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Report of Geological Survey
H & W No. 1 and No. 2 Claims
Holberg Inlet Area, Nanaimo M. D.
Vancouver Island, B. C.

Map Sheet 92L / 12E 50°36'North, 127°40'West

Prepared by: Erik Ostensoe, geologist.
Dates of Field Work: October 8 - 10, 1976.
Date of Report: December 11, 1976.

Erik A. Ostensoe

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Introduction

The writer and Ronald P. McBean carried out a geological survey of the H & W No. 1 and No. 2 claims in the period October 8 through 10, 1976. The purpose of our investigations was to determine the quality and the extent of the silica body known to be present on the claims. We attempted to determine the nature of the enclosing rocks and we examined some of the factors that ma y be of importance with respect to commercial exploitation of the silica deposit. This report summarizes the regional geology as reported by K. E. Northcote (G.E.M. in British Columbia, 1970) and our own observations. Previously unreported chemical analyses by a division of Ideal Basic Industries are included.

Location and Description of Claims

The H & W No. 1 and No. 2 claims are located west of Apple Bay on the north side of Holberg Inlet about five miles west of Coa l Harbour, B. C. The initial post of the claims is situated close to high tide level near remnants of an old farmstead. The blazed location line trends north across a narrow wooded flat area and then steeply up a mossy and brushy treed slope to elevation 400 feet. The claims are traversed by several small streams.

The H & W No. 1 and No. 2 claims are owned by Irene Hansen of North Vancouver, B. C.

Access

Access to the H & W property was from Vancouver by B.C. Ferry to Vancouver Island and thence by road to Coal Harbour. A water taxi operated by H. Hole carried us to the claims. In all, this route was time consuming and tiresome and is not

recommended. The nearby town of Port Hardy is serviced daily by commercial air carriers and that means of access is vastly preferable. A newly constructed logging (?) road of which we were previously unaware leads westerly from a point one-half mile east of Coal Harbour on the main road between Port Hardy and Coal Harbour to pass a few hundred feet north of the H & W claims.

Regional Geology

The geology of the Holberg Inlet - Coal Harbour area has been extensively studied in recent years as a consequence of the discovery in 1966 of the Island Copper mine. At that time many hundreds of mineral claims were staked and then subjected to frenetic geological, geochemical and geophysical surveys. This work has subsequently been re-done in much of the area in a more systematic and academic fashion, largely by government parties and by Utah Mines Ltd., operator of the Island Copper mine and holder of the majority of the claims.

All of the following material in this section of the report is derived from K.E. Northcote's description of the Rupert Inlet - Cape Scott Map Area which is included in the 1970 G.E.M.

The dominant rock formations in the Rupert Inlet - Holberg Inlet area are the Karmutsen, a Triassic age basaltic assemblage of flows and tuffs; the Quatsino, a persistent thick (200 to 2500 feet) limestone and the Bonanza sub-group of Upper Triassic - Lower Jurassic age which consists of "a lower sedimentary unit and an upper volcanic unit". The latter consists of andesitic to basaltic tuffs with interbedded lava flows. Rhyodacite flows and breccias occur in the uppermost portions of the subgroup. Lower Cretaceous age sedimentary rocks, including minor coal occurrences, unconformably overlie

the Bonanza with angular discordance. Outcrops of crystalline rocks that range in composition from diorite to quartz monzonite are thought by Northcote to indicate the presence of a shallow batholith. Dykes, sills and small plugs vary from felsite and quartz feldspar porphyry to basalt in composition.

Alteration has been produced by low grade regional metamorphism and by hydrothermal solutions. The regional metamorphism is expressed by "pervasive chloritization and epidotization of Karmutsen rocks". The hydrothermal alteration which variously takes the form of propylitic, argillic, pyrophyllitic and siliceous assemblages is of critical importance with respect to the mineral potential of the Rupert Inlet - Holberg Inlet area. To quote Northcote, p. 257:

> The belt of intrusive stocks and the accompanying hydrothermal alteration, silicification, and development of skarn occurring between Rupert Inlet and the mouth of the Stranby River is one of very high mineral potential. Not only are most of the known significant mineral deposits of the map-area located along this trend but the abundance of smaller occurrences and widespread alteration suggest that other important deposits may still be found.

Northcote recognizes a block faulting pattern dominated by northwesterly trending faults, generally close to the strike of the bedded rocks. Beds where visible are inclined gently to moderately southwesterly and folding is apparently of little significance.

Although the metallic mineral potential of the general Port Hardy - Holberg Inlet area is well recognized and has received the greatest amount of prospecting interest, potentially viable silica deposits have also been discovered in siliceous alteration zones near the north side of Holberg Inlet. One such deposit, now owned by Canada Cement Lafarge Ltd, is located at Apple Bay, one-half mile east of the east side of H & W 2 claim. A loading facility was constructed in recent

years and trial shipments totalling about 5000 tons have been made.

Geology of the H & W No. L and No. 2 Claims

Our geological survey was of a reconnaissance nature designed to rapidly determine the extent of the outcroppings of the white high-silica content rock. Because the main silica occurrence coincides with a hill and hence has very favorable characteristics with respect to possible quarrying operations (including minimal stripping of overburden and waste rock, favorable gradient from quarry to the beach) our efforts were confined to H & W No. 1, claim. Compass traverses were run from the beach to the newly built road or to the south side of an area of boggy ground situated north of the silica hill. Altitudes were determined by aneroid and contours as drawn on the accompanying sketch are merely indications of the general shape of the terrain.

Multicoloured strongly banded rhyolite tuffs were mapped in outcroppings along the road. These are cut by numerous fault structures, some of which are graphitic. Banding, which is likely bedding, is very disrupted by the faults but an overall north-northwesterly trend was determined. Pyrrhotite, pyrite and magnetite were identified and tiny quartz veins are present in profusion.

Close to the base of the hill in the southwest corner of H & W No. 1 claim we located an extensive area in which the ground is covered with a tufa-like deposit of iron oxides, a true "bog iron" deposit. The material is, at least in some parts of the occurrence, deeper than two feet and incorporates much vegetal debris - leaves, twigs and branches. Much surface water is present in the vicinity but we were unable to determine whether the iron was being deposited from springs. Much

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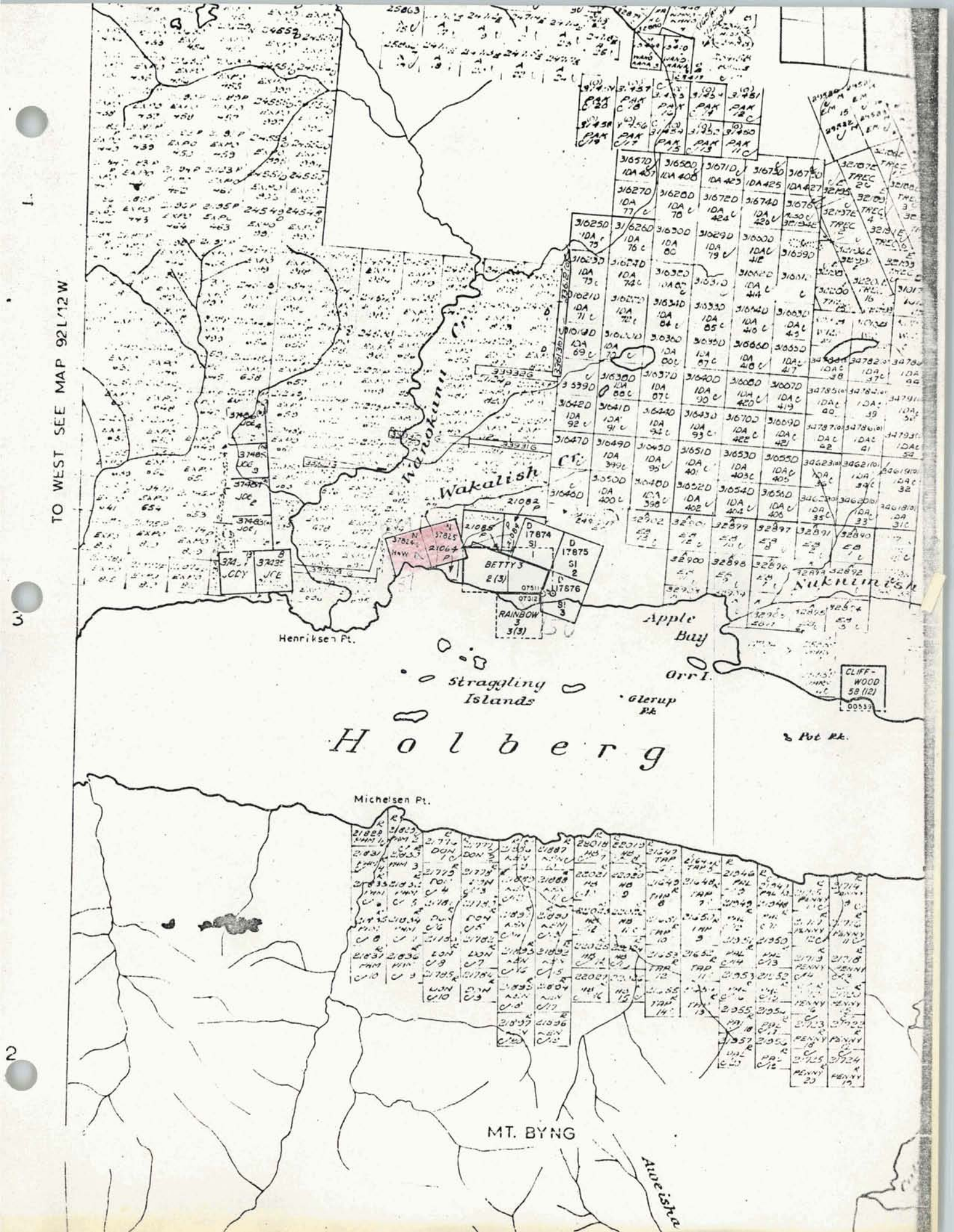
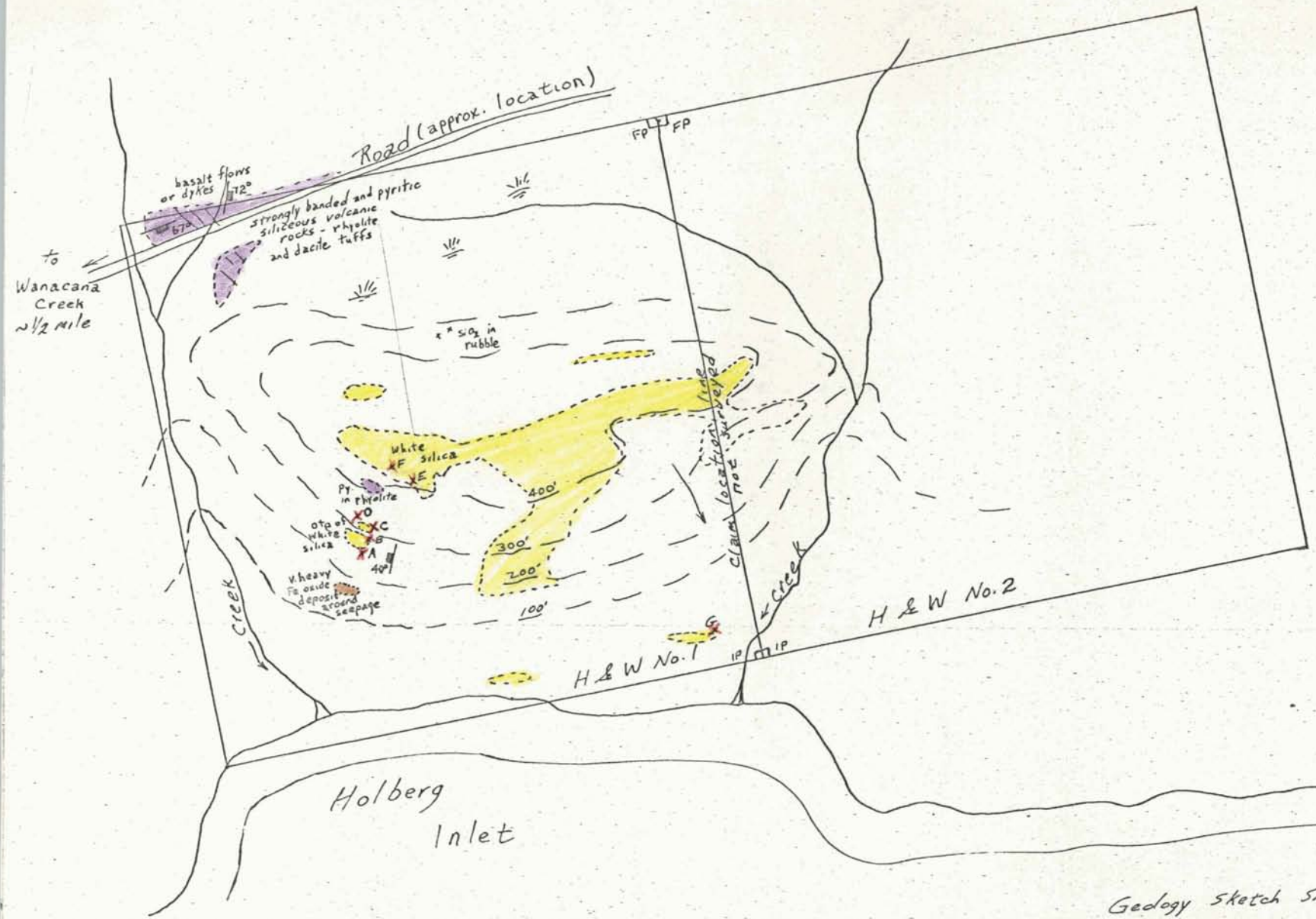

TO WEST SEE MAP 92L/12W
Wakalish Cr.
Wakalish
Henriksen Pt.
Straggling Islands
Glerup Pt.
Orr I.
Apple Bay
Nukumi Is.
Pt Pt.
Holberg
Michelsen Pt.
MT. BYNG
Alveisha
BETTY 3
2(3)
RAINBOW 3
3(3)
CLIFF-WOOD 58 (112)



N

1" = ~ 375'

✗A - sample site

65° - jointing attitude

Geology Sketch Showing Distribution of Silica in Outcrop
H & W No. 1 and No. 2 Claims
Holberg Inlet, Nanaimo M.D. B.C.
Nov. 1976.

To accompany Report by E. Ostensoe
December 11, 1976.

iron pyrite was noted in outcrops a short distance up slope from the iron oxide accumulation.

Except for an outcrop area of pyritic rhyolite all other bedrock outcrops noted on the hill were of the white silica formation. As suggested by the chemical analyses quoted in the following section of this report, the silica formation consists almost entirely of silica. Outcrops have a superficial coating of crumbly white silica powder and are commonly very steep to vertical in profile. No banding or bedding features were observed in any of theoutcrops. Typically, surfaces are somewhat porous in appearance and the possibility that the H & W No. 1 silica occurrence is a siliceous tufa cannot be discarded.

The white silica formation was traced for approximately 1000 feet in the east-west direction and neither extremity was limited geologically. In the north-south direction, the formation was found in outcroppings over a distance of about 500 feet, again without geological limits. Outcrops ranged in elevation from about 100 feet to more than 400 feet. In view of the demonstrated presence of similar material on claims adjoining the H & W claims to the east, that is, on the Canada Cement Lafarge claims, one might speculate that a very large volume of silica formation is present. Some recommended steps toward quantifying the material are included in a following section of this report.

Quality of the Silica Formation

Several samples of the silica formation were analysed by x-ray spectrographic techniques in 1972 for silica content. These analyses were reported previously as follows:

Sample A	-	97.1% SiO_2
B	-	97.4
C	-	95.6
D	-	66.5
E	-	93.2
F	-	90.8
G	-	92.2

More recently five of the samples were analysed chemically with the following results:

Sample	% SiO_2	% Al_2O_3	% Fe_2O_3	% CaO	% MgO	% Na_2O	% K_2O	% Loss	% Total
A	96.4	0.5	1.8	.07	.05	0.0	.01	.45	99.3
C	95.6	0.4	2.2	.05	.05	0.0	.01	.55	98.9
D	71.2	18.5	2.1	.08	.05	0.08	.03	7.8	99.8
E	95.1	0.7	2.7	.06	.05	0.0	.00	.84	99.5
G	94.7	2.3	1.2	.06	.04	0.01	.01	1.5	99.8

Samples A, C and D are from lower elevation outcrops in the southwest corner of H & W No. 1 claim; Sample E, from a very extensive outcrop area near the top of the hill, and Sample G from an outcrop near the beach, close to the claim post. All of the sample locations were visited in thecourse of our recent work and with the exception of sample D which represents some silica formation with interlayered altered tuffaceous bands, all seem to be representative of the formation. Widths sampled were 20 feet in each case.

With the exception of sample D, the uniform high silica content combined with low Al_2O_3, CaO, MgO, Na_2O and K_2O, indicate that a premium quality high silica, low alkaline content product can be acheived readily. The problem of moderate iron content would not be significant with respect to applications in the cement, abrasives and metallurgical industries but might limit its use in stucco dash and certain ceramics.

Quantity of the Silica Formation

Even a cursory examination of the H & W silica property serves to confirm the presence of a very large quantity of high quality silica formation. Application of conservative estimates to the obvious exposed dimensions suggests that in excess of ten million tons are present on H & W No. 1

claim. A series of shallow trenches should be excavated to yield quantities of relatively unweathered material for further analyses and to give better information about the geological aspects of the formation. A series of diamand drill holes should be cored at intervals along the long dimension of the hill to yield more comprehensive data about the character of the formation and its persistence to shallow depth. A detailed market survey should probably preceed any elaborate and detailed quarry planning.

Conclusions

The geological survey and examination carried out on the H & W No. 1 and No. 2 claims 5 miles west of Coal Harbour, B. C. has expanded the factual information available concerning what may be a major deposit of high quality silica rock. Although the lack of suitable outcrops limits our knowledge of the geological environment we were able to determine that banded rhyolite of the upper unit of the Bonanza sub-group is present a few hundreds of feet northwest of the main silica formation occurrence. An apparent concentration of heavily pyritized rhyolite was found in the southwestern part of the H & W No. 1 claim. The silica formation itself was traced for 1000 feet along its east-west dimension and for several hundreds of feet north-south. Previously sampled outcrops were re-visited in order to confirm that the sampling was representative of bedrock material.

It is recommended that future efforts be directed to obtaining better information concerning the quantity and quality of the silica formation in the hill that extends across the H & W No. 1 claim. Until a potential market is located there seems to be little incentive to try to demonstrate the presence of similar silica rock extending across the H & W No. 2 claim toward the quarry on the adjoining property of Canada Cement Lafarge.

STATEMENT OF QUALIFICATIONS

The work described in the accompanying geological report was done by Erik Ostensoe and Ronald P. McBean. . Their qualifications are detailed below:

1) Erik Ostensoe, B.Sc. (Hons.), Member: CIMM, Association of Exploration Geochemists; Geologist -
Completed B.Sc. Honors course at University of British Columbia in 1960 and course requirements of M.Sc. at Queen's University in 1966; employed by Newmont Mining Corporation of Canada Ltd., under direction of Dr. G. W. H. Norman, P.Eng., from May 1960 through August 1964 as field geologist in Granduc Mine area, B.C., by Mount Billings Venture in south-eastern Yukon in summer 1965, by Scud Venture (Asarco) in Iskut River area, B.C. in Summer 1966 and by Granduc Mines, Limited (N.P.L.) and Hecla Mining Company of Canada Ltd., from October 1966 to present as Chief Geologist and Exploration Supervisor under the direction of P. I. Conley, P.Eng.

2) Ronald P. McBean -
Veteran prospector, claim staker and mining property developer. Since 1954 has been involved with prospecting and mining developments in Highland Valley, Stikine River and Zeballos mining areas of British Columbia and in Central and Southeastern parts of Yukon Territory and Redstone - Nahanni areas of Northwest Territories. Was a director of British Columbia and Yukon Chamber of Mines for many years representing independent prospector sector of the Chamber.

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of Geological Report re H & W No. 1 and No. 2 Claims, located 5 miles west of Coal Harbour, Vancouver Island, B. C. 92L/12E

I, Erik A. Ostensoe

of 4306 West 3rd Avenue, Vancouver, B. C. V6R 1M7

in the Province of British Columbia, do solemnly declare that the following costs were incurred in carrying out the geological field work described in the accompanying geological report:

B.C. Ferries	$36.00
Hotel accommodation - Port Hardy, Port McNeil	48.30
Water taxi - Coal Harbour	40.00
Meals, snacks, gratuities	49.16
Truck - 3 days @ $15/day	45.00
Gas for truck	21.45
Geologist - 3 field days, one office day @ $100/day	400.00
Prospector - 3 field days @ $75/day	225.00
Report preparation, draughting, typing, xeroxing	20.00
Total costs incurred	$884.91

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the city of Vancouver, in the Province of British Columbia, this 23 day of December, 1976, A.D.

Erik A Ostensoe

Erik A. Ostensoe

A Commissioner for taking Affidavits for British Columbia or A Notary Public in and for the Province of British Columbia.

SUB-MINING RECORDER