

General Nature of Report: Geological Mapping  
Claims: White Marble, Record Number 379747,  
Spruce No. 2 (lot 1106)

Mining Division: Nanaimo

NTS 092 L 06

Latitude  $50^{\circ} 23' N$  Longitude  $127^{\circ} 16' W$

Owner: J. D. Graham

Operator: Arbutus Resources Ltd.

Author: J. D. Graham, P. Eng.

Date Submitted: September 17, 2001

Date of report: July 30, 2001

GEOLOGICAL SURVEY BRANCH  
ASSESSMENT DIVISION

26,648

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## 1. Introduction

The subject claim is part of a group of Crown Granted claims located south of Kathleen Lake, 11 km directly east of Port Alice, BC. Access is usually obtained via an industrial road (Benson Main) from Port McNeill, BC, a distance of 48 km. The road continues south of Kathleen Lake, then westerly to Jeune Landing. IMASCO (International Marble and Stone Company) hauls high purity limestone from their pit near Craft Creek, along a continuation of this road to a loading facility at Jeune Landing.

The terrain is moderately rugged, especially on the south west boundary of the claim where cliffs reach an elevation of 600 metres. The northern portion of the claim is less steep with elevations between 300 and 450 metres. The topography continues to moderate to the north on the adjacent Crown Grants. The area was logged approximately 15 years ago and it is now covered with a thick growth of immature coniferous trees.

The area was claimed in the 1930's when mining attention was centered on the nearby Old Sport, Coast Copper and Merry Widow properties. The claims mapped in connection with this report were controlled during the late 1950's into the 1970's by Empire Development Limited.

High purity limestone is now been mined in the area by IMASCO in a pit two kilometres to the east of the White Marble mineral claim. Accordingly, limestone is the commodity now sought on this property.

## 2. Detailed Technical Data and Interpretation

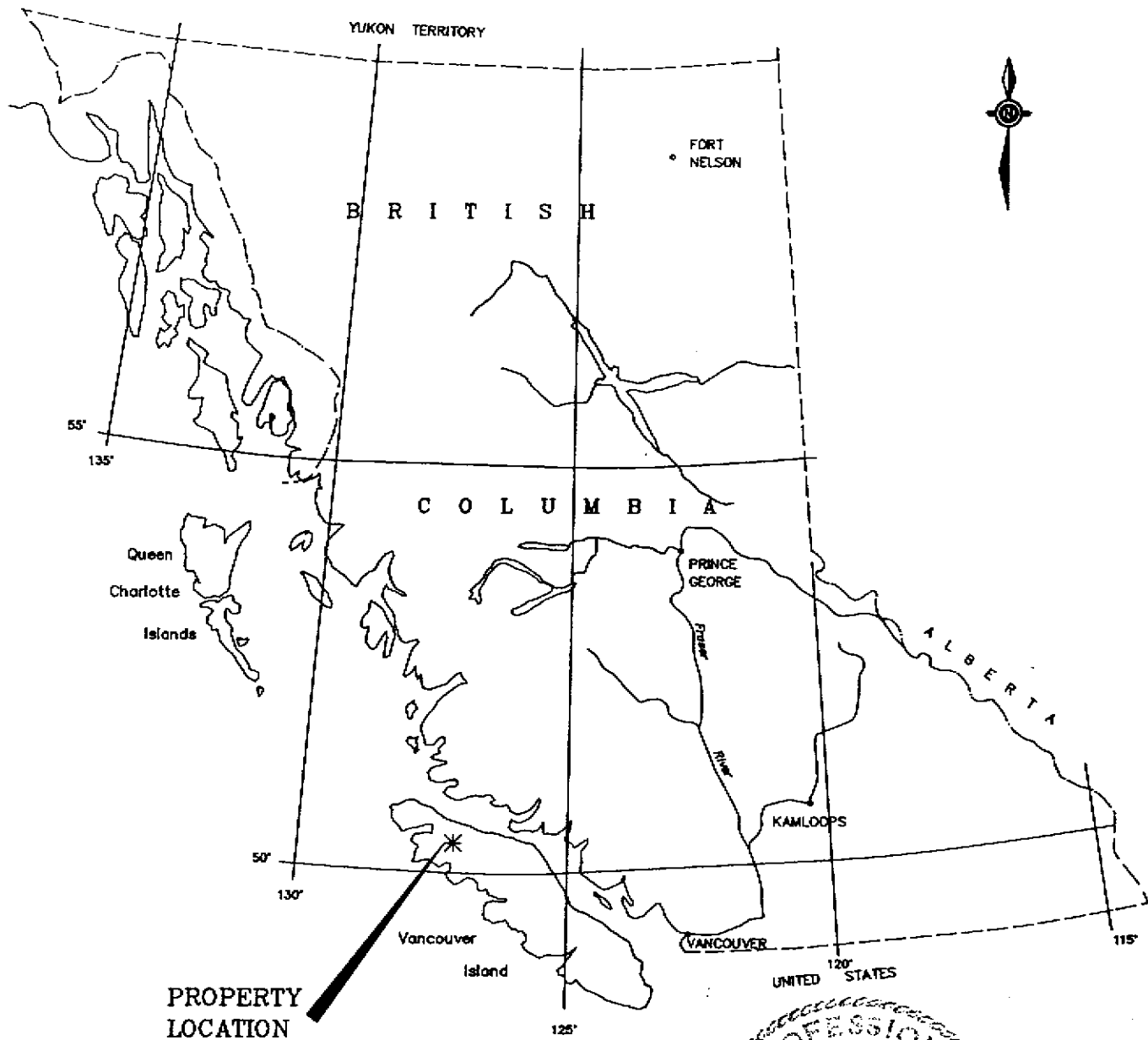
### 2.1 Objective

The objective of the mapping described in this report is to locate high whiteness crystalline limestone suitable as a building stone or for industrial use. Field work was done on August 12 and 13, 2000.

#### 2.2.1 Geological Setting

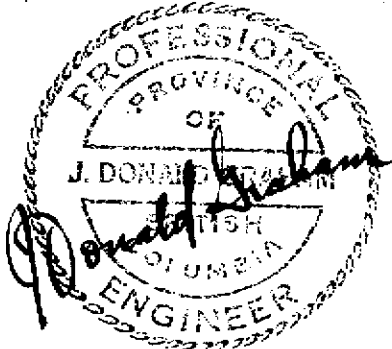
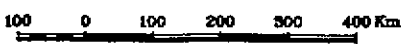
The claim is underlain primarily by Quatsino limestone, but beds of Bonanza Volcanics are also present. Both units are occasionally cut by greenstone dykes.

The area mapped is within the alteration front noted by COMINCO on internal company maps. This front emanates from the Coast Copper stock (diorite gabbro) which is present on the southern portion of the White Marble mineral claim.



PROPERTY  
LOCATION

Scale 1:10,000,000



J. D. Graham & Associates Ltd., Consulting Engineers  
White Marble Project for Arbutus Resources Ltd.

**Map 1** (Of assessment report dated July 30, 2001)  
**Location Map**

### 2.2.2 Area Mapped

The area mapped lies along and proximal to the location line of the White Marble claim, and along a serviceable logging spur road from a point where it crosses the location line, down slope along the spur road for 700 metres. A further section was mapped along a log skid trail to the north of this road, in the middle of Lot 1106, the Spruce No. 2 Crown Grant. Observations were also made along the Jeune Landing - Benson Lake road.

### 2.2.3 Lithology

**Quatsino Limestone:** Quatsino Limestone, the principal component of the middle Upper Triassic Quatsino Formation, is a limestone sequence 600 to 1200 metres thick. The colour of this rock type varies from white to grey. Most occurrences are fine grained and recrystallized with cleavage faces in the 0.5 to 1.0 mm. range. Cleavage faces can reach 5 mm. in some locations. Banding and deformation is not found but occasionally fine dark grey or brown lines with indistinct boundaries are noted. These lines are approximately one mm. wide. Bedding is not seen in the area mapped

**Bonanza Volcanics:** This is a late Upper Triassic formation which overlies the Quatsino Limestone. These volcanic rocks consist of massive andesitic to dacitic flows and tuffs, commonly containing feldspar phenocrysts.

**Greenstone Dykes:** These dykes fine-grained dykes intrude both the Quatsino and Bonanza formations. Feldspar phenocrysts are locally present. The dykes are similar to the Bonanza Volcanics and are difficult to differentiate from the volcanics.

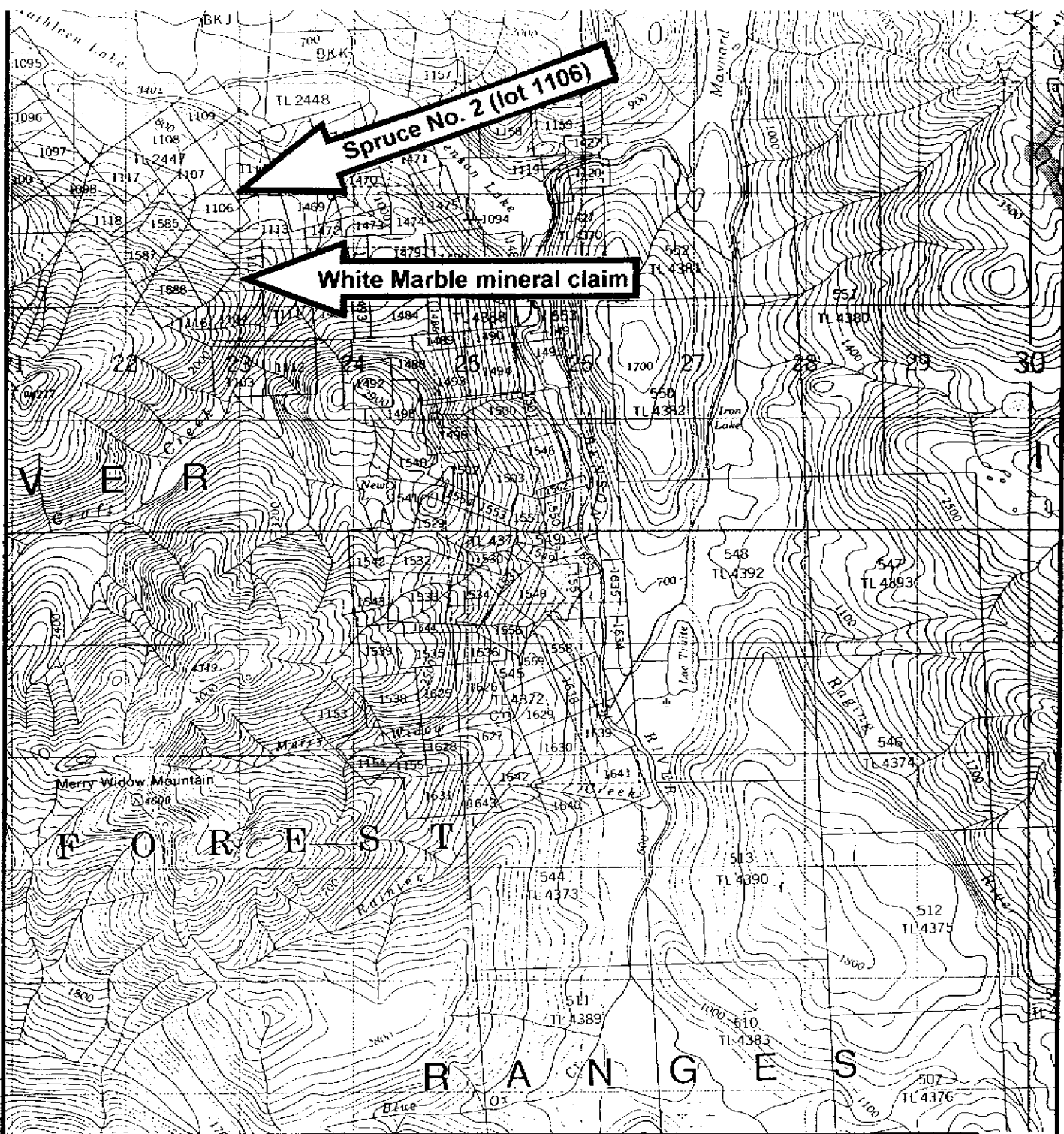
### 2.2.4 Structure

Structure in the limestone was not noted in the area mapped, probably because the bedding features have been obliterated by metamorphism. Minor shearing was noted along some dyke margins.

### 2.2.5 Results

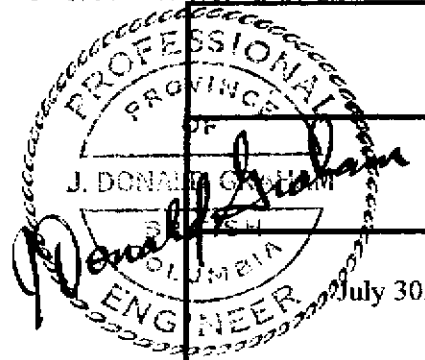
Descriptions of rock types encountered in outcrops are given in Table 1. Individual hand specimens collected are described in Table 2. Outcrops and hand specimen locations are marked on Map 3.

In the lower section of the area mapped, in the area of the "5" series of hand specimens, the quality of limestone appears to be equal to that noted in the nearby IMASCO production open pit. However, the existence of volcanic rock in the area may limit the size of the suitable



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**Map 2** (Of assessment report dated July 30, 2001)  
**Claim Index Map**



**Legend**

July 30, 2001    Scale: 1: 50,000    Area of NTS sheet 92L/06

Table 1

Description of rock types and outcrops mapped on or near the White Marble mineral claim.

For location of rock type and outcrop described, please see the identification number posted on Map 3. In this table the identification numbers are printed in bold. All rock types are Quatsino limestone (QL), unless otherwise noted.

| Identifi<br>cation | Rock type | Description  |
|--------------------|-----------|--|
| <b>1</b>           |           | grey, cleavage faces 1 to 1 mm., weathered face is blocky and grey   |
| <b>2</b>           |           | similar to 1, occasional veinlet, 2 to 3 mm. of white calcite, occasional bleb of white calcite 5 to 10 cm across.   |
| <b>4</b>           |           | outcrop of mixed white and grey crystalline limestone. Predominately grey grading to white.  |
| <b>5</b>           |           | Quite grey on weathered surface but predominately white on a fresh face. Grades to grey in some areas. See Table 2.  |
| <b>5-2</b>         |           | Pocked weathered surface, material at the top of the outcrop has a "sugary" texture. See Table 2   |
| <b>5-3</b>         |           | Similar to 5-2. Outcrop is 20 metres long in an east west direction  |
| <b>5-4</b>         |           | The north half of this outcrop is grey; the south half is white. See Table 2   |
| <b>6</b>           |           | West side of a water course, knob of QL on a south east facing slope. GPS co-ord. 5,582,634N, 622,839E. See Table 2  |
| <b>7</b>           |           | On an overgrown road, west of piles of waste logs, GPS co-ord. 5,582,648N, 622,786E. See Table 2   |
| <b>8</b>           |           | 20 metres west of 7 location. See Table 2  |
| <b>9</b>           | volcanics | Bonanza volcanics (BV) in contact with QL., fragments of QL in volcanics, green soft mineral (serpentine ?) on slip planes and as blebs in the contact zone. Interfingered contact zone extends over 10 metres consisting of 5 to 10 cm dykes in the QL. |
| <b>10</b>          |           | off white crystalline QL., some serpentine on fractures  |
| <b>11</b>          |           | off white QL in contact with BV  |
| <b>12</b>          |           | grey to white QL   |
| <b>13</b>          |           | 90% grey, 10% white QL   |
| <b>14</b>          |           | QL same as 13, cut by greenstone dyke 2 metres wide  |
| <b>15</b>          |           | 75% grey, 25% white  |
| <b>16</b>          |           | white, similar to 5  |
| <b>17</b>          |           | Predominately white QL (See Table 2) but grading to grey in the north west end of the outcrop.   |

Table 2

## Description of limestone (marble) in hand specimens (HS)

The hand specimens were collected August 12 & 13 2000, on and near to the White Marble claim.

| ID     | No. of HS | Colour     | Grain size, mm | Comments  |
|--------|-----------|------------|----------------|---|
| IMASCO | 1         | white      | 1 to 2         | Mined as a high purity limestone by IMASCO at their Craft Creek operation             |
| 5      | 5         | white      | 1 to 2         | Similar colour to IMASCO, but slightly finer grained. Occasional fine black wavy line |
| 5-2    | 5         | white      | 1 to 2         | Similar to IMASCO, occasional brownish yellow fine lines                              |
| 5-4    | 3         | white      | 1 to 2         | Similar to IMASCO, but finer grained.   |
| 6      | 1         | light grey | to 4 mm        | Medium to dark grey on a weathered face.  |
| 7      | 1         | white      | 1 to 2         |   |
| 8      | 1         | light grey | 2 to 3         |   |
| 17     | 1         | white      |                | similar to IMASCO   |
| 230    | 1         | white      | 1 to 2         | blocky specimen   |
| 270    | 2         | very white | lt 1           | fine grained, with one grey-white band, 0.5 to 1. mm wide, indistinct borders.        |
| 285    | 3         | light grey | 1 to 2         | faint banding, white elongated en echelon blebs 3 cm long.                            |
| 315    | 1         | white      | 0.5 to 1       | fine grained, suggestion of banding about 3 cm thick                                  |

Note: Column heading "No. of HS" means the number of hand specimens collected.



limestone deposits. Drilling, trenching and analysis is required to prove out the quality and size of commercial limestone in this area.

The limestone along the White Marble claim location line has more promise for developing a production tonnage as it is a more consistent body of limestone.

The exposures of limestone along the road between the location line and the "5" series have no economic potential due to the presence of volcanic rock and dykes.

### 3. Conclusions and Recommendations:

Hand specimens of the "5" series and from the location line should be analyzed for colour and chemical content. If found to be of commercial quality, the corresponding area(s) should be mapped in more detail.

### 4. References

1. Maps in possession of Arbutus Resources Ltd., obtained from the files of COMINCO, Equinox Resources Ltd. and Empire Development limited.
2. Muller, J. E. , Northcote, K. E., Carlisle, D., 1974: Geology and Mineral Deposits of Alert-Cape Scott Map Area Vancouver Island, British Columbia. G. S. C. Paper 74-8.

## Itemized Cost Statement

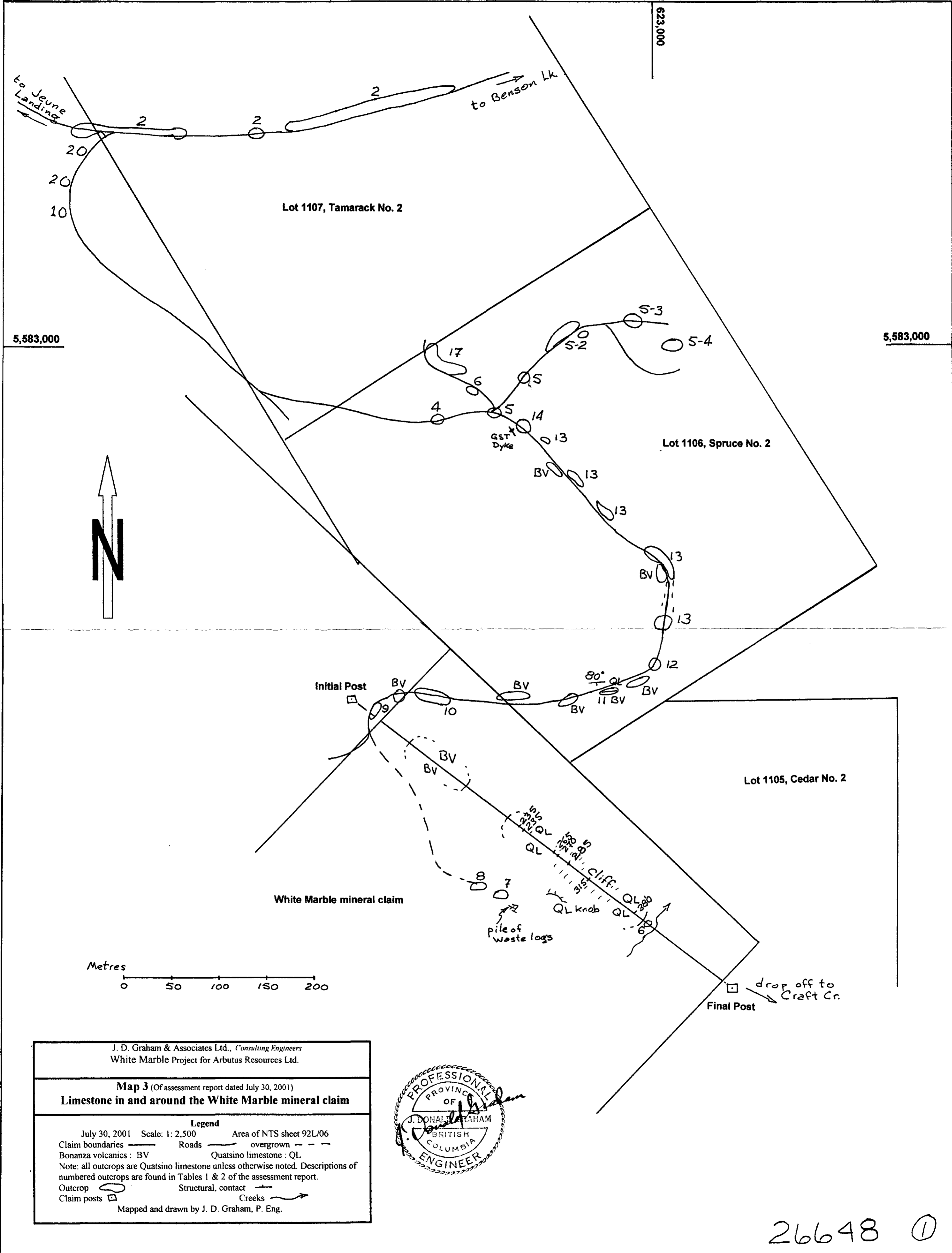
1. 1.5 days at \$450/day, being portions of August 12 and 13, 2000, J. D. Graham, P. Eng., field mapping, inspection of IMASCO open pit and travel \$675.
  2. 1.5 days at \$450/day, examining hand specimens, drawing maps and report writing. \$675.
  3. Expenses.(net of GST)
    - Field accommodation, food \$150
    - Transportation \$100
    - subtotal \$250
- Total: \$1,600.

## Author's Qualifications

I, John Donald Graham, certify that:

1. I am a graduate of the University of British Columbia, holding the following degrees granted by UBC: B. Appl. Sc., Geological Engineering, and M. Appl. Sc., Mining Engineering, and
2. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia, and
3. I have practiced my profession continuously since 1964.

*John Donald Graham*



J. D. Graham & Associates Ltd., Consulting Engineers  
 White Marble Project for Arbutus Resources Ltd.

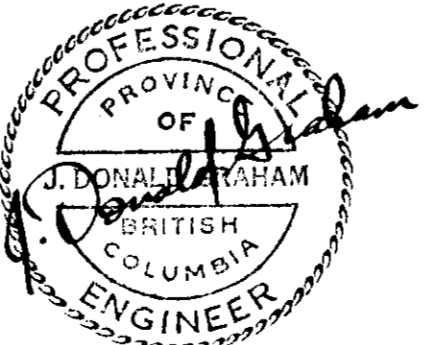
**Map 3** (Of assessment report dated July 30, 2001)  
**Limestone in and around the White Marble mineral claim**

July 30, 2001 Scale: 1: 2,500 Area of NTS sheet 92L/06

**Legend**

Claim boundaries ——— Roads ——— overgrown - - - -  
 Bonanza volcanics : BV Quatsino limestone : QL  
 Note: all outcrops are Quatsino limestone unless otherwise noted. Descriptions of numbered outcrops are found in Tables 1 & 2 of the assessment report.  
 Outcrop ○ Structural, contact ———  
 Claim posts □ Creeks →

Mapped and drawn by J. D. Graham, P. Eng.



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