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**ASSESSMENT REPORT FOR THE 007 LIMESTONE CLAIM  
NANAIMO MINING DIVISION  
VANCOUVER ISLAND, BC**

**NTS MAP: 92 L 12W**

**UTM: 574000E 5608500N**

**PROSPECTING AND SAMPLING REPORT**

**Owner/Operator**

**WILLIAM R. GILROY**

**GEOLOGICAL SURVEY BRANCH  
ASSESSMENT DIVISION**

26 913  
5th June 2002

**B.Ainsworth, PEng BC (Consultant)**

26,913

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## EXECUTIVE SUMMARY

Mr William R. Gilroy (Gilroy) has staked the 007 claim consisting of 20 modified grid units, located 6 kilometres east southeast of the west end of Holberg Inlet in the north Vancouver Island area. The writer and Mr. Gilroy carried out an examination of the property on the 8<sup>th</sup> May 2002 to prospect and sample a limestone body within zeolitized volcanics of the Quatsino formation.

Earlier work identified a limestone body that is reported in the BC MINFILE to have an unclassified inventory of 236,000,000 tonnes of limestone with a minimum thickness of 43 meters. **This tonnage is considered to be "Exploration Information" under the classification of the CIM Council August 20<sup>th</sup> 2000.** This would be of sufficient size to consider its exploitation as a bulk source of limestone and could have within this tonnage white limestone for soil amendment, chemical and fillers markets. *The property is accessible to marine transportation and has land access via logging roads*

This report describes the sampling, the mineral potential and the market potential of the 007 Limestone Project. Work in the early 70's identified the limestone adjacent to the copper mineralization to be of potential economic interest. Three campaigns of core drilling in the limestone were reported, 1975, 1978 and 1980. A report in 1980 by Wishart of Hallam and Associates made an estimate of tonnage 236,000,000 tonnes of limestone rock (ARIS 5413). **Under the definitions of the CIM Council August 20<sup>th</sup> 2000, this tonnage is classified as exploration information and is not classified as a reserve or a resource.**

A composite of various grab samples reportedly contained 54.33% CaO (equivalent to 97.02% Calcium carbonate), 1.19% MgO (equivalent to 2.5% Magnesium carbonate), 0.51% SiO<sub>2</sub>, 0.20% Al<sub>2</sub>O<sub>3</sub>, 0.14% Fe<sub>2</sub>O<sub>3</sub>, 0.11% P, 0.01% S and 43.4% loss on ignition. If more systematic analyses confirm these grades, the deposit would be considered to be of high enough grade for a useful range of markets, including chemical lime, soil amendment and animal feeds, fillers and extenders. small energy credit by the customer since the energy required for calcining was less than that for a purer white limestone.

Further work is needed to prove the consistent quality of the limestone and develop a drill proven resource. This work should include sufficient sampling and analysis of samples to define the range of products that could be derived from the deposit for chemical and fillers markets, agricultural lime and limestone soil amendment products. There is sufficient potential to develop a substantial tonnage of useful limestone on the 007 project to justify a non-contingent, phased exploration effort. The recommended initial programme is budgeted at \$255,000.

## INTRODUCTION

The writer, assisted by Mr. William R. Gilroy (Gilroy), visited the 007 claim consisting of 20 modified grid units on 8<sup>th</sup> June 2002. The claim is located 6 kilometres east southeast of the west end of Holberg Inlet in the north Vancouver Island area. Earlier work in the area, including some diamond drilling, was carried out on the Lime Group of claims (since expired) and the Fox claims (since expired). This work identified a limestone body that is reported in the BC MINFILE to have an unclassified inventory of 236,000,000 tonnes of limestone with a minimum thickness of 43 meters. **This tonnage is considered to be “Exploration Information” under the classification of the CIM Council August 20<sup>th</sup> 2000.**

The purpose of this examination was to prospect the claims and collect samples to assess the quality of the limestone. The limestone has potential to serve as a source of chemical lime and as a supply of calcium carbonate for the fillers and extenders markets.

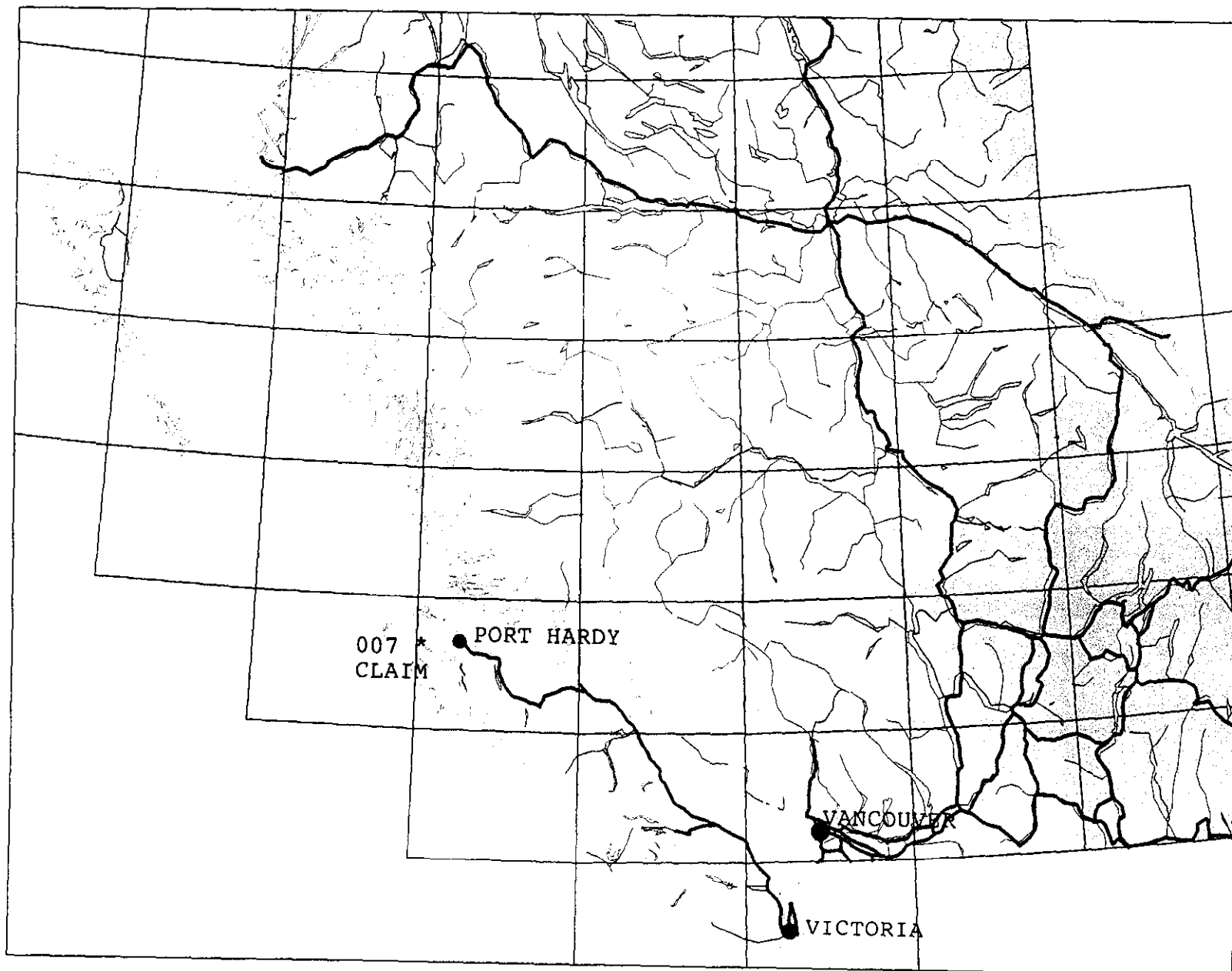
### Scope and Limitations

Research was limited to a review of historical work that related to the immediate area of the property. The site visit enabled the writer to collect 6 samples to assess the variability and general quality of the limestone. The limestone cannot be used as a construction material from a mining lease under the Mines Act. Chemical lime and fillers and extenders uses are permitted under the Mines Act. Volcanics above and below the limestone were zeolitized and may be a source of material for the filters and absorbents markets which could also be produced from a mining lease under the Mines Act. This report also reviews the geology, the mineral potential and the market potential of the 007 Limestone Claim.

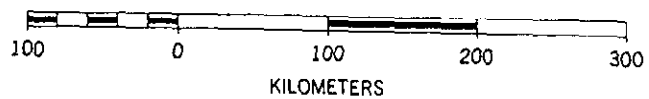
### Sources of Information

Sources of information are detailed below and include both the public domain information available and personally acquired data.

- Research of the Minfile data available for the area
- Review of assessment reports supplied by Mr. Gilroy from Ministry of Mines files
- Review of geological maps and reports completed by the BC Geological Survey Branch or its predecessors



SCALE 1 : 5,000,000



## PROPERTY LOCATION AND DESCRIPTION

Mr. Gilroy acquired the 007 mineral claim by staking. It is comprised of 20 modified grid units, approximately 500 hectares (1,240 acres) with tenure number 388799. The claim is centered on UTM 574000E and 5608500N. It is located (see frontispiece and Figure I) 6 kilometres east southeast of the west end of Holberg Inlet, accessible by logging road from Port Hardy via the community of Holberg on the north end of Vancouver Island, BC. The property extends east-west from the south shoreline of Holberg Inlet near the mouth of Glerup Creek to a point on the shoreline approximately 400 meters east of the mouth of Native Creek. The southerly extent of the property is two kilometers south from this northern boundary, with the southern boundary passing through two small lakes in the Glerup creek drainage.

A complaint was filed by Mr. Gilroy under section 40 of the Mineral Tenure Act claiming that the Alexander claim had been improperly staked and that it should be cancelled. The inspection resulted in definition by the Inspector that Alexander did not overlap the 007 claim but had been incorrectly located on the claim map by its staker, Mr. John Williamson. The 007 claim covers its full original extent, which is the main area of the limestone. Because of a shortage of staff, drafting of the correction was not completed at the time of the examination and prospecting and the change has not been registered. A letter from the Chief Gold Commissioner and an inspection report are presented in Appendix I with the claim documentation to substantiate this correction. The claim location map on the following page is taken from the report of the Claims Inspector.

The area comes under the administration of the Nanaimo mining inspection district.

NAME OF CLAIMS

ALEXANDER / 007

TENURE NUMBER

388639 / 388799

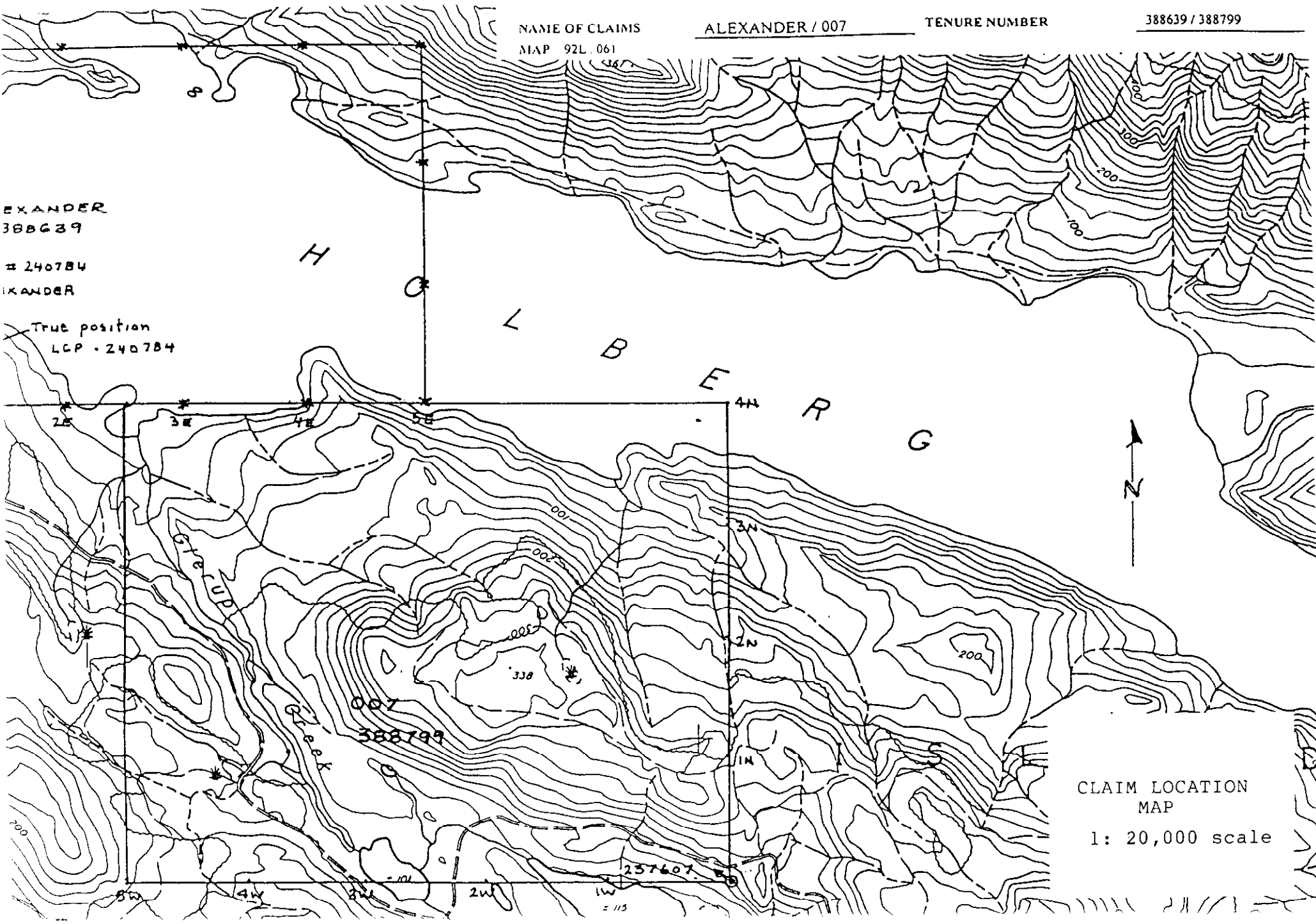
MAP 92L 061

ALEXANDER  
388639

# 240784

ALEXANDER

True position  
LCP - 240784



CLAIM LOCATION  
MAP  
1: 20,000 scale

## **ACCESS, CLIMATE, PHYSIOGRAPHY, LOCAL RESOURCES AND INFRASTRUCTURE**

The property is currently reached by road and logging road from Port Hardy via Holberg, a distance of approximately 50 kms. Holberg is a deep water inlet giving potential access to property for ocean going shipping, including barges.

The area has a climate typical of coastal southern British Columbia, similar to that of Holberg. Holberg has an annual precipitation of almost 4,000 mm, with May to September being the driest period. Temperatures range from a winter average low in January of about 3° Celsius to a summer average high in July - August of 17.4° Celsius. Snow is only intermittent in the area, allowing a year round operating season for exploration or open-pit production.

The claims cover an area that extends from sea level to a tabular hill with a maximum elevation of about 320 meters. The limestone body is located on this hill and forms a steep cliff that faces southwesterly. The limestone is easily accessible via a network of old logging spur roads from the main haul road.

The area of the property is relatively remote with a small population of aboriginals, based at settlements along Holberg Inlet. Holberg, at the west end of Holberg Inlet, is a hamlet with limited capacity for supplying labour, but Port Hardy, a fishing and logging center, was the town site for the Island Copper mining operations and has a much larger labour and skilled work force upon which to draw. The inlet represents the most important physical infrastructure in the area and allows the use of low cost bulk marine transportation for any operation that was started there.

## **HISTORY**

Native Creek, on the east side of the claim block, may have derived its name from the location of native copper within its watershed during early mineral exploration of the Holberg area. A major exploration effort of the northern end of Vancouver Island was stimulated by the discovery of the Island Copper porphyry copper deposit by Utah Mines and Construction in the late 60's. This led to a large staking rush in the area and Holberg Mines Ltd acquired 300 claims approximately covering the present claims. Showings of copper were located by subsequent work in a fault-bounded block cutting across a limestone unit of the Quatsino formation. The mineralization, including chalcopyrite and bornite, was associated with an augite-bearing, basic dyke cutting through volcanics and sediments of the Lower Jurassic Bonanza Group (MINFILE 092L 247). The deposit is provisionally given the classification of volcanic redbed copper type but no comment is made regarding dimensions of the copper mineralization. RGS geochemical coverage does not flag a strongly anomalous signature for the claims but till sampling reported in BCGS Open File 1992-21 did return some copper and cobalt values of note that could have been related to this mineralization.



Work in the early 70's identified the limestone adjacent to the copper mineralization to be of potential economic interest. Three campaigns of core drilling in the limestone were reported, 1975, 1978 and 1980. From the last of these, a minimum thickness of 43 meters was defined for the limestone deposit by Wishart of Hallam and Associates and he made an estimate of tonnage 236,000,000 tonnes of limestone rock (ARIS 5413). **Under the definitions of the CIM Council August 20<sup>th</sup> 2000, this tonnage is classified as exploration information and is not classified as a reserve or a resource.**

From MINFILE 267:

*"World Cement Industries Inc carried out 1529 meters of diamond drilling accompanied by mapping and sampling between 1971 and 1980. The limestone was to be used to supply a cement plant that the company proposed to build at Nanaimo with a capacity of 900,000 tonnes of cement per year."*

**The cost of this historical work in present (2001) dollars may have been in excess of \$100,000.**

## **GEOLOGY**

The limestone deposit occurs in a discontinuous belt of limestones of Upper Triassic age Quatsino Formation (Vancouver Group) that extends west-northwest for 53 kilometers along the south side of the inlet from Quatsino Narrows to William Lake. The belt is frequently segmented by north to northwest trending faults. The limestone unit is exposed on the east side of Quatsino Narrows, extending along the coast from Rupert Inlet to Quatsino Sound. To the south, the belt is bounded by volcanics of the overlying Lower Jurassic Bonanza Group and argillite and black limestone of the Upper Triassic Parsons Bay Formation (Vancouver Group). Thrust contacts are indicated in recent mapping, bounding some of the limestone blocks. On the property no bedding was seen in the limestone unit and it is possible that the contacts of the 007 limestone body is not conformable with the enclosing volcanics. Underlying mafic volcanics of the Upper Triassic Karmutsen Formation outcrop sporadically along the northern margin of the belt of limestones.

From MINFILE 092L 267:

*"Three masses of limestone are exposed in the central portion of a 1.8 kilometer wide rectangular fault block that extends southeastward from the shore of Holberg Inlet for 2.5 kilometers. The westernmost deposit outcrops over a 1.8 by 1.3 kilometer area (190 hectares). The mass is underlain by chloritic, amygdaloidal basalt of the Upper Jurassic Karmutsen Formation. Variably, amygdaloidal Lower Jurassic Bonanza Group (?) outcrop around the east, west and south sides of the deposit."*

The western deposit is comprised of fine grained, white to dark grey limestone that is commonly cut by calcite veinlets. Minor sulphides are present. The limestone becomes intercalated with some tuff, basalt and vesicular andesite in a few places."

### Regional Geology Map

The Regional Geology map (Figure 3) below is taken from the C.I.M Special Volume 46 paper on Island Copper by Perello et al. The map is after Nixon et al. 1994 and the solid circle southeast of Holberg marks the location of the 007 claim.

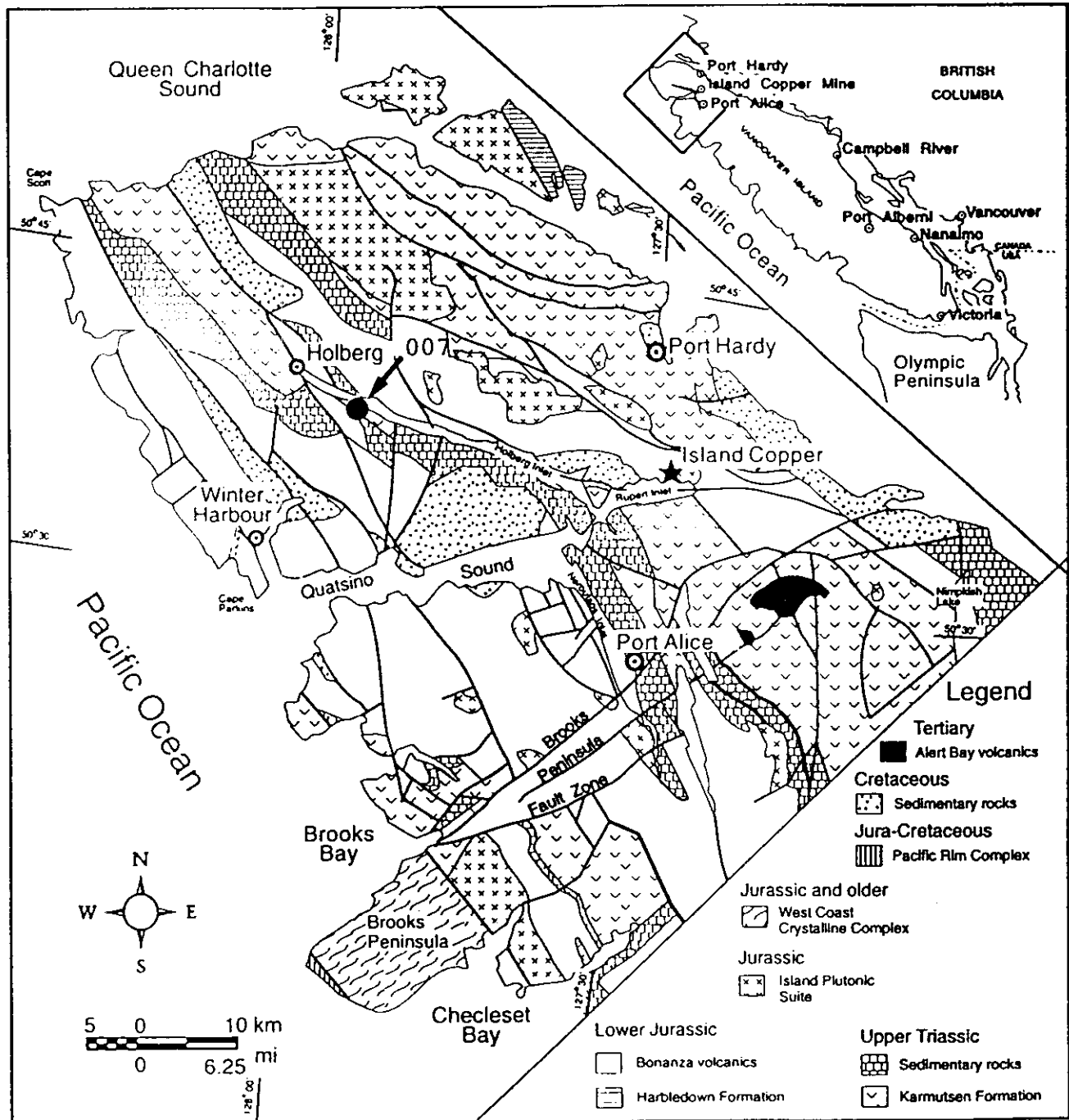


FIGURE 3 Location of Island Copper mine and regional geology (after Nixon et al., 1994).

## DEPOSIT TYPE

The limestone deposit is a sedimentary deposit of unspecified sub-type. The large global amount of carbonate deposition during the Upper Triassic and Jurassic times suggests a climate with high carbon dioxide content. This appears have been a period of extreme biological productivity including those fauna/flora that assisted in the carbon dioxide sequestration that resulted in calcium carbonate formation. The darker grey limestone reported may reflect high residual hydrocarbon content.

The limestone in the main deposit area is veined with calcite veins, which may have been caused by heating due to the placement of contemporaneous volcanic rocks. Zeolite development in the some of the volcanic beds indicates periods with warm waters migrating through the system. This type of alteration has potential to bleach the limestone by driving off hydrocarbons to form high whiteness zones.

The copper mineralization to the east of the main limestone deposit is not the focus of this report but, for the record, the following remarks are made. The mineralization has been interpreted to fall into the general classification of "Volcanic Redbed Copper". D.V. Lefebure and B.N. Church, in BC Geological Survey Open File 1996-13 pages 5-7, describe the profile of deposit type D03, the Volcanic Redbed Copper. The geological characteristics of this family of deposits include shallow marine and subaerial depositional environments in low to intermediate latitudes, which are located in arid environments. The tectonic setting for the depositional environment is within intracontinental rifts with subaerial flood basalt sequences and near plate margins with island arc and continental-arc volcanics.

Mineralization of this deposit type is typically "oxide facies" with chalcocite, bornite and/or native copper associated with hematite and/or magnetite. If native copper were the basis of the name of Native Creek, this would further fit the classification. Silver is typically associated with the copper minerals but they are usually without significant gold values. The mineralization can occur in mafic to felsic flows, tuff and tuff breccias and related sedimentary rocks. The distribution of minerals may be as disseminations, veins, infillings of amygdules, fractures and flowtop breccias.

The airborne magnetometer surveys for the area do not indicate any strong anomalies such as may be caused by basic volcanics, or large skarn or intrusive bodies with associated magnetite mineralization. The till sampling carried out in the area by the BC GSB did give some anomalous copper, cobalt, chromium and nickel values. The anomalous metal values stand out as a distinct grouping compared to metals associated with the Island Copper and Hushamu porphyry systems.

The copper mineralization described in MinFile 092L 247 (see Appendix II) is not typical of the type of deposit that has platinum group metals (PGMs) associated. However, because the till data suggests a strong correlation for copper, chromium, nickel and cobalt, there is potential for a metallogenic association that would include PGMs.

This should encourage some testing for those elements during any assessment of the copper mineralization.

There is some potential that a heat source that could have been responsible for the emplacement of such mineralization could also have caused useful alteration and bleaching of the limestone with the development of skarn or pre-skarn metasomatic assemblages.

## ECONOMIC MINERALIZATION

The limestone has been drill tested in a series of campaigns that gave a preliminary definition of the geometry of the deposit. A composite of various grab samples reportedly contained 54.33% CaO (equivalent to 97.02% Calcium carbonate), 1.19% MgO (equivalent to 2.5% Magnesium carbonate), 0.51% SiO<sub>2</sub>, 0.20% Al<sub>2</sub>O<sub>3</sub>, 0.14% Fe<sub>2</sub>O<sub>3</sub>, 0.11% P, 0.01% S and 43.4% loss on ignition. The sampling carried out during this examination confirms grades in this range of values with some variation as to silica and iron contents. The deposit would be considered to be of high enough grade for a useful range of markets, including sugar beet production and some of the fillers markets. Reported white limestone within parts of the deposit may be suitable for some of the higher margin filler grades.

Only one analysis was presented in the available assessment reports (which is the same analysis referred to in the MinFile report) and the sampling of this report indicates significant variability in the limestone. There is a need to carry out a proper sampling programme in order to guide the work in the continuing exploration and development of the property. One of the assessment reports that there is a dolomitic limestone in part of the deposit without supporting analyses. This sort of variability is most important to define as, while it might reduce the available tonnage for traditional limestone markets, it may broaden the range of markets that could be supplied from the deposit.

The estimate of tonnage given in the MinFile description of the property is 236 million tonnes with a minimum thickness of 46 meters. This number is taken from the Wishart estimate. The physical location of the limestone on a low hill appears to lend itself to the development of an open pit or quarry with little overburden removal. This, coupled with the proximity to the deepwater access along Holberg Inlet, could allow for a relatively low cost mining operation feeding into a bulk shipping transportation mode from the plant site.

The zeolites in the volcanics may have some economic potential, although the markets for natural zeolites are not easy to establish. During the prospecting of the claim block, the zeolites were seen to be wide spread, occurring as amygdule fillings and fine white speckles of zeolite minerals disseminated through the volcanic matrix. If there is a sector within the volcanics with a strong development of zeolites filling the amygdules (the amygdules are relatively common in the Bonanza and Karmutsen volcanic units),

it would be worthwhile testing their cation exchange capability (CEC). A good CEC rating would open the possibility that the material could be used in animal feeds, animal litters, odour absorbents, filter media and the encapsulation of pollutants.

## **LIMESTONE MARKETS AND COMPETITION**

Most limestone production in North America is used in the construction materials sector, either as feed for cement or as aggregate and coated road metal. In much of Canada, and in particular British Columbia, this last application is less significant because of the availability of stone with better wear characteristics. Texada is the largest limestone production site closest to the 007 limestone property and could be used as one benchmark in terms of competitive supply comparisons. A small limestone project was reported to have been bulk sampled by Ecowest Management Ltd, an affiliate of Continental Lime, at Varney Bay on the south side of Holberg Inlet. This project should be considered as a potential competitor but there has been no work reported for the last 3 years. This is described as a chemical limestone deposit, of sufficient purity to supply the company's lime plant at Tacoma, Washington which appears to be the main or captive market at this time. If the project does not go ahead, this market potential could be serviced by limestone from the 007 claim.

Limestone production from the principal source area in British Columbia, Texada Island, goes first into cement production (Ash Grove, Lafarge – Texada Quarrying) and then into aggregates, agricultural, chemical, and rip-rap (large boulder-sized product) markets. About 5 million tonnes are shipped annually to the Lower Mainland and the Pacific Northwest.

Crushed limestone is transported as far as western Idaho and San Francisco Bay Area ports for use in sugar refining. The sugar refiners typically calcine the crushed limestone at the sugar refinery plant site, rather than buy a quicklime product. In the case of some of the darker grey Texada limestone, there is a sufficient residual hydrocarbon/bitumen content that the supplier may receive a credit for contained calorific values. The crushed limestone is also reportedly used as in soil amendment applications in sugar beet growing areas in western Idaho.

Lesser amounts of rock from Texada are used in chemical applications for acid rock drainage remediation and flue gas desulphurization, usually after calcining to lime -  $\text{Ca}(\text{OH})_2$ . The Ecowaste operation is reported to be mainly designed to supply its affiliate company's own requirements for these end uses.

A white limestone, from an area of thermally metamorphosed limestone on Texada Island is quarried by Imperial Limestone Corporation. This goes into the markets of fillers and extenders and decorative stone. Their production is reported to be about the same as the planned rate for Ecowaste at about 200,000 tonnes per annum.

F.O.B. prices range from US\$5.50/tonne for bulk limestone (local prices can vary considerably above this) as crushed stone for aggregate to \$15 - \$20/tonne for finer crushed and screened product. Freight costs have a major impact on the selection of supplier for these lower priced markets. Much higher prices are paid for fine ground high whiteness calcium carbonate for fillers, which reflects the cost of grinding and bagging product. In some operations, the fine ground product may be surface treated with silicones to facilitate surface wetting by the polymers with which the fillers are used. The result is a product that sells for several hundred dollars per tonne in specialty markets.

A nearby market potential exists to supply calcium carbonate fillers to the Next Generation paper mill in Port Alberni. The mill is currently using oolitic chalk filler from Denmark which should have a considerable freight premium attached to its price. This would apply even if the ships bringing the chalk product were returning to Europe with a back haul load of pulp and paper. The potential should be explored to supply either ground white calcium carbonate or precipitated calcium carbonate into that market.

Raw limestone is generally a large bulk volume, low priced product that is dependent upon low cost transportation maintain profitability in the face of low margins. The location of the 007 claim could permit access for bulk marine transportation through deep-water channels up Quatsino and Holberg inlets from the Pacific. There are few identifiably special characteristics about the deposit from a market perspective other than this tidewater access. The raw limestone could be moved at relatively low cost to processing plant locations where energy costs for calcining and fine grinding are advantageous. Such plant locations could be in the Puget Sound, the port areas of New Westminster, North Vancouver, Surrey and Squamish.

Because of the distribution of limestone along the shores of Holberg Inlet and Quatsino Narrows there is some potential for other operations to start up in the area. The best potentials are around the mouth of the Marble River but these have been alienated as a protected area by the Provincial Government. Since Ecowaste is aiming its production at its own captive market in Tacoma, it is possible that additional producers could obtain niches supplying other markets such as carbonate fillers, soil amendment or sugar refining and could become successfully established.

## **SUMMARY OF WORK COMPLETED**

The writer, assisted by Mr. R. Gilroy, traversed the over-grown logging roads along the sectors marked on the 1:50,000-scale sketch map on the following page. Sample locations are shown on the same map as RG 1-6. The samples were panel type chip samples, which because of the massive nature of the limestone, may have favoured the more resistant siliceous material where it formed protrusions that could be broken with a rock pick. The limestone is generally grey whitish and with a very fine grained crystals



except where occasional calcite veinlets (2-10mm width) show some coarser grain material. No fossils were observed.

The samples were shipped to Acme Analytical Laboratories in Vancouver for analysis. A four acid digestion was carried out and the solutions were analyzed by ICP-Mass Spectroscopy for 41 elements. Silica was determined by lithium borate fusion followed by ICP-Emission Spectroscopy and reported as SiO<sub>2</sub>. Analytical certificates are included in Appendix II.

Using a conversion factor of 2.4973 to derive calcium carbonate from the calcium analysis, the limestone shows a range of 80.92% to 97.12% calcium carbonate with two samples giving calculated calcium carbonate values just over 100%. Those two samples did not have significant chemical differences compared to the other samples. These high values probably represent relatively high purity limestone but the accuracy of analysis is limited in the high purity material and the best method of determination is by subtracting the minor element concentrations. The silica values for these two samples were the two lowest of the suite of samples.

Sample RG #3, the lowest calcium carbonate value had 19.6 % magnesium carbonate content indicated by calculation. While not a full dolomite, this would properly be described as a magnesian limestone and would be a significant variation of chemical specification compared to the bulk limestone

Base metal values were all below or at normal concentrations for ordinary limestones.

## **INTERPRETATION AND CONCLUSIONS**

Earlier work on the 007 Project indicated a potentially large tonnage of limestone rock that has potential to serve the chemical lime markets and the fillers markets. Further work is needed to prove the consistent quality of the limestone and confirm its distribution so that the tonnage can be considered a drill proven resource. This work should include sufficient sampling and analysis of samples to define the range of products that could be derived from the deposit for chemical and fillers markets. The analysis should include test work to establish the quantities of nominally toxic elements such as arsenic, mercury and base metals. The suitability of the material for the production of agricultural lime and limestone soil amendment products, its calcining characteristics and natural brightness/whiteness should also be confirmed.



## COST STATEMENT

The cost of the orientation and sampling work is:

B.Ainsworth PEng BC - 3 days @\$500 per diem	\$ 1,500
R.Gilroy field assistant - 3 days @\$150 per diem	\$ 450
Sample analyses	\$ 166.28
Transportation 4x\$ 3 days @\$60 per diem	\$ 180
Board and Lodging 2 persons @\$75 per diem for 3 days	\$ 450
Total	\$ 2,296.28
	\$ 2,746.28

## RECOMMENDATIONS

There is sufficient potential to develop a substantial tonnage of mineralization on the 007 project to justify a non-contingent, phased exploration effort. The first part of this work should include a brief programme of mapping and more detailed surface sampling with the purpose of laying out a cost-effective grid for drill definition of the deposit. Prospecting and mapping of the property outside the area of the limestone is also recommended.

The further prospecting would include a preliminary investigation of the zeolite potentials of the volcanics, and the copper mineralization discussed in the Minfile documentation. This could be carried out concurrently with the drill programme.

The programme of diamond drilling should start with an initial campaign of 12 core drill holes on a grid of with 400 meter centres, each of approximately 50 meters in depth. This work could outline a preliminary resource of approximately 200 million tonnes of limestone to a depth of 40 meters. If the initial programme is successful in establishing good continuity a further programme in-filling the grid at 200 meter centres would be recommended. If the deposit was more variable the option remains to focus on the areas of highest priority, where white or chemically desirable limestone zones may exist, and develop sufficient tonnage for a mine life of more than 10 years at 200,000 tonnes per annum (i.e. >2 million tonnes).

Sampling should be completed of the limestone sections encountered in the drill holes to define its brightness, chemistry and variability. Rock Quality Designation (RQD) measurements should be made from the core for the purpose of defining the integrity of the rock in a potential quarry wall. The total estimate of cost for this work is \$255,000 including G.S.T.

## Phase I

Prospecting and Mapping 5 days @ \$700/day \$ 3,500

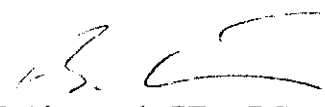
### Diamond Drilling - 600 meters in 12 set-ups

Mob/demob	\$ 3,000
Direct drilling costs 600m. @\$60/m	\$ 36,000
Geologist and assistant - mob/demob	\$ 2,000
Logging, core splitting, mapping -14 days @\$700/diem	\$ 9,800
Sampling and assaying 60 samples @\$25	\$ 1,500
Camp operation 7 crew for 14 days @ \$80/diem	\$ 7,840
Report and assessment filing	\$ 2,500
Sub-total	\$ 66,140
Contingency @15%	\$ 9,921
<b>Total</b>	<b>\$ 76,000</b>
GST 7%	\$ 5,320

## PHASE II

Fill-in drilling 44 holes to 50 meters depth @\$50/m	\$ 110,000
Geologist and assistant 48 days @ 700/diem	\$ 33,600
Sampling, testing and assaying	\$ 7,000
Mob/demob	\$ 1,500
Camp Operation 7 crew for 46 days @\$80/diem	\$ 3,276
Sub-total	\$ 155,376
Contingency @15%	\$ 23,306
<b>Total</b>	<b>\$ 179,000</b>
G.S.T. 7%	\$ 12,530
<b>Grand Total for Programme</b>	<b>\$ 255,000</b>
G.S.T 7%	\$ 17,850

Respectfully submitted,

  
B.Ainsworth, PEng BC.

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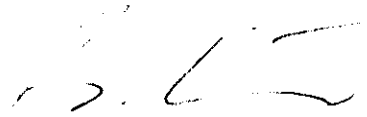
S.M.E. Industrial Minerals and Rocks: <http://books.smenet.org/imar>

U.S.G.S. – Commodities Summaries 1999

## CERTIFICATE

- 1) I, Benjamin Ainsworth am the author of this report having offices at 915-409 Granville Street, Vancouver, BC. I am self-employed as a consultant geologist.
- 2) I graduated from Oxford University with an Honours Degree in Geology in 1962 and have been practicing my profession continuously since that time. I am a registered member of the Association of Professional Engineers and Geoscientists of British Columbia, Registration Number 8648.
- 3) I have been practicing as a consultant geologist since 1987 following 21 years as working for Placer Development Ltd during which time I spent time on industrial minerals projects including reviews and assessment for investment purposes, of several limestone projects.
- 4) I have worked on projects similar to the subject mining property of this report and am a "Qualified Person" in the context of National Instrument 43-101.
- 5) As of the date of this report I am not aware of material facts that are not reflected in this report by written inclusion or reference.
- 6) I act as the corporate "Qualified Person" for Consolidated Venturix Holdings Limited (CDNX) and I have authored qualifying reports for the following publicly traded mining companies:  
1996 Triton Mining Corporation (TSE)  
1998 C2C Mining Corporation (CDNX)  
1999 Stralak Resources Inc (CDNX)  
2991 Hathor Exploration Ltd
- 7) I do not have any agreement, arrangement or understanding with Mr. Gilroy or any affiliated company to be or become an insider, associate or employee.
- 8) I do not own any securities directly or indirectly in any affiliated company of Mr. Gilroy. Other than my normal fee for the preparation of this report, I do not expect to receive any benefits from Mr. Gilroy including any interest in the property or any securities of an affiliated company.
- 9) My professional relationship with Mr. Gilroy is at arm's length and I have no expectation that the relationship will change.
- 10) In my professional opinion the property is of potential merit and further exploration work is justified.

March 18th 2002 at Vancouver, BC

  
Benjamin Ainsworth, PEng BC

**APPENDIX I**

**007 Claim Documentation**



MINERAL TITLES BRANCH  
 Report Rec'd. 1-1228  
 File No.: 13040-02  
 DEC - 3 2001  
 L.I.# \_\_\_\_\_  
 File 13040-02-1-1228  
 VANCOUVER, B.C.

**INSPECTION REPORT**

INSPECTION:  REQUEST  COMPLAINT  GENERAL  VERIFICATION

DETAILS: An inspection of the claim site was conducted subsequent to a complaint being filed pursuant to Section 40 of the Mineral Tenure Act.

CLAIM NAME/PLACER NO.: Alexander TENURE NO.: 388639

MINING DIVISION: Nanaimo MAP REFERENCE: 92L.061 TAG NO.: 240784

DATE INSPECTED: DATE OF REPORT: RECORDED OWNER: \_\_\_\_\_

Y M D  
 01 11 20

Y M D  
 01 11 30

John Williamson  
 1312 Downie Street  
 New Westminster B.C. V3M 3G5

INSPECTOR: Don Smith  
 DON J SMITH

**VERIFICATION**

The following titles affected by the attached map verification, result from the following Legal Posts found:

GPS OBSERVATION NAD 83 UTM ZONE 18Q9

TITLES NAME/TENURE NO. PLACER LEASE NUMBER	LEGAL POSTS VERIFIED	AMENDMENT	NORTHING	EASTING	COMMENTS
	POSTS TAG NO.	INSP./CAME			
Alexander 388639	LCP (W.P.) 240784	Insp.	5609322	572242	LCP witnessed 100m @ 90°
007 388799	LCP 237607	Insp.	5607411	576139	

**COMMENTS:**

- The Witness post for the LCP for the Alexander mineral claim was found approximately 1500m North and 2000m West of the position shown on the locator sketch.
- As a result the 007 mineral claim would acquire all ground within the perimeter of its boundaries.



IN THE MATTER OF A COMPLAINT PURSUANT TO  
SECTION 40 OF THE MINERAL TENURE ACT  
R.S.B.C. 1996, CHAPTER 292

AND

IN THE MATTER OF MINERAL CLAIM NAMED ALEXANDER  
TENURE NUMBER 388639  
NANAIMO MINING DIVISION

ORDER OF THE CHIEF GOLD COMMISSIONER

UPON RECEIPT of a complaint by Mr. William Gilroy, the complainant, pursuant to section 40(1), regarding MINERAL CLAIM NAMED ALEXANDER, TENURE NUMBER 388639, in the NANAIMO MINING DIVISION;

AND UPON ordering Mr. Don Smith, Mineral Title Inspector, Kamloops, British Columbia to investigate and report on the facts relevant to the grounds of the said complaint;

AND UPON receiving the report of Mr. Don Smith, dated November 30, 2001 following the investigation of the facts relevant to the grounds of the said complaint;

AND UPON reviewing the said report and being satisfied from the evidence before me that the complainant's claim is not located over the claim under complaint;

I, Denis Lieutard, Chief Gold Commissioner for the Province of British Columbia, find that the complainant, William Gilroy, was not an interested person for the purpose of section 40(1) in this action and I order the complaint action terminated.

Denis Lieutard  
Chief Gold Commissioner

Dated at Victoria, British Columbia  
this 15 day of January, 2002.

File No. 13825-02-1238

## **APPENDIX II**

### **Certificates of Analyses**



GEOCHEMICAL ANALYSIS CERTIFICATE

Ainsworth-Jenkins Holdings Inc. File # A201316  
 915 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Ben Ainsworth



SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb	Hf	
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
SI	.8	3.7	5.8	15	<.1	2.8	<.1	34	.07	8	.3	<.1	.3	139	.1	1.5	.1	1	6.82	.011	1.8	3.9	.13	147	.035	1.03	7.650	.20	.1	69.9	3	2.4	2.7	.5	<.1	<.1	1	2.6	<.1	2.6	2.0	
RG-1	.1	3.7	1.9	8	<.1	<.1	1	191	.22	22	1.0	<.1	.1	1609	<.1	.4	<.1	8	35.65	.006	.9	6.9	.26	5	.029	.42	.019	.09	<.1	6.6	2	.1	2.5	.3	<.1	<.1	1	2.0	<.1	2.8	.2	
RG-2	.3	.9	.5	5	<.1	<.1	<.1	200	.05	18	1.2	<.1	<.1	275	<.1	.2	.1	3	38.89	.001	.5	3.2	.14	4	<.001	.05	.012	.01	<.1	.5	<.1	<.1	.5	.1	<.1	<.1	<.1	<.1	.1	<.1	.5	<.1
RG-4	.2	1.3	1.8	5	<.1	<.1	<.1	104	.03	16	1.1	<.1	<.1	282	<.1	.2	<.1	4	40.62	.001	.2	3.7	.17	3	<.001	.08	.018	.01	<.1	.5	<.1	<.1	.6	.1	<.1	<.1	<.1	<.1	.2	<.1	.3	<.1
RG-5	.2	.9	.4	5	<.1	<.1	<.1	192	.07	20	1.2	<.1	<.1	324	<.1	.1	<.1	4	35.83	.002	1.4	4.5	1.36	3	<.001	.09	.045	<.01	<.1	1.0	<.1	<.1	.3	.1	<.1	<.1	<.1	.5	<.1	.1	<.1	
STANDARD	10.6	133.0	36.8	180	.3	39.1	14	1060	3.80	31	7.3	<.1	7.4	250	6.0	6.2	5.4	135	1.52	.111	26.7	309.7	.95	1199	.373	7.13	1.669	2.13	7.9	50.7	47	7.1	15.3	9.1	.6	4	11	23.0	<.1	67.7	2.9	

Standard is STANDARD DST3.

GROUP 1EX - 0.25 GM SAMPLE DIGESTED WITH HClO4-HNO3-HCl-HF TO 10 ML. UPPER LIMITS - AG, AU, W = 200 PPM; MO, CO, CD, SB, BI, TH & U = 4,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM. DIGESTION IS PARTIAL FOR SOME MINERALS & MAY VOLATIZE SOME ELEMENTS, ANALYSIS BY ICP-MS.  
 - SAMPLE TYPE: ROCK R150

DATE RECEIVED: MAY 17 2002 DATE REPORT MAILED: *May 27/02* SIGNED BY: *C.L.* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

P. 07/07

FAX NO. 6042531716

JUN-03-2002 MON 11:59 AM ACME ANALYTICAL LAB

ACME ANALYTICAL LABORATORIES LTD. 652 E. HASTINGS ST. VANCOUVER V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716  
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GEOCHEMICAL ANALYSIS CERTIFICATE

Ainsworth-Jenkins Holdings Inc. File # A201432  
915 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Ben Ainsworth

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb	Hf		
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
SI	.7	7.7	8.2	11	<.1	.8	<.1	26	.07	1	.4	<.1	.3	146	<.1	.9	.1	<.1	7.35	.011	1.9	2.3	.13	156	.030	.99	9.831	.22	.3	83.8	4	2.2	3.0	.5	<.1	<.1	1	2.4	<.1	2.8	2.0		
RG-3	.5	1.2	.5	<.1	.1	<.1	<.1	142	.12	11	1.7	<.1	<.1	222	<.1	.2	<.1	<.1	32.40	.002	.2	3.6	5.65	2	.002	.05	.009	.01	.9	.7	1	<.1	.5	.1	<.1	<.1	<.1	.5	.1	.3	<.1		
RG-6	.1	.9	.4	1	<.1	<.1	<.1	39	<.01	9	1.2	<.1	<.1	184	<.1	<.1	<.1	<.1	41.34	.001	.4	1.9	.12	2	.006	.02	.009	<.01	.3	.1	<.1	<.1	.1	<.1	<.1	<.1	<.1	.3	.2	.2	<.1		
STANDARD	10.2	124.5	39.8	185	.3	37.3	14	1117	3.99	27	7.6	<.1	6.1	231	5.4	6.8	5.6	134	1.58	.104	23.5	297.9	.94	1093	.388	7.02	1.904	2.10	7.0	55.5	46	6.9	15.0	9.0	.6	5	10	22.8	<.1	67.0	2.6		

Standard is STANDARD DST3.  
GROUP 1EX - 0.25 GM SAMPLE DIGESTED WITH NClO4-HNO3-HCl-NF TO 10 ML. UPPER LIMITS - AG, AU, W = 200 PPM; MO, CO, CD, SB, BI, TH & U = 4,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM. DIGESTION IS PARTIAL FOR SOME MINERALS & MAY VOLATIZE SOME ELEMENTS, ANALYSIS BY ICP-MS.  
- SAMPLE TYPE: ROCK R150

DATE RECEIVED: MAY 27 2002 DATE REPORT MAILED: *June 3/02* SIGNED BY: *C.P.* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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852 E. HASTINGS ST.

VANCOUVER BC V6A 1R6

PHONE (604) 253-3158 FAX (604)

3-1716

WHOLE ROCK ICP ANALYSIS

AA  
LL

Ainsworth-Jenkins Holdings Inc. File # A201316R  
915 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Ben Ainsworth

AA  
LL

SAMPLE#

SiO<sub>2</sub>  
%

RG-1	5.49
RG-2	1.23
RG-4	.63
RG-5	1.00
STANDARD SO-17	61.73

GROUP 4A - 0.200 GM SAMPLE BY LIBO2 FUSION, ANALYSIS BY ICP-ES.  
- SAMPLE TYPE: ROCK PULP

DATE RECEIVED: MAY 29 2002 DATE REPORT MAILED: *June 3/02* SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

WHOLE ROCK ICP ANALYSIS

Ainsworth-Jenkins Holdings Inc. File # A201432R  
915 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Ben Ainsworth



SAMPLE#	SiO2 %
RG-3	.45
RG-6	.34
STANDARD SO-17	61.73

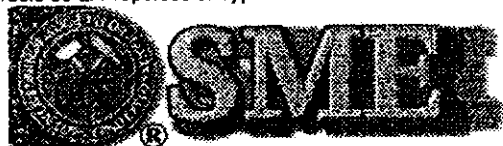
GROUP 4A - 0.200 GM SAMPLE BY LIBO2 FUSION, ANALYSIS BY ICP-ES.  
- SAMPLE TYPE: ROCK PULP

DATE RECEIVED: MAY 29 2002 DATE REPORT MAILED: *June 3/02* SIGNED BY: *C. Leong* P. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

**APPENDIX III**

**Properties of typical Commercial Lime Products**

Table 55-2. Properties of Typical Commercial Lime Products



# Industrial Minerals and Rocks

SME Home Page Online Books Main Page Industrial Minerals and Rocks

Table 55-2. Properties of Typical Commercial Lime Products		
<b>QUICKLIMES</b>		
	High Calcium	Dolomitic
Primary Constituents	CaO	CaO and MgO
Specific Gravity	3.2-3.4	3.2-3.4
Bulk Density (pebble lime), g/cm <sup>3</sup>	0.88-0.95	0.88-0.96
Specific Heat at 38°C kJ/kg	0.4	0.94
Angle of Repose	55°*	55°*
<b>HYDRATES</b>		
	High Calcium	Normal Dolomitic
Primary Constituents	Ca(OH) <sub>2</sub>	Ca(OH) <sub>2</sub> + MgO
Specific Gravity	2.3-2.4	2.7-2.9
Bulk Density, g/cm <sup>3</sup>	0.4-0.56†	0.4-0.56
Specific Heat at 38°C kJ/kg	0.62	0.62
Angle of Repose	70°*	70°*
Source: National Lime Association (1988).		
*The angle of repose for both types of lime (hydrate in particular) varies considerably with mesh, moisture content, degree of aeration, and physical characteristics of the lime; e.g., for quicklime it generally varies from 10 to 13°C and for hydrated lime it may range as much as 2 to 26°C.		
† In some instances these values may be extended. The Scott method is used for determining the density values. In calculating bin volumes the lower figure should be used.		

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