

Ministry of Energy and Mines  
BC Geological Survey

Assessment Report  
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geological, Geochemical & Geophysical TOTAL COST: \$ 5,660.95

AUTHOR(S): Andris Kikauka SIGNATURE(S): A. Kikauka

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): \_\_\_\_\_ YEAR OF WORK: 2015

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5579509

PROPERTY NAME: Beaver Cove

CLAIM NAME(S) (on which the work was done): Black Marble 1037637

COMMODITIES SOUGHT: High calcium marble

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 092L 279

MINING DIVISION: Nanaimo NTS/BCGS: 092L10W, 092L.056

LATITUDE: 50 ° 30 ' 59 " LONGITUDE: 126 ° 53 ' 38 " (at centre of work)

OWNER(S):

1) W.E. Pfaffenberger 2) \_\_\_\_\_

MAILING ADDRESS:

4-4522 Gordon Pt Dr  
Victoria BC V8N 6L4

OPERATOR(S) [who paid for the work]:

1) Fundamental Res Corp 2) \_\_\_\_\_

MAILING ADDRESS:

4-4522 Gordon Pt. Dr  
Victoria BC V8N 6L4

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Upper Triassic Vancouver Group Quatsino Fm marble (recrystallized limestone) occurs as WNW trending, shallow dipping bands over a strike length of 2,000 m. A graphitic black marble alternates with white marble, and minor blue marble. Competent marble is suitable for value added, e.g. polished marble tile, dimension & building stone.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 23070, 23616, 26783, 31800, 33646, 8285, 15230

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
<b>GEOLOGICAL (scale, area)</b>			
Ground, mapping	1:5,000 10 hectares	Black Marble 1037637	1,434.45
Photo interpretation			
<b>GEOPHYSICAL (line-kilometres)</b>			
Ground			
Magnetic	1.3 Km 104 readings	Black Marble 1037637	1,806.35
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
<b>GEOCHEMICAL (number of samples analysed for...)</b>			
Soil			
Silt			
Rock	8 samples Fusion whole rock 1 graphite C-IR18	Black Marble 1037637	2,420.15
Other			
<b>DRILLING (total metres; number of holes, size)</b>			
Core			
Non-core			
<b>RELATED TECHNICAL</b>			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
<b>PROSPECTING (scale, area)</b>			
<b>PREPARATORY / PHYSICAL</b>			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
<b>TOTAL COST:</b>			5,660.95

NTS 92 L 10/W, TRIM 092L.056

LAT. 50 30' 59" N

LONG. 126 53'42" W

GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL  
REPORT ON MINERAL TENURE 1037637  
BLACK MARBLE CLAIM  
BEAVER COVE, B.C.

Nanaimo Mining Division

by

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**GEOLOGICAL SURVEY BRANCH**  
**ASSESSMENT REPORT**  
December 30, 2015

35,814

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## 1.0 SUMMARY

The Black Marble mineral property is located approximately 19-21 kilometers ESE of Port McNeill, BC and covers an area of 246.6 hectares (MTO ID # 1037637, Fig 2). Marble layers and beds are part of the Upper Triassic Quatsino Formation (Vancouver Group) and are cut by a minor amount of 0.5-25 meter wide dykes/sills Early-Middle Jurassic diorite/granite. The Black Marble claim features the North and South high calcium marble zones, located between 100-300 meters elevation, and are readily accessible by year-round access roads (1000 Main, and Holdsworth Mountain Road), and contain competent, quarry-able, large, block marble outcrops. Upper Triassic Quatsino Formation is of economic interest because of high calcium marble present on the subject property. Limestone has been metamorphosed to marble on the property over a 2 kilometer strike length. Marble is relatively pure and most of the marble is high calcium (> 97% CaCO<sub>3</sub>, and < 3% impurities (clay minerals, mica, quartz, and Fe oxides).

Marble layers and beds have a 30-120 meter range of thickness, and a relatively shallow dip (with a northerly component). Outcrops of black and white coloured, high calcium marble are exposed on the subject property between 50-300 meter (164-984 feet) elevation. The North Zone features high purity marble. White coloured marble from North Zone (rock chip samples BM-4, 6, & 7) returned geochemical whole rock analysis of 55.1-55.7% CaO. The South Zone features rock chip sample BM-5 returned geochemical whole rock analysis of 55.2% CaO. This outcrop (rock sample BM-5) forms a solid, competent 6-10 meter relief exposure (with high rock quality designation, i.e. cliff forming) of white and minor black marble. The South Zone where cliff forming marble is exposed has potential for large (2.4 X 2.4 X 1.8 m) block marble extraction (abrasive carbide coated wire-saw & guide hole-quarry methods). The marble beds which form small cliffs with approximately 3-15 m relief (e.g. location of rock chip 15BM-5) have potential to provide dimension stone marble for use as marble facings (vener) and marble tiles. There is also a demand for large block (2.4 X 2.4 X 1.8 meters) blocks that can be quarried from competent marble, e.g. South Zone rock sample BM-5, & slab sample S-110 (Fig 4 & 5).

The sugary medium to coarse grain texture of both white and black coloured marble causes reflectance of calcite cleavage faces (and minor fine grain mica), when the rock is played in light. Reflectance (polish-ability) increases when slab samples were wet polished with 600 grit emery paper. A smooth and polished finish of marble results in high gloss finish reflectance, which was confirmed by mechanically smoothing of slab samples with wet 600 grit emery paper. Highly polished, sugary medium to coarse grain marble slab samples (S-101 to S-110), resulted in 'Starry Night' texture of polished marble slabs. Competent (i.e. high rock quality designation) is suitable for dimension stone tiles, architectural stone, and veneer. High calcium marble with a bright white colour can be crushed and processed to produce 'whiting', a powder used as a colouring agent and filler in paint, putty, plastics, grout, cosmetics, paper and other manufactured products. A total of 4 out of 8 samples (sample numbers BM-4-7) averaged 55.33% CaO, 0.08% MgO, 0.86% SiO<sub>2</sub>, 0.07% Al<sub>2</sub>O<sub>3</sub>, 0.09% Fe<sub>2</sub>O<sub>3</sub>, and 0.07% P<sub>2</sub>O<sub>5</sub>. The whole rock geochemistry is considered high purity, 'high calcium marble' suitable for industrial applications.

A slab sample of black marble (S-107) from the North Zone was analyzed for % graphitic carbon. Geochemical analysis from ALS Minerals (method C-IR18) indicates that there is 0.17% C (graphite) in this rock sample of black marble. It is assumed that this low grade of graphite is of no commercial value.

Sub-hedral to euhedral calcite crystals become larger as the marble is subject to higher grades of metamorphism. As marble approach intrusive rock contact aureoles, calcite crystals become larger. A magnetometer total field survey was carried out over 1.3 line-km in close proximity to North & South Zones of high calcium marble in order to discern magnetite bearing intrusive granite/diorite from magnetite poor carbonate rocks. Results from the magnetometer survey suggest intrusive rock underlies a small portion of the north half of the South Zone (approximate location 648, 575 E, 5,598,150 N, elev 200 m), which can be traced northwest to exposures in road-cuts where an Early-Middle Jurassic granodiorite is cut by a late stage NW trending fault zone (approximately 3 m wide, 1% clay, dipping 29 degrees NE, location 648,484 E, 5,598,260 N, elev 250 m).

High calcium marble of the Quatsino Formation of northern Vancouver Island is considered viable for commercial development. Evaluation of marble in considerable detail is recommended and summarized as a 3 phase program:

TOTAL BUDGET for Phase 1-3 \$100 K

Phase I- Detailed mapping and sampling of the claims. Phase I is estimated to cost \$12 K.

Phase II- Excavator trenching and blasting estimated at \$24 K.

Phase III- Diamond drilling program. A number of shallow 30-60 m deep core drill holes (total 500 m) to be drilled at an estimated cost of \$64 K.

Contingent on results, further bulk testing to include quarrying of several rough quarry blocks, approximately 8 ft. X 8 ft. X 6 ft (2.4 X 2.4 X 1.8 m) each. Phase 4 will also include permitting, marketing, logistics and engineering required for production and lease.

## 1.0 INTRODUCTION

The purpose of this report is to document geological mapping, geochemical whole rock analysis and C (carbon) graphite geochemical analysis of the marble on the subject property, as well as interpretation of magnetometer data. Geological, geochemical and geophysical fieldwork consisted of mapping along recently upgraded logging roads located in the centre of the property.

Geological mapping of the Black Marble Project covers approximately 10 hectares and covers several smaller zones potential economic zones (approximately 2-5 hectares in area, North & South Zones) of high calcium black and white recrystallized limestone of Upper Triassic age Quatsino Fm. Geochemical sampling of 8 rock chip samples (across widths of 200 cm), from the North & South Zones indicate the presence of high calcium marble in outcrop. A total of 4 out of 8 samples (sample numbers BM-4-7) averaged 55.33% CaO, 0.08% MgO, 0.86% SiO<sub>2</sub>, 0.07% Al<sub>2</sub>O<sub>3</sub>, 0.09% Fe<sub>2</sub>O<sub>3</sub>, and 0.07% P<sub>2</sub>O<sub>5</sub>. This is considered as high purity, high calcium marble and highly desirable for industrial applications.

A magnetometer total field survey was carried out over 1.3 line-km in close proximity to North & South Zones of high calcium marble to discern magnetite bearing intrusive granite/diorite. The magnetometer survey suggested intrusive rock underlies a small portion of the north half of the South Zone, which can be traced northwest.

## 2.0 LOCATION, ACCESS, & PHYSIOGRAPHY

There are several towns and lesser communities in the map area where accommodation and lodging are readily obtained, including Port Hardy and Port McNeill. Numerous logging roads will provide access to most of the Quatsino recrystallized limestone. Topography ranges from 50-600 meters (164-1,968 feet), with valleys generally less than 60 meters above sea level (along the Tsulton R valley). There are numerous lakes, creeks and streams where water for diamond drilling is readily obtainable. Heavy duty equipment for trenching and road-building will be accessible locally, in either Port Hardy or Port McNeill. The climate on the north island is relatively mild. The summers are warm and generally dry, while the winters are cool and wet. Snow will accumulate on the higher peaks, but generally the valley bottoms and lower hills stay clear for year round work.

Access to the property is gained by driving south from Port McNeil along B.C. Highway 19 (Island Highway) for a distance of 14 km, and then turning east onto the Englewood-Kilpala access road. A series of branch logging roads provide access to most parts of the claim group. The Black Marble 1037637 property occupies a portion of the transition between the lowlands of Vancouver Island's northeast coast and the rugged mountain ranges (Mount Holdsworth) to the south. Much of the property is a southeast facing hill with an average slope of 12°. The drainage has a trellis pattern but creeks can be expected to flow usually during run-off periods due to the limestone bedrock. The claim is within TFL 37 owned by Western Forest Products (WFP), who operate numerous camps, the largest being Woss where the Forestry Engineering office is located. A unique feature of TFL 37 is the still operating logging railway, which transports logs to the sorting and shipping facility at Beaver Cove.

## 3.0 PROPERTY STATUS

### CLAIM OWNERSHIP

The Black Marble mineral property is located on Claim Sheet 092L 10/W, BCGS 092L.056, (Nanaimo Mining Division). The registered 100% owner of the property is William Pfaffenberger (FMC 143363).

TABLE I  
List of Claims

Claim Name	MTO ID #	Issue Date	Good to Date*	Area (hectares)	Owner 100%
Black Marble	1037637	2015/JUL/31	2020/SEP/30	246.559	143363

\* after application of assessment work documented in this report.

Mineral title in British Columbia is acquired by locating claims in the prescribed manner as outlined in the Mineral Act. Title is maintained by filing appropriate assessment work in the amount of \$5 per ha for the first 2 years and \$10 per ha for year 3 & 4, \$15 per ha for year 5-6, and \$20 ha thereafter. Under the present status of mineral claims in British Columbia, the consideration of industrial minerals requires careful designation of the products end use. An industrial mineral is a rock or naturally occurring substance that can be mined and processed for its unique qualities and used for industrial purposes (as defined in the *Mineral Tenure Act*). It does not include "Quarry Resources". Quarry Resources includes earth, soil, marl, peat, sand and gravel, and rock, rip-rap and stone products that are used for construction purposes (as defined in the *Land Act*). Construction means the use of rock or other natural substances for roads, buildings, berms, breakwaters, runways, rip-rap and fills and includes crushed rock. Dimension stone means any rock or stone product that is cut or split on two or more sides, but does not include crushed rock.

#### 4.0 BEAVER COVE (& AREA) PROPERTY HISTORY

The Black Marble Property lies within the northern section of the East (Bonanza) Band of the Quatsino recrystallized limestone. The description of the east band from the 1991 report is given below: Eastern (Bonanza) Band stretches from tidewater on the eastern side of Vancouver Island at Beaver Cove to south of the south end of Bonanza Lake. There has been very little mineral exploration associated with this band, except for a localized Pb-Zn skarn hosted occurrence located in close proximity to the Black Marble property North Zone. This base metal skarn occurrence is associated with a rhyolite dyke, MINFILE: Lorena 2, 092L 221 (Fig 3). Pods of skarn hosted mineralization consists of massive pyrite-sphalerite-galena and minor scheelite (up to 0.5 per cent) occurring in a brecciated zone and associated with the rhyolite dikes which cross-cut the Quatsino Fm. In 1979, a 1 metre channel sample yielded 11.3 per cent combined lead-zinc with grab samples assaying up to 50.3 per cent combined lead-zinc (Assessment Report 8285). In 1986, a grab sample assayed 31.2 grams per tonne silver, 0.206 per cent cadmium and greater than 1 per cent lead and zinc, respectively (Assessment Report 15230). In 1972, Lorena Mines completed a program of rock and soil sampling. In 1979 and 1980, Skidagate Exploration completed a program of geological mapping, minor blasting, rock sampling and prospecting on the area as the Ren 1-4 claims. In 1984 and 1986, Granada Exploration completed programs of soil sampling and prospecting on the area as the Nimrod claims.

High calcium limestone has been examined on the Bob claims at the south end of Bonanza Lake and the Nimrod1 claims just below Beaver Cove. This band has been the most explored for limestone and marble. The potential of the north end of this band has been known since the turn of the century. The outcropping along Tsulton River has been documented by both Parks (1917) and Gouge (1944) as well as the Annual Report for 1904. Gunning described this limestone band as the Quatsino limestone, consisting of white to grey crystalline limestone. Exploration of the south end of the band has been undertaken for both base metals (Bob) and limestone (Tsino). The limestone mapped on the Tsino Claims has been described as black to buff weathering, fine to medium grained, white to light grey in color. The east central area of the claims is underlain by coarse grained marble, being composed of intergrown and poorly formed calcite crystals. Fine grained light grey to dark grey calcite rich limestone has also been mapped (AR 19025). Drilling

intersected light grey to white, fine grained subhedral to anhedral, completely crystalline marble. There are mottled light grey to medium grey patches in the white marble (AR 06267). Fracture density and jointing patterns have not been documented.

#### Central Section:

Exploration efforts have been concentrated on the Bonanza, Leo D'or and Doro claims, in a relatively confined area in the centre of the belt. There has been an adit driven to assess the industrial potential of the limestone on the Doro Claim. There is presently one quarry being planned on the Leo D'or Claim. The limestone on the western half of Bonanza Claims has been described as black to buff weathering, fine to medium grained, white to light grey in color. The east central area is partly underlain by coarse grained marble, composed of intergrown and poorly formed calcite crystals. Fine grained light grey to dark grey calcite rich limestone has also been mapped (AR 19023). McCammon (1968) mapped the limestone as a lower, white and grey fine grained limestone, a higher darker limestone with dolomitic beds and an upper black limestone containing scattered 2-6 inch lenses of black chert and many fossils. The limestone on the eastern half of the Bonanza Claims is divided into an upper, medium to dark grey member and lower, light grey to white member. The upper member occasionally contains silica blebs. The lower member is fairly coarse grained were recrystallized and has thin beds of dark grey cherty or pyritic material (AR 17760). McCammon (1968) described the limestone as fairly uniform white and dark-grey streaked, sugary textured crystalline marble with grains as much as 118 inch in diameter. A 65 metre long horizontal adit was driven in to the lower limestone during 1983-1984 on the Doro Claim. The adit intersected a bed of massive, white, fine-grained (1-2 mm), crystalline limestone with occasional greyish streaks and mottled bands. (Geological Fieldwork 1985). The fracture patterns and jointing density has not been documented for these claims.

#### Northern End:

Exploration efforts on the northern end of the belt have been confined to the area proximal to the Tsulton River Valley. The marble in this area has been described by four different government geologists. A base metal exploration program undertaken to the north of the Tsulton River, mapped the limestone as well. The first examination was made in 1904. On the north side of Tsulton Creek about a mile from salt water, there is a 200 foot high marble bluff, extending about 1/2 mile up the creek. Samples of this marble are of a bluish color, and the stone is somewhat granulated on the surface (AR 1904). Parks (1917) also examined this exposure, taking two samples. Sample #I560 is a fine grained, glistening, white crystalline limestone with faint cloudiness in light tints. Sample #I561 is a white marble of the same fine grain as #1560, but very delicately lined with blue coloured vein material. Parks thought that in both grain and color this was one of the most desirable marbles observed. Gouge (1944) examined this exposure describing it as white and blue, fine-grained, high-calcium limestone, forming part of a belt 700 yards wide. Most of the limestone is white and has a sugary texture, but bands of fine-grained, blue limestone are interbedded with white. The most obvious impurities are occasional small nodules of quartzite or of chert, and in places thin dykes of pale green igneous rock are present. McCammon (1968) examined the same exposure (Samples 22, 23) as well as exposures to the south (Samples 24,25). He described the limestone at the Tsulton River as varying from white to white and grey streaked with black. Most is fine-grained, but near the intrusive grains are as much as 114 inch in diameter. Sample 22 is of the sugary white variety. Sample 23 is also a

creamy white sugary rock. The limestone to the south (samples 24, 25) is grey to white, partly fine grained, and partly sugary white marble with grains 0.2 mm in diameter. A very dark grey to black, fine grained limestone with scattered fossil remains was also noted. The limestone to the north is described as massive to thickly bedded (314/14SW), medium grey in color, and locally cryptocrystalline (AR 12764). Jointing is perpendicular to bedding and coated with calcite. The limestone grades upward into a darker more argillaceous limestone with interbeds of chert and chert nodules. The limestone has been locally recrystallized in patches of "off-white" marble, along with certain beds near the contact with the intrusives being selectively recrystallized to marble. The bedding orientation becomes more erratic toward the intrusive contact. It has been intruded by andesitic to rhyolitic dykes 0.5-2.0 m wide (AR 08285). Other than the examined exposure on the Tsulton River, little documentation exists for fracture patterns and jointing density. The potential of the Tsulton River exposure has been described by Parks (1917) and Gouge (144). Parks (1917) thought there was much stone available, large blocks could be procured in places and the marble itself was of a very desirable variety. Black Marble claim 1037637 is located in the northern section of the East Band. The claim overlies a 2 kilometer strike length of high calcium marble outcrops that range from 10-125 m in width.

Previously, the Black Marble claim area was examined by Achermann and Duncan G. Ogden for Industrial Fillers and by David Coffin for Vanguard Consulting between June 15 and 19, 1988. A short diamond drilling program was conducted to the west of the property between August 2 and August 10, 1988. Some regional geological mapping was completed by Howard Brown for Pleuss Stauffer in 1984. Previous work for high brightness filler CaCO<sub>3</sub> including limited diamond drilling that was done for Industrial Fillers (Pleuss Stauffer, OMYA) in the late 1980's. The claims are partly underlain by intrusive rocks and a belt of variably altered, Quatsino recrystallized limestone. High brightness (up to 91.21%) and high purity (up to 56% CaO, equivalent to 99.68% CaCO<sub>3</sub>) have been obtained from preliminary sampling to the south.

In 1992 and 1994, Mammoth Geological completed geological mapping of the Ton 1-6 claims. Detailed geology identifies a distinct blue coloured marble as a specialty dimension stone.

Work in 2001-2012 carried out by Homegold Resources (Smiley Property) shows that the area mapped along the Mainline logging road is a complex sequence of bleached white limestone to black graphite limestone intruded by a series of small dioritic dykes and sills. Future work recommended by Homegold includes detail geological mapping along zone 100m wide from intrusive contact, and reconnaissance magnetometer lines throughout the property to identify the presence of blind intrusive bodies or dykes and along the intrusive contact to test for higher brightness calcium carbonate.

WFP Logging owns a private deepwater dock facilities at Beaver Cove. In the past the Kelsy Bay-Beaver Cove Ferry used the ramp and the Nimpkish Iron operation also loaded barges at Beaver Cove.



## 5.0 REGIONAL GEOLOGY

The geology of the north end of Vancouver Island has been described by Muller et al (1974) and Muller et al (1980). The area lies in the Insular Belt of the Canadian Cordillera. The map area is chiefly underlain by the middle to upper Triassic Vancouver Group, overlain by the lower Jurassic Bonanza Group. The Vancouver Group is intruded by large and small bodies of Early-Middle Jurassic Island Intrusions and the related (?) Westcoast Complex, and overlain unconformably by remnants of a lower Cretaceous clastic wedge on the southwest side and similar upper Cretaceous beds on the northwest side of Vancouver Island. There are some small early Tertiary (Catface) intrusions also mapped. The region may be divided into several great structural blocks, separated mainly by important near-vertical faults and themselves fractured into many small fault segments.

The Vancouver Group is comprised of the lower Karmutsen Formation, middle Quatsino Formation and upper Parson Bay Formation. The Karmutsen Formation, the thickest and most widespread of the Vancouver Group formations, consists of basaltic pillow lavas, pillow breccias and lava flows with minor interbedded limestones, primarily in the upper part of the formation. Karmutsen rocks outcrop throughout the north part of Vancouver Island, primarily to the east. The Quatsino Formation overlies the basalts. The lower part of the Quatsino Formation consists of thick bedded to massive, brown-grey to light grey, grey to white weathering, fine to medium grain marble. The formation is in gradational contact with the overlying Parson Bay Formation by an increase in layers of calcareous pelites. Quatsino carbonate outcrops as three narrow belts on the north part of Vancouver Island. The Parson Bay Formation consists of a series of interbedded silty limestones and calcareous shales and sandstones, and occasional beds of pure recrystallized limestone. Parson Bay rocks outcrop sporadically overlying the Quatsino Fm. The Bonanza Group overlies the Vancouver Group. Bonanza Group rocks are primarily a Jurassic assemblage of interbedded lava, breccia and tuff with compositions ranging from basalt through andesite and dacite to rhyolite, deposited in a volcanic island arc environment. The Bonanza Group outcrop primarily on the west side of northern Vancouver Island. The Westcoast Complex is a heterogeneous assemblage of amphibolite and basic migmatite with minor metasedimentary and metavolcanic rocks of greenschist metamorphic grade. The Westcoast Complex outcrops in a loosely defined belt on the west coast of Vancouver Island. Granitoid batholiths and stocks of the Island Intrusions underlie large parts of Vancouver Island. These intrusions range in composition from quartz diorite and tonalite to granodiorite and granite. The Cretaceous clastic wedge includes the Queen Charlotte and Nanaimo Groups. These groups consist of cyclical successions of sandstone, conglomerate and shale, with interbedded coal in the Nanaimo Group. These rocks outcrop around Quatsino Sound. Small intrusive stocks of early Tertiary age and of general quartz dioritic composition are known in many parts of Vancouver Island. These rocks are generally massive, light colored, fine to medium grained equigranular to locally porphyritic granitoid rocks. They are commonly regularly and closely jointed.

The following list of lithologies are rock types present on Black Marble 1037637 property:

Lithology Legend

- EMJIgd Early-Middle Jurassic Island  
Plutonic Complex, granodiorite
- IJBca Lower Jurassic Bonanza Fm  
Calc-alkaline volcanics
- UTrVP Upper Triassic Parson Bay Fm,  
Vancouver Group, limestone,  
marble, slate, siltstone, argillite
- UTrVQ Upper Triassic Quatsino Fm,  
Vancouver Group, limestone,  
marble, calcareous sediments
- UTrVK Upper Triassic Karmutsen Fm,  
Vancouver Group, basalt

The network of large scale faults are present on the north end of Vancouver Island appears to be the superposition of two or more fracture patterns, each with a characteristic directions and of different age and origin. The Quatsino Formation limestones are the main focus of the marble exploration. The larger, massive beds of limestone are white to black in color and distinctly crystalline. Exceedingly fine-grained beds form a small percentage of the sequence. Siliceous or cherty varieties are rare as well. The Quatsino Formation consists almost entirely of recrystallized limestone, with a few thin flows of andesite or basalt. The limestone is fine to coarsely crystalline, and ranges from white to black, with various intermediate colors. Towards the base, it tends to be exceedingly fine grained, and grey and brownish or buff colors are characteristic. Midway of the formation the colors are predominantly white or grey, but towards the top the limestone becomes dark grey to black, due to a varying quantity of carbonaceous (graphitic) matter, and the formation grades upward into argillites and impure limestones of the overlying Parson Bay Formation. Even at the top, however, light grey or even white beds are interbedded with the darker varieties. The bedding, as represented by colour banding, is generally well preserved in the upper part of the formation but in the lower part, where white to brownish grey and buff colors predominate, it is poorly preserved. In the upper part, too, the beds are generally thin. The formation is dominantly a high-calcium limestone (Hoadley, 1953).

Within a mile or two of bodies of the Coast Intrusions, the limestone may be highly contorted and extremely jointed and fractured, cut by many acidic dykes, and partly to completely skarnified (Hoadley, 1953). In the vicinity of Kathleen and Alice lakes, the lower portion of the limestone contains small interbeds of lava and above it lies a mixed series of argillites, quartzites and volcanics in which there are small beds of argillaceous limestone. White to dark grey limestones occur at several places on Nimpkish Lake. The limestones are recrystallized and somewhat faulted. (Gunning, 1930). Recrystallized limestone obtains a thickness of 500 to 1000 feet (152.4-304.8 m) in the Nimpkish Lake Quadrangle. The limestone becomes darker and argillaceous towards the top of the formation. (Gunning, 1930). The limestone in the Zeballos area is medium to coarsely crystalline and, owing to extensive recrystallization, has lost all evidence of bedding. On weathered surfaces the limestone is grey, but on freshly broken surfaces it ranges from white to cream (Stevenson, 1950).

The limestone outcropping along Nimpkish Lake (Central Band) is too jointed in many places to serve as a building stone, but where the beds are least deformed, as from Beaver Cove to Bonanza Lake, it could be extracted in blocks sufficiently large for ordinary structural purposes. Limestone outcrops in three relatively narrow discontinuous bands of varying lengths on the north end of Vancouver Island (McCammon, 1968). The East Band reaches from the hill just west of Beaver Cove southeast across Tsulton River to Bonanza Lake and down the west side of the lake to its west end. The Centre Band extends from 5 kilometres south of Port McNeill southeast to 15 kilometres past the south end of Nimpkish Lake. The West Band extends from west of Nahwitti Lake southeast to Tlupana Inlet. Additional limestone occurrences extend along the south shore of Holberg Inlet.

## 6.0 2015 FIELD PROGRAM

### 6.1 SCOPE & PURPOSE

Upper Triassic Quatsino Formation is of economic interest because of high calcium marble present on the subject property for the purpose of 'value added' industrial end use. Limestone has been metamorphosed to marble on the property over a 2 kilometer strike length. Marble is relatively pure and most of the marble is high calcium > 97% CaCO<sub>3</sub>, and < 3% impurities (e.g. clay minerals, mica, quartz, and Fe oxides). Rock chip sampling and geochemical whole rock analysis is intended to identify rock types present, and geological mapping is intended to identify relevant textures, structures and alteration minerals present. Magnetometer geophysical surveying is intended to locate buried intrusive rock with relatively higher magnetite content.

### 6.2 METHODS & PROCEDURES

A total of 8 rock chip samples were taken across 2 meter intervals along exposures of bedrock near Tsulton River in the Beaver Cove high calcium marble zones (Fig 4). Rock chip samples were taken with rock hammer and chisel and consist of acorn to walnut sized bedrock pieces for a total weight ranging from 1.5 to 2.5 kgs. Sample material was placed in marked poly ore bags and shipped to ALS Minerals, North Vancouver. A total of 10 slab samples were selected as a competent, cobble size pieces that were sawn in 2-3 cm thick slabs (Lortone 14 inch slab saw). The slab saw cuts identified texture and reflectance (polish-ability). One of the ten slab samples (S-107, competent black, fine-medium grain marble) was analyzed for % C (ALS code C-IR18, graphitic carbon by LECO, Appendix A & B).

ALS Minerals crushed better than 70% passing a 2 mm screen split and pulverized rock chip samples Prep-31, Appendix B). A split of 250 grams is pulverized to better than 85% passing a 75 micron screen. The sample pulp is analyzed using ALS Minerals ME-XRF-06 (XRF-26) Li borate flux major oxide whole rock geochemical analytical methods.

Geological mapping was carried out over 10 hectares of exposed bedrock. Geological structure such as bedding and fault orientation as well as lithology changes were noted and mapped at a scale of 1:10,000 (Fig 4), and at a scale of 1:5,000 (Fig 5 & 6).

A Total of 1.3 line km of field magnetometer geophysical instrument surveying was carried out over the Beaver Cove Black Marble property on Nov 12, 2015. The instrument used is a GEM

GSM-19T v 7.0 proton magnetometer. The readings were taken at 12.5 meter intervals using a Garmin 60Cx GPS for survey location. A total of 108 field readings were done along east-west oriented grid lines (grid numbers correlate with UTM grid). Instrument sensor was oriented to record vertical component of total field. Values in nT recorded by GEM GSM-19T v 7.0 proton magnetometer are absolute (not relative values). Raw data was corrected by looping (returning to a common point and verifying reading over time intervals of 20-120 minutes, and comparing the correction with diurnal changes recorded by magnetic observatories operated by Natural Resources Canada (Appendix F).

### 6.3 PROPERTY GEOLOGY

Geological mapping identified stratbound marble layers and lenses that striking west-northwest and dipping shallow north-northeast. The dominant fault structures appear to be northwest and northeast oriented, and likely related to emplacement of Mid-Jurassic age Island Plutonic Complex intrusive rocks. The marble (recrystallized limestone) of the Quatsino Formation is extensive throughout the local area as lenses along a 4 kilometer strike length that extends 2 km south-southeast of the subject property. The Black Marble (MTO ID 1037637) mineral property features high calcium marble hosted in the Quatsino Formation.

The writer performed fieldwork consisting of geochemical sampling magnetometer surveying and geological mapping on the property. Fieldwork was carried out Nov 10-13, 2015. Technical work is recorded in this assessment report, and reported as MEM Event number 5579509.

Geochemical sampling was carried out on exposed surface bedrock. A total of 8 rock chip samples were collected from surface outcrop. Rock chip samples were analyzed by ALS Minerals, North Vancouver, BC, using Li Borate fusion, whole rock analysis ME-XRF-06 (XRF26).

Geological mapping of approximately 10 hectares (Fig 5 & 6) identified a dense, fine-medium grain black marble (Samples S-101 & 102, S-107-110, BM-1, BM-6 & 7). There were also pearl white marbles (variably mottled grey), both coarse (2-4mm) and banded (re-crystallized textures). A pink-brown coloured granite/granodiorite was seen in roadcuts near center of property (120-250 meters elevation). The marble in the area of the logging road is close to contacts with a dull pink to dark grey granodiorite to granite.

Descriptions of slab samples taken from Black Marble Claim are listed as follows:

ID	Colour	Easting	Northing	Elev (m)	Sample Type	Lithology
S-101	Black	648575	5597980	181	Rock chip	Marble
S-102	Black	648517	5597956	175	Rock chip	Marble
S-103	White, minor mottled grey	648715	5598140	159	Rock chip	Marble
S-104	White, minor mottled grey	649300	5598664	114	Rock chip	Marble
S-105	White, minor mottled grey	649254	5598686	117	Rock chip	Marble
S-106	White, minor mottled grey	649208	5598703	127	Rock chip	Marble
S-107	Black	649069	5598645	123	Rock chip	Marble
S-108	Black 20% White 1-15 cm bands	648988	5598550	140	Rock chip	Marble
S-109	Black	649030	5598862	200	Rock chip	Marble
S-110	Black	648277	5597575	179	Rock chip	Marble

ID	Bedding strike	Bedding dip	Width	Comments
S-101			grab	black, fine to med grain marble, massive
S-102			grab	black, fine to med grain marble, massive
S-103	113	22 N	grab	pearl white, overlain by black med grain marble
S-104			grab	pearl white, med grain marble, massive
S-105			grab	pearl white, med grain marble, massive
S-106			grab	pearl white, med grain marble, massive
S-107			grab	black, fine to med grain marble, massive
S-108			grab	black, fine to med grain marble, massive
S-109			grab	black, fine to med grain marble, massive
S-110	109	24 N	grab	black, fine to med grain marble, massive

ID	C %	Texture	Competence
S-101		1-2 mm fine to med grain	Good-Excellent
S-102		1-2 mm fine to med grain	Good-Excellent
S-103		1-4 mm fine to coarse grain, sugary	Excellent
S-104		1-4 mm fine to coarse grain, sugary	Excellent
S-105		1-4 mm fine to coarse grain, sugary	Excellent
S-106		1-4 mm fine to coarse grain, sugary	Excellent
S-107	0.17	1-2 mm fine to med grain	Excellent
S-108		1-2 mm fine to med grain	Good-Excellent
S-109		1-2 mm fine to med grain	Good-Excellent
S-110		1-2 mm fine to med grain	Excellent

Sample S-102, & S-103 are weakly brecciated and cut by white carbonate microveinlets. Sample S-108 contains approximately 5% white carbonate streaks and clots (1-15 cm).

#### 6.4 PROPERTY GEOCHEMISTRY

Descriptions of rock chip samples taken from Black Marble Claim are listed as follows:

ID	Colour	Easting NAD 83	Northing NAD 83	Elev (m)	Sample Type	Lithology
BM-1	Black	648574	5597982	178	Rock chip	Marble
BM-2	White	648602	5598022	175	Rock chip	Marble
BM-3	White	648568	5598093	200	Rock chip	Marble
BM-4	White	649302	5598663	107	Rock chip	Marble
BM-5	White	648277	5597575	174	Rock chip	Marble
BM-6	White	649208	5598703	127	Rock chip	Marble
BM-7	Black	649069	5598645	123	Rock chip	Marble
BM-8	Black	649030	5598862	203	Rock chip	Marble

ID	Bed strike	Bed dip	Width (cm)	Comments
BM-1			200	black, med grain marble, massive
BM-2			200	pearl white, med grain marble, massive
BM-3	113	22 N	200	pearl white, overlain by black med grain marble
BM-4			200	pearl white, med grain marble, massive
BM-5			200	pearl white, med grain marble, massive
BM-6			200	pearl white, med grain marble, massive
BM-7			200	black, med grain marble, massive
BM-8			200	black, med grain marble, massive

ID	CaO %	MgO %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %	MnO <sub>2</sub> %	Na <sub>2</sub> O %	K <sub>2</sub> O %	SO <sub>3</sub> %	Na <sub>2</sub> O %
BM-1	51.7	1.27	0.34	0.26	8.74	0.03	<0.01	0.06	0.08	<0.01
BM-2	51.2	2.47	0.44	0.52	4.59	0.02	<0.01	0.31	0.69	<0.01
BM-3	54	1.03	0.17	0.1	2.51	0.03	<0.01	0.1	0.2	<0.01
BM-4	55.7	0.09	0.05	0.11	0.61	0.03	<0.01	0.01	0.19	<0.01
BM-5	55.2	0.08	0.07	0.11	0.86	0.04	<0.01	0.01	0.12	<0.01
BM-6	55.3	0.07	0.06	0.1	0.74	0.02	<0.01	0.02	0.15	<0.01
BM-7	55.1	0.1	0.13	0.05	1.25	0.01	<0.01	0.01	0.01	<0.01
BM-8	50.9	2.15	0.28	0.14	8.43	0.01	<0.01	0.04	0.08	<0.01

Outcrops of black and white coloured, high calcium marble are exposed on the subject property between 50-300 meter (164-984 feet) elevation. The North Zone features high purity marble.

White and black coloured marble from North Zone (rock chip samples BM-4, 6, & 7) returned geochemical whole rock analysis of 55.1-55.7% CaO. The South Zone features rock chip sample BM-5 (white colour) with geochemical whole rock analysis of 55.2% CaO. This outcrop (rock sample BM-5) forms a solid, competent 6-10 meter relief exposure (with high rock quality designation, i.e. cliff forming) of white and minor black marble. A total of 4 out of 8 samples (sample numbers BM-4-7, consisting of 3 white & 1 black coloured sample) averaged 55.33% CaO, 0.08% MgO, 0.86% SiO<sub>2</sub>, 0.07% Al<sub>2</sub>O<sub>3</sub>, 0.09% Fe<sub>2</sub>O<sub>3</sub>, and 0.07% P<sub>2</sub>O<sub>5</sub>. The whole rock geochemistry of samples BM-4 to BM-7 are considered high purity, 'high calcium marble' suitable for industrial applications.

## 6.5 PROPERTY GEOPHYSICS

A Total of 1.3 line km of field magnetometer surveying was carried out over the Beaver Cove Black Marble property on Nov 12, 2015. The instrument used is a GEM GSM-19T v 7.0 proton magnetometer. The readings were taken at 12.5 meter intervals using a Garmin 60Cx GPS for survey location. Raw data was corrected by looping (returning to a common point and verifying reading over time intervals of 20-120 minutes, and comparing the correction with diurnal changes recorded by magnetic observatories operated by Natural Resources Canada (Appendix F). Magnetometer surveying was done on the South Zone (Fig 9) which includes 0.975 km total line grid. Magnetometer surveying done on the North Zone (Fig 10), including 0.325 km total line grid located about 400 meters northeast of the South Zone. Returned nano-Tesla values from the South Zone (Fig 9) range from 54,675.20 to 56,521.24 nT, and values from the North Zone (Fig 10) range from 54,766.15 to 55,104.55 nT.

There is a inverted funnel-shaped total field magnetometer high in the South Zone that corresponds to nearby outcrop of Jurassic Island Plutonic Suite granite/granodiorite (north part of grid) that contains 0.1-0.2% magnetite. It is probable that mag highs in the order of 200-500 gammas above background outline distribution of the magnetite enriched Jurassic Island Plutonic Suite granite/granodiorite (Fig 9). The North Zone magnetic survey outlined weak strength (100-200 nT) magnetometer lows. Interpretation of results from the magnetometer survey, suggest the North Zone grid area is not underlain by magnetite enriched bedrock.

## 7.0 DISCUSSION OF RESULTS

The Black Marble claim features the North and South high calcium marble zones, located between 100-300 meters elevation, and are readily accessible by year-round access roads (1000 Main, and Holdsworth Mountain Road), and contain competent, quarry-able, large, block marble outcrops. Upper Triassic Quatsino Formation is of economic interest because of high calcium marble present on the subject property. Limestone has been metamorphosed to marble on the property over a 2 kilometer strike length. Marble is relatively pure and most of the marble is high calcium (> 97% CaCO<sub>3</sub>, and < 3% impurities (clay minerals, mica, quartz, and Fe oxides).

Marble layers and beds have a 30-120 meter range of thickness, and a relatively shallow dip (with a northerly component). Outcrops of black and white coloured, high calcium marble are exposed on the subject property between 50-300 meter (164-984 feet) elevation. The North Zone features high purity marble. White coloured marble from North Zone (rock chip samples



BM-4, 6, & 7) returned geochemical whole rock analysis of 55.1-55.7% CaO. The South Zone features rock chip sample BM-5 returned geochemical whole rock analysis of 55.2% CaO. This outcrop (rock sample BM-5) forms a solid, competent 6-10 meter relief exposure (with high rock quality designation, i.e. cliff forming) of white and minor black marble. The South Zone where cliff forming marble is exposed has potential for large (2.4 X 2.4 X 1.8 m) block marble extraction (abrasive carbide coated wire-saw & guide hole-quarry methods). The marble beds which form small cliffs with approximately 3-15 m relief (e.g. location of rock chip 15BM-5) have potential to provide dimension stone marble for use as marble facings (veneer) and marble tiles. There is also a demand for large block (2.4 X 2.4 X 1.8 meters) blocks that can be quarried from competent marble (e.g. South Zone rock sample BM-5, & slab sample S-110, Fig 4 & 5).

The sugary medium to coarse grain texture of both white and black coloured marble causes reflectance of calcite cleavage faces (and minor fine grain mica), when the rock is played in light. Reflectance (polish-ability) increases when slab samples were wet polished with 600 grit emery paper. A smooth and polished finish of marble results in high gloss finish reflectance, which was confirmed by mechanically smoothing of slab samples with wet 600 grit emery paper. Highly polished, sugary medium to coarse grain marble slab samples (S-101 to S-110), resulted in 'Starry Night' sparkle texture of polished marble slabs. Competent (i.e. high rock quality designation) is suitable for dimension stone tiles, architectural stone, and veneer. High calcium marble with a bright white colour can be crushed and processed to produce 'whiting', a powder used as a colouring agent and filler in paint, putty, plastics, grout, cosmetics, paper and other manufactured products. A total of 4 out of 8 samples (sample numbers BM-4-7) averaged 55.33% CaO, 0.08% MgO, 0.86% SiO<sub>2</sub>, 0.07% Al<sub>2</sub>O<sub>3</sub>, 0.09% Fe<sub>2</sub>O<sub>3</sub>, and 0.07% P<sub>2</sub>O<sub>5</sub>. The whole rock geochemistry is considered high purity, 'high calcium marble' suitable for industrial applications.

A slab sample of black marble (S-107) from the North Zone was analyzed for % graphitic carbon. Geochemical analysis from ALS Minerals (method C-IR18) indicates that there is 0.17% C (graphite) in this rock sample of black marble. It is assumed that this low grade of graphite is of no commercial value.

Sub-hedral to euhedral calcite crystals become larger as the marble is subject to higher grades of metamorphism. As marble approach intrusive rock contact aureoles, calcite crystals become larger. A magnetometer geophysical survey was carried out over 1.3 line-km in close proximity to North & South Zones of high calcium marble in order to discern magnetite bearing intrusive granite/diorite from magnetite poor carbonate rocks. Results from the magnetometer survey suggest intrusive rock underlies a small portion of the north half of the South Zone (approximate location 648, 575 E, 5,598,150 N, elev 200 m), which can be traced northwest to exposures in road-cuts where an Early-Middle Jurassic granodiorite is cut by a late stage NW trending fault zone (approximately 3 m wide, 1% clay, dipping 29 degrees NE, location 648,484 E, 5,598,260 N, elev 250 m).

## 8.0 CONCLUSIONS

High calcium marble of the Quatsino Formation of northern Vancouver Island is considered viable for commercial development for 'value added' industrial end use. Evaluation of marble in considerable detail is recommended and summarized as a 3 phase program:

## 9.0 RECOMMENDATIONS

Recommended 3 phase program outlined as follows:

TOTAL BUDGET for Phase 1-3 \$100 K

Phase I- Detailed mapping and sampling of the claims. Phase I is estimated to cost \$12 K.

Phase II- Excavator trenching and blasting estimated at \$24 K.

Phase III- Diamond drilling program. A number of shallow 30-60 m deep core drill holes (total 500 m) to be drilled at an estimated cost of \$64 K.

Contingent on results, further bulk testing to include quarrying of several rough quarry blocks, approximately 8 ft. X 8 ft. X 6 ft (2.4 X 2.4 X 1.8 m) each. Phase 4 will also include permitting, marketing, logistics and engineering required for production and lease.

The first stage is a program of detailed mapping. The purpose of the mapping is to assess the potential of competent, high calcium marble for commercial scale extraction. This includes mapping fracture patterns and joint densities as well as lithologic descriptions. Several polished sections should be made to interpret the suitability of the marble for facings and tiles. A second phase program of trenching and blasting is required. The purpose is to obtain some "fresh" blocks for polished sections to judge the suitability of the marble. A program of diamond drilling would assess possible quarry site(s). From the drill core, data on fracture patterns and joint densities would be obtained, as well as data on color and impurity variations. The entire length of the core should be cut and polished giving a third dimensional view of the suitability of the marble for facings and tiles.

Contingent on results, a 4<sup>th</sup> phase will consist of pre-production stripping to clear quarry site of overburden and quarrying of 10-20 rough blocks at least 8 ft. X 8 ft. X 6 ft (2.4m X 2.4m X 1.8m). These rough blocks will be processed into facings and tiles to ensure output from the quarry will meet the specifications required for marble facings and/or marble tiles. Once the actual quarry site(s) has been designated, an engineering study, a calculation of reserves and a permitting program is required to get the quarry set up for initial production. The marble located on the Black Marble mineral property has potential use as both tiles and face finished slab. The black and white (as well as blue) varieties are of particular interest.

## 10.0 REFERENCES

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## CERTIFICATE AND DATE

I, Andris Kikauka, of 4199 Highway 101., Powell R, B.C. V8A 0C7 am a self employed professional geoscientist. I hereby certify that:

1. I am a graduate of Brock University, St. Catharines, Ont., with an Honours Bachelor of Science Degree in Geological Sciences, 1980.
2. I am a Fellow in good standing with the Geological Association of Canada.
3. I am registered in the Province of British Columbia as a Professional Geoscientist.
4. I have practiced my profession for thirty years in precious and base metal exploration in the Cordillera of Western Canada, U.S.A., Mexico, Central America, and South America, as well as for three years in uranium exploration in the Canadian Shield..
5. The information, opinions, and recommendations in this report are based on fieldwork carried out in my presence on the subject property Nov 10-13, 2015 during which time a technical evaluation consisting of geochemical rock chip and slab sampling, geological mapping, and magnetometer surveying of the marble beds on mineral tenures 1037637 was carried out by the writer.
6. I am employed as an independent consultant..
7. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading. The recommendations are intended as a guide and are not to be used to procure public financing.

Andris Kikauka, P. Geo.,

*Andris Kikauka*

Dec 30, 2015



**ITEMIZED COST STATEMENT- BEAVER COVE,  
CLAIM NAME: BLACK MARBLE  
MINERAL TENURE NUMBER 1037637  
FIELDWORK PERFORMED NOV 10-13, 2015  
WORK PERFORMED ON MINERAL TENURE 1037637  
NANAIMO MINING DIVISION, NTS 92L 10W (TRIM 092L 056)**

**FIELD CREW:**

<b>A. Kikauka (Geologist) 4 days (surveying, mapping)</b>	<b>\$</b>	<b>1,763.00</b>
<b>S. Apted (Geotechnician) 4 days (surveying, sampling)</b>	<b>\$</b>	<b>1,260.00</b>

**FIELD COSTS:**

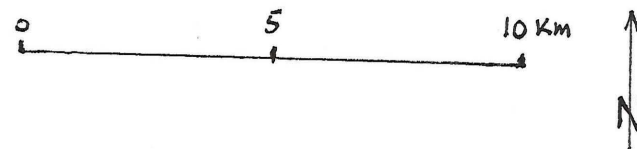
<b>Mob/demob/preparation</b>	<b>305.30</b>
<b>Meals and accommodations</b>	<b>508.70</b>
<b>Truck mileage &amp; fuel</b>	<b>471.20</b>
<b>Fusion ICP AES geochemical analysis (8 rock samples)</b>	<b>324.20</b>
<b>C-IR18 Graphite analysis</b>	<b>36.55</b>
<b>Magnetometer Rental 4 days</b>	<b>342.00</b>
<b>Report</b>	<b>650.00</b>

**Total= \$ 5,660.95**





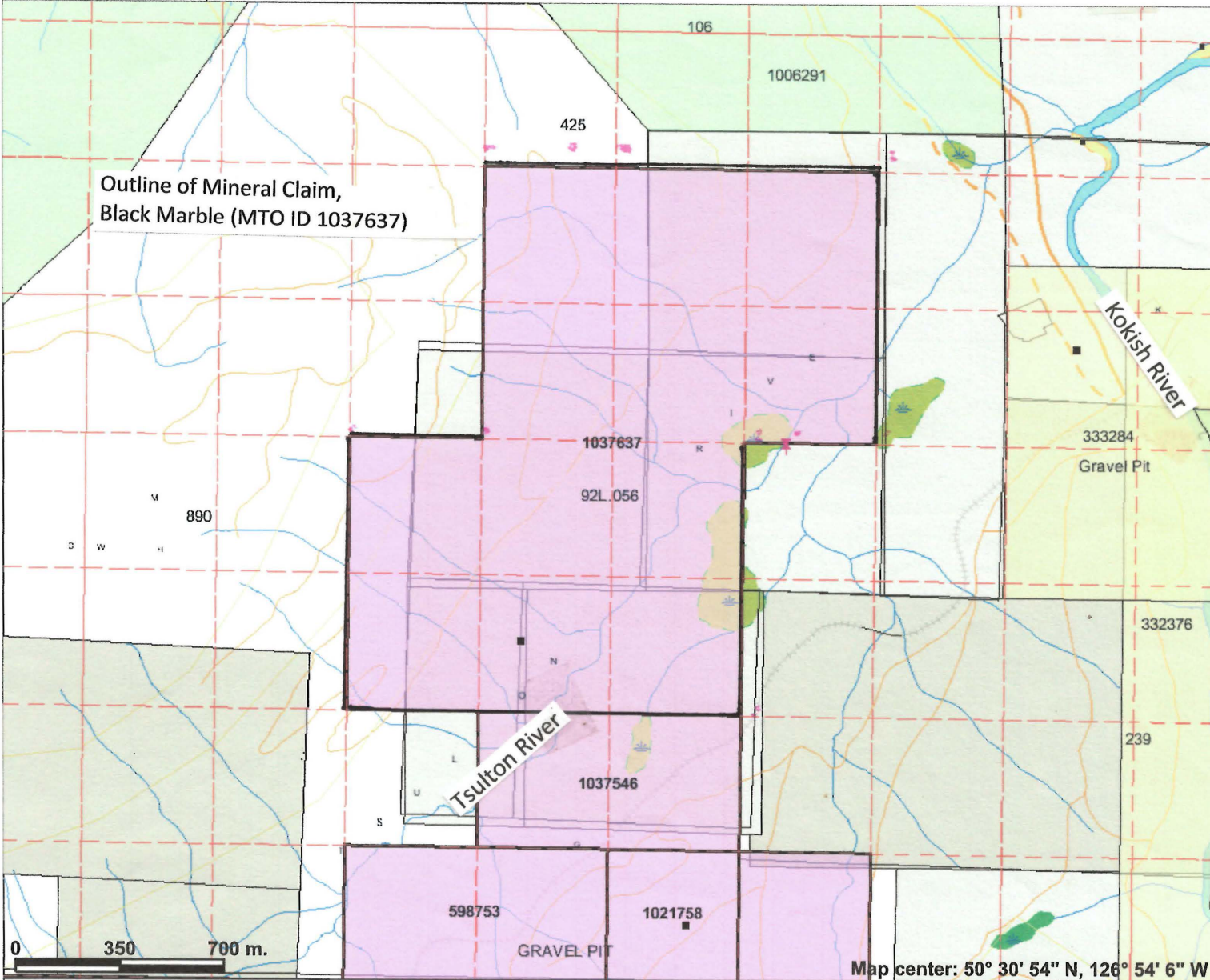
Fig 1 Black Marble (MTO ID 1037637) General Location  
 Nanaimo Mining Division, NTS 092L 10/W BCGS 092L.056







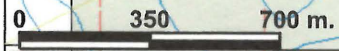
# Black Marble Claim 1037637 FIG 2 Claim Location MTO ID 1037637



Outline of Mineral Claim,  
Black Marble (MTO ID 1037637)

### Legend

- MINFILE Status**
- Producer
  - Past Producer
  - Developed Prospect
  - All others
- Land Status**
- Indian Reserves
  - National Parks
  - Conservancy Areas
  - Parks
  - Federal Transfer Lands
  - MTO Grid (MTO)
  - Mineral Tenure (current)
  - Mineral Claim
  - Mineral Lease
- Mineral Reserves (current)**
- Placer Claim Designation
  - Placer Lease Designation
  - No Staking Reserve
  - Conditional Reserve
  - Release Required Reserve
  - Surface Restriction
  - Recreation Area
  - Others
  - First Nations Treaty Related Lands
- Other Features**
- First Nations Treaty Lands
  - Integrated Cadastral Fabric
  - Survey Parcels
  - BCGS Grid
  - Contours (1:250K)
  - Contour - Index



Map center: 50° 30' 54" N, 126° 54' 6" W



Scale: 1:20,463

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: BCGS 092L.056, Tsultson River, Beaver Cove, BC

**Nanaimo Mining Division, NTS 092L 10/W BCGS 092L.056**

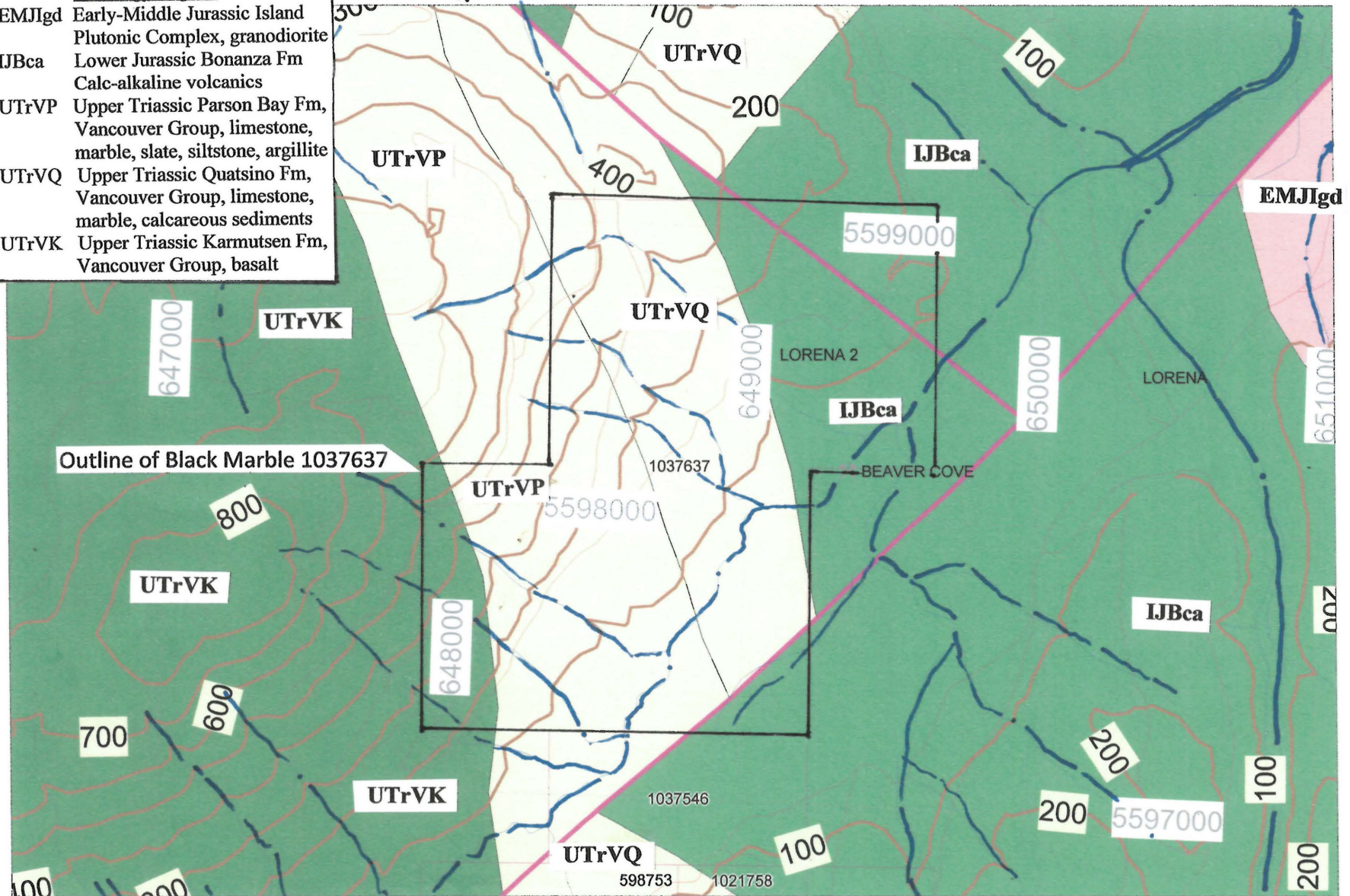


# Fig 3 Black Marble 1037637 General Geology

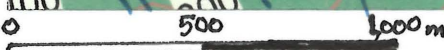
Contour Interval 100 m

SOURCE: BCGS

Lithology Legend	
EMJlgd	Early-Middle Jurassic Island Plutonic Complex, granodiorite
IJBca	Lower Jurassic Bonanza Fm Calc-alkaline volcanics
UTrVP	Upper Triassic Parson Bay Fm, Vancouver Group, limestone, marble, slate, siltstone, argillite
UTrVQ	Upper Triassic Quatsino Fm, Vancouver Group, limestone, marble, calcareous sediments
UTrVK	Upper Triassic Karmutsen Fm, Vancouver Group, basalt



Outline of Black Marble 1037637



SCALE 1 : 20,000

— Fault ←— Creek

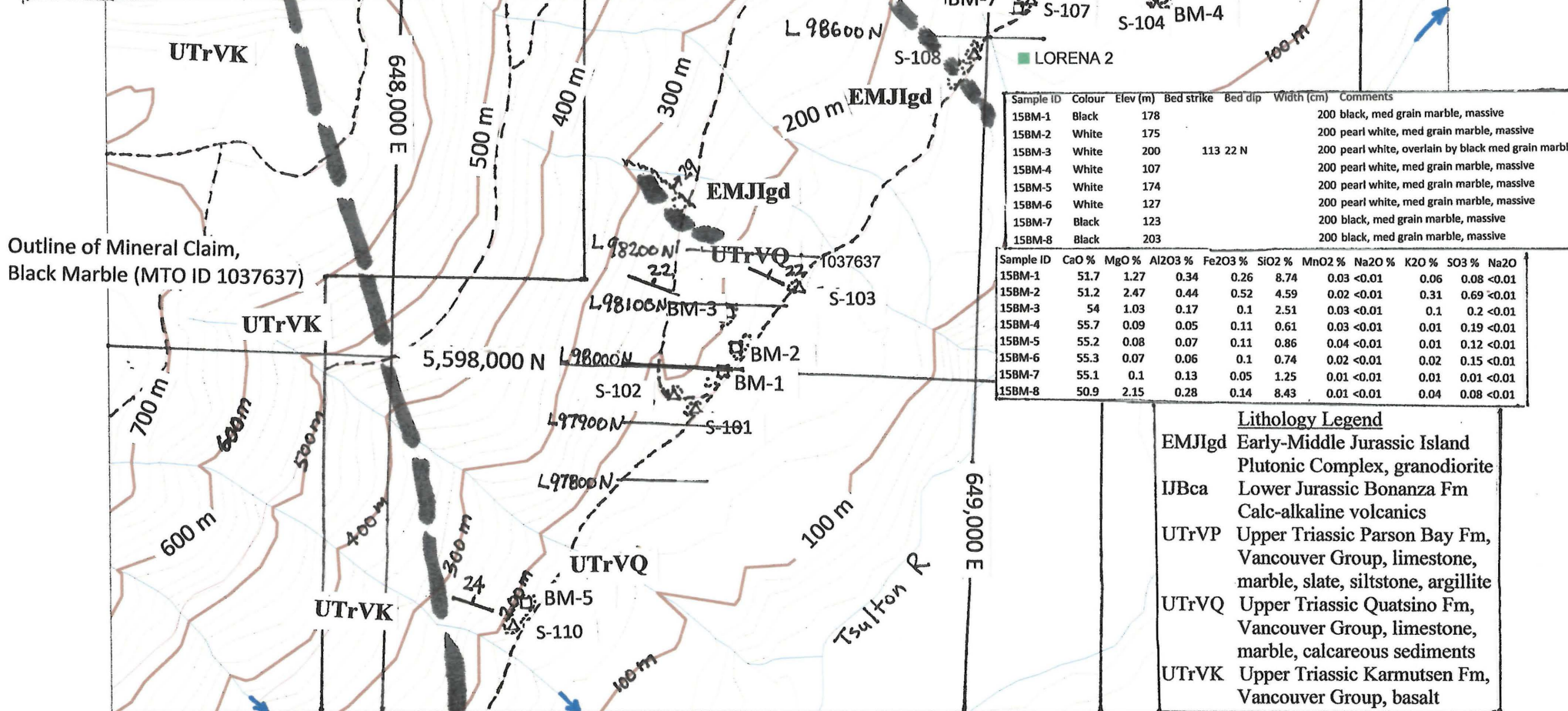




# Black Marble 1036737 rock samples & magnetometer grid

FIG 4 Property Geology, Rock Samples, & Magnetometer Grid

ID	Colour	Bedding strike	Bedding dip	Width	Comments	C %
S-101	Black			grab	black, fine to med grain marble, massive	
S-102	Black			grab	black, fine to med grain marble, massive	
S-103	White	113 22 N		grab	pearl white, overlain by black med grain marble	
S-104	White			grab	pearl white, med grain marble, massive	
S-105	White			grab	pearl white, med grain marble, massive	
S-106	White			grab	pearl white, med grain marble, massive	
S-107	Black			grab	black, fine to med grain marble, massive	0.17
S-108	Black			grab	black, fine to med grain marble, massive	
S-109	Black			grab	black, fine to med grain marble, massive	
S-110	Black	109 24 N		grab	black, fine to med grain marble, massive	

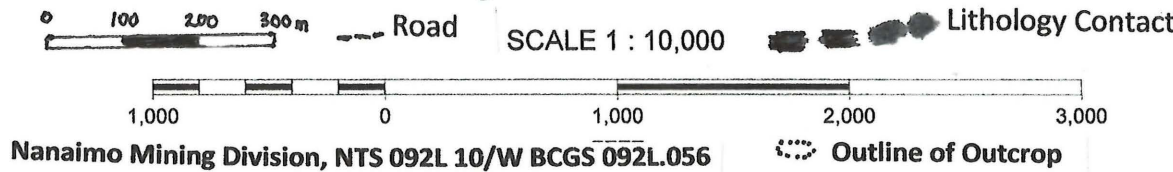


Sample ID	Colour	Elev (m)	Bed strike	Bed dip	Width (cm)	Comments
15BM-1	Black	178				200 black, med grain marble, massive
15BM-2	White	175				200 pearl white, med grain marble, massive
15BM-3	White	200	113 22 N			200 pearl white, overlain by black med grain marble
15BM-4	White	107				200 pearl white, med grain marble, massive
15BM-5	White	174				200 pearl white, med grain marble, massive
15BM-6	White	127				200 pearl white, med grain marble, massive
15BM-7	Black	123				200 black, med grain marble, massive
15BM-8	Black	203				200 black, med grain marble, massive

Sample ID	CaO %	MgO %	Al2O3 %	Fe2O3 %	SiO2 %	MnO2 %	Na2O %	K2O %	SO3 %	Na2O
15BM-1	51.7	1.27	0.34	0.26	8.74	0.03	<0.01	0.06	0.08	<0.01
15BM-2	51.2	2.47	0.44	0.52	4.59	0.02	<0.01	0.31	0.69	<0.01
15BM-3	54	1.03	0.17	0.1	2.51	0.03	<0.01	0.1	0.2	<0.01
15BM-4	55.7	0.09	0.05	0.11	0.61	0.03	<0.01	0.01	0.19	<0.01
15BM-5	55.2	0.08	0.07	0.11	0.86	0.04	<0.01	0.01	0.12	<0.01
15BM-6	55.3	0.07	0.06	0.1	0.74	0.02	<0.01	0.02	0.15	<0.01
15BM-7	55.1	0.1	0.13	0.05	1.25	0.01	<0.01	0.01	0.01	<0.01
15BM-8	50.9	2.15	0.28	0.14	8.43	0.01	<0.01	0.04	0.08	<0.01


**Lithology Legend**

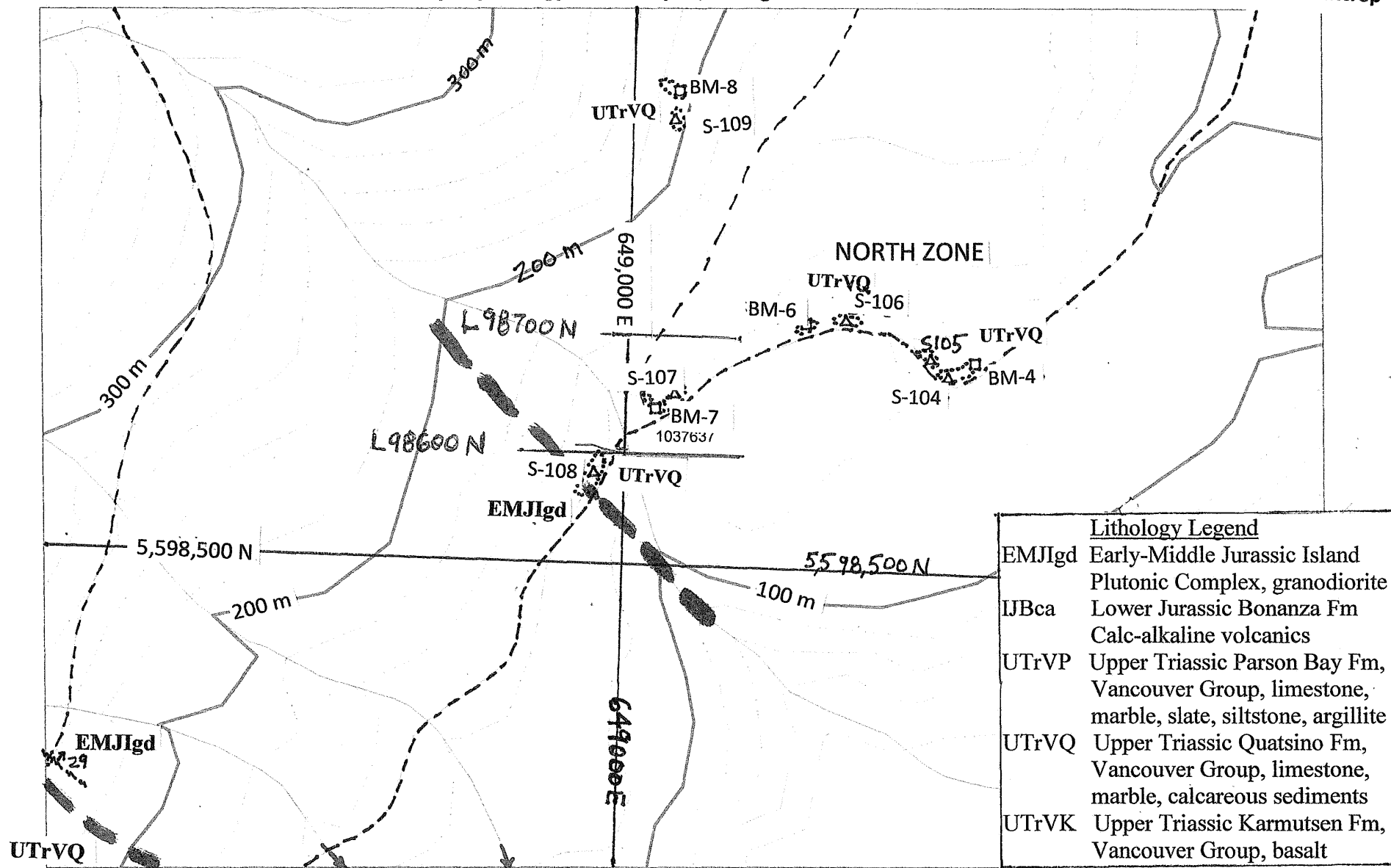
- EMJgd Early-Middle Jurassic Island Plutonic Complex, granodiorite
- IJBca Lower Jurassic Bonanza Fm Calc-alkaline volcanics
- UTrVP Upper Triassic Parson Bay Fm, Vancouver Group, limestone, marble, slate, siltstone, argillite
- UTrVQ Upper Triassic Quatsino Fm, Vancouver Group, limestone, marble, calcareous sediments
- UTrVK Upper Triassic Karmutsen Fm, Vancouver Group, basalt




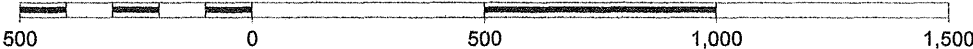


# Fig 5 Black Marble 1037637 North Zone



FIG 5 North Zone: Property Geology, Rock Samples, & Magnetometer Grid

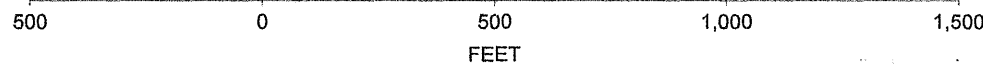
 Outline of Outcrop



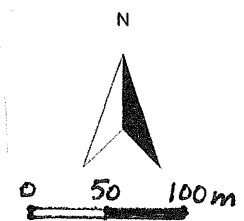
Lithology Legend	
EMJlgd	Early-Middle Jurassic Island Plutonic Complex, granodiorite
IJBca	Lower Jurassic Bonanza Fm Calc-alkaline volcanics
UTrVP	Upper Triassic Parson Bay Fm, Vancouver Group, limestone, marble, slate, siltstone, argillite
UTrVQ	Upper Triassic Quatsino Fm, Vancouver Group, limestone, marble, calcareous sediments
UTrVK	Upper Triassic Karmutsen Fm, Vancouver Group, basalt

 Road     
  SCALE 1 : 5,000     
  Rock Chip Sample     
  Slab Sample (Cobble)

 Fault     
  Lithology Contact



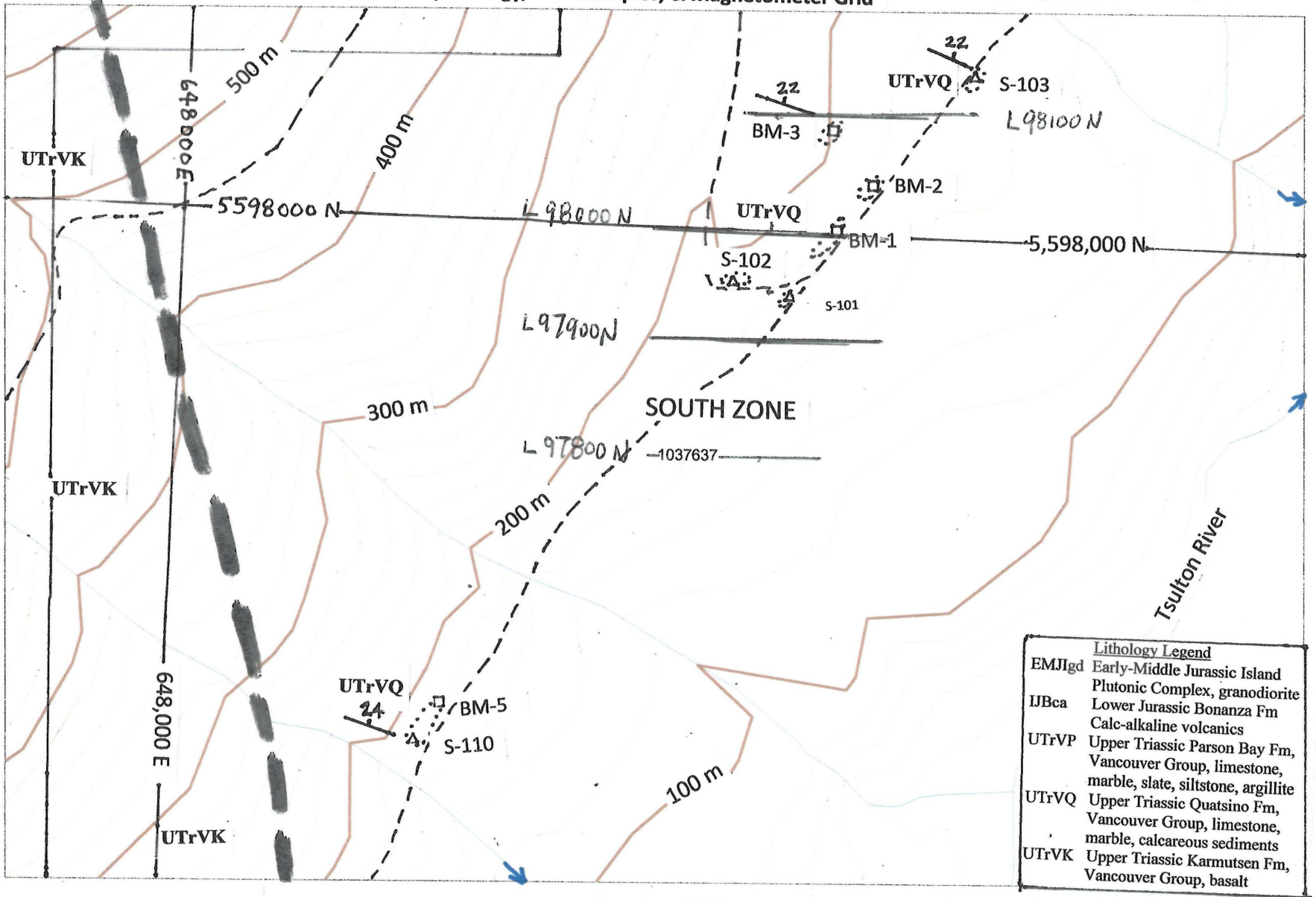
Nanaimo Mining Division, NTS 092L 10/W BCGS 092L.056



# Fig 6 Black Marble 1037637 South Zone

FIG 6 South Zone: Property Geology, Rock Samples, & Magnetometer Grid

⋯ Outline of Outcrop

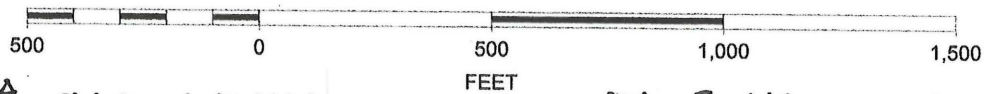


□ Rock Chip Sample

SCALE 1 : 5,000

Nanaimo Mining Division, NTS 092L 10/W BCGS 092L.056

N



△ Slab Sample (Cobble)

— Bedding

--- Road

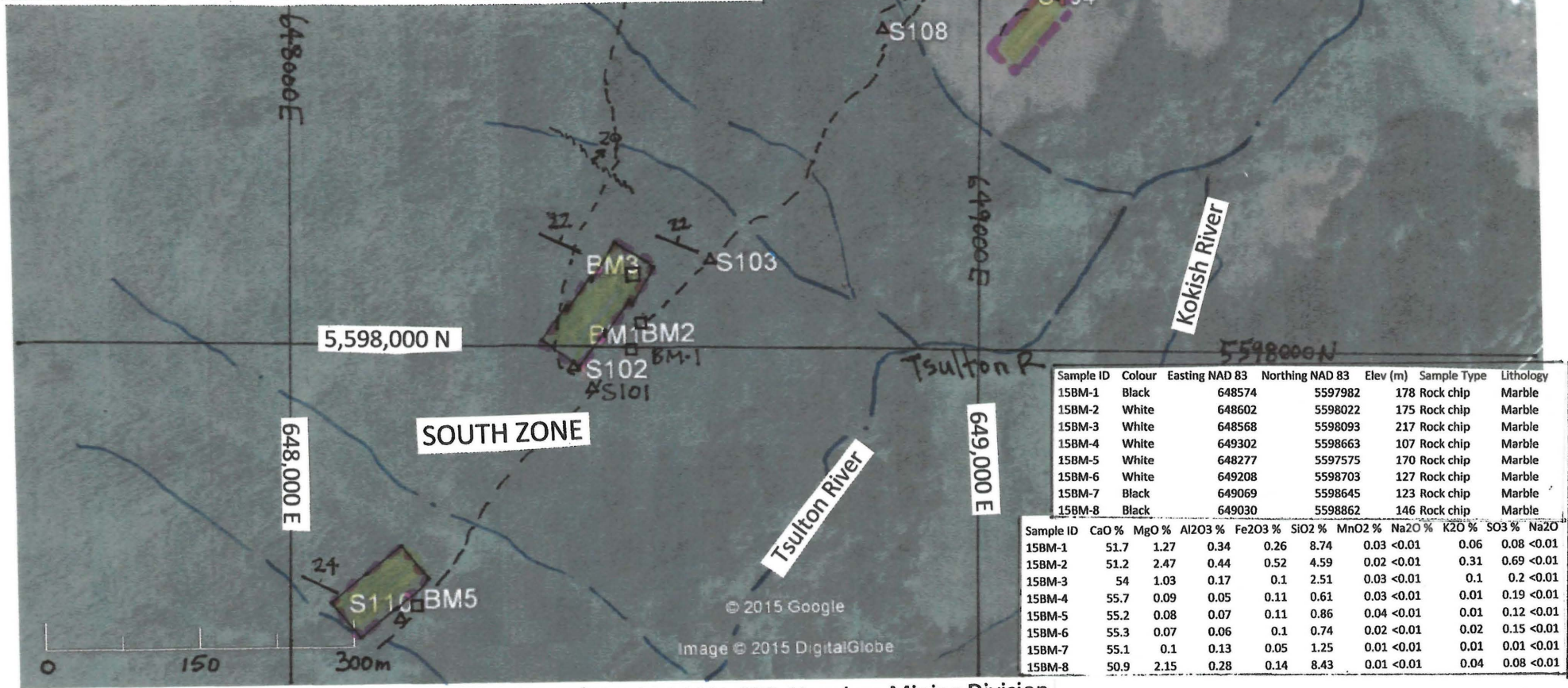
--- Fault ● Lithology Contact





ID	Colour	Bedding strike	Bedding dip	Width	Comments	C %
S-101	Black			grab	black, fine to med grain marble, massive	
S-102	Black			grab	black, fine to med grain marble, massive	
S-103	White	113	22 N	grab	pearl white, overlain by black med grain marble	
S-104	White			grab	pearl white, med grain marble, massive	
S-105	White			grab	pearl white, med grain marble, massive	
S-106	White			grab	pearl white, med grain marble, massive	
S-107	Black			grab	black, fine to med grain marble, massive	0.17
S-108	Black			grab	black, fine to med grain marble, massive	
S-109	Black			grab	black, fine to med grain marble, massive	
S-110	Black	109	24 N	grab	black, fine to med grain marble, massive	

FIG 7 ROCK CHIP/SLAB SAMPLING  
POTENTIAL QUARRY SITES GOOGLE EARTH

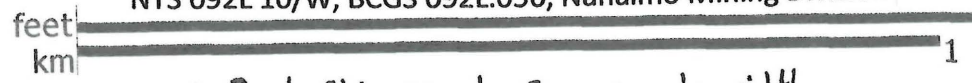


Sample ID	Colour	Easting NAD 83	Northing NAD 83	Elev (m)	Sample Type	Lithology
15BM-1	Black	648574	5597982	178	Rock chip	Marble
15BM-2	White	648602	5598022	175	Rock chip	Marble
15BM-3	White	648568	5598093	217	Rock chip	Marble
15BM-4	White	649302	5598663	107	Rock chip	Marble
15BM-5	White	648277	5597575	170	Rock chip	Marble
15BM-6	White	649208	5598703	127	Rock chip	Marble
15BM-7	Black	649069	5598645	123	Rock chip	Marble
15BM-8	Black	649030	5598862	146	Rock chip	Marble

Sample ID	CaO %	MgO %	Al2O3 %	Fe2O3 %	SiO2 %	MnO2 %	Na2O %	K2O %	SO3 %	Na2O
15BM-1	51.7	1.27	0.34	0.26	8.74	0.03	<0.01	0.06	0.08	<0.01
15BM-2	51.2	2.47	0.44	0.52	4.59	0.02	<0.01	0.31	0.69	<0.01
15BM-3	54	1.03	0.17	0.1	2.51	0.03	<0.01	0.1	0.2	<0.01
15BM-4	55.7	0.09	0.05	0.11	0.61	0.03	<0.01	0.01	0.19	<0.01
15BM-5	55.2	0.08	0.07	0.11	0.86	0.04	<0.01	0.01	0.12	<0.01
15BM-6	55.3	0.07	0.06	0.1	0.74	0.02	<0.01	0.02	0.15	<0.01
15BM-7	55.1	0.1	0.13	0.05	1.25	0.01	<0.01	0.01	0.01	<0.01
15BM-8	50.9	2.15	0.28	0.14	8.43	0.01	<0.01	0.04	0.08	<0.01

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Google earth

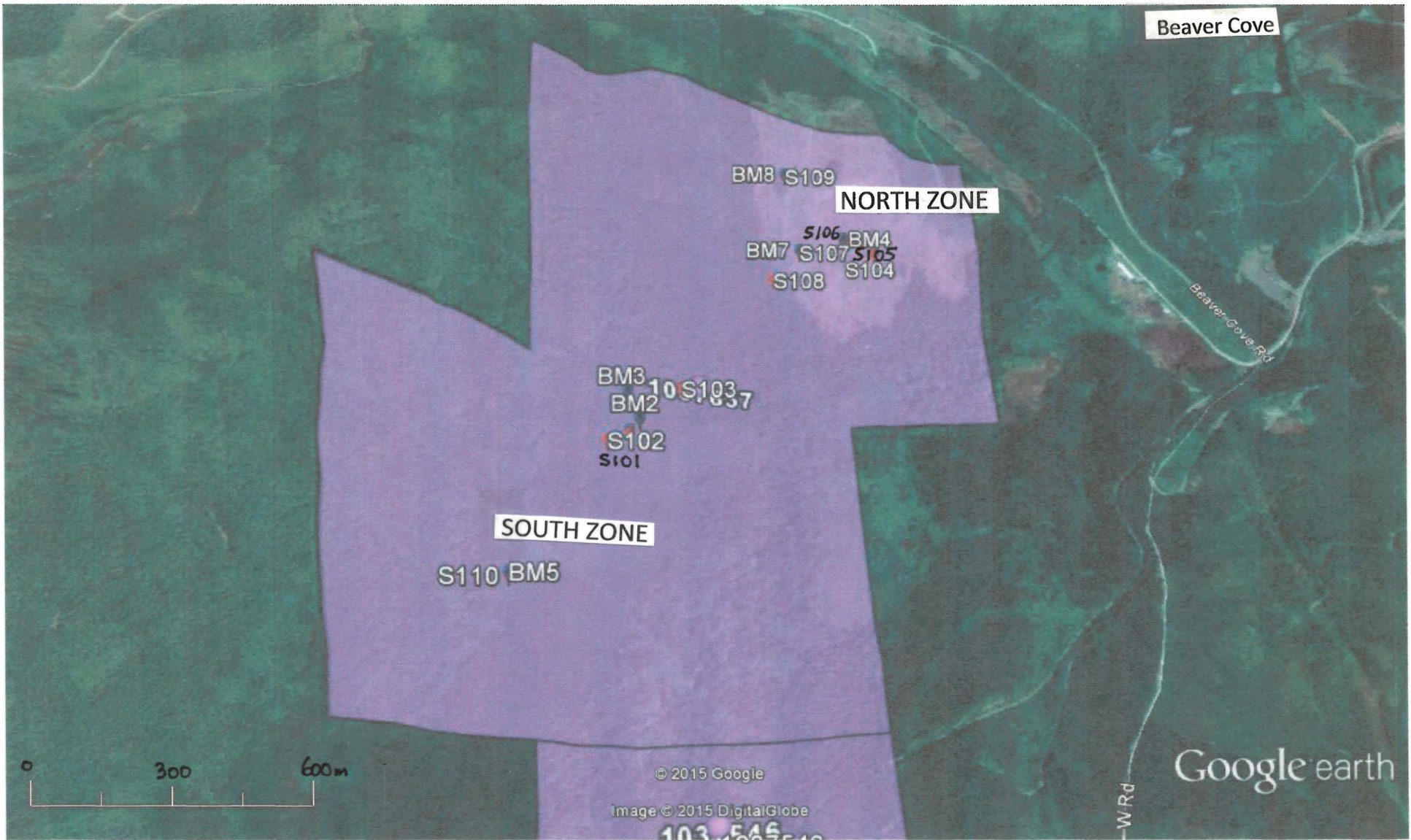


Potential quarry site (large blocks)  
Area of high calcium marble  
Competent (High RQD) outcrop

Rock Chip sample 2 m sample width  
 Slab sample (Cobble size) NOTE: S107 analyzed for %C  
 Creek  
 Bedding  
 Fault  
 Dip







Google earth

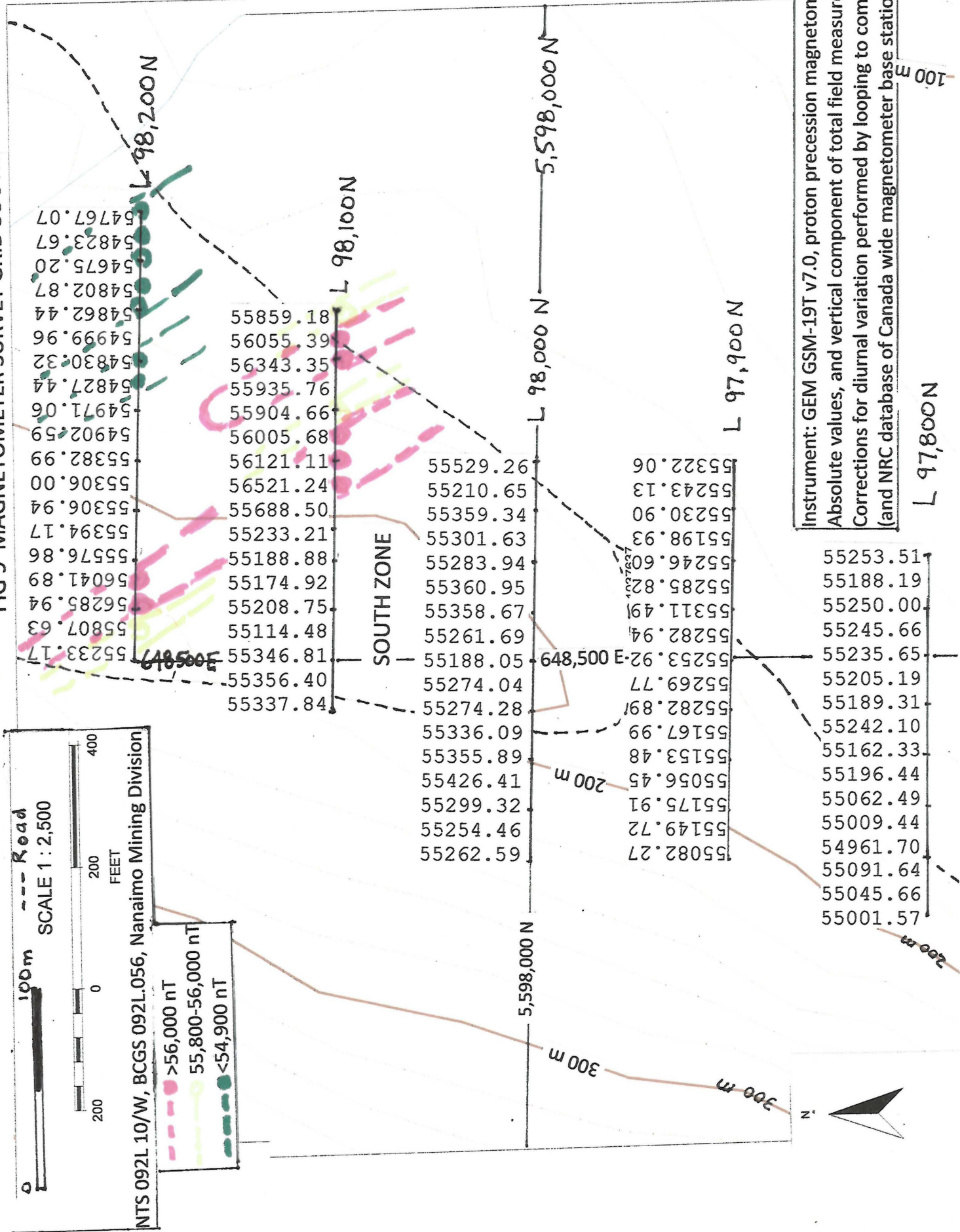
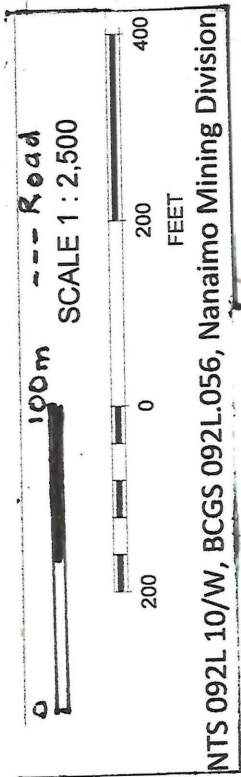


FIG 8 PROPERTY ROCK CHIP/SLAB SAMPLING GOOGLE EARTH  
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# Black Marble 1037637 Magnetometer Grid South

FIG 9 MAGNETOMETER SURVEY GRID SOUTH



Instrument: GEM GSM-19T v7.0, proton precession magnetometer  
 Absolute values, and vertical component of total field measured.  
 Corrections for diurnal variation performed by looping to common station  
 (and NRC database of Canada wide magnetometer base stations)

15.52553	55253.17
61.88155	55188.15
00.00555	55250.00
99.52455	55245.99
59.52355	55235.59
61.52055	55205.61
13.61855	55185.13
01.52425	55242.01
33.29155	55262.33
44.96155	55196.44
64.29055	55202.64
44.60055	55009.44
07.19655	54961.07
49.16055	55015.49
55.04555	55045.55
57.10055	55001.57

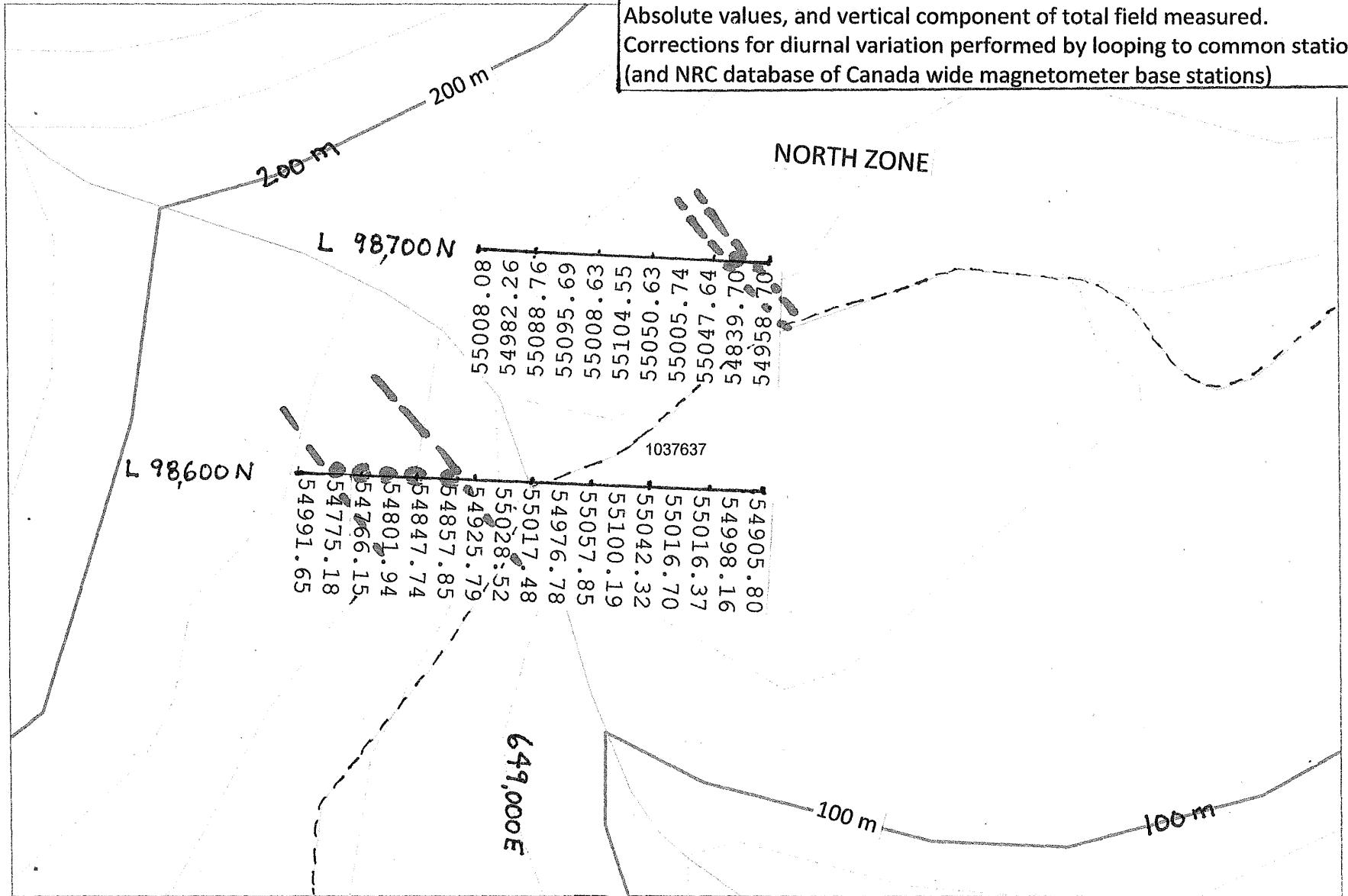
65.29255	55292.65
94.45255	55254.94
32.66255	55229.32
14.92455	55226.14
68.55355	55355.68
60.93355	55336.60
82.47255	55274.82
40.47255	55274.40
00.88155	55281.00
69.19255	55261.69
79.85355	55355.79
56.09355	55283.56
64.82255	55283.64
88.88155	55188.88
12.32355	55233.12
05.88955	55289.05
42.12595	55212.42
92.65555	55229.92
11.12195	55121.11
89.50095	55009.89
99.40655	55065.99
97.53655	55336.97
53.34395	55343.53
63.55095	55505.63
81.65855	55585.81

55233.17	55233.17
55807.63	55807.63
56285.94	56285.94
56041.89	56041.89
55576.86	55576.86
55394.17	55394.17
55306.94	55306.94
55306.00	55306.00
55382.99	55382.99
54902.59	54902.59
54971.06	54971.06
54827.44	54827.44
54830.32	54830.32
54999.96	54999.96
54862.44	54862.44
54802.87	54802.87
54675.20	54675.20
54823.67	54823.67
54767.07	54767.07



# Black Marble 1037637 Magnetometer Grid North

Instrument: GEM GSM-19T v7.0, proton precession magnetometer  
 Absolute values, and vertical component of total field measured.  
 Corrections for diurnal variation performed by looping to common station  
 (and NRC database of Canada wide magnetometer base stations)



Station ID	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8	Value 9	Value 10
L 98700N	80.80055	92.28645	97.88055	69.56055	39.80055	55.40155	39.05055	47.50055	49.47055	54839.70
L 98600N	54991.65	54775.18	54766.15	54801.94	54847.74	54857.85	54925.79	55017.48	54976.78	55057.85
1037637	55100.19	55042.32	55016.70	55016.37	54998.16	54905.80	54958.70	54958.70	54958.70	54958.70

FIG 10 MAGNETOMETER SURVEY GRID NORTH  
 NTS 092L 10/W, BCGS 092L.056, Nanaimo Mining Division

--- Road

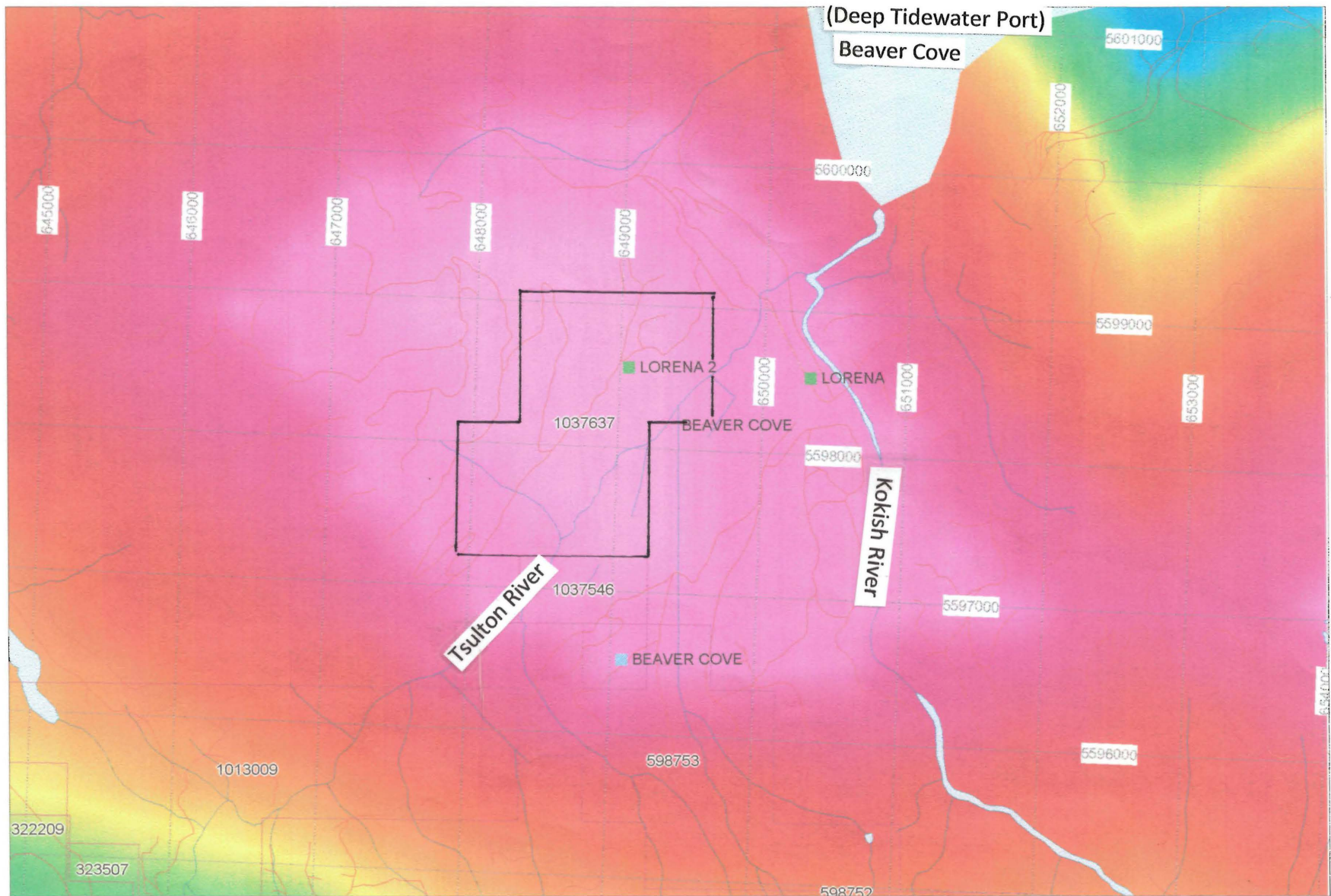
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0 200 0 200 400 600  
 FEET

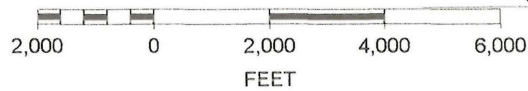
● >56,000 nT  
 ● 55,800-56,000 nT  
 ● <54,900 nT

N

# Black Marble Aeromagnetics



SCALE 1 : 40,000

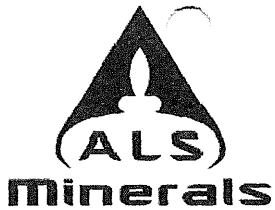


**FIG 11 GSC AIRBORNE MAGNETOMETER SURVEY**

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Source: 1st derivative data, Mapplace





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**4199 HIGHWAY 101**  
**POWELL RIVER BC V8A 0C7**

Page: 1  
 Total # Pages: 2 (A - B)  
 Plus Appendix Pages  
 Finalized Date: 15-DEC-2015  
 This copy reported on  
 16-DEC-2015  
 Account: KIKAND

APPENDIX A

**CERTIFICATE VA15188826**

Project: Beaver Cove Marble

This report is for 9 Rock samples submitted to our lab in Vancouver, BC, Canada on 4-DEC-2015.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA		
----------------	--	--


SAMPLE PREPARATION	
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
CRU-QC	Crushing QC Test
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

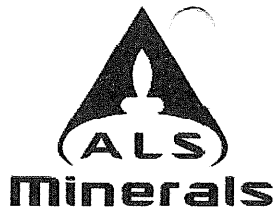
ANALYTICAL PROCEDURES		
ALS CODE	DESCRIPTION	INSTRUMENT
C-IR18	Graphitic carbon by LECO	LECO
ME-XRF26	Whole Rock By Fusion/XRF	XRF
OA-GRA05x	LOI for XRF	WST-SEQ

To: **KIKAUKA, ANDRIS**  
**4199 HIGHWAY 101**  
**POWELL RIVER BC V8A 0C7**

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*

Signature:   
 Colin Ramshaw, Vancouver Laboratory Manager



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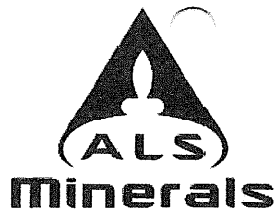
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Page: 2 - A  
 Total # Pages: 2 (A - B)  
 Plus Appendix Pages  
 Finalized Date: 15-DEC-2015  
 Account: KIKAND

Project: Beaver Cove Marble

**CERTIFICATE OF ANALYSIS VA15188826**

Sample Description	Method Analyte Units LOR	WEI-21	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26
		Recvd Wt. kg	Al2O3 %	BaO %	CaO %	Cr2O3 %	Fe2O3 %	K2O %	MgO %	MnO %	Na2O %	P2O5 %	SO3 %	SiO2 %	SrO %	TiO2 %
15 BM-1		1.02	0.34	<0.01	51.7	<0.01	0.26	0.06	1.27	0.03	<0.01	0.12	0.08	8.74	0.26	0.02
15 BM-2		1.50	0.44	0.01	51.2	<0.01	0.52	0.31	2.47	0.02	<0.01	0.16	0.69	4.59	0.62	0.06
15 BM-3		1.44	0.17	0.01	54.0	<0.01	0.10	0.10	1.03	0.03	<0.01	0.11	0.20	2.51	0.40	0.01
15 BM-4		1.24	0.05	<0.01	55.7	<0.01	0.11	0.01	0.09	0.03	<0.01	0.02	0.19	0.61	0.16	0.01
15 BM-5		1.42	0.07	<0.01	55.2	<0.01	0.11	0.01	0.08	0.04	<0.01	0.01	0.12	0.86	0.18	0.01
15 BM-6		1.18	0.06	<0.01	55.3	<0.01	0.10	0.02	0.07	0.02	<0.01	0.01	0.15	0.74	0.57	0.01
15 BM-7		1.62	0.13	<0.01	55.1	<0.01	0.05	0.01	0.10	0.01	<0.01	0.24	0.01	1.25	0.13	0.01
15 BM-8		0.82	0.28	<0.01	50.9	<0.01	0.14	0.04	2.15	0.01	<0.01	0.20	0.08	8.43	0.13	0.02
15 BM-107		1.32														



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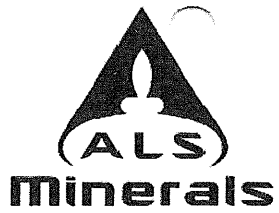
Client: KIKAUKA, ANDRIS  
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 Total # Pages: 2 (A - B)  
 Plus Appendix Pages  
 Finalized Date: 15-DEC-2015  
 Account: KIKAND

Project: Beaver Cove Marble

**CERTIFICATE OF ANALYSIS VA15188826**

Sample Description	Method Analyte Units LOR	ME-XRF26	OA-GRA05x	C-IR18
		Total %	LOI 1000 %	C Graphi %
		0.01	0.01	0.02
15 BM-1		99.77	36.86	
15 BM-2		100.00	38.88	
15 BM-3		100.25	41.52	
15 BM-4		99.99	42.97	
15 BM-5		99.98	43.26	
15 BM-6		100.15	43.07	
15 BM-7		99.76	42.69	
15 BM-8		99.86	37.45	
15 BM-107				0.17



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Project: Appendix 1  
Total # Appendix Pages: 1  
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Account: KIKAND

Project: Beaver Cove Marble

**CERTIFICATE OF ANALYSIS VA15188826**

**CERTIFICATE COMMENTS**

**LABORATORY ADDRESSES**

Applies to Method:

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.  
C-IR18  
ME-XRF26  
WEI-21

CRU-31  
OA-GRA05x

CRU-QC  
PUL-31

LOG-22  
SPL-21



**WHOLE ROCK GEOCHEMISTRY**
**ME- XRF06**
**SAMPLE DECOMPOSITION**
**50% - 50%  $\text{Li}_2\text{B}_4\text{O}_7$  -  $\text{LiBO}_2$**  (WEI- GRA06)

**ANALYTICAL METHOD**
**X-Ray Fluorescence Spectroscopy (XRF)**

A calcined or ignited sample (0.9 g) is added to 9.0g of Lithium Borate Flux (50 % - 50 %  $\text{Li}_2\text{B}_4\text{O}_7$  -  $\text{LiBO}_2$ ), mixed well and fused in an auto fluxer between 1050 - 1100°C. A flat molten glass disc is prepared from the resulting melt. This disc is then analysed by X-ray fluorescence spectrometry.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Aluminum Oxide	$\text{Al}_2\text{O}_3$	%	0.01	100
Barium Oxide	BaO	%	0.01	100
Calcium Oxide	CaO	%	0.01	100
Chromium Oxide	$\text{Cr}_2\text{O}_3$	%	0.01	100
Ferric Oxide	$\text{Fe}_2\text{O}_3$	%	0.01	100
Potassium Oxide	$\text{K}_2\text{O}$	%	0.01	100
Magnesium Oxide	MgO	%	0.01	100
Manganese Oxide	<del>MgO</del> $\text{MnO}$	%	0.01	100
Sodium Oxide	$\text{Na}_2\text{O}$	%	0.01	100
Phosphorus Oxide	$\text{P}_2\text{O}_5$	%	0.01	100
Silicon Oxide	$\text{SiO}_2$	%	0.01	100
Strontium Oxide	$\text{SrO}_2$	%	0.01	100
Titanium Oxide	$\text{TiO}_2$	%	0.01	100
Loss On Ignition	LOI	%	0.01	100
	Total	%	0.01	101

**NOTE:** Since samples that are high in sulphides or base metals can damage Platinum crucibles, a ME- ICP06 finish method can be selected as an alternative method.

## SAMPLE PREPARATION PACKAGE

# PREP- 31

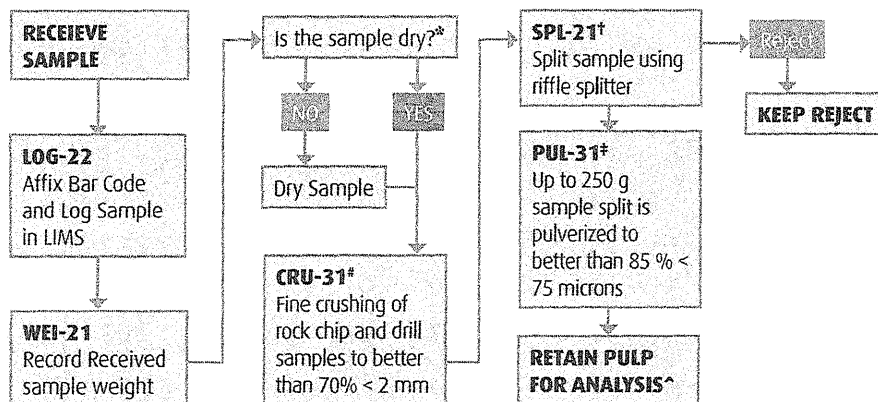
## STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh, US Std. No. 200) screen. This method is appropriate for rock chip or drill samples.

METHOD CODE	DESCRIPTION
LOG-22	Sample is logged in tracking system and a bar code label is attached.
DRY-21	Drying of excessively wet samples in drying ovens. This is the default drying procedure for most rock chip and drill samples.
CRU-31	Fine crushing of rock chip and drill samples to better than 70% of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-31	A sample split of up to 250 g is pulverized to better than 85% of the sample passing 75 microns.

### FLOW CHART - SAMPLE PREPARATION PACKAGE – PREP-31 STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE



\*If samples air-dry overnight, no charge to client. If samples are excessively wet, the sample should be dried to a maximum of 120°C. (DRY-21)

†QC testing of crushing efficiency is conducted on random samples (CRU-QC).

‡The sample reject is saved or dumped pending client instructions. Prolonged storage (> 45 days) of rejects will be charged to the client.

^QC testing of pulverizing efficiency is conducted on random samples (PUL-QC).

^Lab splits are required when analyses must be performed at a location different than where samples received.

ALS MINERALS: Analytical procedure Code C-IR18 (Graphitic carbon by LECO)

ANALYTE RANGE (%) DESCRIPTION CODE (Total) 0.01%-50% Total carbon by Leco furnace, C (Graphite).  
0.02%-50% HCl (50%) leach of carbonates, roasting to remove organic carbon, Leco furnace. C-IR18

APPENDIX C ROCK CHIP SAMPLE DESCRIPTIONS

*Description of Rock Chip Samples*

ID	Colour	Easting	Northing	Elev (m)	Sample Type	Lithology	Lithology Alteration
BM-1	Black	648574	5597982	178	Rock chip	Marble	low grade metamorphism
BM-2	White	648602	5598022	175	Rock chip	Marble	low grade metamorphism
BM-3	White	648568	5598093	200	Rock chip	Marble	low grade metamorphism
BM-4	White	649302	5598663	107	Rock chip	Marble	low grade metamorphism
BM-5	White	648277	5597575	174	Rock chip	Marble	low grade metamorphism
BM-6	White	649208	5598703	127	Rock chip	Marble	low grade metamorphism
BM-7	Black	649069	5598645	123	Rock chip	Marble	low grade metamorphism
BM-8	Black	649030	5598862	203	Rock chip	Marble	low grade metamorphism

ID	Bedding strike	Bedding dip	Width (cm)	Comments
BM-1				200 black, med grain marble, massive
BM-2				200 pearl white, med grain marble, massive
BM-3	113	22 N		200 pearl white, overlain by black med grain marble
BM-4				200 pearl white, med grain marble, massive
BM-5				200 pearl white, med grain marble, massive
BM-6				200 pearl white, med grain marble, massive
BM-7				200 black, med grain marble, massive
BM-8				200 black, med grain marble, massive

ID	CaO %	MgO %	Al2O3 %	Fe2O3 %	SiO2 %	MnO2 %	Na2O %	K2O %	SO3 %	Na2O
BM-1	51.7	1.27	0.34	0.26	8.74	0.03	<0.01	0.06	0.08	<0.01
BM-2	51.2	2.47	0.44	0.52	4.59	0.02	<0.01	0.31	0.69	<0.01
BM-3	54	1.03	0.17	0.1	2.51	0.03	<0.01	0.1	0.2	<0.01
BM-4	55.7	0.09	0.05	0.11	0.61	0.03	<0.01	0.01	0.19	<0.01
BM-5	55.2	0.08	0.07	0.11	0.86	0.04	<0.01	0.01	0.12	<0.01
BM-6	55.3	0.07	0.06	0.1	0.74	0.02	<0.01	0.02	0.15	<0.01
BM-7	55.1	0.1	0.13	0.05	1.25	0.01	<0.01	0.01	0.01	<0.01
BM-8	50.9	2.15	0.28	0.14	8.43	0.01	<0.01	0.04	0.08	<0.01

APPENDIX D ROCK SLAB SAMPLE DESCRIPTIONS

*Description of Slab Saw Cut Pieces*

ID	Colour	Easting NAD 83	Northing NAD 83	Elev (m)	Sample Type
S-101	Black	648575	5597980	181	Slab saw cut
S-102	Black	648517	5597956	175	Slab saw cut
S-103	White, minor mottled grey	648715	5598140	159	Slab saw cut
S-104	White, minor mottled grey	649300	5598664	114	Slab saw cut
S-105	White, minor mottled grey	649254	5598686	117	Slab saw cut
S-106	White, minor mottled grey	649208	5598703	127	Slab saw cut
S-107	Black	649069	5598645	123	Slab saw cut
S-108	Black, 20% White 1-15 cm bands	648988	5598550	140	Slab saw cut
S-109	Black	649030	5598862	200	Slab saw cut
S-110	Black	648277	5597575	179	Slab saw cut

ID	Lithology	Bed strike	Bed dip	Width	Comments
S-101	Marble			grab	black, fine to med grain marble, massive
S-102	Marble			grab	black, fine to med grain marble, massive
S-103	Marble	113	22 N	grab	pearl white, overlain by black med grain marble
S-104	Marble			grab	pearl white, med grain marble, massive
S-105	Marble			grab	pearl white, med grain marble, massive
S-106	Marble			grab	pearl white, med grain marble, massive
S-107	Marble			grab	black, fine to med grain marble, massive
S-108	Marble			grab	black, fine to med grain marble, massive
S-109	Marble			grab	black, fine to med grain marble, massive
S-110	Marble	109	24 N	grab	black, fine to med grain marble, massive

ID	C %	Texture	Competence
S-101		1-2 mm fine to med grain	Good-Excellent
S-102		1-2 mm fine to med grain	Good-Excellent
S-103		1-4 mm fine to coarse grain, sugary	Excellent
S-104		1-4 mm fine to coarse grain, sugary	Excellent
S-105		1-4 mm fine to coarse grain, sugary	Excellent
S-106		1-4 mm fine to coarse grain, sugary	Excellent
S-107	0.17	1-2 mm fine to med grain	Excellent
S-108		1-2 mm fine to med grain	Good-Excellent
S-109		1-2 mm fine to med grain	Good-Excellent
S-110		1-2 mm fine to med grain	Excellent

## APPENDIX E MAGNETOMETER DATA

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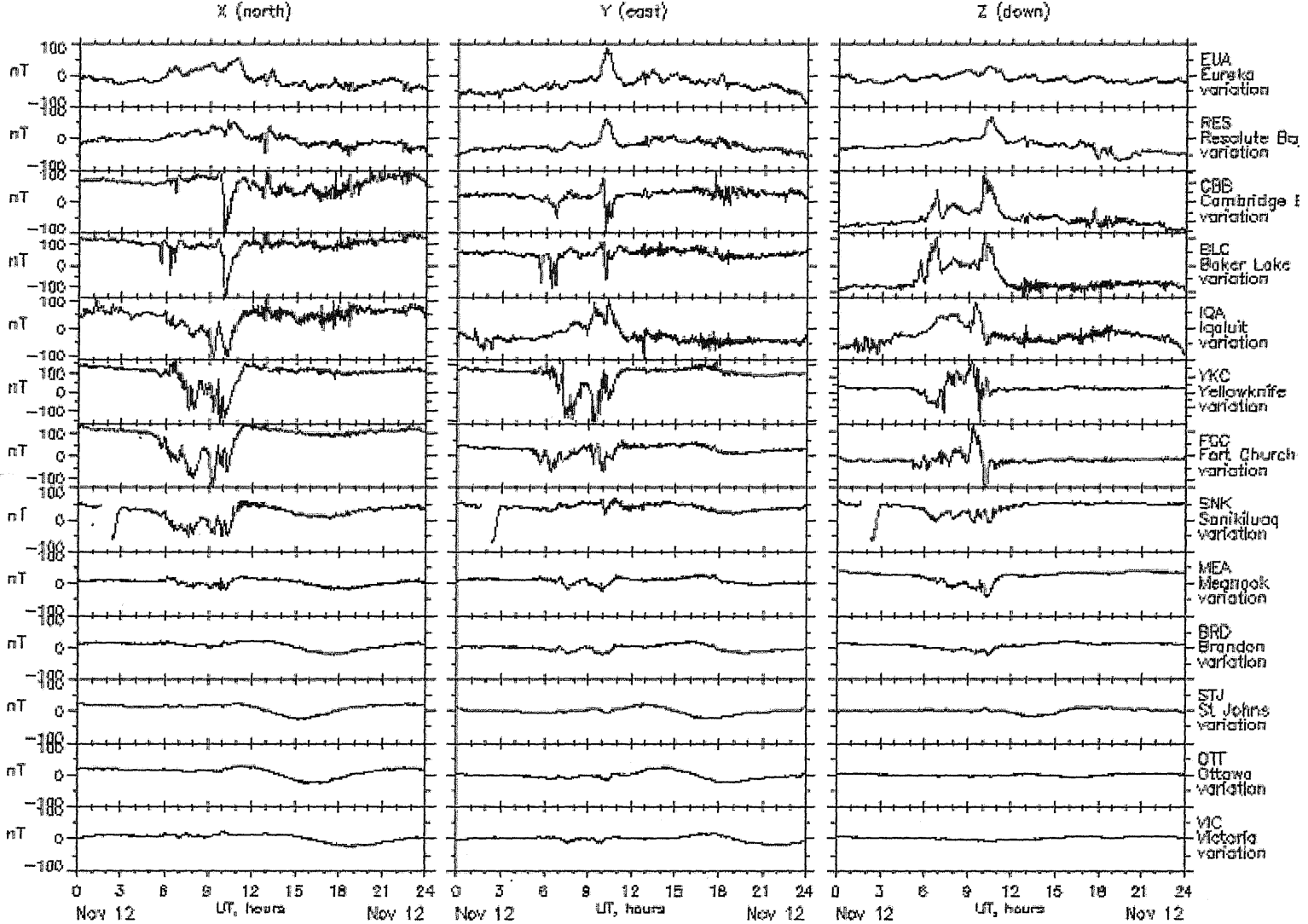
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# APPENDIX F MAGNETOMETER NRC OBSERVATORY DATA (NOV 12, 2015)

Canadian Magnetic Observatories - 1 min data

Day 316 12 November 2015



APPENDIX G PHOTOS



LOOKING SW AT SOUTH ZONE





LOOKING NW AT CONTACT WITH ILSAND PLUTONIC SUITE GRANODIORITE (LEFT), AND HIGH CALCIUM MARBLE (RIGHT)




[MINFILE Home page](#) | [ARIS Home page](#) | [MINFILE Search page](#) | [Property File Search](#)
**MINFILE Record Summary**
**MINFILE No 092L 279**
[XML Extract/Inventory Report](#)

Print Preview	PDF	-- SELECT REPORT --	<input checked="" type="checkbox"/> New Window
File Created:	24-Jul-85	by BC Geological Survey (BCGS)	
Last Edit:	24-Jan-14	by Karl A. Flower(KAF)	

**SUMMARY**
[Summary Help](#)

<b>Name</b>	BEAVER COVE, TSULTON RIVER	<b>NMI</b>	
<b>Status</b>	Past Producer	<b>Mining Division</b>	Nanaimo
<b>Latitude</b>	<a href="#">50° 30' 59" N</a>	<b>BCGS Map</b>	092L056
<b>Longitude</b>	<a href="#">126° 53' 36" W</a>	<b>NTS Map</b>	092L10W
<b>Commodities</b>	Limestone, Marble, Building Stone	<b>UTM</b>	09 (NAD 83)
<b>Tectonic Belt</b>	Insular	<b>Northing</b>	5598167
<b>Capsule</b>		<b>Easting</b>	649349
<b>Geology</b>		<b>Deposit Types</b>	R09 : Limestone
		<b>Terrane</b>	Wrangell, Plutonic Rocks

A band of limestone, of the Upper Triassic Quatsino Formation (Vancouver Group), extends south across the east side of a hill, just west of Beaver Cove, for 2500 metres to the Tsulton River. The band is truncated to the north by a northwest trending fault and to the south, along the Tsulton River, by a northeast trending fault. This band is the faulted extension of a belt of limestone that continues southward from the Tsulton River to Bonanza Lake (092L 280). The band is bounded to the west by an elongate, north trending diorite stock of the Early to Middle Jurassic Island Plutonic Suite. Underlying basalts of the Upper Triassic Karmutsen Formation (Vancouver Group) outcrop along the east side of the band. The strata strike northwest and dip steeply southwest. The limestone bed varies from 120 to 150 metres in thickness.

Near its north end, the band is comprised mostly of fine grained, white to black streaked limestone that becomes coarse grained near the diorite contact. Some pyrrhotite-garnet-epidote skarn is developed at the contact. The limestone here contains some chert and a few, 0.6 to 1.2 metre wide dikes. Exposures to the south in the Tsulton River display creamy white, sugary limestone that is interbedded with a few bands of fine-grained, bluish grey limestone.

Occasional small nodules of chert and a few thin dikes are present. A 67 metre long chip sample taken across white sugary textured limestone on the north end of the band contained in per cent (Minister of Mines Annual Report 1968, p. 318, Sample 22):

```

-----
CaO          - 55.17
MgO          -  0.08
Insolubles   -  1.22
R2O3         -  0.30
Fe2O         -  0.13
MnO          -  0.023
P2O5         -  0.02
Sulphur      -  0.01
Ignition Loss - 43.21
-----
  
```

A sample of white limestone from the south end assayed, in per cent (CANMET Report 811, p. 142, Sample 8):

```

-----
CaO          - 54.34
MgO          -  0.34
SiO2         -  1.04
Al2O3        -  0.12
Fe2O3        -  0.16
Sulphur      -  0.02
-----
  
```

It is reported that some marble was quarried from the south end of this deposit around 1884 at a point 2.8 kilometres southwest of Beaver Cove on the Tsulton River, but no production figures are available (Minister of Mines Annual Report 1904, page 249).

In 1992 and 1994, Mammoth Geological completed programs of prospecting and geological mapping on the area as the Ton 1-6 claims. In 2001 through 2012, Homegold Resources completed programs of geological mapping on the area to the northwest as the Smiley NW property.

**Bibliography** EMPR AR 1904-249; \*1968-316,318  
 EMPR ASS RPT [23070](#), [23616](#), [26783](#), [31800](#), [33646](#)  
 EMPR OF 1992-18, pp. 31, 34-35



EMPR PF (Report on Limestone Deposits of the Pacific Northwest, p. 2)  
GSC MAP 4-1974; 1552A  
GSC OF 9; 170; 463, Sheet 2  
GSC P 69-1A; 70-1A; 72-44; \*74-8  
GSC SUM RPT 1931A, p. 35  
CANMET RPT 452, Vol.5, pp. 171,172; 811, Part 5, pp. 136,137

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