack of the drill jumbo, and the need to install power and water connections. By the end of Phase III, the total advance from the collar was 195 feet, with a 52 foot raise driven to surface for the ventilation fan set-up.

Metallurgical studies were initiated with Lakefield Research in Ontario, as back-up for the Bacon Donaldson report and a sample (about 800 pounds) of ore was gathered from the different veins and sent in August. Norelco continued studies of the water quality, acid-generating potential of the waste, tailings and ore and other environmental factors for the Stage I report.

Surveying continued on the property outline (old Crown-granted claims) to tie them to the surface and underground survey. All diamond drilling and development were surveyed as well. Reports were written to prepare budgets for the next programs leading up to feasibility studies.

Program results were as follows:

(1) Surface drilling on the Camp Vein system

The veins in this system are distinguished from other veins on the property by a steep westerly dip and distinctive mineralization which includes the silver minerals proustite and argentite. This mineralization produces high but erratic silver assays ranging from 30 to over 400 ounces per ton. When averaged with lower grade vein material in the same intersection the average for four intersections in the Camp No. 1 Vein is 71 ounces, over a true width of 5 feet and depth from rock surface of 300 feet. Only one section has been completed in enough detail for good interpretation, and drilling

will continue. The main vein is at least 300 feet long and still open north, south and at depth. Results are shown in plan and section as Fig. 2.

Total surface drilling: 2518'.

(2) 2600 South Crosscut

The crosscut was driven on line toward the approximate location of the NG3 vein in surface D.D.H. 71-5, expecting to cut the vein at about 300 feet. The heading was stopped at about 325 feet, since no vein had been found, and the face area was slashed to allow for diamond drilling.

During the advance, the crosscut followed a narrow vein for a short distance before it entered the right wall. This vein at its widest contained 8-12 inches of heavy sulphides and a chip sample assayed (over 12"):
0.06 oz Au/T, 21.0 oz AG/T, 1.67% Cu, 8.85% Pb, 20.60% Zn.

The vein runs out rapidly into pyrite stringers with some zinc. Several faults filled with talc and coarse crystalline pyrite were cut, and an unusual amount of rock-bolting and screening was done.

Underground development - Crosscut - 325 feet
- Slash - 13.7 feet (drift equivalent).

(3) Underground Diamond Drilling

(a) One "bazooka" (lightweight and portable) drill hole was drilled north-easterly from the crosscut face. At 80', no vein had been found and the hole could not be deepened.

Holes drilled westerly failed to find the No. 3 Extension as projected. Instead, an extensive fault zone was found which probably terminated the vein. This fault may be the zone which the 2600 South Crosscut crossed, and the NG3 may be the faulted section of the No. 3 Extension. A final three holes were drilled easterly and the NG3 vein was cut in 87 U-15 at 149.5' to 155.5'. The section assayed over six feet:

0.012 oz Au/T, 7.93 oz Ag/T, 1.08% Cu, 1.66% Pb, 12.60% Zn.

The assay also showed 450 ppm (gms/tonne) germanium, which is the first information on the germanium content of the NG3 vein.

The results of this program are shown on Fig. 6. The short hole program testing the walls of the No. 3 Extension drift is in progress now, but results will not be available for this report.

If the fault theory is correct for the termination of the No. 3 Extension, then it is possible that the NG3 is actually the offset No. 3 Vein. This would require a lateral movement of about 400 feet.

Underground diamond drilling - 87 U-10 - 87 U-15. Total 1660 feet.

(4) 2590 Decline

As the program evolved, the long-range budget was firmed up and it was decided to put both (a) and (b) on hold. The portion of the Phase III budget reserved for the decline was allotted to the start of a large decline to be driven from the tailings pond area at elevation 2590; to the No. 3 Vein at elevation 2200 feet, about 500 feet down dip from the Alinak raise area on the 2600 level. This part of the No. 3 Vein was drilled off in detail and contains gold and silver values much above average. The decline is 9' x 13' in cross-section, driven at -15% and will eventually be 3000 feet long.

During its progress, the decline will cross at least three known vein structures - the Church Vein, the S-26 Vein, and the Footwall Vein before reaching the No. 3 Vein. A branch may be driven at the 2400 foot elevation to cut the No. 3 Vein 300 feet down dip. From this point a ventilation and escape raise could be driven to the 2600 level.

Because of its size and the requirements for ventilation, the plant at the collar is quite extensive. Drilling will be done by a 2-boom air-hydraulic jumbo, and mucking by a 3-yard Scoop tram with 2-10 ton trucks. Ventilation will be supplied by 2-50 H.P. fans and a 48 inch vent tube. Water is supplied from the old tailings pond, and power by a branch line from the Alimak Raise line and a second generator.

The budget objective of 500 feet of decline was set for the small exploration decline planned for Cole Lake. The budget amount was used up quite quickly at the 2590 decline, and the actual advance was:

2590 Decline - 195'
Ventilation raise - 52'.

(5) Metallurgical Studies

(a) Bacon Donaldson Associates: This report with flowsheet was produced on October 22 and is available at the Houston Metals office in Vancouver.

In summary, the report recommends a three-way separation into copper, lead and zinc concentrates; with further study on producing a pyrite concentrate to be leached for gold-silver recovery. Total recoveries were:

Au	49.6%
Ag	86.5%
Cu	92.7%
Pb	89.2%
Zn	96.3%

These results were obtained on a composite sample. Better results can be obtained on samples from individual veins, but the ore will be treated as a blend which will vary with production sources. This problem was experienced by Bradina, as well, and is more complex now that new sources of ore are being explored.

With regard to the high gold loss to tailings, tests showed that the pyrite containing the gold can be leached with cyanide, but that the cyanide consumption is so high that the margin of profit is small. Filter regeneration of cyanide or a higher gold price is necessary to make the pyrite treatment worthwhile.

With regard to recovery, it should be noted that copper in the lead concentrate is not necessarily a source of income, and the same applies to the other base metals. Germanium in the zinc concentrate may be a source of income, depending on the level and on the smelter's interest in it. Marketing is still a very important facet in the feasibility of this project.

- (b) Lakefield Research - results of this study have not been received.
- (c) Marketing - Dr. L. Bernstein continues his study of mineralogy and marketing for germanium. In addition to his own efforts, Mr. Petancic is considering engaging the services of a specialist in concentrate marketing.
- (d) Environmental - Norecol Environmental Consultants are continuing the base-line studies on water quality, wildlife, acid-generating potential and other factors which could affect the permits required for production. The original studies from 1971 of the tailings storage facility have been found, and it is obvious that the existing dam is the starter dam as built in 1971. If this dam is built up to the planned height, it could store about four to five years' requirements. This approach is being studied.

CONCLUSIONS AND RECOMMENDATIONS

The program made progress on all the objectives, so that recommendations can be made.

- (1) The NG3 vein was located, so that further development can be laid out. This will involve about 150 feet of crosscut followed by 50 feet of drift on the vein.
- (2) The Camp Vein system was shown to have a large potential for high grade silver ore. Detailed diamond drilling seems to be the best method of extending and evaluating this zone and a further 10,000 feet is recommended. There is some urgency to push this program since the veins are trending toward the portal and probable plant area.
- (3) The underground drilling should be continued as the Footwall Vein evaluation program has just started. Some allowance should also be made for drilling from the 2590 Decline and "Bulkley" crosscut.
- (4) The 2590 Decline should continue as planned to about 3000 feet. 200 feet of decline was accomplished in Phase III, plus most of the surface facility required to complete this project.

(5) The "Bulkley" Crosscut is recommended as another major project which has great exploration potential. The estimate of 400,000 tons of possible ore in the Cole Lake area is probably conservative. The project involves a small amount of preparation, most of which has been done in October, plus 4300 feet of 9' x 9' crosscut.

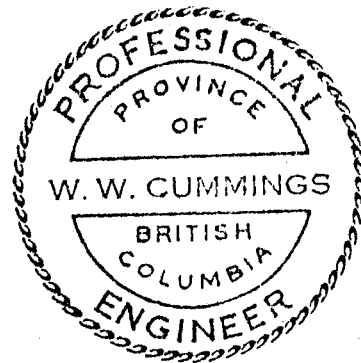
(6) Metallurgical, marketing and environmental studies must be continued.

COSTS

Overall costs have been estimated for the total program by Mr. Petancic at \$3,750,000. This has been broken down in budgets prepared for those organizations which are funding the ongoing project. These figures are available from Mr. Petancic.

Respectfully submitted,


W.W. Cummings, P.Eng.



APPENDIX I

CERTIFICATE

I, W.W. CUMMINGS, of New Denver, in the Province of British Columbia, hereby certify that:

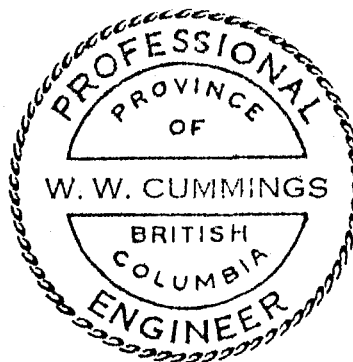
- 1) I am a geological engineer with office and residence at New Denver, B.C., with mailing address of P.O. Box 57;
- 2) I am a graduate of Queen's University, Kingston, Ontario with a B.Sc. in geology and mineralogy, 1949;
- 3) I am a member of the Association of Professional Engineers, Province of British Columbia;
- 4) This report is based on published and unpublished reports and personal knowledge from working on the properties involved;
- 5) I have no direct or indirect interest in the property or securities of New Nadina Explorations Ltd., or Houston Metals Corporation, nor do I expect to receive any interest.
- 6) I hereby consent to the use of this report by Houston Metals Corporation in connection with the Prospectus or Statement of Material Facts relating to the raising of funds.



W.W. CUMMINGS, P.ENG.

New Denver, B.C.

October 30, 1987



APPENDIX II

REFERENCES

Bacon Donaldson & Associates Ltd. (1987)

Metallurgy of Owen Lake Deposit - for Houston Metals Corporation October 22, 1987.

Church, B.C.N (1969):

Geology of the Owen Lake Area and Report on the Silver Queen Mine - Geology Exploration and Mining in B.C. 1979 - B.C. Ministry of Energy, Mines and Petroleum Resources.

Cummings, W.W. (1986):

- 1) Report on the Owen Lake Property - for Bulkley Silver Resources Inc.
- 2) Report on the Silver Queen Mine for Houston Metals Corporation - March 1987
- 3) Summary report on Phase III - Owen Lake Project

Dawson, J.M. (1985)

Report on Owen Lake Property - for Bulkley Silver Resources Ltd. by Dawson Geological Consultants Ltd.

Ford, G. (1982)

Report on the Silver Queen Mine - New Nadina Explorations Ltd. (for Campbell Resources Ltd.)