

GEOLOGICAL MAPPING ON THE RHONDA AND
HABU CLAIM BLOCKS, FIRST AND SECOND
NORTH FORK CREEKS, McDAME
(CASSIAR) GOLDFIELD. B.C.

By Timothy Liverton PhD, FGS, FGAC

Claims:	Rhonda 1-4	336257 to 336260
	Habu 1-6	336261 to 336266
NTS:	104P-6 (W)	
Latitude:	59°17'N	
Longitude:	129°25'W	

Liard Mining Division

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,977

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LOCATION

The Rhonda and Habu claim blocks are located in the valley of McDame Creek, from 12 to 15 km east of the site of Cassiar town. The claim blocks both cross the Stewart-Cassiar highway (37), the Habu at Holloway Bar and Second North Fork Creek and the Rhonda at Centreville (First North Fork Creek).

INTRODUCTION

The valley of McDame Creek has been the site of placer gold mining since 1874 when miners moved northward from Dease Lake. Some of the early boulder piles are still visible, left from hand placer workings by Chinese immigrants after 1885, but much of the bottom of the valley has been excavated and sluiced several times since. Four intermittent placer mining operations are currently in progress in the immediate vicinity of First and Second North Fork Creeks.

The hardrock claims staked here were located in order to cover two types of mineralization: vein-type base metal/silver and a possible quartz vein source of the placer gold in this region.

The present work consists of detailed geological mapping of natural and road cut rock exposures in order to document the structural geology and visible mineralization.

GEOLOGY: REGIONAL

In the vicinity of Centreville the SW side of the McDame Creek valley follows the contact between greenstones, siliciclastics and carbonate sediments of the Sylvester Group to the west and lower Palaeozoic sediments of the North American margin to the east. The North American margin sediments have been displaced by dextral strike-slip

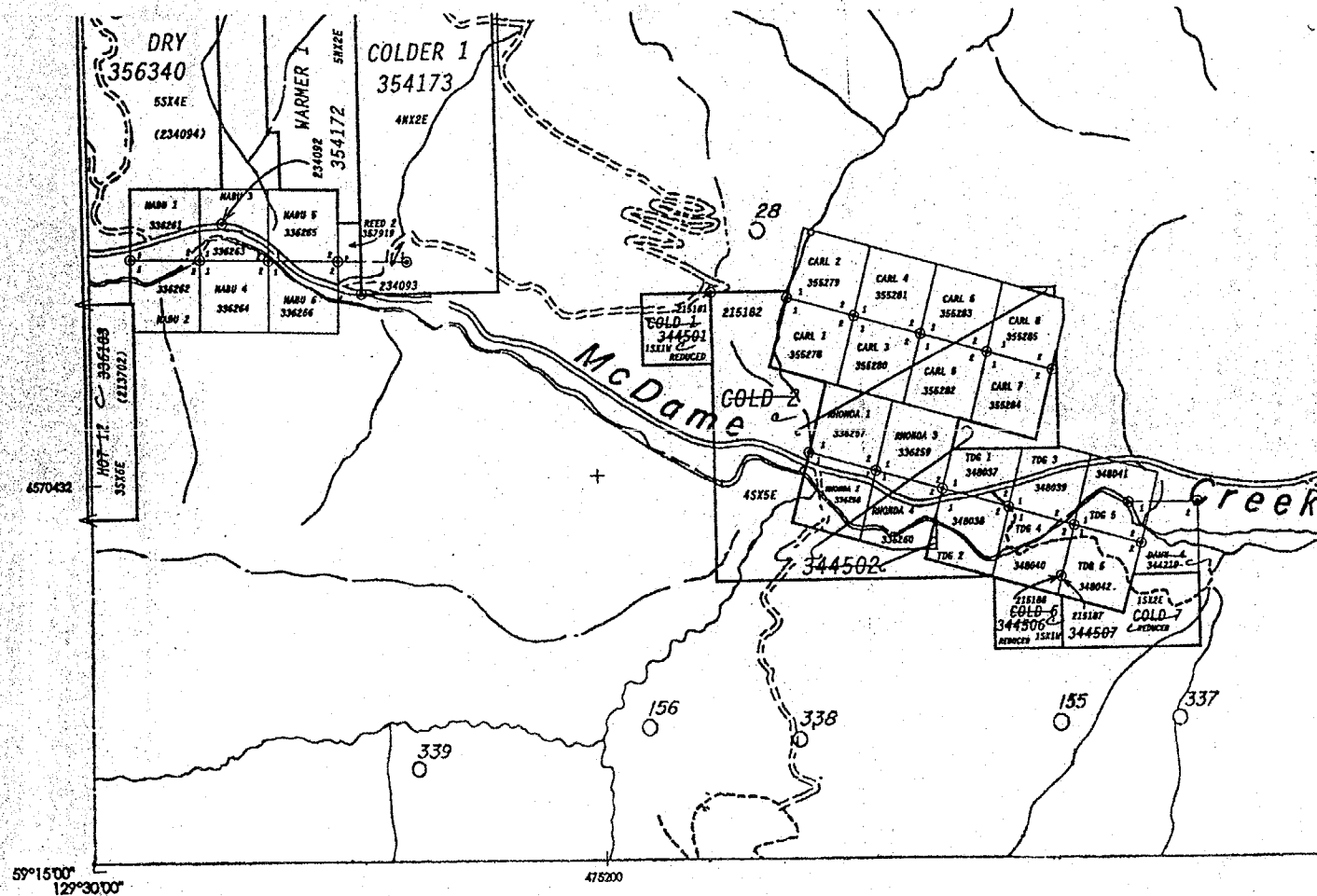


Figure 1. Location of the Habu and Rhonda claims.
SW corner of claim map 104P-6 (W) reduced
to 1:50 000 scale.

movement along the Tintina-Rocky Mountain fault system during early Tertiary time. Current theory considers the Sylvester Group rocks (Gabrielse, 1963) to be allochthonous (Gordey et al., 1982; Harms, 1984) and part of the Slide Mountain terrane, hence this implies that the contact along the south side of the McDame valley is a terrane boundary. To the northwest, in the Cassiar terrane, the oldest rock units exposed are limestone, dolomite and slate of the Proterozoic Good Hope Group and overlying, partly fault-bounded sections of Cambrian siliciclastics and carbonate units of the Atan Group. Overlying Cambrian-Ordovician Kechika Group limestone, slate and greenstone are succeeded to the SW by Ordovician to Devonian Sandpile Group sediments of dolomite and breccia. The regional mapping of Gabrielse (1963) indicates that in the Cassiar terrane units faulting is common both along a NW strike (major boundaries) and also with a N-S sense.

FIGURE 2 REGIONAL GEOLOGY

From Gabrielse (1963), reproduced at the original 1" to 4 mile scale (1:253,440).

Stratigraphic units are as follows:

6	Sandpile Group	Silurian	Dolomite, breccia, sandstone
5	Kechika Group	Camb. – Ordov.	Limestone, slate, phyllite, shale
4	Atan Group	Cambrian	Limestone, dolomite, shale
3			Quartzite, slate, conglomerate, siltstone
2	Good Hope Group	Proterozoic	Limestone, greenstone, schist
1			limestone, dolomite, slate, quartzite

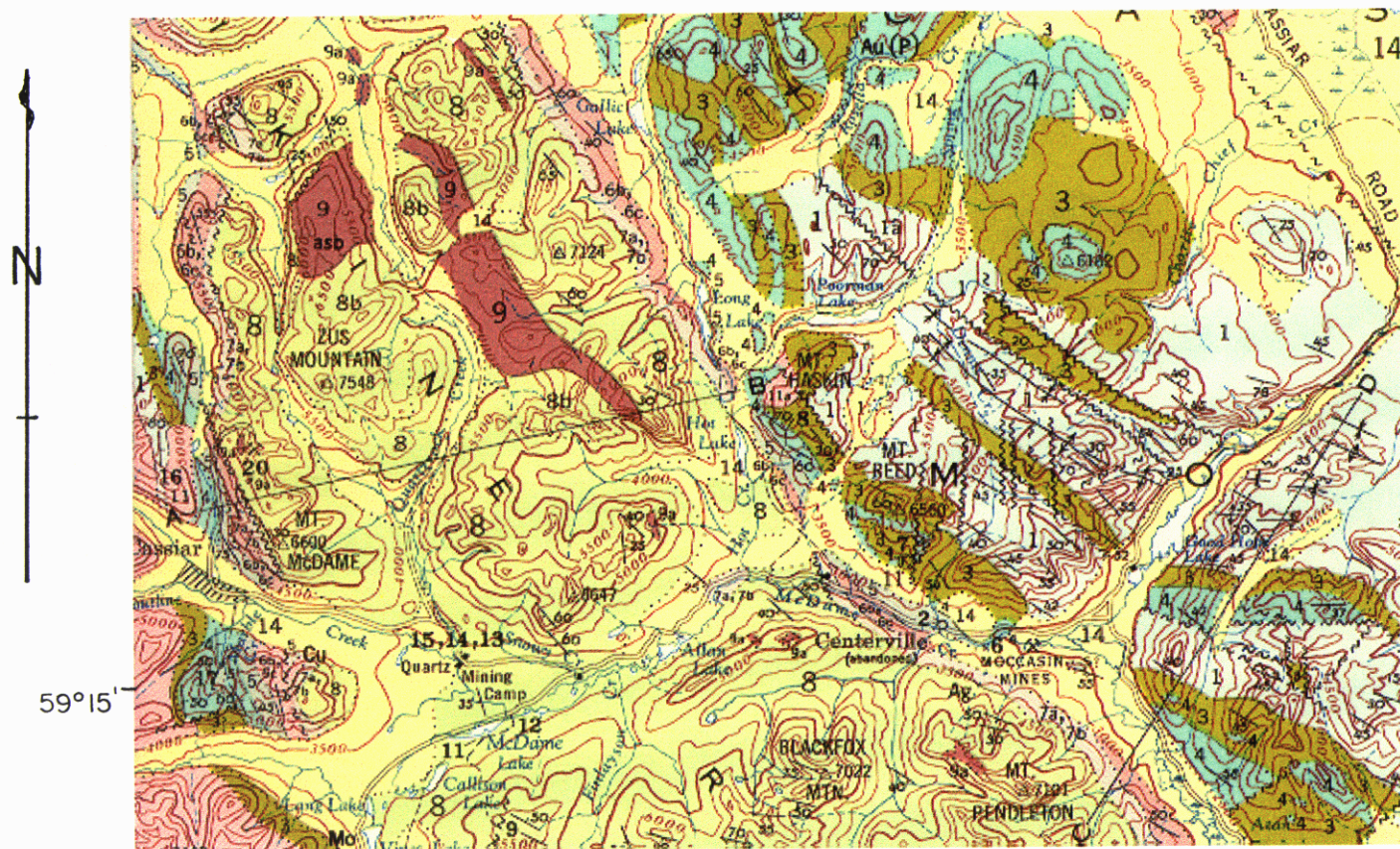


Figure 2. Scale = 1:253 440

DETAILED GEOLOGY

METHODS

Mapping was performed around Second North Fork Creek and along the road at both claim groups using compass, tape and clinometer traverses for survey control and is shown plotted at either 1:1000 or 1:2000 scale. Detailed mapping at the immediate First North Fork Creek area was performed using plane table and alidade for control.

SECOND NORTH FORK CREEK: HABU CLAIMS

Of the two claim blocks these claims have the larger extent of outcropping mineralization. Lithologies recognised in this immediate area are: the northeasternmost rock exposures (the waterfall and above: see west 1:1000 sheet) are of flaggy, mid grey limestone which shows a prevailing moderate (25-42°) SE dip. This unit grades into massive dolomitic limestone and breccia which, in places around the lower falls and exposures immediately east of the culvert entrance on the highway, has a distinct smell of hydrogen sulphide when freshly broken. Similar lithologies eastward along the highway do not yield as pronounced a smell. This part of the mapped area is part of the Sandpile Group of Silurian to possibly Devonian age.

The westernmost exposures along the highway show black and grey slates. At the easternmost extent mapped on the Habu claims (see east sheet 1:1000 scale) flaggy limestones are again seen and these probably are the strike extension of those above the waterfall. However, the contact between flaggy limestone and dolomitic massive carbonates is here locally faulted by an E-W striking structure. A small (50m long, forming a 15m high cliff) block of chert which contained metre-scale limestone beds is found in the centre of the exposures on the east side of the creek. This unit does not correlate with the flaggy limestones mapped on strike to the NW and is likely fault bounded. These units are interpreted to be units 6b and 6c of the Sandpile Group

(Gabrielse, 1963). The higher elevations on the sides of the valley are covered with glacial till.

STRUCTURAL GEOLOGY

The flaggy limestones (NE corner) show a prevailing SW dip with some mesoscopic scale (approx. 5m) minor flexures that locally steepen dips to 50° . Cleavage is a slaty fabric developed particularly at the upper contact of the unit with more massive, dolomitic carbonates. The dolomitic carbonates show frequent small-scale fracturing faulting and development of calcite veins that strike NW-SE and are near vertical.

Cleavage (slaty, or in places an anastomosing pressure solution fabric) is most obviously developed in the black and grey slates of the westernmost mapped area. Here jointing is most obvious and two distinct types are seen: a pervasive, tight, planar joint set and another set often at only 15° to the principal set that is discontinuous but carries calcite-filled tension gashes.

FIGURE 3 STEREOGRAMS

A. Poles to various foliations plotted on a Schmidt net:

Data from both the Habu and Rhonda claims are shown as follows:

Circles = bedding on the Habu group; squares for the Rhonda claims;

Dots = cleavage;

Crosses (except centre of projection) = joints.

B. Poles to mineralized veins.

The bedding / cleavage relationship is consistent with there being a single mesoscopic fold generation. Joints are likely related to the folding. Mineralization (Fig. B) follows both joints and cleavage and, perhaps also bedding planes.

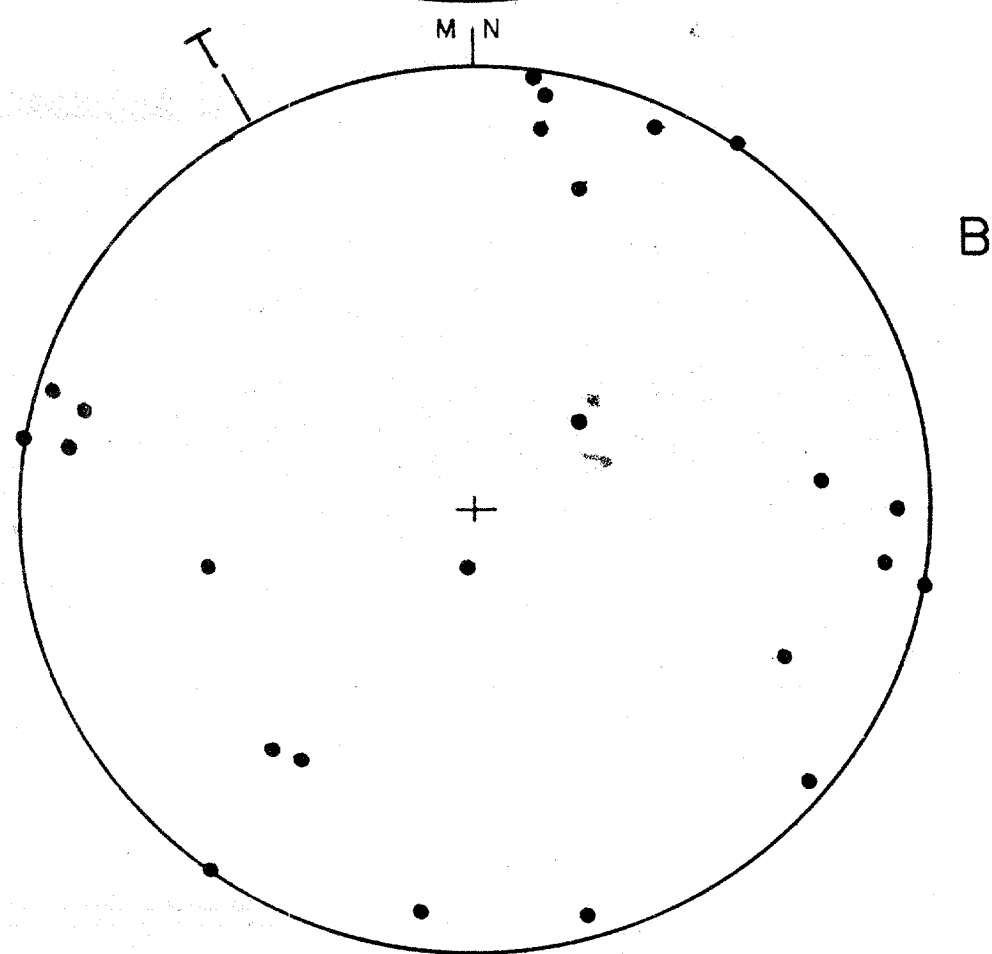
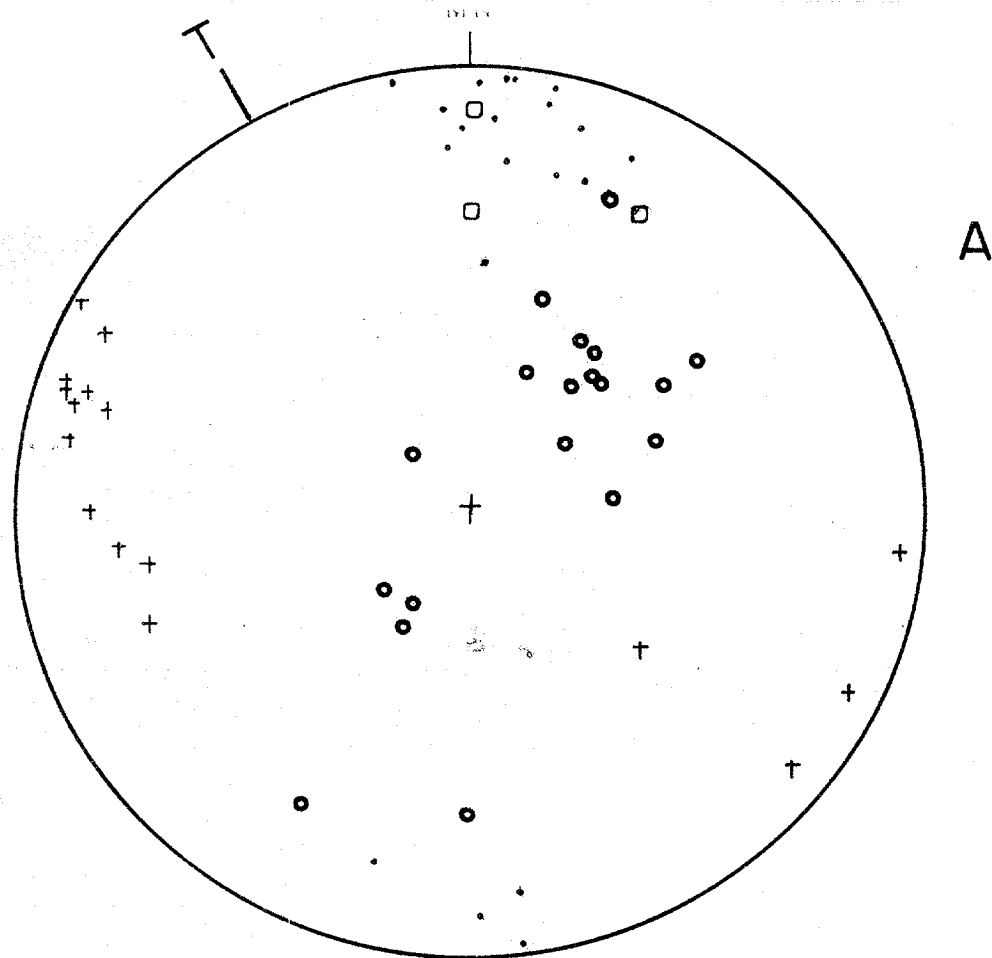


Figure 3. Stereograms.

Two limestone boudins are seen in the exposures west of Second North Fork Creek which are transposed into the steeply dipping plane of the cleavage. These slates show most evidence of brittle deformation in this area. Small scale shears are seen parallel to the cleavage and also to the NE striking joint direction (see following section).

MINERALIZATION

On the Habu claims mineralization is visible in the slates controlled by two structures: as pyrite with or without stibnite in millimetre-thick coatings on the NNE striking joints and also with quartz in metre scale shear zones that strike both NW and NE with steep NE and SE dips respectively.

In the massive dolomitic carbonates mineralization appears in wider (1.6m) breccia zones over a total zone of about 20m wide, which is near vertical and SE striking. This is the main mineralization long known on the claims and it is approximately 60 metres north of the road. This zone is approximately parallel to the McDame valley and may represent shearing parallel to the major fault. Both metre-scale and decimetre wide shears carry sulphide mineralization: pyrite cubes up to 40mm size and finer sphalerite-pyrite-galena mineralization in the breccia zone 1.6m wide at the base of the cliff. Fifteen metres east, near the marked break in slope of the hillside a vertical shear zone carries 2m of pyrite-sphalerite mineralization in calcite breccia. Sampling of this whole mineralized zone was not attempted during this present work, but is desirable in future.

FIRST NORTH FORK CREEK - RHONDA CLAIMS

DETAILED GEOLOGY

Two lithologies here are distinct from those of Second North Fork Creek. The immediate vicinity of the creek (see 1:500 scale detail map) has exposure of mudstone with centimetre-thick, slightly boudinaged limestone layers and are likely part of the Kechika Group. A stratigraphic thickness of about 25 metres is exposed close to the highway however, further exposures exist 200m up the creek. More massive mid grey

marl underlies this unit. The marly beds are well cleaved, but do not show obvious bedding layers. A vigorous HCl reaction indicates considerable carbonate content. To the east (see 1:2000 scale sheet) road exposures are of light grey cleaved mudstone and siltstone.

STRUCTURAL GEOLOGY

The First North Fork Creek area shows pervasive slaty cleavage dipping for 75-88° to the SW and bedding dips steeply SW to WSW in the region of the creek. Jointing is not nearly as obviously developed in these lithologies as it is at Second North Fork Creek.

MINERALIZATION

The only mineralization noted during this present mapping was limonite-stained quartz veins on the Rhonda 3 claim (see east part of the 1:2000 sheet).

DISCUSSION

The original rationale in Mr. Hibbing's staking these claims was that there might be a local source for the placer gold in McDame Creek, rather than it having been transported in glacial till from the Ericsson mine area. He postulated that each of First, Second and Third North Fork Creeks have followed faults that are secondary to the major structure along McDame Creek, bounding the Sylvester Group volcanics. Evidence in support of this hypothesis is:

- a) Localization of placer gold at the confluence of these creeks (none is known between Third North fork and Ericsson) and;
- b) Quartz carrying gold showing the mould of euhedral pyrite crystals, complete with striations is known from the placers. This does not appear to have been transported any distance;
- c) There are verbal reports of gold-bearing quartz veins at the Holloway Bar and also on the Habu claims. A verbal report by Grant Stewart, who carries out excavation work while Joe Reed still held the ground suggests that such veins strike N-S rather than following the SE trend of the base metal mineralization.

It is entirely possible that faults have provided conduits for auriferous fluids in this region. If so, then perhaps the black slates and foetid carbonates may have provided a suitable reducing environment for gold deposition. Using these assumptions, the Second North Fork Creek area may be the better prospect. However the Pocohontas adit (see 1:500 scale detail map) is reputed to have produced some 22,000 ozs of gold (George Zimich, pers. Comm. from old mining reports). The portal of this adit is now obscured by a slumped hillside and is approximately marked by springs issuing from the toe of the slump. The presence of this adit indicates that a hardrock source of gold exists at First North Fork Creek.

RECOMMENDATIONS

This present mapping represents more what was feasible in time and money rather than perhaps what is desirable for evaluation of the property. It has at least been possible to delineate the trend of the base metal bearing shear zone that is an obvious prospecting target. No particular clue as to possible gold occurrence has been found. Two approaches are proposed for further exploration:

- 1) To test the shear zone related base metal mineralization extensions to the SE and NW should be sought. The SE direction may be readily investigated since overburden is slight. There may be more soil and till cover to the NW. A small sampling grid (lines of perhaps 150-200 metres length) could be established and soil geochemical sampling carried out by hand pitting. If a significant strike length to the zone is demonstrated, further exposure of rock by pitting and sampling for assay is desirable.
- 2) To test the faulting model for the First to Third North Fork creeks it is desirable to map a much larger area, say, on a scale of 1:10,000 to see if demonstrable offsets of stratigraphy occur. This would not be easy due to timber cover, but should be possible with effort.
- 3) To further test the possibility of quartz vein gold mineralization a detailed lithogeochemical survey could be attempted in the vicinity of Second North Fork Creek and in particular on the opposite side of the highway where rock exposures do occur along McDame Creek. It is feasible to cover the Habu 3 and western part of Habu 5 claims.

REFERENCES

Gabrielse, H. 1963. McDame map area, Cassiar District, British Columbia. Geological Survey of Canada Memoir 319, pp. 138.

Gordey, S.P., Gabrielse, H. and Orchard, M.J. 1982. Stratigraphy and structure of the Sylvester allochthon, south-west McDame map area, northern British Columbia. *In*: Current research Part B. Geological Survey of Canada Paper 82-1B, p. 101-106.

Harms, T.A. 1984. Structural style of the Sylvester allochthon, northeastern Cry Lake map area, British Columbia. *In*: Current Research, Part A. Geological Survey of Canada Paper 84-1A, p. 109-112.

STATEMENT OF QUALIFICATIONS

T.Liverton

BSc: in Geology and Geophysics, University of Sydney 1965;

BSc in Economic Geology, University of Adelaide 1967

PhD Royal Holloway, University of London 1992.

28 years experience in mineral exploration, mining geology and engineering geology.

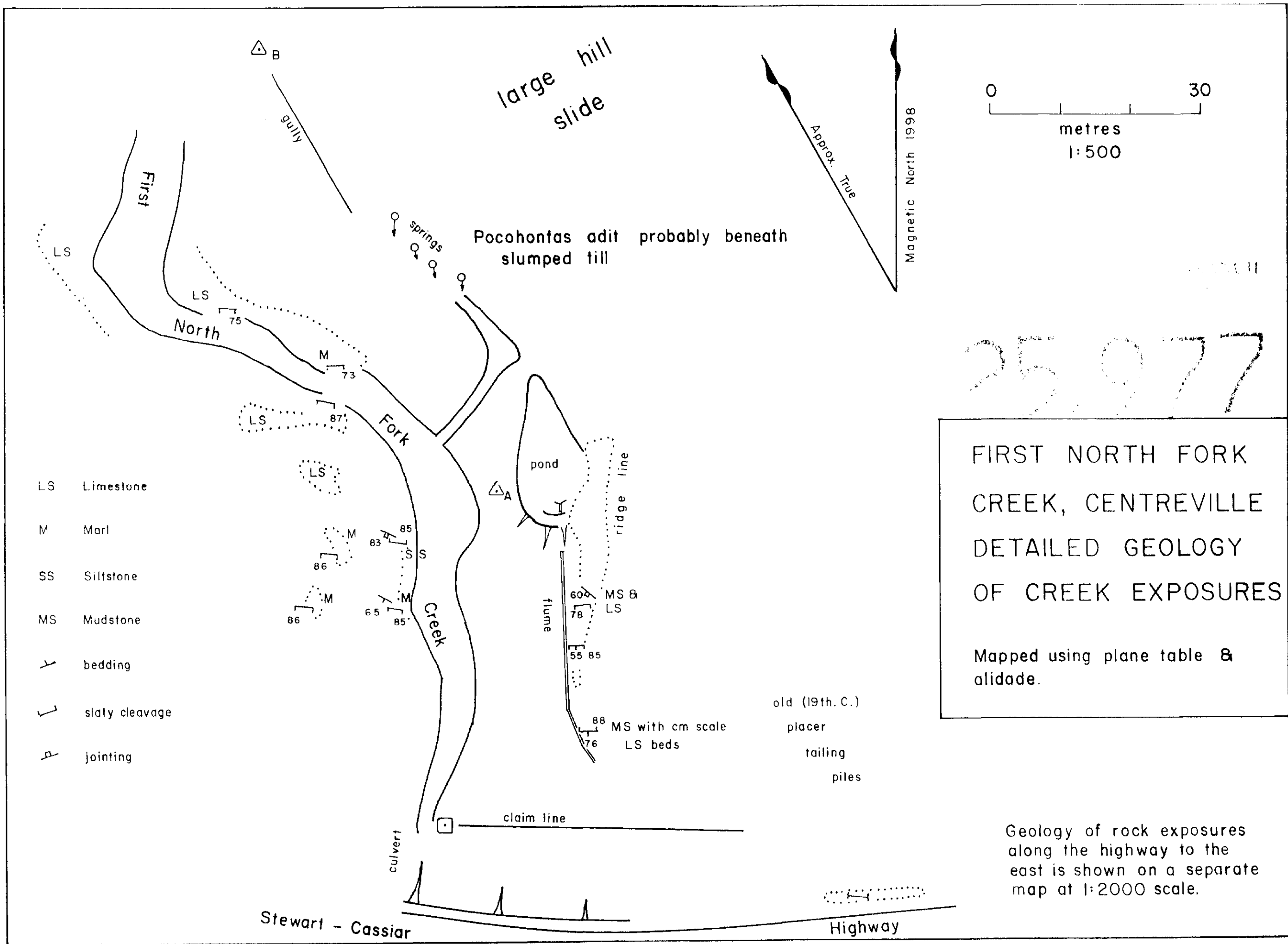
Lately (1996-97) Visiting Professor in economic geology at the Universidade de Brasilia, Brazil.

Member of the Geological Society of America, Fellow of the Geological Society, Fellow of the Geological Association of Canada.

COST STATEMENT

T. Liverton	5 days @ \$600.00 per day	\$3000.00
H. Hibbing	5 days @ \$300.00 per day	\$1500.00
Report preparation,	3 days	\$ 900.00
Xerox of maps		\$ 12.00
Vehicle, 5 return trips = 1499km	@ \$0.15 per km	\$ 224.85
Total:		\$5636.85

Timothy Liverton

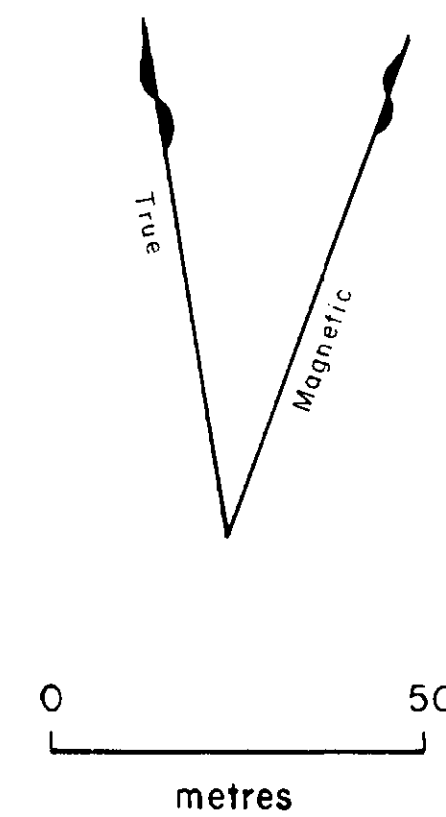


HABU 5

HABU 6

overlap of west sheet

overlap



25.977

SECOND NORTH FORK CREEK, McDAME GOLDFIELD, 104 P-6

GEOLOGY OF THE NORTHERN PORTION OF THE CLAIMS

EAST SHEET: HABU 5 & 6 CLAIMS

41 yellow weathering dolomitic l.s.

2m breccia

limonite stained shears

limonite in float

3 limonite in float

2m sheared & siliceous (possible dyke)

Py in fracture

tension gashes

81
p63

Fe stained float

breccia

1.5m sandstone

36

Fe stain

60

Py in fractures

18

Py in fractures

60

blocky l.s.

35

5cm qtz vein

30-45

Fault: 1.8m breccia limestone fractured

flaggy limestone

massive limestone to here

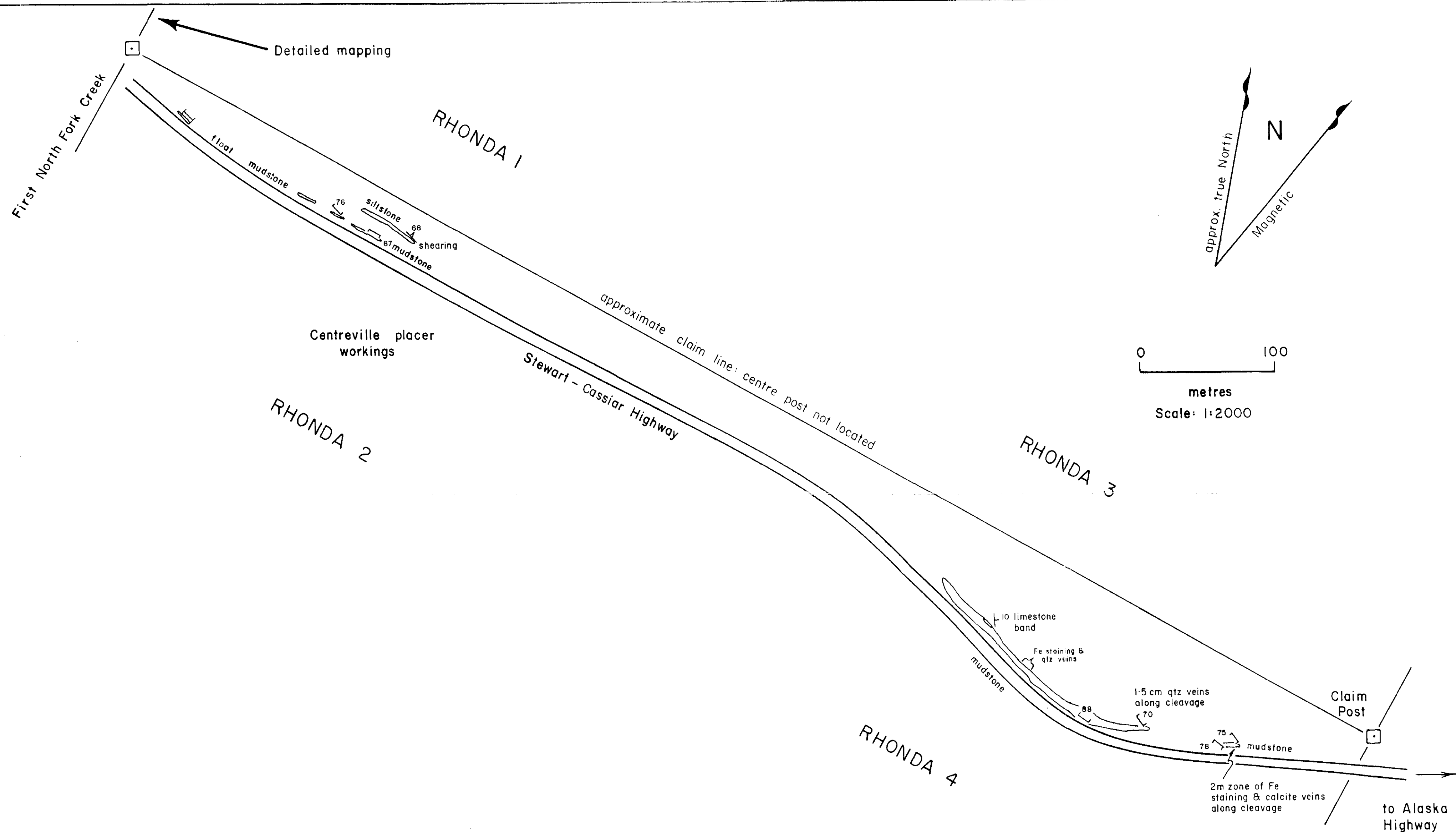
83

66

60

20

14



FIRST NORTH FORK CREEK, McDAME GOLDFIELD, 104 P-6
GEOLOGY OF THE SOUTHERN PORTION OF THE CLAIMS

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