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RAVEN BAY  
L I M E S T O N E D E P O S I T  
T E X A D A I S L A N D  
B. C.

TEXADA ISLAND LIMESTONE

RAVEN BAY LIMESTONE

SUMMARY OF PROPERTY

PRODUCT: CHEMICAL AND CEMENT GRADE LIMESTONE. POTENTIALLY 150,000,000 TONS. AVERAGE ANALYSIS: CaO 55.33%, CO<sub>2</sub> 42.22, INSOLUBLE RESIDUE 1.48, FeO<sub>3</sub> 0.16, Al<sub>2</sub>O<sub>3</sub> 0.11, MgO 0.14, S 0.06, P<sub>2</sub>O<sub>5</sub> 0.05, CARBON 0.29.

LOCATION AND ACCESSIBILITY: TEXADA ISLAND, BRITISH COLUMBIA, CANADA. ADJACENT TO DEEP WATER. DISTANCES: VANCOUVER, B. C. 80 MILES, SEATTLE 180, PORTLAND 400, SAN FRANCISCO 900.

OWNERSHIP: PRIVATELY HELD BY MINING CLAIM. CROWN LEASE AVAILABLE TO CLAIM HOLDER AT ROYALTY OF 10 CENTS PER CUBIC YARD. AREA IS 600 ACRES OF WHICH 160 ACRES ARE UNDERLAIN BY LIMESTONE.

ECONOMIC POTENTIAL: TEXADA ISLAND IS THE MAJOR PRESENT AND POTENTIAL SOURCE OF LIMESTONE FOR THE ENTIRE WEST COAST OF THE UNITED STATES. SIX MAJOR FIRMS HAVE ACQUIRED ALL OF THE REMAINING TRACTS WITH THE EXCEPTION OF THE RAVEN BAY PROPERTY. PRODUCTION IN 1968 WAS 3,000,000 TONS OF WHICH 70% WENT TO THE U. S. WITH FOREIGN REGISTRY OF SHIPS AND SIZEABLE BULK CARRIERS, THIS SOURCE PROMISES TO BE THE LOWEST-COST SOURCE OF SUPPLY FOR MANY YEARS TO COME.

PHYSICAL PROBLEMS: THE MARBLE BAY LIMESTONE OF TRIASSIC AGE IS KNOWN TO BE IN EXCESS OF 300 FEET THICK, AND MAY BE MORE THAN 2000 FEET THICK. THE SURFACE RISES GRADUALLY TO 400 FEET ABOVE SEA LEVEL. THE DISTANCE TO TIDE WATER IS ONE MILE. CLIMATE IS MILD WITH YEAR-ROUND OPERATIONS POSSIBLE. SECOND GROWTH TIMBER COVERS THE SURFACE. THERE IS VIRTUALLY NO OVERBURDEN. A NETWORK OF BASIC IGNEOUS DIKES INTRUDES THE LIMESTONE REQUIRING CARE IN QUARRYING TO MAINTAIN GRADE WITH STRIPPING OF "SIDE BURDEN", BUT OFFERS NO FORMIDABLE PROBLEMS.

PROPOSAL: THE CLAIM OWNER OFFERS THE MINING CLAIMS FOR SALE AND WILL GIVE A REASONABLE TIME UNDER OPTION FOR EVALUATION. FOR FURTHER INFORMATION CONTACT:

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CANADA.

TEXADA ISLAND LIMESTONE

THE LARGEST DEPOSIT OF LIMESTONE ON THE PACIFIC COAST OF NORTH AMERICA IS LOCATED ON THE NORTHERN PORTION OF TEXADA ISLAND, ABOUT 80 MILES NORTH OF VANCOUVER, BRITISH COLUMBIA. SEATTLE IS 180 MILES SOUTH OF THIS AREA, PORTLAND 400 MILES AND SAN FRANCISCO ABOUT 900. VERY SUBSTANTIAL TONNAGES ARE BEING MOVED INTO LOCAL CANADIAN MARKETS AS WELL AS INTO PUGET SOUND AND COLUMBIA RIVER LOCATIONS. THE DEVELOPMENT AND USE OF LARGE OCEAN GOING BARGES HAS EXPANDED THE ECONOMIC CIRCLE OF TEXADA LIMESTONE AND THE INDUSTRY IN GENERAL IS ON THE VERGE OF FURTHER EXTENDING THIS CIRCLE TO INCLUDE NORTHERN CALIFORNIA BY THE PRACTICAL APPLICATION OF 20,000 TO 30,000 TON BARGES OR LARGER BULK CARRIERS.

THE TREND TO ALMOST UNIVERSAL DEPENDENCE BY THE LIMESTONE CONSUMING INDUSTRIES, ON TEXADA STONE, IS PROMPTED BY THE FACT THAT THE PACIFIC REGION LIMESTONES OF THE UNITED STATES ARE LOCATED TOO FAR INLAND TO COMPETE AGAINST TEXADA'S MASSIVE HIGH CALCIUM DEPOSITS POSSESSING, AS THEY DO, A UNIFORMITY OF CHEMICAL AND PHYSICAL CHARACTERISTIC COMPLEMENTED BY DEEP WATER LOCATION, AN ESTABLISHED LABOUR FORCE AND AN EXCELLENT CLIMATE. ELECTRIC POWER IS IN ADEQUATE SUPPLY AT MAINLAND RATES BY THE BRITISH COLUMBIA HYDRO AUTHORITY. THERE IS A GOOD POSSIBILITY OF NATURAL GAS SUPPLY IN THE PROJECTED PLAN OF THE WESTCOAST TRANSMISSION COMPANY TO SUPPLY GAS TO MAC MILLAN BLOEDEL'S

# TEXADA ISLAND LIMESTONE

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MILL AT POWELL RIVER WITH EXTENSION TO VANCOUVER ISLAND VIA TEXADA. INDEED, TEXADA LIMESTONE IS SUMMED UP IN THE BROCHURE ISSUED BY IDEAL, THE LARGEST CEMENT COMPANY IN NORTH AMERICA, AT ITS SEATTLE PLANT DEDICATION, in 1967:

" OUR EXPLORATIONS IN THE PACIFIC NORTHWEST AND IN FACT ON THE ENTIRE WEST COAST - HAVE CONTINUED FOR AT LEAST TWENTY YEARS. IN 1954 WE PURCHASED OUR FIRST HOLDING OF LIMESTONE ON TEXADA ISLAND NEARLY 200 MILES NORTH OF SEATTLE IN BRITISH COLUMBIA: THROUGH THE YEARS WHILE OTHER CLOSER SOURCES HAVE BEEN SOUGHT, WE HAVE GRADUALLY INCREASED OUR RESERVES ON TEXADA, FINALLY COMING TO THE CONCLUSION THAT THESE OF ALL THE DEPOSITS TESTED ARE BY FAR THE BEST IN QUALITY AND ACCESSIBILITY FOR OUR PURPOSES. OUR PRESENT HOLDINGS IN EXTENT ARE NOW ADEQUATE FOR ANY FORESEEABLE NEED IN THE FUTURE."

THE LIST OF OWNERS AND OPERATORS IN THE TEXADA LIMESTONE BELT IS A PRESTIGIOUS ONE AND IS LISTED HEREUNDER:

OCEAN CEMENT COMPANY  
DOMTAR COMPANY  
LA FARGE CEMENT OF NORTH AMERICA  
IDEAL CEMENT COMPANY  
KAISER ALUMINUM ( TEXADA MINES )  
IMPERIAL LIMESTONE

## TEXADA ISLAND LIMESTONE

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IN ADDITION, THE OREGON PORTLAND CEMENT COMPANY OF PORTLAND, OREGON AND THE LONE STAR CEMENT COMPANY OF SEATTLE ARE COMMITTED TO A COMPLETE LIMESTONE SUPPLY RESPONSIBILITY FROM PRODUCERS ON TEXADA. WITH THE EXCEPTION OF COLUMBIA CEMENT AT BELLINGHAM AND OCEAN AT BAMBERTON, THE ENTIRE CEMENT PRODUCTION INDUSTRY IN THE COLUMBIA RIVER, PUGET SOUND AND BRITISH COLUMBIA AREAS IS PERMANENTLY PREDICATED TO THE USE OF TEXADA STONE. IT IS INDICATED THAT OCEAN IS PLANNING TEXADA SUPPLY WITHIN A 5 TO 10 YEAR PERIOD. SOME SIXTEEN PULP AND PAPER MILLS, THREE STEEL MILLS, TWO LIME PLANTS, A CALCIUM CARBIDE PLANT AND A SCORE OF MISCELLANEOUS CONSUMERS ARE LONG TERM USERS OF TEXADA LIMESTONE. IN 1968 AND 1969, APPROXIMATELY THREE MILLION TONS WERE SHIPPED ANNUALLY, WITH ABOUT 70% GOING TO THE UNITED STATES EXPORT MARKET. IT IS A FAIR ESTIMATE TO PROJECT A COMBINED MOVEMENT OF SIX MILLION TONS BY 1975. EFFECTIVE JANUARY 1, 1968 THE U. S. DUTY ON LIMESTONE, FOR CEMENT USE, WAS ENTIRELY REMOVED AND THE DUTY ON CHEMICAL GRADES WILL BE REDUCED TO A FINAL LEVEL OF \$0.10 PER TON BY JANUARY 1, 1970. THE RESULT OF THIS RECENT TARIFF AGREEMENT HAS BEEN A VERY DISTINCT ENHANCEMENT IN THE VALUE OF TEXADA LIMESTONE.

PROPERTY STATUS ON TEXADA IS PROBABLY THE MOST COMPLEX IN BRITISH COLUMBIA BY REASON OF AN EIGHTY YEAR HISTORY OF MINING ACTIVITY. ORIGINAL DISTRICT LAND LOTS, CROWN GRANT MINERAL CLAIMS AND REVERSIONS, LIMESTONE LEASES AND RECORDED MINERAL

## TEXADA ISLAND LIMESTONE

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CLAIMS, WITH VARIOUS SUPERIMPOSITIONS, MAKE IT A CONFUSING AREA. THE ORIGINAL CROWN GRANT DISTRICT LOTS AND CROWN GRANT MINERAL CLAIMS CARRY THE LIMESTONE RIGHTS IN PERPETUITY WITHOUT ROYALTY TO THE CROWN. THE CROWN WILL NOT SELL TITLE TO ITS VACANT LIMESTONE LAND BUT WILL ISSUE LEASE GENERALLY TWENTY ONE YEAR TERM, AT \$10.00 LEASE RENTAL PER ACRE PER YEAR PLUS A ROYALTY OF \$0.10 PER CUBIC YARD, IN PLACE, FOR LIMESTONE REMOVED OR, AT A FACTOR OF 2.25 TONS PER CUBIC YARD, THE ROYALTY PAYABLE WOULD BE .044 PER SHORT TON. RECORDED MINERAL CLAIMS ON VACANT CROWN LAND GIVE THE RIGHTS TO PRECIOUS AND BASE METALS BUT NOT LIMESTONE. HOWEVER, SUCH STAKINGS CONTROL THE GROUND AND PRECLUDE ANY APPLICATION FOR LIMESTONE LEASE UNLESS SPECIFICALLY APPROVED BY THE MINERAL CLAIM HOLDER. HENCE THE HOLDER IS IN THE POSITION OF REFUSING OTHERS BUT ABLE TO CONSENT TO HIS OWN APPLICATION AT ANY TIME. THE COST OF HOLDING A RECORDED MINERAL CLAIM IS \$100.00 ASSESSMENT WORK OR THE SAME AMOUNT ANNUALLY, BY CASH-IN-LIEU OF WORK. CLAIMS CAN BE GROUPED AND WORK, SUCH AS DIAMOND DRILLING, DONE ON ONE CLAIM CAN BE APPLIED TO THE ENTIRE GROUP AND PREPAID TO ANY NUMBER OF YEARS AHEAD. FOR INSTANCE \$10,000.00 SPENT ON A GROUP OF TEN CLAIMS COULD BE REGISTERED TO PREPAY ASSESSMENT FOR TEN YEARS. IN SHORT, IT IS CONSIDERED ADVISABLE TO HOLD LIMESTONE GROUND UNDER RECORDED MINERAL CLAIMS STATUS AS BEING THE MINIMAL COST APPROACH TO MAINTAINING GOOD TITLE UNTIL THE GROUND IN QUESTION IS REQUIRED FOR PRODUCTION.

## T E X A D A I S L A N D L I M E S T O N E

THE LIMESTONE SYSTEM IS SHOWN ON THE ATTACHED MAPS AS WELL AS A REASONABLE INDICATION OF EXISTING OWNERSHIPS. THE MATERIAL IN THE AREA FROM STURT BAY TO BLUBBER BAY, ON THAT NORTH-EAST PORTION OF THE ISLAND, IS HIGH IN MAGNESIA AND IS NOT CONSIDERED A COMMERCIAL STONE. THIS WAS THE REASON FOR THE ABANDONMENT OF THE B. C. CEMENT ( OCEAN ) QUARRY AT BLUBBER BAY AND THE MARBLE BAY QUARRY AT STURT BAY. THE DOMTAR PROPERTIES ARE BASICALLY CROWN GRANT, THE LA FARGE HOLDINGS ARE CROWN GRANT AND LEASE, THE IDEAL PROPERTIES ARE ABOUT HALF LEASE-HOLD AS ARE THOSE OF OCEAN CEMENT. IMPERIAL LIMESTONE IS ENTIRELY LEASE-HOLD AND HAS OPERATED AS SUCH FOR ABOUT TWENTY YEARS. THE PHILOSOPHY OF PRESENT GOVERNMENTS AT FEDERAL, PROVINCIAL AND MUNICIPAL LEVEL IS TOWARDS THE RETENTION OF TITLE IN THE CROWN AND ENCOURAGEMENT OF LEASE-HOLD TENURES. THIS HAS BECOME A FIRM PART OF CANADIAN POLICY AND IS FULLY RECOGNIZED BY EVERY LEVEL OF THE INVESTMENT AND BUSINESS COMMUNITY AS A VALID BASE FOR PERMANENT PLANNING AND COMMITMENT. IN A PERIOD OF SIX YEARS BETWEEN 1962 AND 1968 THE PROPERTY OWNERSHIP STRUCTURE ON TEXADA CHANGED DRASTICALLY AS THE MAJOR COMPANIES CONSOLIDATED THEIR PLANNING AND ACQUIRED REMAINING CROWN GRANTS, RECORDED MINERAL CLAIMS OVER ALL POTENTIAL PRODUCTION AREAS



## TEXADA ISLAND LIMESTONE

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AND IN CURRENT ANALYSIS, ALMOST COMPLETELY CONTROLLED THE LIMESTONE BELT TO THE EXCLUSION OF ANY ADDITIONAL OPERATORS.

THESE COMPANIES, OF NATIONAL AND INTERNATIONAL STATURE, WILL NOT BE INCLINED TO DISPOSAL OF PROPERTY BECAUSE OF THE DOMINANT DEMAND OF THEIR TYPE OF INDUSTRY, WHICH REQUIRES RAW MATERIAL INSURANCE OVER 100 YEAR TERM.

THE ONLY MAJOR PROPERTY STILL AVAILABLE ON TEXADA HAS HAD A HISTORY OF BEING KNOWN AS OUTSTANDING IN THE QUANTITY AND QUALITY OF LIMESTONE CONTAINED WITHIN ITS BOUNDARIES BUT HAS INHERITED A SUCCESSIVE PATTERN OF INADEQUATE OR PROMOTIONAL OWNERS WHO HAVE FAILED TO REALIZE THE POTENTIAL EXISTING OR TO PUT IT INTO THE HANDS OF AN EXPERIENCED PRODUCTION COMPANY.

LONG TERM PLANNING AND INTRICATE ACCUMULATION OF PROPERTY HAS RESULTED IN THE ASSEMBLY OF A FIRST CLASS MAJOR LIMESTONE PROPERTY ON A BASIS OF COMPLETE CONTROL OF GROUND AT MINIMAL HOLDING EXPENSE. IT IS THE LAST SUCH SITUATION AVAILABLE ON TEXADA AND IT IS OFFERED FOR SALE BY THE SOLE OWNER WHO FOR REASON OF AGE AND INTEREST IN DISPOSAL PRIOR TO POSSIBLE TAX LAW CHANGES, IS WILLING TO OFFER THE ENTIRE HOLDINGS, AS LISTED.

YOUR CONSIDERATION AND COMMENT WILL BE APPRECIATED.

TEXADA ISLAND LIMESTONE

PROPERTY

THE OWNER HAS EMPLOYED THE FIRM OF UNDERHILL AND UNDERHILL, PROFESSIONAL ENGINEERS AND LAND SURVEYORS, IN ALL HIS TEXADA STAKINGS. THE UNDERHILL FIRM IS RECOGNIZED AS THE MOST EXPERT IN TEXADA LAND MATTERS AND HAS HAD A WIDE EXPERIENCE, OVER SOME FORTY YEARS, WITH NUMEROUS CLIENTS IN THIS GENERAL AREA. RECORDED MINERAL CLAIMS ARE BY NECESSITY NOT EXACT IN LOCATION, BUT IT IS BELIEVED THAT THE ACCOMPANYING PLAN REPRESENTS AS ACCURATE A DESCRIPTION AS IS POSSIBLE WITHOUT FORMAL SURVEY OF THE ENTIRE LOCALITY.

THE PROPERTY CONSISTS OF APPROXIMATELY 600 ACRES AND IS COMPRISED OF THE FOLLOWING

MINERAL CLAIMS: "FLORENCE" GROUP - 17 CONTINGUOUS CLAIMS-TEXADA:

WILL 2 FR. RECORD # 21086	MOLLY RECORD # 17981
WILL 3 FR. RECORD #19450	MOLLY 1 RECORD # 18073
WILL 4 " " # 19451	MOLLY 2 " # 18074
WILL 5 " " # 19452	MOLLY 3 " # 18075
WILL 6 " " # 19453	MOLLY 4 " # 18139
KELLY JO FR. " # 19674	MOLLY 5 " # 18140
JOE FR. RECORD # 19671	MOLLY 6 " # 18141
WILLY 1 " " # 27287	MOLLY 7 " # 18142
WILLY 2 " " # 27288	

CROWN GRANT:

PARCEL "C" OF LOT 6: BEING 9.5 ACRES OF CROWN GRANT PROPERTY SITUATED AT RAVEN BAY TEXADA ISLAND CONTIGUOUS TO THE MINERAL

T E X A D A I S L A N D L I M E S T O N E

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P R O P E R T Y

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CLAIM HOLDINGS. THE PROPERTY IS ADVANTAGEOUSLY LOCATED AND IS A LOGICAL TERMINUS FOR ANY PRODUCTION ACTIVITY. THIS UPLAND PARCEL PROVIDES A STRATEGIC KEY LOCATION FOR OPERATIONAL UTILIZATION AND DEEP WATER-FRONT DEVELOPMENT ON MALASPINA STRAITS. MOREOVER, IT IS A DESIRABLE PIECE OF SHORE-LINE REAL ESTATE WITH A RUNNING STREAM AND HAS CONNECTION BY ROAD TO THE TOWN OF VAN ANDA.

THE WILL 2, 3, 4, 5, 6 AND THE KELLY JO FR. COVER THE LIMESTONE AREAS ON DISTRICT LOTS 418 AND 458-A THEREBY ESTABLISHING THE OWNER AS SOLE CANDIDATE FOR ANY ENSUING LIMESTONE LEASE OR LEASES. AREA UNDERLAIN BY LIMESTONE IS ESTIMATED TO BE ABOUT 160 ACRES. THE MOLLY, JOE AND WILLY CLAIMS ARE FOR ACCESS CONTACT TO TIDE-WATER AND FOR UTLIMATE PROPERTY SECURITY. IT IS PROBABLE THAT A CONVEYOR BELT SYSTEM FROM THE LIMESTONE TO THE LOADING POINT WILL BE THE MOST EFFECTIVE METHOD OF MATERIAL HANDLING. RECENT PROVINCIAL LAND POLICY ALLOWS FOR A RIGHT-OF-WAY LEASE TO BE CONVERTED INTO CROWN GRANT TITLE ON THE BASIS OF PERMANENT IMPROVEMENTS SHOWING COMPLETION OF INTENT. THEREFORE, THE MINERAL CLAIM HOLDINGS ALLOW FOR LEASE OF RIGHT-OF-WAY WHICH IS CONVERTIBLE TO CROWN GRANT, UNDER CERTAIN CONDITIONS. SIMILARLY, ANY AREA ON THE MINERAL CLAIM HOLDING, REQUIRED FOR PLANT OR PRODUCTION SITE USE MAY BE INITIALLY LEASED AND SUBSEQUENTLY PURCHASED AT A NOMINAL PRICE PER ACRE, WHEN AGREED DOLLAR COMMITMENTS ON PERMANENT IMPROVEMENTS IN PHYSICAL PLANT HAVE BEEN ACCOMPLISHED.

T E X A D A   I S L A N D   L I M E S T O N E

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P R O P E R T Y

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THEREFORE, THE CURRENT PROVINCIAL GOVERNMENT POLICY WOULD PERMIT ACQUISITION OF FEE SIMPLE OR INDEFEASIBLE TITLE ON PLANT SITE WHEREVER SITUATED ON THE MINERAL CLAIMS AS WELL AS SIMILAR TITLE TO A RIGHT-OF-WAY CONNECTING TO THE EXISTING FEE SIMPLE WATER FRONT AREA AT PARCEL "C". THE BASIC LIMESTONE PRODUCTION AREA WOULD REMAIN AS A LEASE. THE 17 MINERAL CLAIMS ARE CONTIGUOUS AND ARE GROUPED SO THAT EXPLORATORY DRILLING COSTS OR ROAD CONSTRUCTION COSTS MAY BE FILED AGAINST THE GROUP AND THEREBY PERMIT PRE-PAYMENT OF THE \$100.00 ANNUAL PER CLAIM ASSESSMENT. THE ENTIRE GROUP OF 17 CLAIMS ARE PREPAID AND IN GOOD STANDING UNTIL JUNE, 1971.

LOTS   4 1 8 - 4 5 8 - A

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THE GEOLOGY OF TEXADA ISLAND LIMESTONE IS ABLY DESCRIBED IN BULLETIN NO. 40 "CALCAREOUS DEPOSITS OF SOUTHWESTERN BRITISH COLUMBIA" WHEREIN THE DEPOSITS ARE CATEGORIZED AS BEING IN THREE MEMBERS, EACH SEVERAL HUNDRED FEET THICK, WITH THE FIRST AND LOWERMOST BEING COMPOSED ALMOST EXCLUSIVELY OF HIGH CALCIUM LIMESTONE. ALL THE DEPOSITS ARE COMPLICATED BY INTRICATE DYKE STRUCTURES. DEPTH OF THE DEPOSITS IS NOT KNOWN ALTHOUGH THE MARBLE BAY MINE WAS STILL IN LIMESTONE AT 1700 FEET WHEN ABANDONED AND A VERTICAL DIAMOND DRILL HOLE WAS COMPLETED BY ONE OF THE COMPANIES, IN FIRST MEMBER GROUND AT 700 FEET.

T E X A D A I S L A N D L I M E S T O N E

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LOTS 4 1 8 - 4 5 8 - A

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LOTS 418 AND 458 -A ARE DISTINCTLY IN THE FIRST MEMBER CATEGORY AND ARE LESS ENCUMBERED BY INTRUSIVE DYKES THAN THE PROPERTIES PRESENTLY BEING OPERATED BY OTHERS. THE PHYSICAL EVIDENCE IN THE TERRITORY AS A WHOLE IS ALMOST CONCLUSIVE THAT THE LIMESTONE WOULD EXTEND AT LEAST 500 FEET IN DEPTH OR ABOUT SEA-LEVEL. THE QUANTITY CAN CONSERVATIVELY BE ESTIMATED AT 150 MILLION TONS AND THE CHEMICAL GRADE WOULD AVERAGE A MINIMUM OF 95% CALCIUM CARBONATE WITH LESS THAN 1% MAGNESIUM OXIDE AND LESS THAN 2% SILICA. VERY SUBSTANTIAL QUANTITIES OF 97% AND 98% CALCIUM CARBONATE STONE WOULD BE ENCOUNTERED FOR DISPOSAL INTO CHEMICAL MARKETS. THE ATTACHED REPORT AND DIAMOND DRILL RESULT IS MINIMAL IN SCOPE BUT INDICATIVE OF THE DEPOSIT. THE OWNER FEELS THAT THE CONFIDENCE AND SUBSTANTIAL INVESTMENT OF OTHER MAJOR OPERATING COMPANIES IN THE IMMEDIATE AREA IS SATISFACTORY EVIDENCE OF THE IMPORTANCE OF THE TERRITORY AS A WHOLE. THERE IS NO DOUBT THAT A LARGE VOLUME HIGH QUALITY PROPERTY EXISTS BUT A MORE THOROUGH PROGRAM TO DEFINE THE SPECIFIC REQUIREMENTS OF A PARTICULAR INDUSTRY WOULD BE NECESSARY PRIOR TO COMMENCING OPERATIONS.

THE TERRAIN IS SUITABLE FOR THE ESTABLISHMENT OF A MODERN FACILITY FOR QUARRYING, CRUSHING, CONVEYING AND BARGE LOADING AT MODERATE CAPITAL COST FOR ACCOMPLISHMENT OF LOW PRODUCTION UNIT RESULT.

THIS REPORT IS PURPORTED  
TO BE THE RESULTS OF  
INVESTIGATION BY DR. DOLMAGE  
AND IS PRESENTED AS RECEIVED

JULY 30, 1954

RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND , B. C.

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THIS REPORT DISCUSSES THE SIZE AND GRADE OF A LARGE DEPOSIT OF LIMESTONE SITUATED NEAR THE NORTH-EAST COAST OF TEXADA ISLAND, ABOUT 80 MILES NORTHWEST OF VANCOUVER.

TEXADA IS A LARGE ISLAND ABOUT 30 MILES IN LENGTH, 2 TO 5 MILES WIDE AND RISING TO A MAXIMUM ELEVATION OF 2450 FEET. IT IS COMPOSED MAINLY OF VOLCANIC ROCKS OF JURO-TRIASSIC AGE. INTERBEBDED WITH THE VOLCANIC ROCKS BUT IN MUCH SMALLER AMOUNTS ARE SEDIMENTS MAINLY LIMESTONE. THESE OUTCROP AT THREE PLACES ON THE ISLAND: AT THE NORTH END, THE SOUTH END AND NEAR THE MIDDLE OF THE WEST COAST. THE DEPOSITS IN QUESTION FORM A PART OF THE NORTHERN BODY OF LIMESTONE WHICH EXTENDS IN A SOUTHERLY DIRECTION FROM BLUBBER BAY TO WELCOME BAY. THE ONLY OTHER ROCKS WORTHY OF MENTION ARE BODIES OF GRANODIORITE AND DIORITE WHICH ARE YOUNGER THAN AND WERE INJECTED INTO THE OTHER ROCKS.

LOCAL GEOLOGY

THE LARGE BODY OF LIMESTONE ON THE NORTHERN END OF TEXADA ISLAND HAS BEEN A SOURCE OF LIMESTONE FOR MANY YEARS. THREE QUARRIES ARE NOW IN OPERATION, ONE OF WHICH, SITUATED IN BLUBBER BAY HAS BEEN PRODUCING FOR OVER 30 YEARS. THE LIMESTONES OF THIS

RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND, B. C.

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LOCAL GEOLOGY

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AREA HAVE RECENTLY BEEN STUDIED BY W. H. MATHEWS, OF THE BRITISH COLUMBIA DEPARTMENT OF MINES. (1) \*

HE DIVIDES THE FORMATION INTO THREE MEMBERS AS FOLLOWS, (1) A BASAL MEMBER RESTING ON THE VOLCANIC ROCKS, HAVING A THICKNESS OF ABOUT 500 FEET AND COMPOSED, EXCEPT FOR THE BOTTOM FEW FEET OF HIGH-CALCIUM, LOW-MAGNESIUM LIMESTONE. (2) ABOVE THIS IS A MIDDLE MEMBER 1500 FEET THICK MADE UP MAINLY OF HIGH-CALCIUM LIMESTONE BUT CONTAINING A NUMBER OF MAGNESIAN LIMESTONE BEDS. (3) ABOVE THIS IS THE THIRD MEMBER 200 TO 300 FEET THICK IN PLACES BUT ENTIRELY REMOVED BY EROSION IN OTHERS. IT CONTAINS A HIGH PROPORTION OF MAGNESIAN LIMESTONE AND DELOMITE. THE RAVEN BAY DEPOSITS ARE CONFINED LARGELY IF NOT ENTIRELY TO THE LOWEST AND PUREST MEMBER.

THE WHOLE FORMATION IS FOLDED INTO A BROAD SYNCLINE BORDERED BY A SMALL STEEP ANTICLINE ON THE EAST. EAST OF THIS ANTICLINE IS A SECOND BUT SMALLER SYNCLINE AND THE RAVEN BY DEPOSITS FORM THE EASTERN LIMIT OF THIS SYNCLINE. THEY REST ON THE VOLANIC ROCK AND DIP TO THE WEST AT MODERATE ANGLES.

\* (1) GEOL. OF LIMESTONE DEPOSITS OF  
NORTHERN PART OF TEXADA ISLAND,  
WESTERN MINER, FEB. 1946, PAGE 36.



RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND, B. C.

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LOCAL GEOLOGY

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OTHER THAN THE ABOVE MENTIONED BEDS OF MAGNESIAN LIMESTONE THE ONLY OBJECTIONABLE FEATURES OF THE LIMESTONES ON TEXADA ISLAND ARE THE MANY DYKES AND IRREGULAR BODIES OF DIORITE OCCURRING IN THEM. IN PLACES THESE CONSTITUTE A LARGE PROPORTION OF THE TOTAL VOLUME OF ROCK AND HAVE TO BE REMOVED OR AVOIDED IN QUARRYING, THUS ADDING TO THE COSTS.

THE CHEMICAL IMPURITIES BESIDES MAGNESIA CONSISTS OF INSOLUBLE RESIDUES ( MAINLY SILICA AND ALUMINA ), FERRIC OXIDE , SULPHUR, PHOSPHORUS, MANGANESE, AND CARBONACEOUS MATTER. THESE ARE GENERALLY SO LOW IN AMOUNT AS TO BE UNOBJECTIONABLE.

RAVEN BAY DEPOSITS

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THE RAVEN BAY PROPERTY IS INDICATED ON THE ACCOMPANYING CLAIM MAPS. IT CONTAINS OVER 500 ACRES AND IS SITUATED CLOSE TO THE EAST SHORE OF TEXADA ISLAND ABOUT 2 1/2 MILES SOUTHEAST OF THE TOWN VAN ANDA. EXCEPT FOR A NARROW STRIP ALONG THE EAST SIDE OF THE PROPERTY AND THE SMALL FORESHORE LOT NUMBER 2698 THE WHOLE PROPERTY IS OCCUPIED BY LIMESTONE AND THIS LIMESTONE IS PART OF THE LOWEST AND PUREST MEMBER OF THE TEXADA LIMESTONE FORMATIONS. THROUGHOUT THE AREA THE LIMESTONE IS WELL EXPOSED IN MANY NATURAL OUTCROPS, SOME OF WHICH ARE QUITE LARGE. THE MATERIAL IS REMARKABLY UNIFORM IN APPEARANCE. IT HAS A BLuish GRAY COLOR AND A FINE-GRAINED TEXTURE THROUGHOUT. THE BEDS ARE THICK AND MASSIVE AND SO SIMILAR TO ONE ANOTHER AS TO BE UNDISTINGUISHABLE. NO BEDDING PLANES COULD

RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND, B. C.

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RAVEN BAY DEPOSITS

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BE FOUND ON THE PROPERTY. THE ONLY VARIATION IN COLOR SEEN WAS A SLIGHT BLEACHING IN THE CLOSE VICINITY OF SOME OF THE LARGER DIORITE DYKES.

IN AN EXTENSIVE TRAVERSE OF THE PROPERTY, FOUR DIORITE OR ANDESITE DYKES WERE OBSERVED WHICH WERE 5 FEET, 10 FEET, 15 FEET AND 30 FEET WIDE RESPECTIVELY. SEVERAL SMALLER ONES WERE ENCOUNTERED IN THE DRILL HOLES AS SHOWN IN THE DRILL SECTIONS. NO DOUBT THERE ARE OTHERS ON THE PROPERTY BUT THE IMPRESSION GAINED FROM TRAVERSING IT AND EXAMINING THE DRILL CORES IS THAT THEY ARE COMPARATIVELY FEW IN NUMBER AND WILL HAVE LITTLE OR NO EFFECT ON THE METHODS OR COSTS OF QUARRYING. CERTAINLY, THEY ARE FEWER IN THIS AREA THAN IN SOME OF THE QUARRIES NOW BEING OPERATED.

THE CHEMICAL NATURE OF THE LIMESTONE IS INDICATED BY THE SCATTERED SAMPLES SHOWN ON THE LARGE PLAN. THE TWO PRINCIPAL IMPURITIES ARE MAGNESIAN AND INSOLUBLE RESIDUES, MAINLY SILICA. BOTH THESE ARE UNIFORMLY LOW. THEY SEEM TO BE SLIGHTLY HIGHER TOWARDS THE WEST WHERE THE HIGHER STRATA ARE EXPOSED. THIS CONFORMS TO MATHEW'S FINDINGS. IN SOME OF THE CORES SMALL AMOUNTS OF PYRITE WERE SEEN. THIS ACCOUNTS FOR THE IRON AND SULPHUR SHOWN IN THE CHEMICAL ANALYSES. THE AVERAGE CONTENT OF MAGNESIA IN 14 SAMPLES SCATTERED OVER THE WHOLE AREA IS 0.50 PERCENT . THREE OF THESE REPRESENTING A SMALL PART OF THE

RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND, B. C.

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RAVEN BAY DEPOSITS

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EXTREME WESTERN PART OF THE PROPERTY SHOWED A MAGNESIA CONTENT OF 0.94, 1.49 AND 1.50 PERCENT RESPECTIVELY. OMITTING THIS SMALL PART OF THE PROPERTY THE REMAINDER WOULD HAVE A MAGNESIA CONTENT OF ONLY 0.32 PERCENT.

ASSUMING THE AREA OF THE PROPERTY TO BE 500 ACRES AND THE QUARRYING DEPTH TO BE 50 FEET, THERE WOULD BE ON THE PROPERTY 90,750,000 TONS OF LIMESTONE. IT IS OBVIOUS THAT IT WOULD BE IMPRACTICABLE IF NOT IMPOSSIBLE TO THOROUGHLY SAMPLE SO LARGE A VOLUME OF ROCK. NEVERTHELESS, A SUPERFICIAL EXAMINATION TOGETHER WITH THE SCATTERED SAMPLES ABOVE MENTIONED INDICATE A MARKED UNITY THROUGHOUT AND A COMPARATIVELY HIGH QUALITY LEAVING NO DOUBT THAT THERE ARE MANY MILLIONS OF TONS OF HIGH QUALITY LIMESTONE ON THE PROPERTY.

WHEREAS NEAR THE EASTERN PART OF THE PROPERTY WERE SELECTED AS BEING IDEAL FOR QUARRYING AND WERE FULLY TESTED BY SURFACE SAMPLING AND BY DIAMOND DRILLING. THESE AREAS ARE SHOWN ON PLAN 11. AND REFERRED TO AS "A" AND "B".

AREA "A" HAS 18 HOLES DRILLED TO THE ASSUMED DEPTH OF THE QUARRY FLOOR. ALSO A LINE OF SAMPLES WAS TAKEN FROM THE SURFACE DIRECTLY ABOVE EACH OF THE DRILLED SECTIONS. THESE SAMPLES, TOGETHER WITH THOSE OBTAINED FROM EACH DRILL HOLE ARE SHOWN ON THE ACCOMPANYING SECTIONS. ALSO INDICATED ON EACH SECTION IS ITS AREA IN SQUARE FEET AS DETERMINED BY THE PLANIMETER. THE VOLUME OF LIMESTONE SO TESTED

RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND, B. C.

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RAVEN BAY DEPOSITS

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WAS CALCULATED BY AVERAGING THE AREAS OF ALL VERTICAL SECTIONS AND MULTIPLYING THIS AVERAGE BY THE LENGTH OF THE AREA TESTED, THAT IS, THE DISTANCE BETWEEN DRILL HOLES 1 AND 9. THIS BLOCK WAS THUS FOUND TO CONTAIN 552,000 TONS OF TESTED LIMESTONE.

IN THIS BLOCK 54 SAMPLES SHOW THAT THE MAGNESIA CONTENT VARIES BETWEEN 0.10 AND 0.65 PERCENT AND AVERAGES ONLY 0.25 PERCENT. THE SAMPLES SHOW ALSO THAT THE INSOLUBLES VARY FROM 0.20 TO 4.48 PERCENT EXCEPTING ONE SAMPLE WHICH CONTAINED 15.28%. THIS SAMPLE WAS TAKEN CLOSE TO A DYKE WHICH ACCOUNTS FOR ITS ABNORMAL COMPOSITION. INCLUDING THIS SAMPLE THE AVERAGE PERCENT ON INSOLUBLES IS ONLY 2.27%. THIS LIMESTONE IS THEREFORE EXCEPTIONALLY PURE.

BLOCK "B", WHICH LIES BETWEEN DRILL HOLES 12 AND 13, WAS FOUND BY THE SAME METHOD OF CALCULATION TO CONTAIN 325,000 TONS OF LIMESTONE AVERAGING 0.32% MAGNESIA AND 1.6% INSOLUBLES.

THESE TWO BLOCKS, PLUS THE UNTESTED BLOCK LYING BETWEEN THEM AND WHICH MAY SAFELY BE CONSIDERED TO BE OF SIMILAR COMPOSITION, HAVE A TOTAL OF ABOUT 1,860,000 TONS OF LIMESTONE AVERAGING ABOUT 0.23 PERCENT MAGNESIA AND 2.0 PERCENT INSOLUBLES.

TWENTY-TWO SAMPLES TAKEN WERE SUBJECTED TO COMPLETE CHEMICAL ANALYSES, THE RESULTS OF WHICH ARE ATTACHED HERETO. THEY SHOW, BESIDES MAGNESIA AND INSOLUBLES, SMALL AMOUNT OF FERRIC OXIDE,

RAVEN BAY LIMESTONE DEPOSITS  
RAVEN BAY, TEXADA ISLAND, B. C.

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RAVEN BAY DEPOSITS

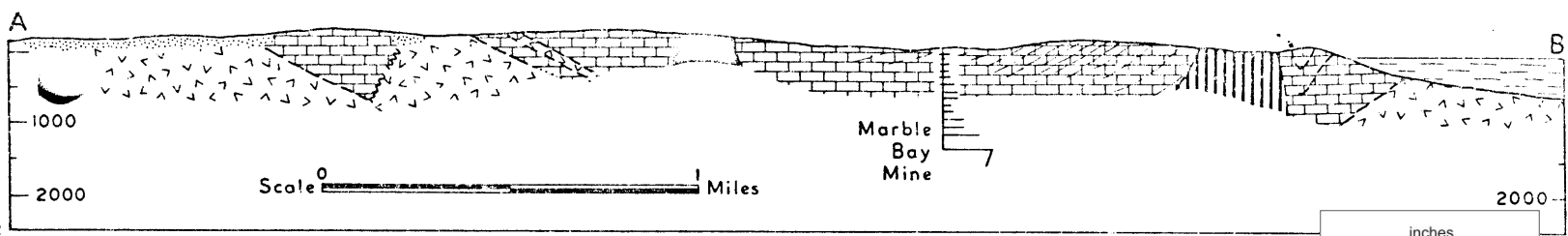
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ALUMINUM OXIDE, SULPHUR, PHOSPHOROUS PENTOXIDE, MANGANESE DIOXIDE AND CARBONACEOUS MATTER. IN ALL CASES THE QUANTITIES OF THESE IMPURITIES ARE QUITE LOW AND WELL WITHIN THE LIMITS TOLERATED IN MOST OF THE INDUSTRIES IN WHICH LIMESTONE IS USED.

IT IS POSSIBLE THAT AS QUARRYING PROCEEDS SECTIONS MAY BE FOUND WHERE SOME OF THE IMPURITIES, PARTICULARLY IRON AND SULPHUR IN THE FORM OF PYRITE, MAY EXCEED THE AMOUNT TOLERATED BY CERTAIN INDUSTRIES BUT THIS IS NOT PROBABLE AND IF ANY SUCH SECTIONS ARE FOUND THEY WILL BE SMALL. ON THE OTHER HAND IT IS PROBABLE THAT IF MATERIAL PURER THAN AVERAGE WERE REQUIRED FOR ANY SPECIAL PURPOSE IT COULD BE FOUND ON THE PROPERTY BY CAREFUL PROSPECTING.

AS TO THE SUITABILITY OF THIS LIMESTONE FOR CALCINING TO MAKE QUICKLIME NO TESTS HAVE BEEN MADE. HOWEVER, A VERY SIMILAR STONE FROM THE SAME FORMATION HAS BEEN USED AT BLUBBER BAY FOR THIS PURPOSE IN LARGE QUANTITIES AND FOR MANY YEARS, GIVING A HIGHLY SATISFACTORY PRODUCT.

IT IS CONCLUDED FROM ALL THE EVIDENCE THAT THE RAVEN BAY LIMESTONE DEPOSITS CONTAIN VERY LARGE TONNAGES OF HIGH GRADE LIMESTONE SITUATED CLOSE TO CHEAP MEANS OF TRANSPORTATION BY SCOW TO ALL PARTS OF THE GULF OF GEORGIA AND PUGET SOUND.



Section A-B

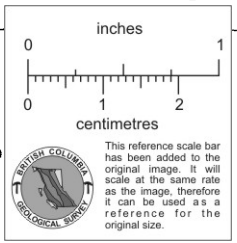
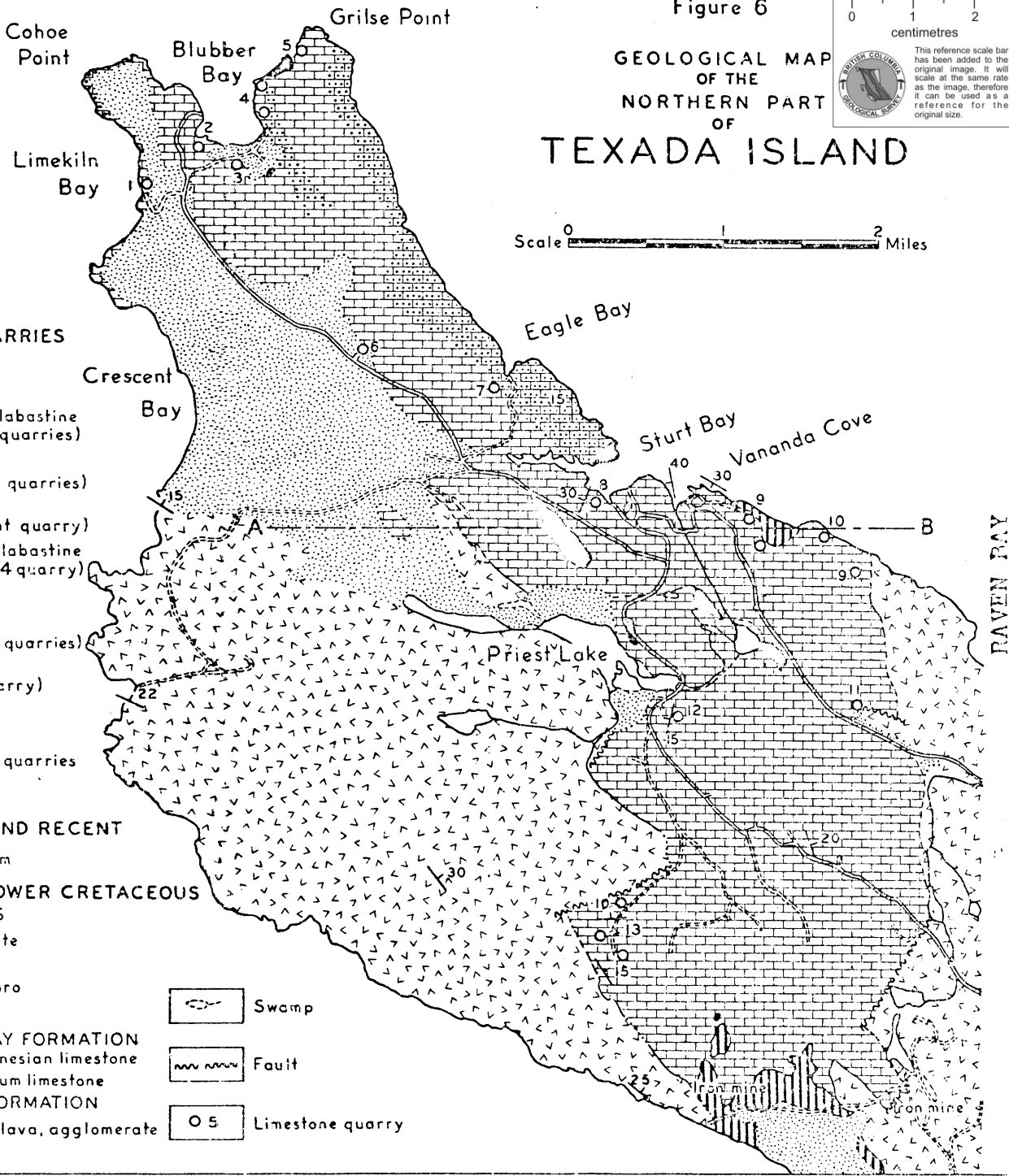
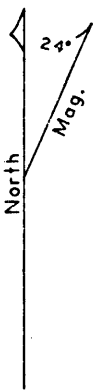
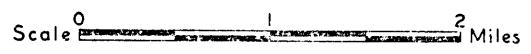


Figure 6

GEOLOGICAL MAP  
OF THE  
NORTHERN PART  
OF  
TEXADA ISLAND



LIMESTONE QUARRIES

- 1 Limekiln Bay
- 2 Gypsum Lime and Alabastine (old quarries)
- 3 Fogh property
- 4 B.C. Cement Co. (old quarries)
- 5 B.C. Cement Co. (Grilse Point quarry)
- 6 Gypsum Lime and Alabastine (No. 4 quarry)
- 7 McMillan Lime Co.
- 8 Marble Bay
- 9 Beale Quarries (old quarries)
- 10 Beale Quarries (operating quarry)
- 11 McKay Quarry
- 12 Johnson Quarry
- 13 S. Beale Blackrock quarries

PLEISTOCENE AND RECENT

Drift, alluvium

JURASSIC OR LOWER CRETACEOUS

Quartz diorite

Diorite, gabbro

TRIASSIC

MARBLE BAY FORMATION  
Chiefly magnesian limestone

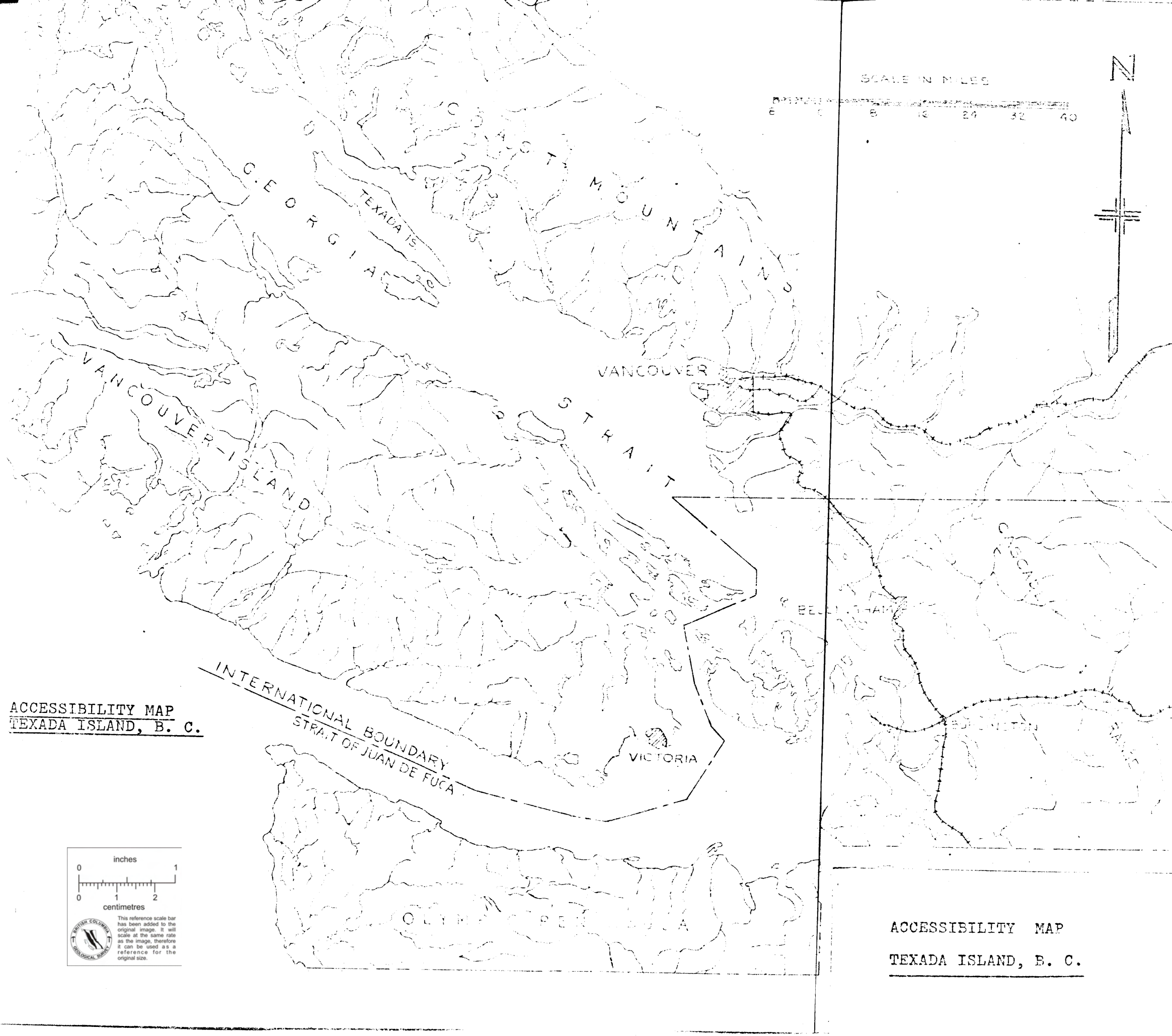
Chiefly calcium limestone

TEXADA FORMATION  
Greenstone, lava, agglomerate

Swamp

Fault

Limestone quarry



ACCESSIBILITY MAP  
TEXADA ISLAND, B. C.

ACCESSIBILITY MAP  
TEXADA ISLAND, B. C.

0 1  
inches

0 1 2  
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

AVERAGE OF ANALYSES ( DIAMOND DRILLING & SURFACE SAMPLING )  
FROM AREA " A "

---

	AVERAGE		HIGHEST		LOWEST
INSOLUBLE RESIDUE.....	2.220%	.....	5.800%	.....	0.600%
FERRIC OXIDE.....	0.260%	.....	0.750	.....	0.110
ALUMINUM OXIDE.....	0.230	.....	0.360	.....	trace
CALCIUM OXIDE.....	54.400	.....	55.680	.....	51.880
MAGNESIUM OXIDE.....	0.220	.....	0.360	.....	0.100
TOTAL SULPHUR.....	0.060	.....	0.460	.....	trace
PHOSPHORUS PENTOXIDE(LESS THAN).....	0.050	.....	0.100	.....	0.010
MANGANESE DIOXIDE (LESS THAN ).....	0.015	.....	0.015	.....	0.010
CARBONACEOUS MATTER.....	0.560	.....	1.150	.....	0.300
CARBON DIOXIDE.....	41.780	.....	42.570	.....	39.950
CALCIUM CARBONATE CONTENT ( CALCULATED FROM CALCIUM OXIDE ) .....					<u>97.14%</u>

R. W. BURTON  
(SIGNED)



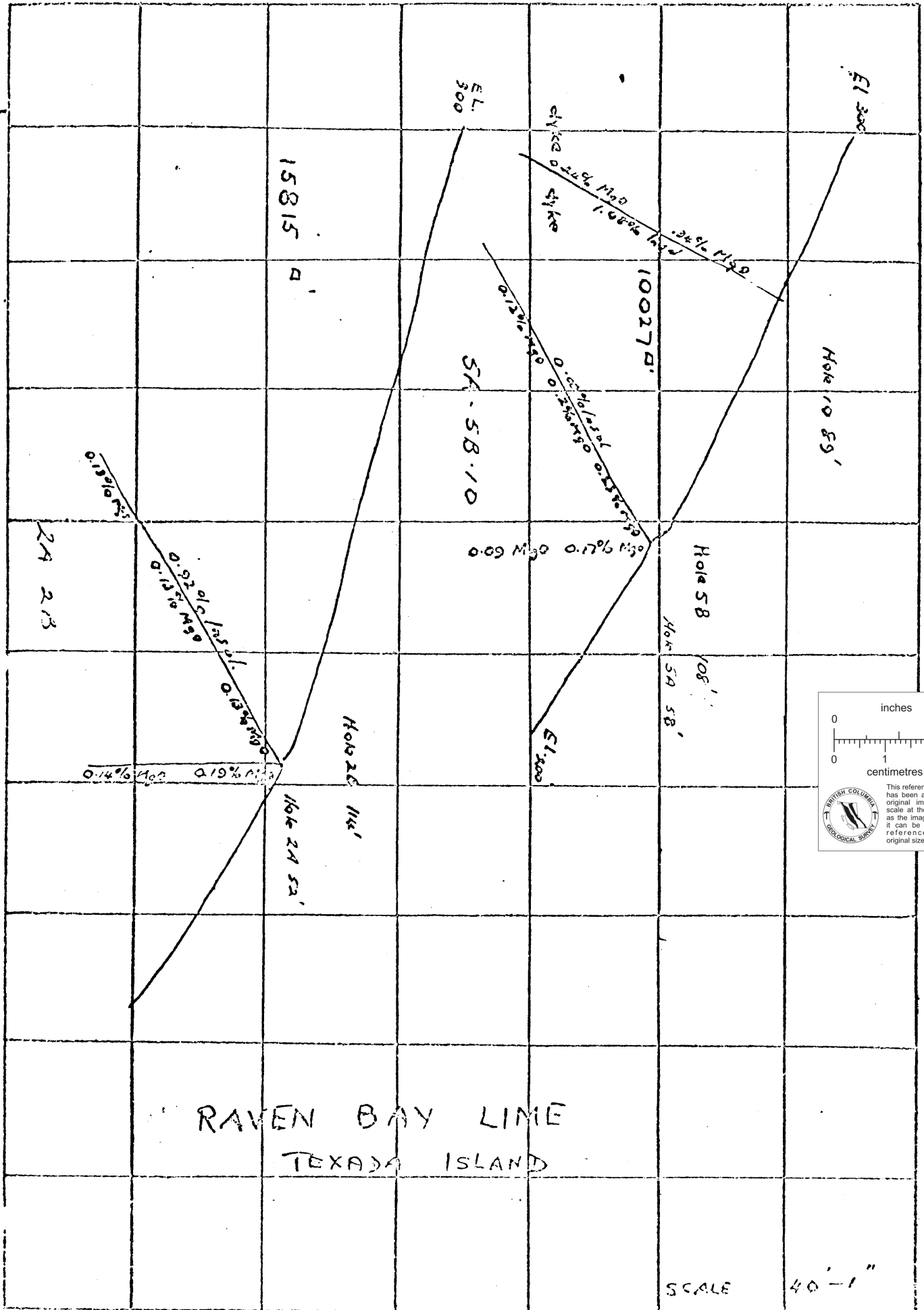
AVERAGE OF ANALYSES ( DIAMOND DRILLING & SURFACE SAMPLING )  
FROM AREA "B"

---

	<u>AVERAGE</u>	<u>HIGHEST</u>	<u>LOWEST</u>
INSOLUBLE RESIDUE.....	1.480%	3.560%	0.520%
FERRIC OXIDE.....	0.160	0.240	0.120
ALUMINUM OXIDE.....	0.160	0.170	0.060
CALCIUM OXIDE.....	55.330	55.720	54.680
MAGNESIUM OXIDE.....	0.140	0.200	0.100
TOTAL SULPHUR.....	0.053	0.130	0.040
PHOSPHORUS PENTOXIDE.....	0.046	0.056	0.020
MANGANESE DIOXIDE (LESS THAN).....	0.006	0.010	trace
CARBONACEOUS MATTER.....	0.290	0.800	0.120
CARBON DIOXIDE.....	42,220	43,000	40,330

CALCIUM CARBONATE CONTENT (CALCULATED FROM CALCIUM OXIDE ) ..... 98.00%

R. W. BURTON  
(SIGNED)



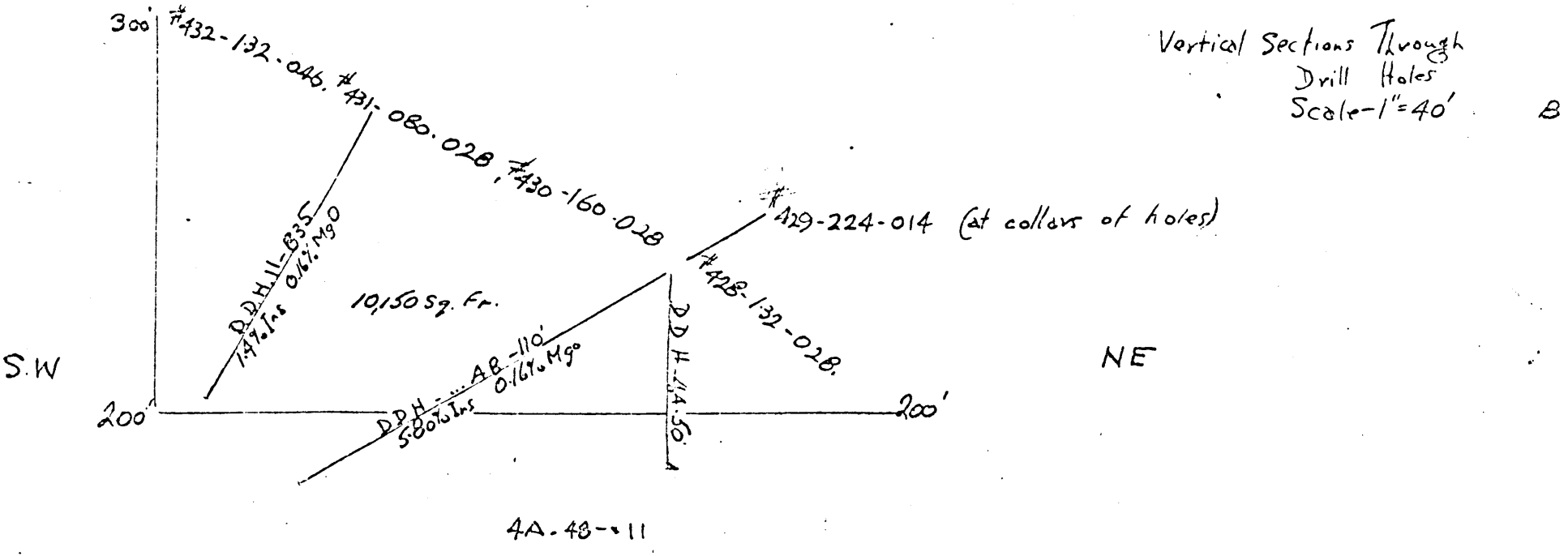
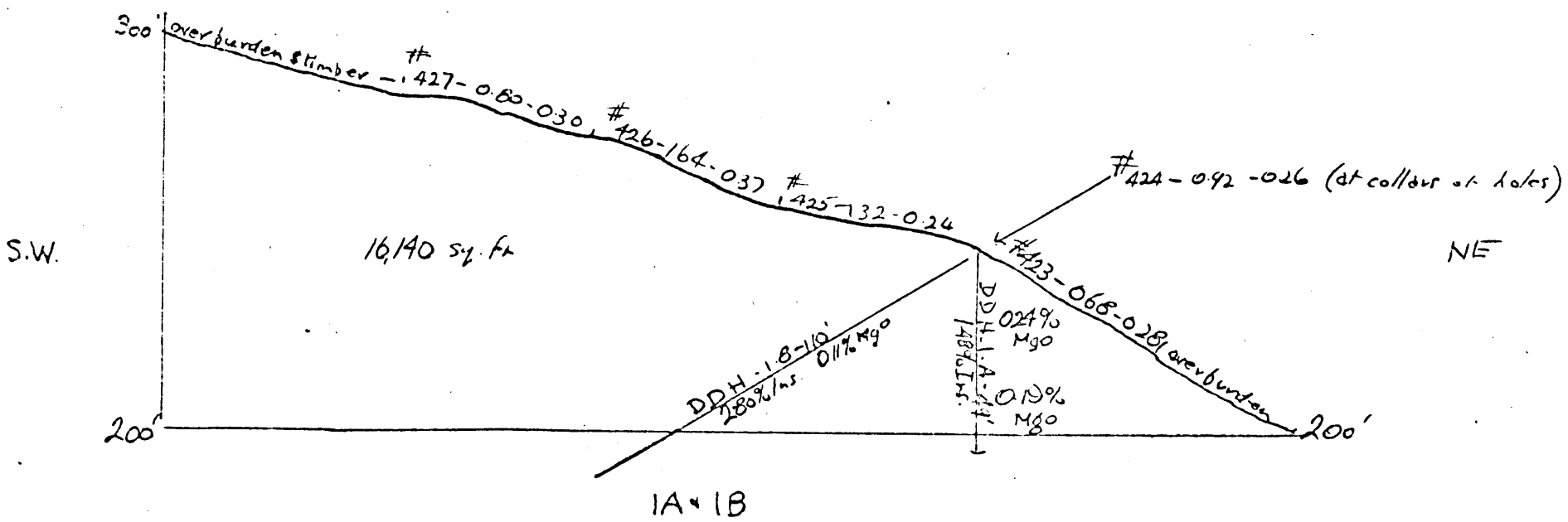
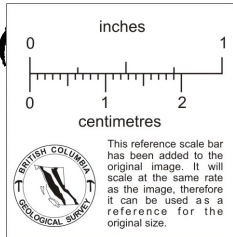
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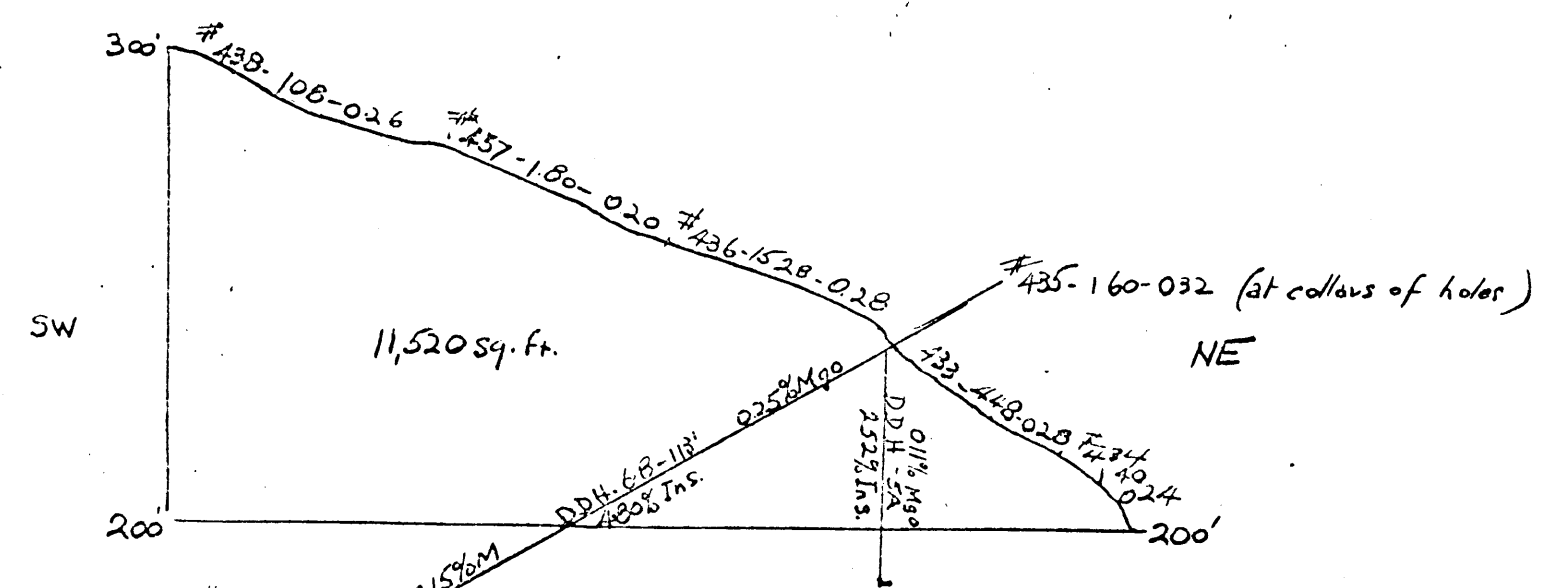
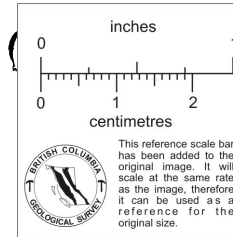
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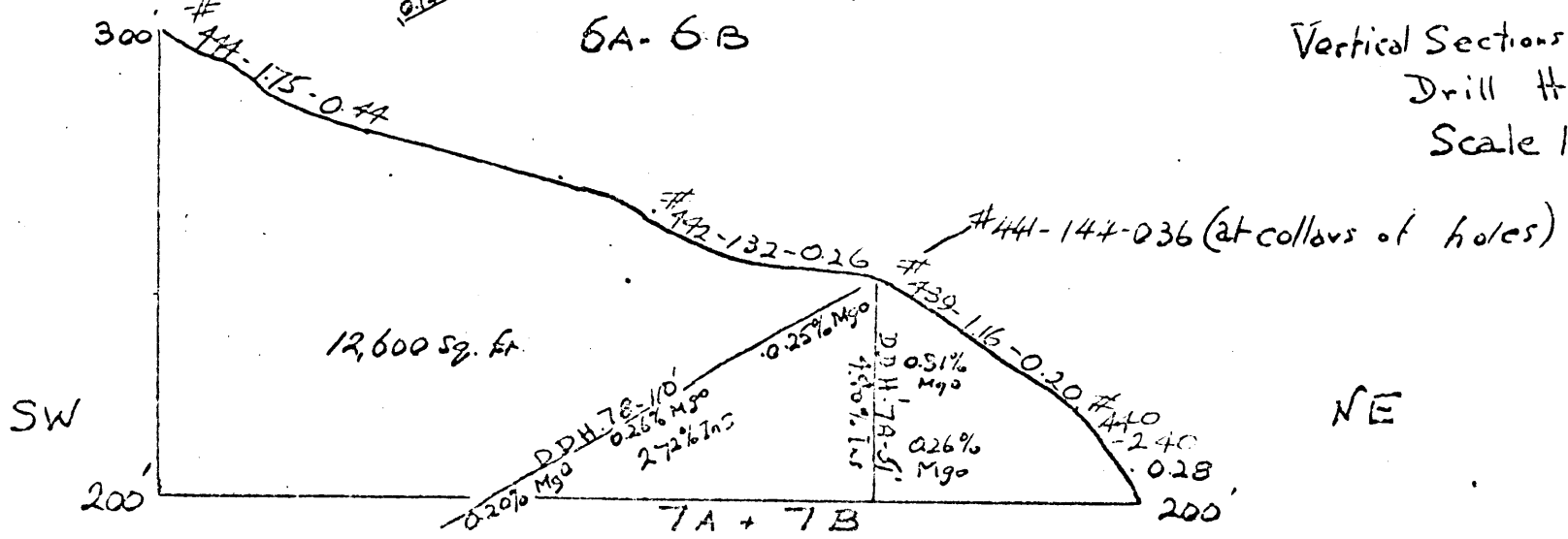
RAVEN BAY LINE  
TEXADA ISLAND

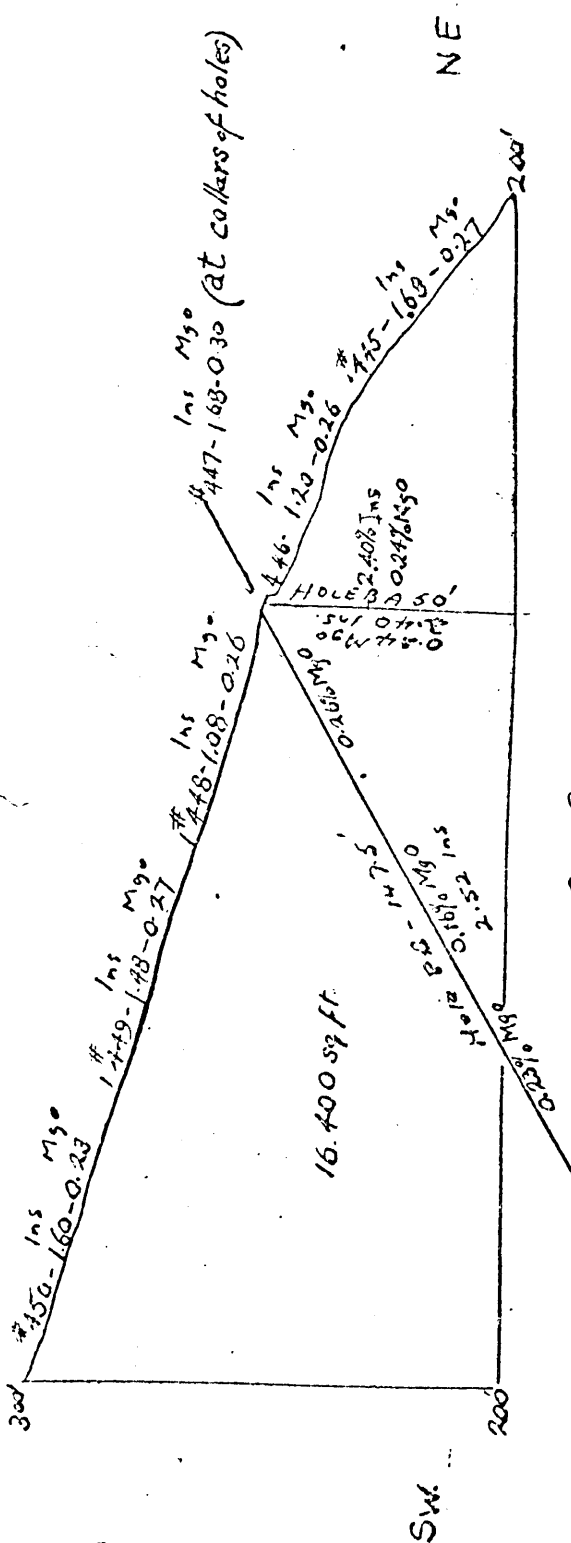
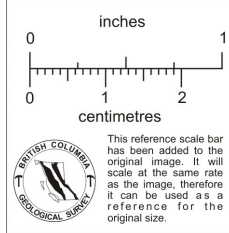
SCALE 40'-1"





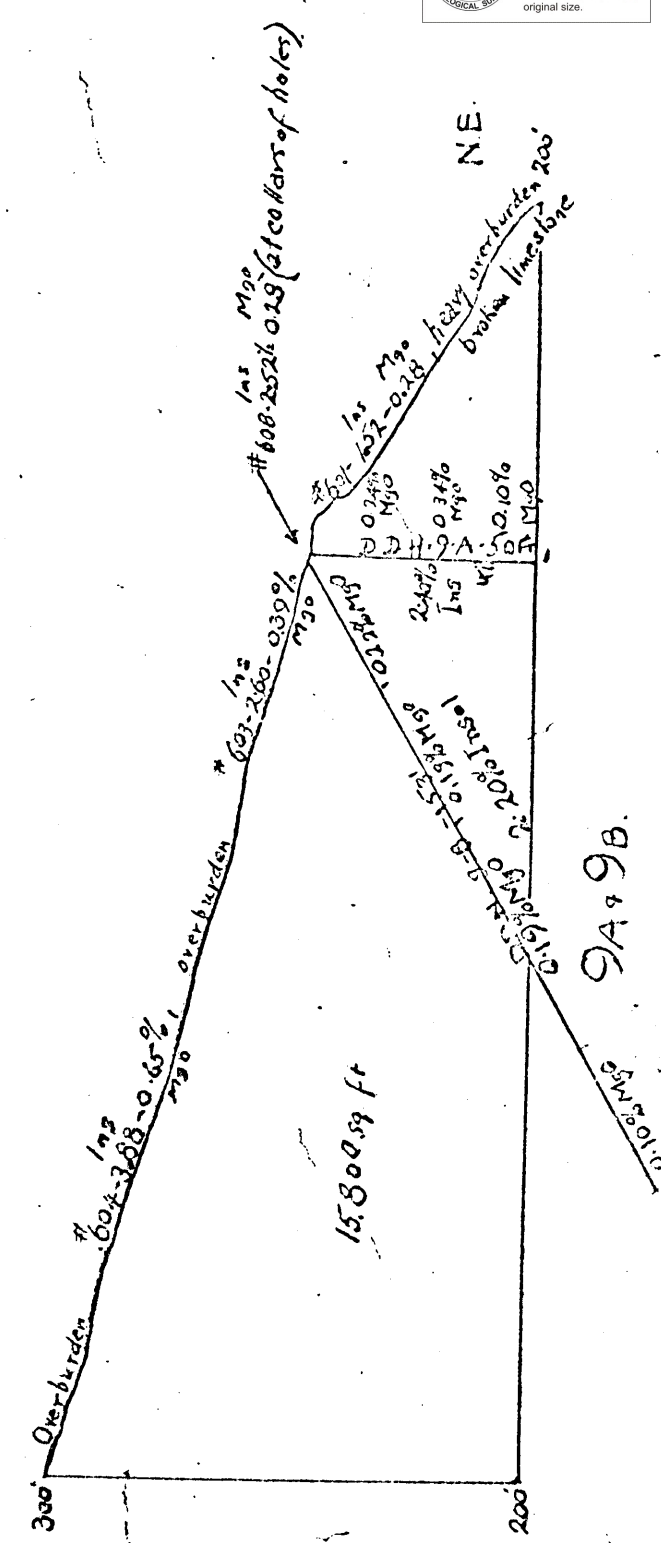
Vertical Sections Through  
Drill Holes  
Scale 1" = 40' B





8A48B

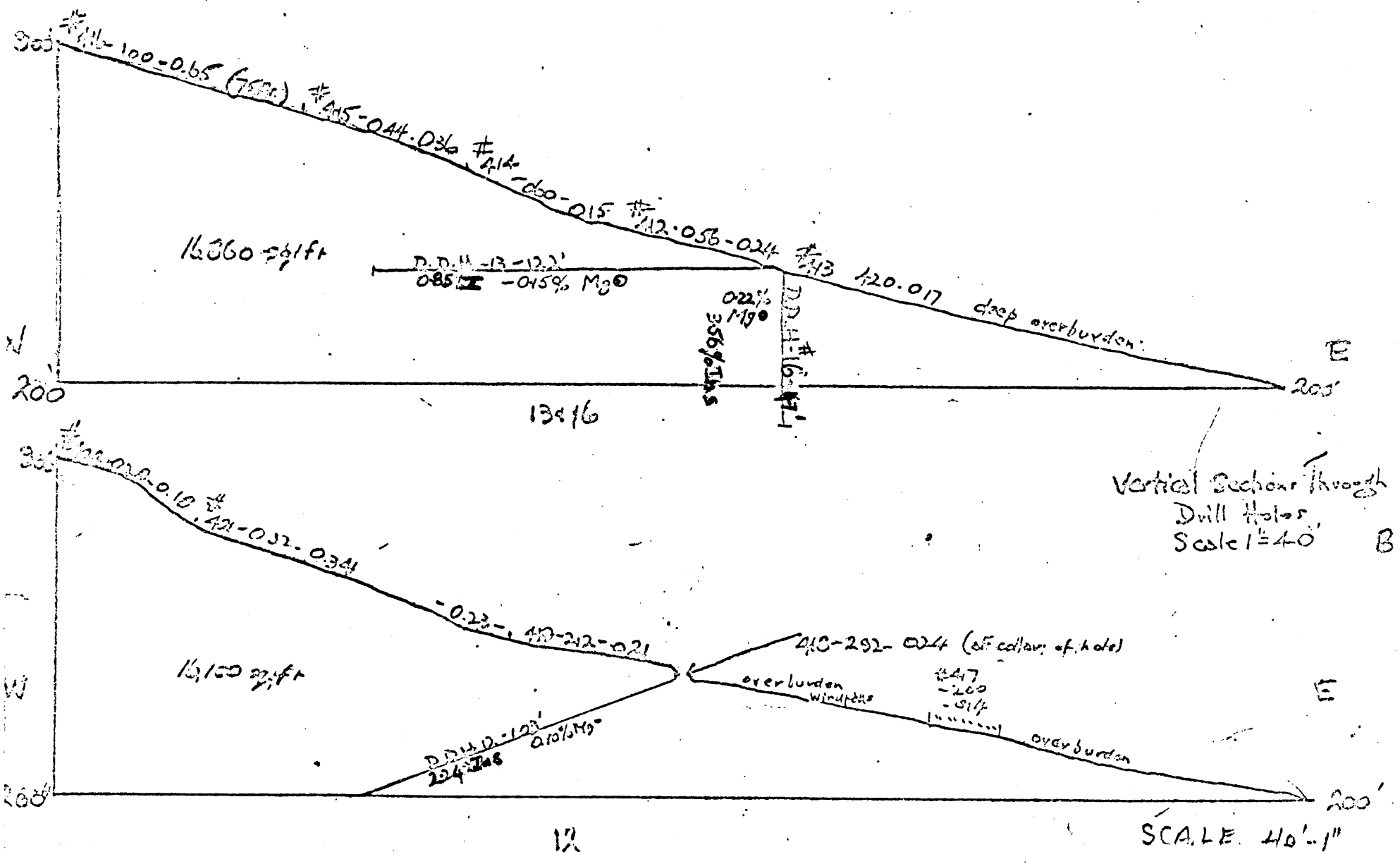
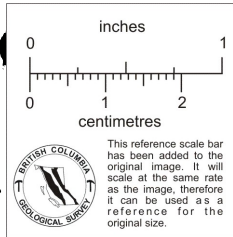
Vertical Sections Through  
Drill Holes  
Scale - 1"=40'



9A49B

RAVEN BAY LIME  
TEXADA ISLAND

B.

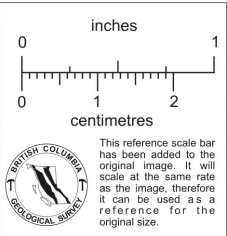
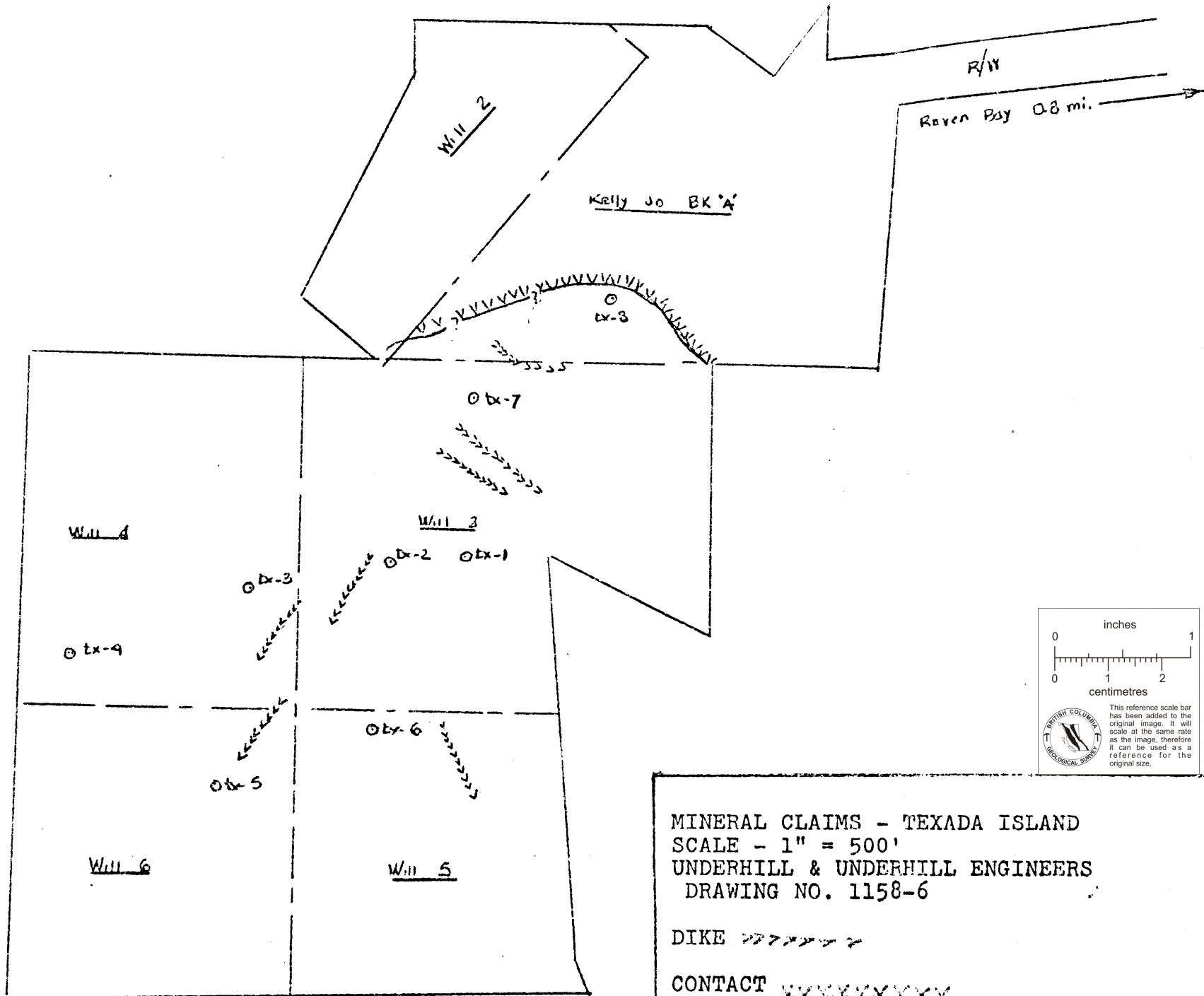


1 9 6 8    S A M P L E S    A N D    C H E M I C A L    A N A L Y S E S

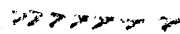
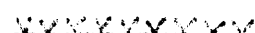
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EIGHT SEPARATE SAMPLES WERE OBTAINED OVER THE PROPERTY AS INDICATED ON THE ENCLOSED MINERAL CLAIM MAP. THE SAMPLES OBTAINED WERE SURFACE SAMPLES, BUT CARE WAS EXERCISED IN OBTAINING SAMPLES VOID OF ANY WEATHERED SURFACES. THE CHEMICAL ANALYSES OF THESE SAMPLES ARE AS FOLLOWS:

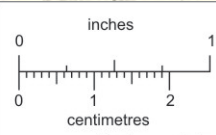
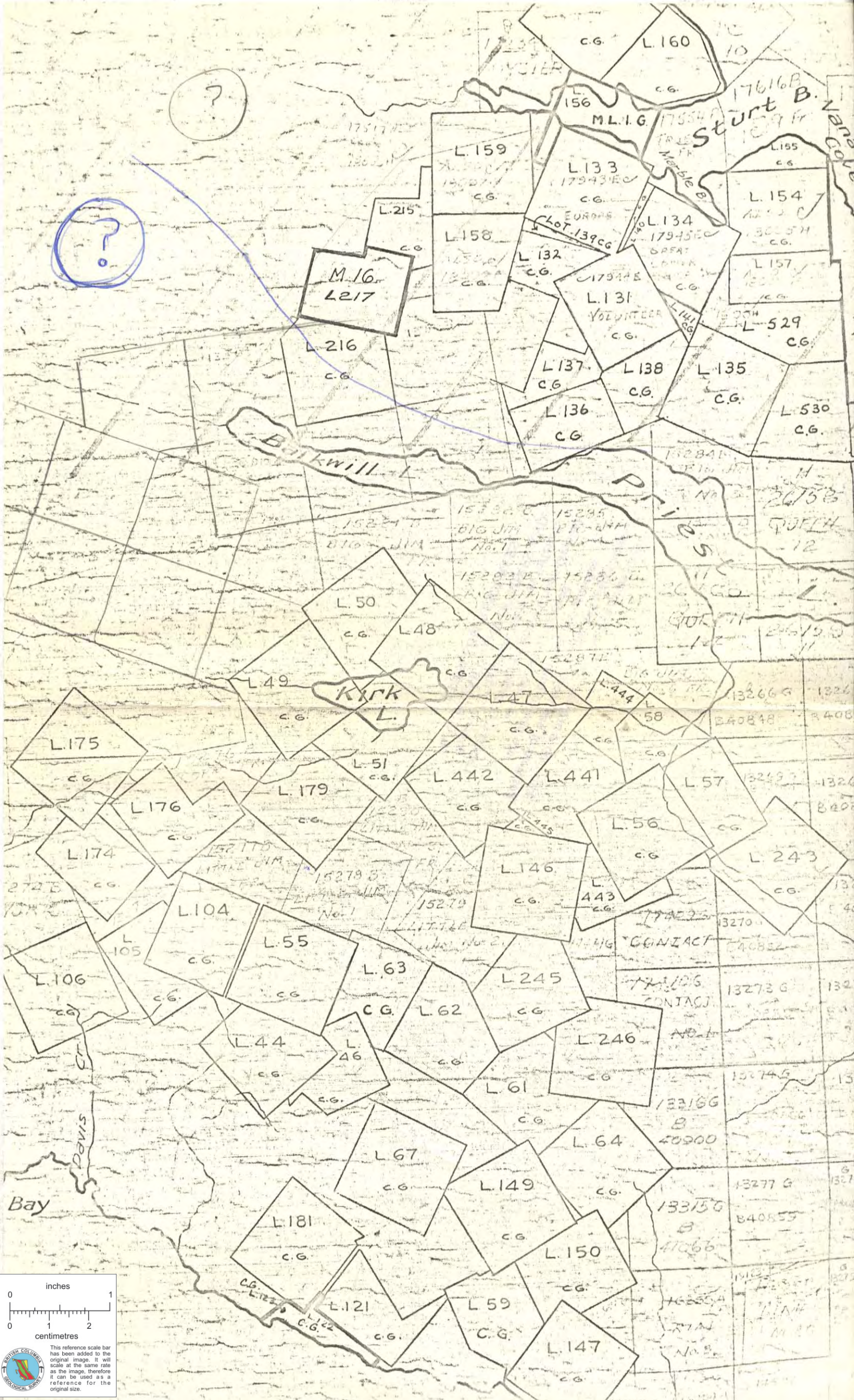
<u>SAMPLE #</u>	<u>TX-1</u>	<u>TX-2</u>	<u>TX-3</u>	<u>TX-4</u>	<u>TX-5</u>	<u>TX-6</u>	<u>TX-7</u>	<u>TX-8</u>
SiO <sub>2</sub>	0.94	0.35	0.23	0.29	0.22	0.88	0.24	1.57
Fe <sub>2</sub> O <sub>3</sub>	0.02	0.03	0.02	0.02	0.02	0.06	0.02	0.09
Al <sub>2</sub> O <sub>3</sub>	0.06	0.09	0.03	0.08	0.03	0.12	0.08	0.14
CaO	54.64	55.36	54.58	55.62	55.24	54.95	55.35	54.87
MgO	0.21	0.36	0.76	0.25	0.25	0.30	0.29	0.33
SrO	0.03	0.06	0.04	0.01	0.02	0.07	0.02	0.13
LOSS	43.45	43.73	43.93	43.73	43.63	42.91	43.36	43.79
<u>T O T A L</u>	<u>99.35</u>	<u>99.98</u>	<u>99.59</u>	<u>100.00</u>	<u>99.41</u>	<u>99.29</u>	<u>99.36</u>	<u>99.92</u>



MINERAL CLAIMS - TEXADA ISLAND  
 SCALE - 1" = 500'  
 UNDERHILL & UNDERHILL ENGINEERS  
 DRAWING NO. 1158-6

DIKE   
 CONTACT   
 SAMPLE LOCATION tx - 1

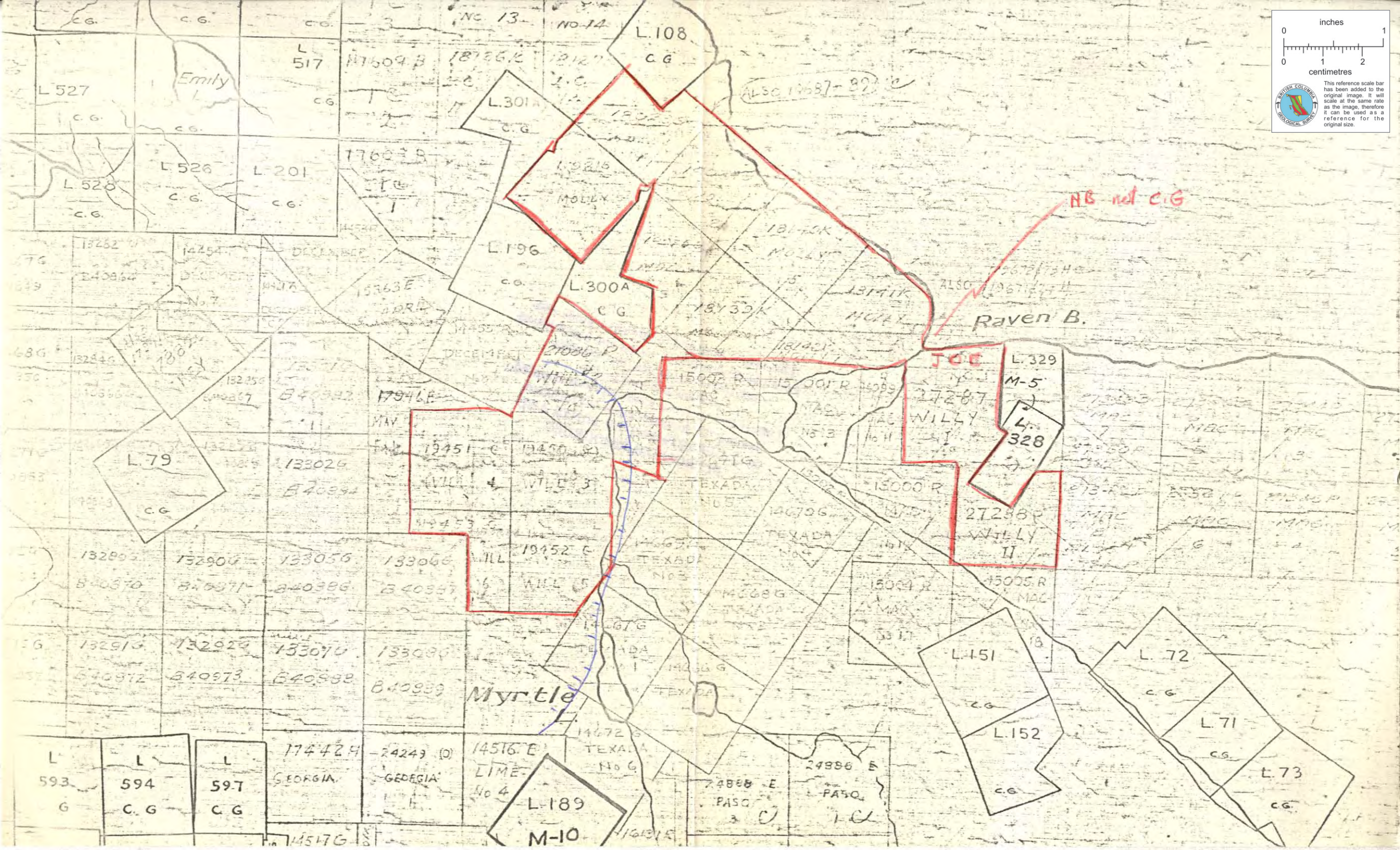
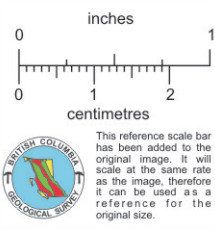




This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

This map is prepared to serve as a guide only.  
Positions of unsurveyed claims and placer leases  
are plotted from locators' sketches  
and are not guaranteed.

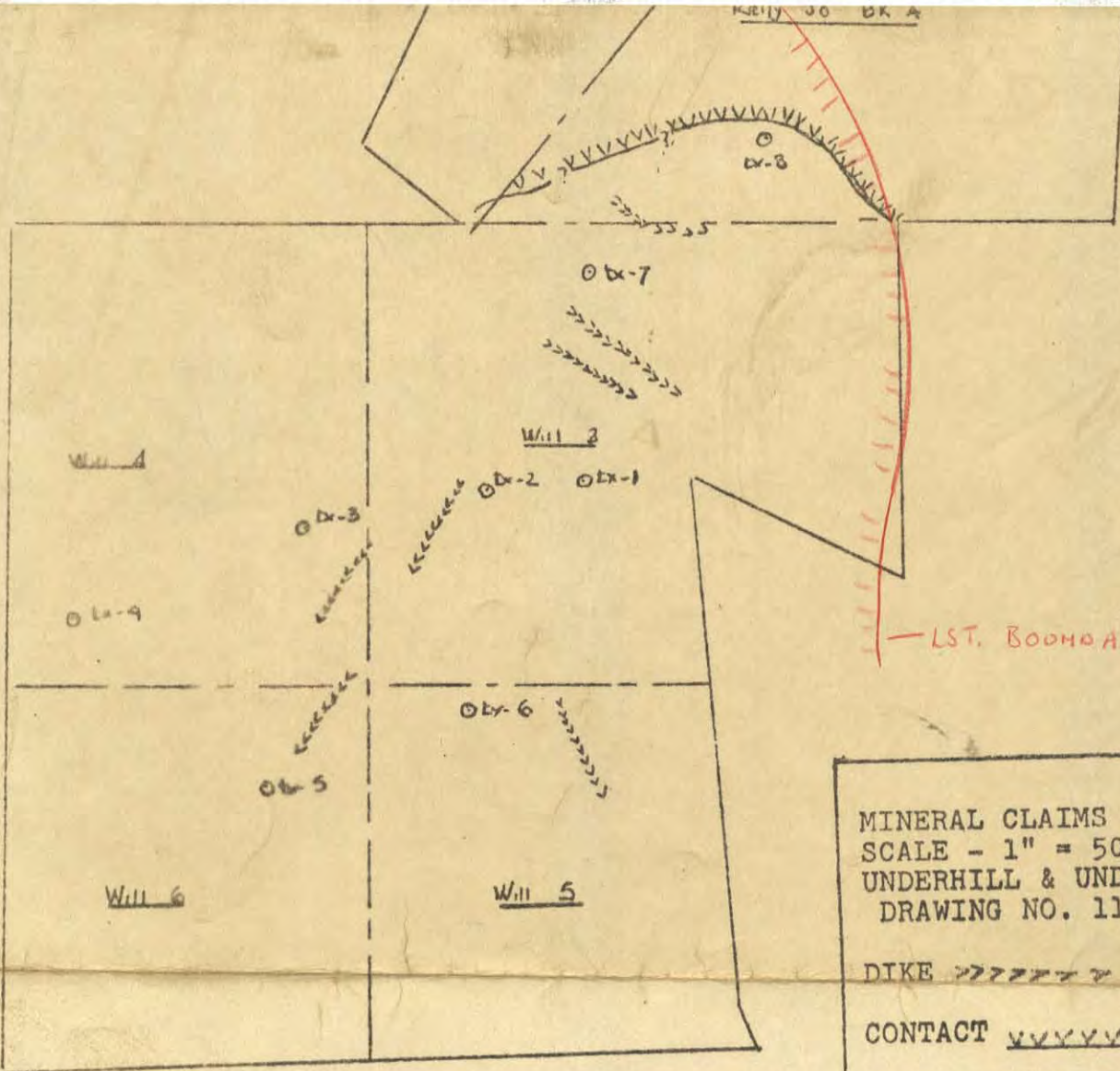
Letters C.G. indicate claim is Crown-Granted.  
Symbol "C" indicates claim has forfeited.  
**B. C. DEPARTMENT OF MINES AND  
PETROLEUM RESOURCES**



This map is prepared to serve as a guide only.  
Positions of unsurveyed claims and placer leases  
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and are not guaranteed.  
Letters C.G. indicate claim is Crown-Granted,  
and are not guaranteed.  
Symbol "C" indicates claim has forfeited.

**LETTERS C.G. INDICATE CLAIM IS CROWN-GRANTED,  
SYMBOL "C" INDICATES CLAIM HAS FORFEITED.  
B. C. DEPARTMENT OF MINES AND  
PETROLEUM RESOURCES**

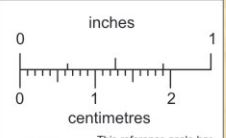


MINERAL CLAIMS - TEXADA ISLAND  
 SCALE - 1" = 500'  
 UNDERHILL & UNDERHILL ENGINEERS  
 DRAWING NO. 1158-6

DIKE >>>>>>>>

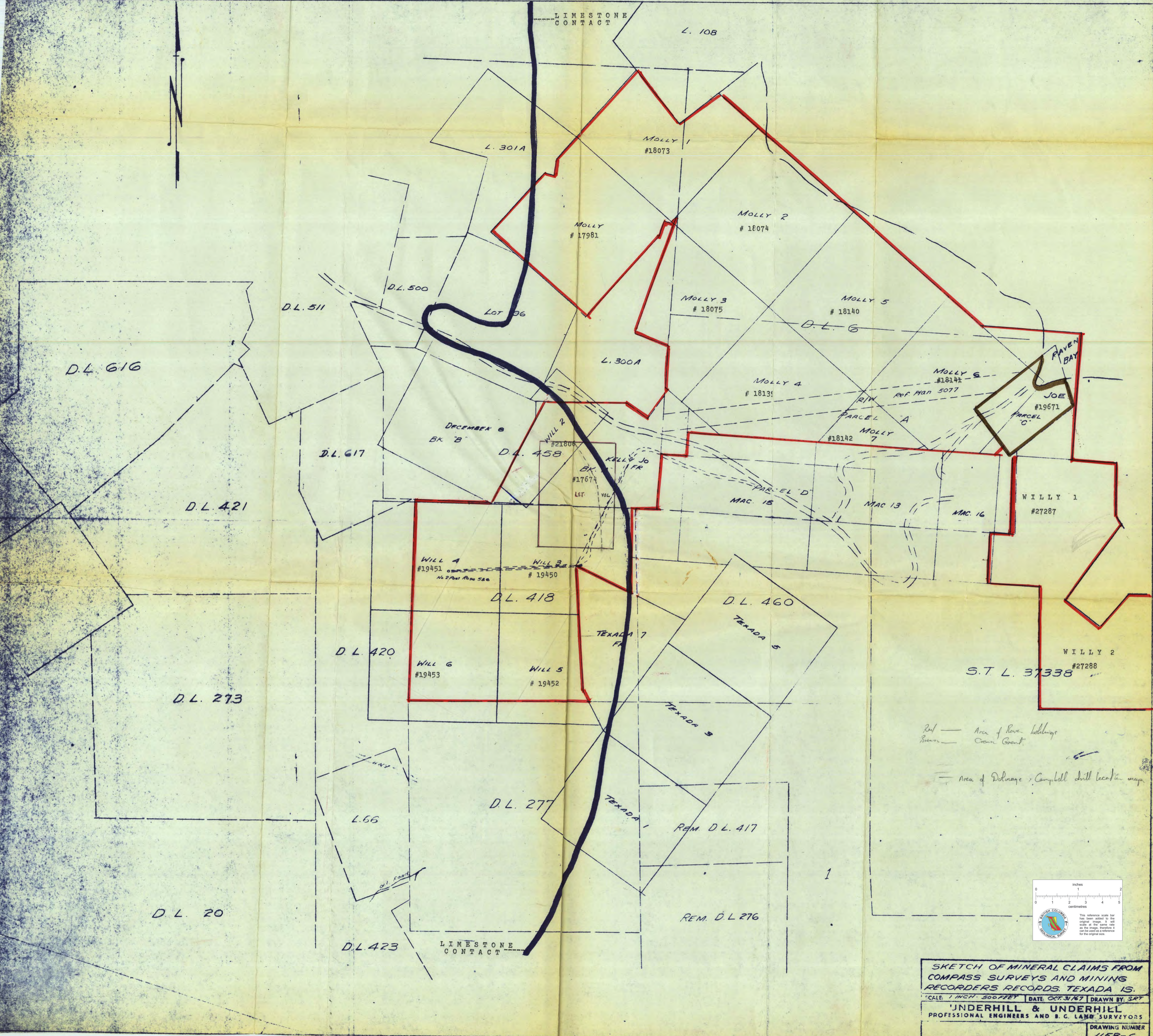
CONTACT ~~~~~~

SAMPLE LOCATION tx - 1

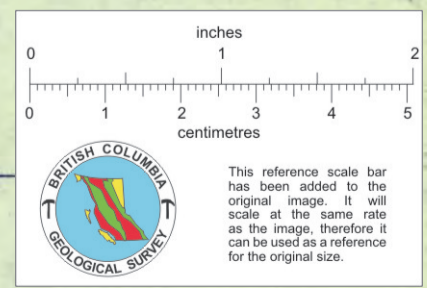


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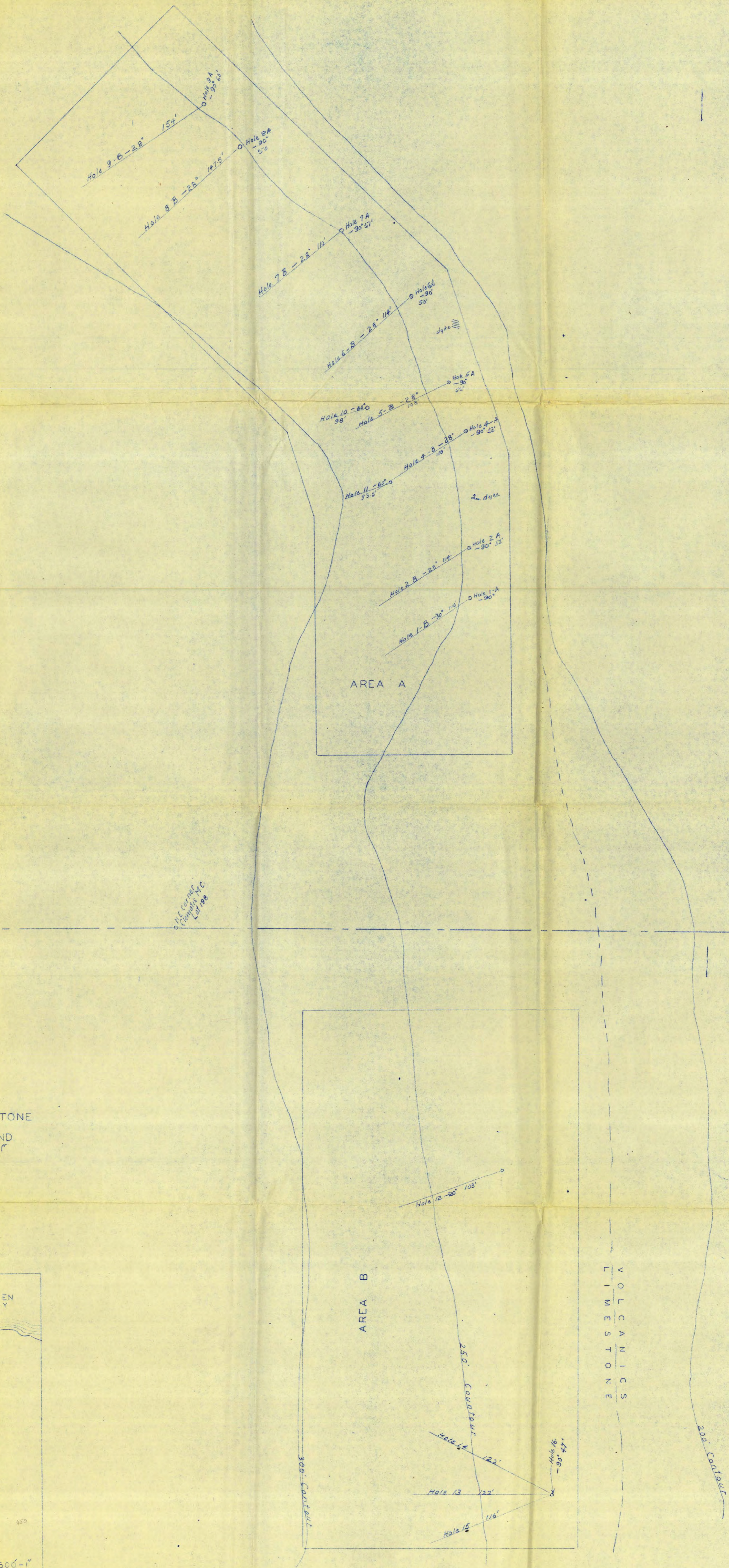




Red — Area of Rowe Holdings  
 Brown — Ocean Grant  
 --- Area of Dolmage - Campbell drill location map



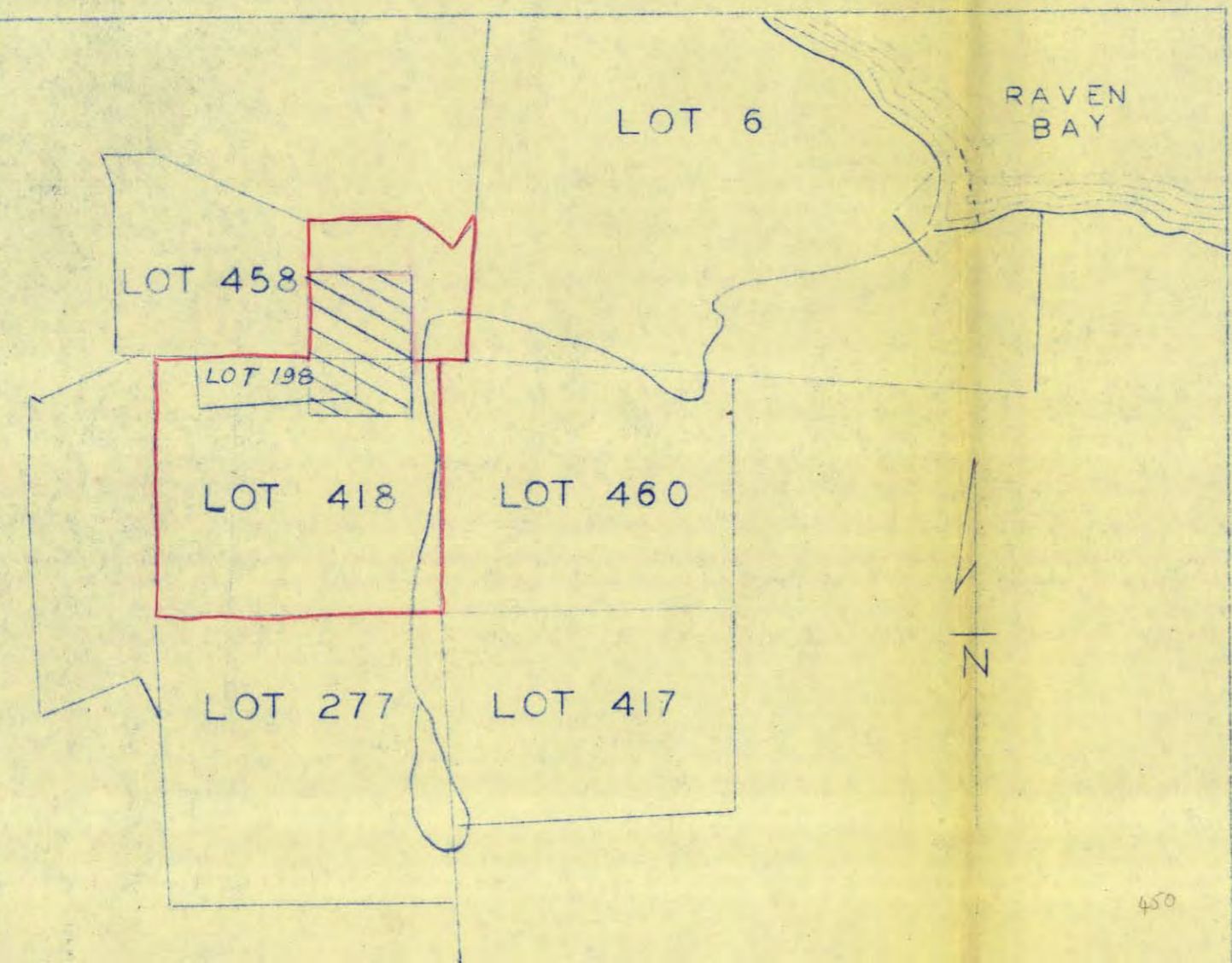
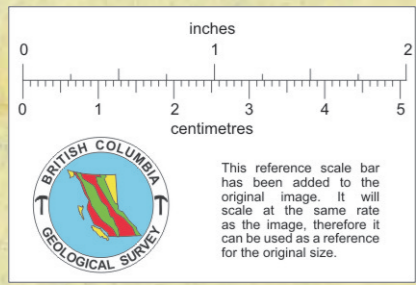
SKETCH OF MINERAL CLAIMS FROM  
 COMPASS SURVEYS AND MINING  
 RECORDERS RECORDS, TEXADA IS.  
 SCALE 1 INCH = 500 FEET DATE OCT. 31/67 DRAWN BY SRT  
 UNDERHILL & UNDERHILL  
 PROFESSIONAL ENGINEERS AND B. C. LAND SURVEYORS  
 DRAWING NUMBER  
 1158-6



LOT 458  
LOT 418

NE corner  
Clayton, N.C.  
Lot 198

RAVEN BAY LIMESTONE  
TEXADA ISLAND  
SCALE 40'-1"

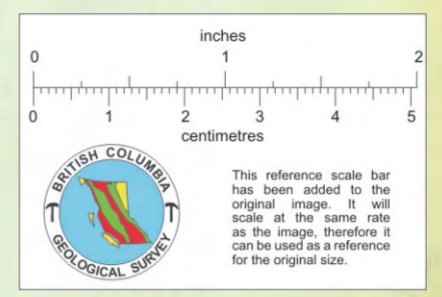
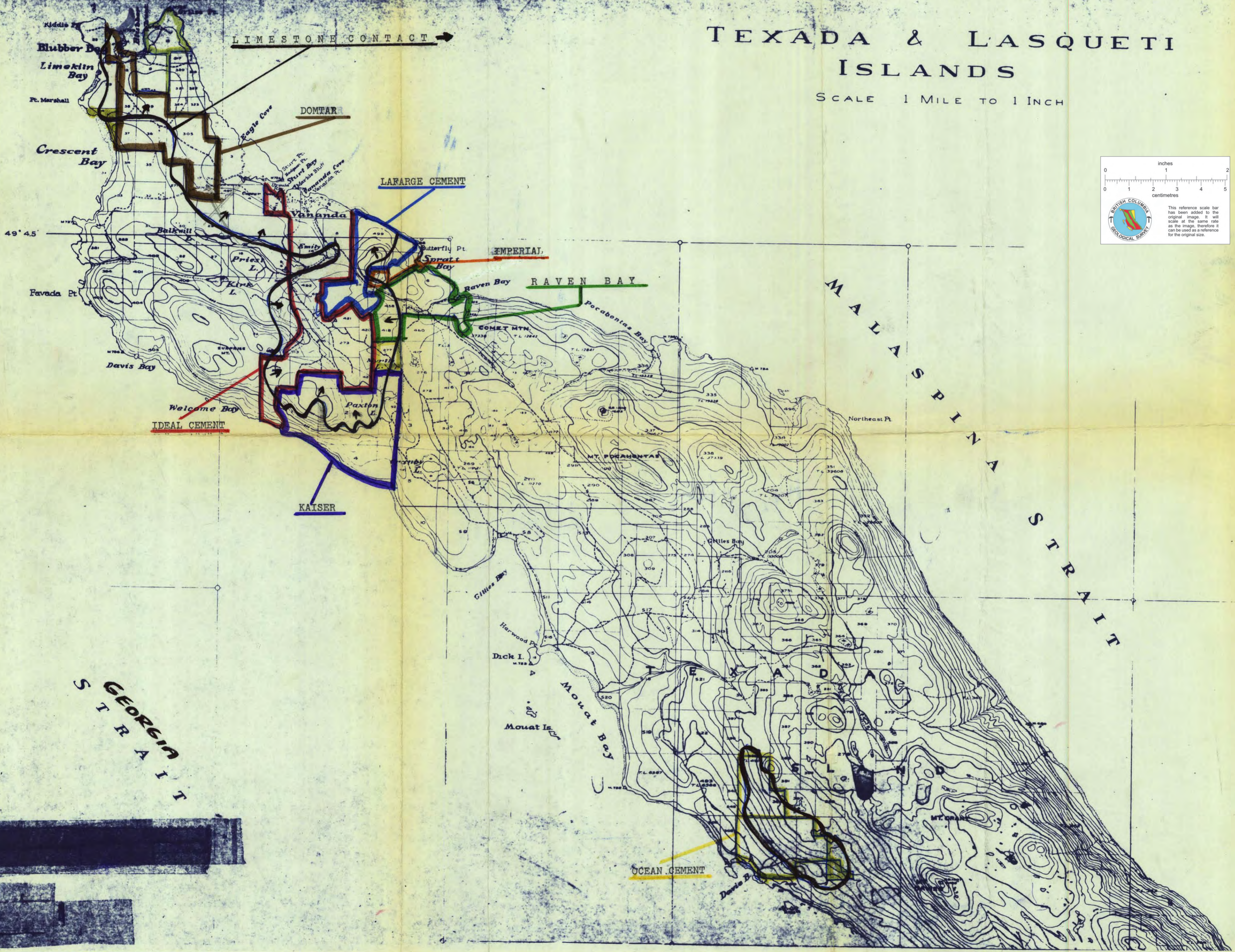


KEY MAP SCALE 1500'-1"

VOLCANICS  
LIMESTONE

# TEXADA & LASQUETI ISLANDS

SCALE 1 MILE TO 1 INCH



GEORGIA STRAIT

49° 45'