RED CHIEF QUARRY
SUMMARY OF WORK COMPLETED

Whitehorse, Yukon

Location:

1. 12.5 km west of Whitehorse
2. NTS Map Area 105 D/11
3. Latitude 60° 41' N
   Longitude 135° 20' W

For:

SIDCO EXPLORATIONS LTD 91-081
P.O. Box 4471
Whitehorse, Yukon
Y1A 2R8

By:

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December 5, 1991

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INTRODUCTION

Scope and Overview

This report on the dimension stone potential of a single site near Franklin Lake is based on preliminary examinations, conducted during four visits to the site between August and September of 1990, and on July 17, 1991.

The quarry site (Figure 1) is located 5.5 km west of the Whitehorse city boundary, on the Jackson Lake road, 4.3 km from the junction of the Fish Lake road, and 12.5 km from the Alaska highway.

The site is underlain by a sequence of well bedded red to maroon and green-gray siltstone and crystal rich greywacke. This unit is the Mandanna Member of the Aksala Formation which is part of the Triassic Lewes River Group. An outcrop of light grey to buff, massive and thick bedded limestone of the Hancock Member of the Lewes River Group is exposed on the west side of the quarry site.

This report was prepared at the request of Mr. Sid McKeown of SIDCO EXPLORATIONS LTD who is sole owner of the quarry lease. The report is a revision of a report initially completed in November 1990. Revision consisted of additional information on the Hancock Member limestone.

FIELD EVALUATION

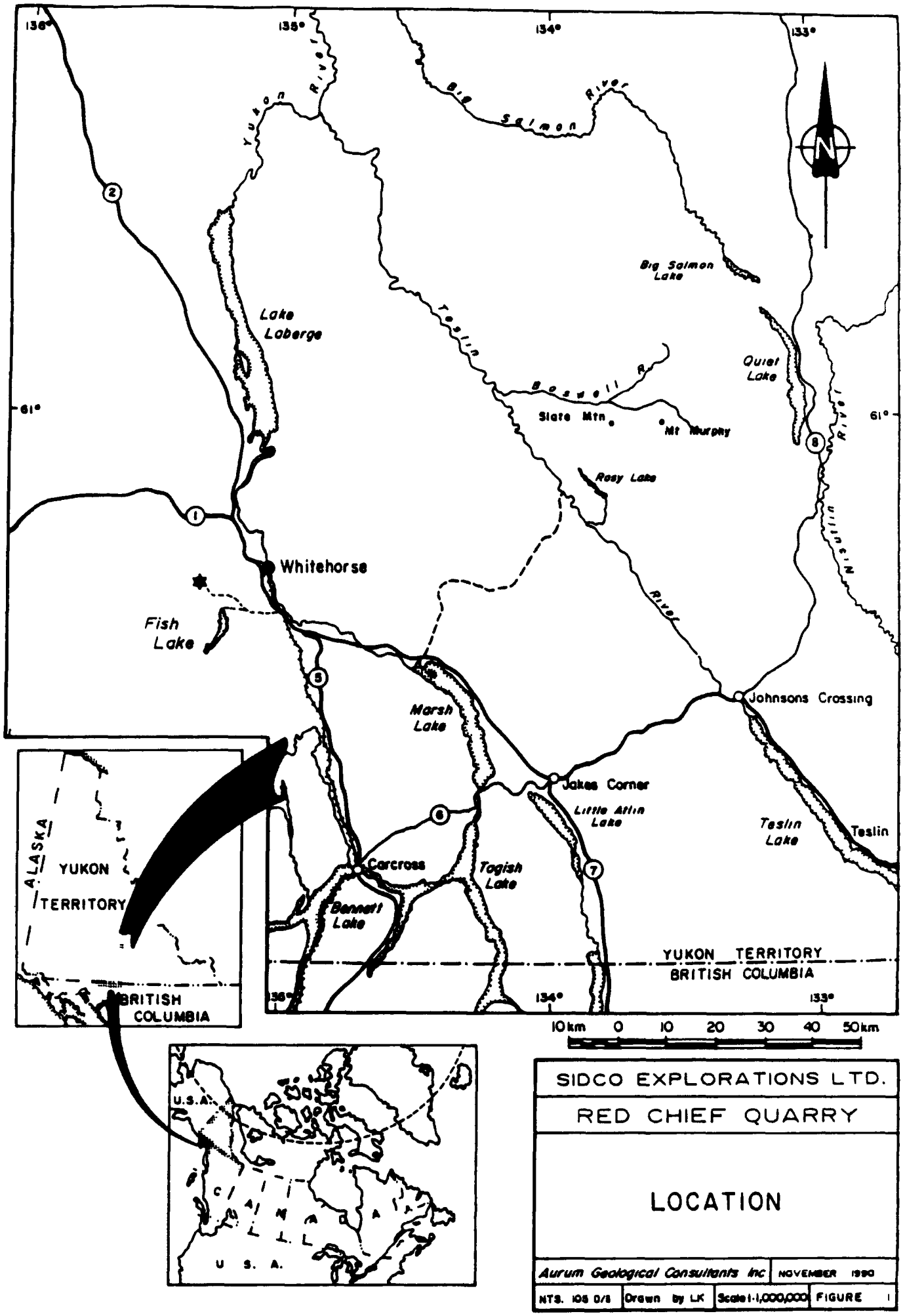
Introduction

The area examined is directly north of Franklin Lake on the Jackson lake road, and is located at 60° 41'latitude and 135° 20'Longitude on NTS map area 105 D-11. A 300 m access trail was constructed using D-6 Caterpillar from the existing road. The outcrops of Mandanna Member siltstones form a steep westerly facing hill that has a relative relief of approximately 50 meters. The area of outcrop is well exposed and is bounded on the south and north sides by broad rounded overburden filled gullies. To the west of the hill, the terrane is flat and smooth and provides ample working space.

Quarry and Land Use Permits

A quarry permit (No. 90/985) authorizing the excavation of 100 cubic meters of rock was issued to SIDCO EXPLORATIONS LTD on May 31, 1990 by Indian and Northern Affairs Canada under the Territorial Quarrying Regulations. A second quarry permit (No 90/008) authorizing 400 cubic meter of rock excavation was issued on June 18th, 1990. Both permits describe the site as 30 meters north of existing Franklin Lake access at 60° 41'latitude and 135° 20' longitude. A Class A Land Use Permit (No. YA0Q708) was issued by Indian and Northern Affairs Canada on May 31, 1990, and ammended in 1991.

Two quartz claims Red Chief 1 and 2 (YB27601 & YB27602) were granted on June 13, 1990 to Mr. Sid McKeown and are shown on the 105 D/11 claim map.



SIDCO EXPLORATIONS LTD.			
RED CHIEF QUARRY			
LOCATION			
Aurum Geological Consultants Inc		NOVEMBER 1990	
NTS. 105 D/8	Drawn by LK	Scale 1:1,000,000	FIGURE 1

Site Description

A 250 m base line, trending 110°, was laid out along the access road to the quarry site approximately 30 m west of the cliff face. The site was then mapped by hip-chain and compass and all outcrops and features were noted. A plan view of the area is shown in Figure 2. The outcrops of red to maroon siltstone form a moderate cliff exposure which is approximately 75 m long at its base and is over 30 m high. Scattered outcrops of red siltstone and a volcanic breccia have been located about the main Red Chief exposures.

In 1990, the face of the outcrop was cut back using a D-6 Caterpillar and a 225 hoe. A ramp and bench cut was developed across the front of the quarry face. At the base of the quarry face, a pile of crushed stone material suitable for use as roofing granules or stucco dash was excavated and stockpiled. The material is of approximately minus 3/4 inch size and there is an estimated 1000 cubic meters of material available before screening and washing.

Five test pits were excavated at various locations away from the main cliff exposures using a 225 hoe, most pits uncovered additional exposures of the red siltstone. Approximately 150 m to the northwest an excavation exposed a thick bedded light grey recrystallized limestone with orthogonal jointing. This exposure may be suitable for quarrying large dimension stone blocks.

The main access road to the site is of a good grade and width. Level sites for maneuvering loaders and dump trucks has been developed below the Red Chief cliff face and room for an expanded processing site is available.

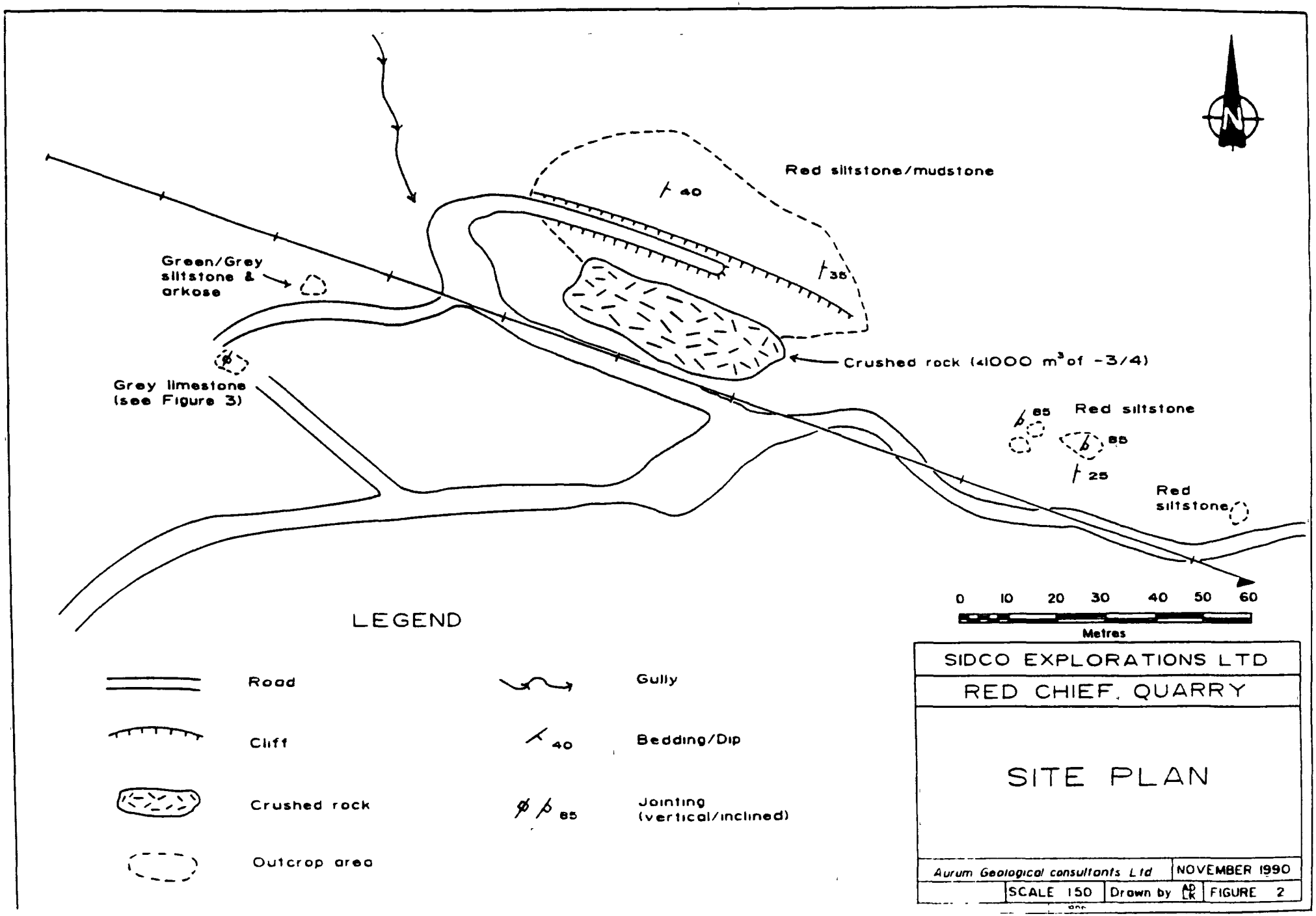
Mapping, shallow excavations, and one large cut at the base of the red siltstone cliffs has exposed a thick section of the red siltstone and one small outcrop of grey marble.

Mandanna Member (Red Siltstone)

This is a dark maroon to brick red siltstone with irregular interlayered lenses of very crisp red mudstone, the layering is distinct and has a strong bedding parallel parting lineation or flaggy cleavage. Bedding sets vary between 5 and 20 cm in thickness and individual beds are very competent. Through weathering processes, the sedimentary rocks at this location commonly form well shaped angular blocks that are suitable for flagstone or building stone. Blocks spall out with good rectangular fracture patterns and commonly with long dimensions greater than 30 cm. The bedding attitude (30 degree dip) should allow relatively easy extraction of large plates suitable for flagstones.

The composition of the siltstone is very homogeneous and the fresh surface is not noticeably different than the weathered surface. There is no indication from weathered exposures that the red siltstone contains any iron bearing minerals that could cause rust to develop. Overall, this sedimentary rock has a pleasing color that displays a fair degree of uniformness throughout the exposures.

Approximatly 100 tons of red sandstone were excavated and hauled to the warehose from the siltstone quarry. A face approximatly 30 m long contains suitable stone. Three pallets of grey-green siltstone were split at MacRae and are stockpiled for sale.

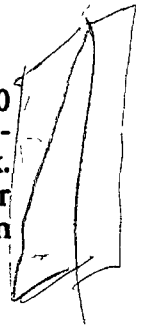

Red siltstone/mudstone
40
35
Green/Grey siltstone & arkose
Crushed rock (±1000 m³ of -3/4)
Grey limestone (see Figure 3)
85
Red siltstone
85
25
Red siltstone
0 10 20 30 40 50 60
Metres
LEGEND
Road
Gully
Cliff
40
Bedding/Dip
Crushed rock
85
Jointing (vertical/inclined)
Outcrop area
SIDCO EXPLORATIONS LTD
RED CHIEF. QUARRY
SITE PLAN
Aurum Geological consultants Ltd
NOVEMBER 1990
SCALE 150
Drawn by AD CK
FIGURE 2

The "waste factor" is estimated to be less than 30% at this site because rock not suitable for flagstone or facing stone can be used as decorative crushed stone after it has been screened to various sizes.

Over 40 m^3 of crushed red siltstone (3/8 inch) has already been sold locally to various companies. There is a stockpile of approximately 1000 m^3 of crushed rock at the Red Chief quarry site which requires screening and washing, and an additional 1000 m^3 of screened and washed material at a processing facility at MacLean Lake. The processed crush consists of three classified sizes: 3/4 inch, 3/8 inch, and coarse red sand.

Volcanic Breccia

Approximately 70 meters northeast of the quarry baseline there is a 10 meter by 10 meter exposure of a massive dark green grey volcanic breccia which contains sub-rounded to angular fragments of granitic and volcanic clasts in a fine grained matrix. The outcrop has a broadly spaced jointing set and appears to be suitable for extracting fairly large (1m x 1 m) blocks. One specimen from this locality has been cut. Further joint spacing measurements should be conducted at this outcrop site.



Hancock Member (Limestone)

This lithology is exposed at the end of a short cat road on the west side of the site (Figure 2). The rock is a light grey to off-white, compact, fine to medium grained, massive and thickly bedded limestone. On fresh surfaces the limestone shows a recrystalized texture with slight mottling, the color is light pinkish grey to white. A fine network of ankerite and siderite veinlets cross cuts the limestone but shows no tendency to fracture along the plane of veining.

The exposure at this site is of a 5 m by 5 m dip plane surface which displaying a well developed orthogonal joint set (Figure 3). An upper and a lower sheet are exposed; these are both in the order of 50 to 75 cm thick. As yet no attempts have been made to extract blocks from this site. From the joint spacing it appears that blocks of approximately 1 m x 0.5 m x 0.5 m may be extracted.

A large block of recrystalized limestone/marble, probably a near source glacial erratic, was located near the quarry and has been cut. This rock is an attractive white limestone with mottling and wisps of sooty black impure limestone. Further work should be undertaken to locate a suitable source of this rock type for further work.

During the 1991 work program, the area of limestone outcrop west of the red siltstone outcrop was further stripped exposing three well developed sheets (Beds) of limestone. The dimensions of these sheets are as follows:

Sheet #1 (upper)	8.5m x 3m x 1.2m
Sheet #2 (middle)	6.5m x 5m x 1m
Sheet #3 (lower)	6.5m x 5m x 1m

Bedding attitude is approximately 025°/25° South. Prominent calcite, ankerite and siderite filled fractures are oriented at 035°/65° Northwest. Approximately 30 large (1 m^3) blocks of limestone have been stockpiled at the quarry site. Six blocks of approximatly 3m x 2m x 1m were transported to the warehouse at MacRae and cut with the diamond saw. Preliminary tests showed that the limestone had a tendency to fracture during cutting. Large slabs suitable for flagstone or facia can be recovered as product from these slabs.

CONCLUSIONS AND RECOMMENDATIONS

Results of the study

The Red Chief Quarry site contains a substantial volume of an attractive red siltstone, and lesser amounts of limestone and volcanic breccia which may have dimension stone applications. The site is accessible by road from Whitehorse by all weather road and further upgrading is not necessary at this time. Should full scale production of dimension stone proceed then the existing road will require some upgrading to allow tractor trailers to reach the quarry site.

The red siltstone is suitable for extracting flagstone and building stone for use as veneer and as decorative crushed stone for walkways and artificial garden decoration.

Although the scope of this study is limited, the results suggest that there is a suitable source of a marketable dimension stone. Market potential is obviously local at this stage, but further research and testing and efforts to identify a fine quality marketable stone should be pursued.

Further Work

Efforts to identify potential sources for fine quality stone particularly quality limestone should be a continued priority. Fine quality limestone has a the greatest value and market exposure of all dimension stone.

Additional source areas for potential dimension stone should be researched and developed. Local market demand for granite slabs is considered to have excellent potential and a source of quarryable granite should be located.

The local building industry should be made more aware of the availability of dimension stone products by developing trade show displays of dimension stone products, this could be partly achieved by assembling a display set of cut and polished specimens.

A marketing study should be completed; this should include research into all aspects of grade, quality, and quantities of dimension stone required for national and international markets.

If required, materials testing such as compressive strength, moisture and absorption tests should be completed.