Geological Report
on the
MTX MINERAL CLAIMS
Nos. 1-63 inclusive

Claim Sheet No. 105 1-12

SUMMIT LAKE AREA
Watson Lake Mining Division

62° 35' N. Lat., 129° 45' W. Long.

Owner of Claims:
NRD Mining Co. Ltd.

Mapping & Report by P.J. Street, M. Sc.
Supervision by R. S. Adamson, P. Eng.

Work completed between Aug. 27 and Sept. 3, 1973.

October 8, 1973

DOLMAGE CAMPBELL & ASSOCIATES LTD.
VANCOUVER, CANADA

060142

DOLMAGE CAMPBELL & ASSOCIATES LTD.
CONSULTING GEOLOGICAL & MINING ENGINEERS
1000 GUINNESS TOWER
VANCOUVER 1, B.C.

Geological Report on the MTX MINERAL CLAIMS Nos. 1-63 inclusive

Office Of The Supervising Mining Recorder
NOV 22 1973
WHITEHORSE
Yukon Territory

Claim Sheet No. 105 I/12

SUMMIT LAKE AREA
Watson Lake Mining Division

$2005.00

62° 35' N. Lat., 129° 45' W. Long.

060142

Owner of Claims:
NRD Mining Co. Ltd.

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $2005.00

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

Mapping & Report by P.J. Street, M.Sc.
Supervision by R.S. Adamson, P.Eng.

Work completed between Aug. 27 and September 3, 1973

RECEIVED
NOV 23 1973
MINING
INSPECTORS OFFICE
WHITEHORSE, Y.T.

October 8, 1973.

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INTRODUCTION

LOCATION AND ACCESS:

The MTX claim block is situated within a few miles of the boundary of the Yukon and Northwest Territories, approximately 200 miles north of Watson Lake, Y.T., and about 20 miles northwest of Summit Lake. Present access to the property consists of flying directly by helicopter from Summit Lake, which is suitable for float aircraft. The nearest road lies 50 miles to the southeast, and links the Canada Tungsten mine to Watson Lake on the Alaska Highway.

PROPERTY:

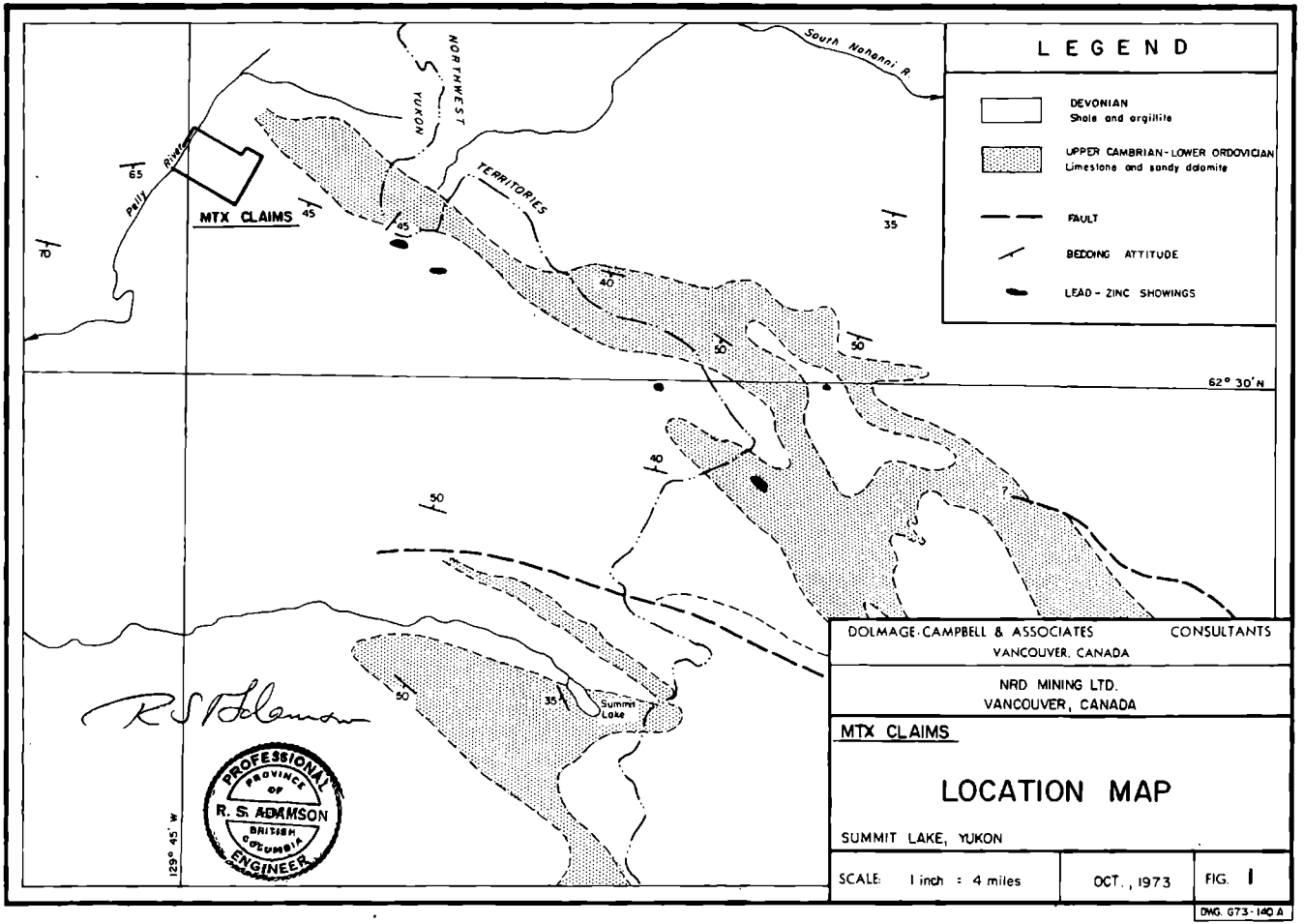
The property comprises Mineral Claims MTX 1-63, held in the name of NRD Mining Co. Ltd. of Vancouver, B.C.

The claim group forms an elongate block extending roughly northwesterly from a broad plateau down to the Pelly River. Topographic relief is of the order of 1000 feet, and the plateau is dissected by several westerly-flowing creeks. These in turn drain into a strong, northerly-flowing creek that traverses the southwest quadrant of the property before flowing into the Pelly River. About one-third of the property lies above the tree-line, i.e. above about 5000 feet elevation.

HISTORY:

No work appears to have been done on the property prior to staking in late 1972. The property was staked on the basis of the discovery of zinc-lead deposits by Canex-Placer Ltd., a few miles to the southeast.

A geochemical soil survey was carried out in late August and early September, simultaneously with the geological mapping that forms the subject of the present report. The geological mapping was carried out by P.J. Street on behalf of R.S. Adamson, P.Eng., for Dolmage Campbell & Associates Ltd.


LEGEND
DEVONIAN
Shale and argillite
UPPER CAMBRIAN - LOWER ORDOVICIAN
Limestone and sandy dolomite
FAULT
BEDDING ATTITUDE
LEAD - ZINC SHOWINGS
South Nahanni R.
NORTHWEST
YUKON
TERRITORIES
Pelly River
MTX CLAIMS
Summit Lake
62° 30' N
129° 45' W
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON
DOLMAGE·CAMPBELL & ASSOCIATES
CONSULTANTS
VANCOUVER, CANADA
NRD MINING LTD.
VANCOUVER, CANADA
MTX CLAIMS
LOCATION MAP
SUMMIT LAKE, YUKON
SCALE: 1 inch = 4 miles
OCT., 1973
FIG. 1
DWG. G73-140 A

REFERENCES:

Geological Survey of Canada, Map 8-1967, Nahanni.

R.C.A.F. Air Photos Nos. A 12245-379 to A 12245-380, National Air Photograph Library, Ottawa.

Adamson, R.S., Geochemical Report on MTX Mineral Claims 1-63, Dolmage Campbell & Associates Ltd., October 9th, 1973.

REGIONAL GEOLOGY

The geological setting of the Summit Lake zinc-lead district comprises essentially two rock formations; an argillaceous unit ranging in age possibly from the Late Ordovician to the Mississippian (but predominately Devonian), and an older carbonaceous unit which is probably Cambrian in age.

The most extensive rock type in the area, the argillaceous unit, is black-grey shale that is extensively regionally metamorphosed to argillite with well-developed foliation. The argillite is noticeably harder than the unmetamorphosed shale and is locally pyritic; otherwise, the two rock types are not readily distinguished in the field by casual observation. Most of the rock exposed in the area of the Summit Lake base metal occurrences is argillaceous and some is pyritic enough to have produced gossans. Local intense (isoclinal) folding of the shale-argillite sequence is common and, combined with the absence of distinct marker beds, makes precise stratigraphic positional determinations difficult in this sequence. Also, due to this difficulty of determining the proper sequence in the shale-argillite rocks it is likely that some of the rock units included in it may be as old as Ordovician and thus represent an orderly sequence from the underlying Cambrian rocks.

Of direct potentially-economic significance is a distinctive graptolitic shale formation that occurs near the base of the argillaceous sequence. It is this formation, Late Ordovician in age, that hosts the presently known deposits on the nearby Canex-Placer claims. The distribution of this key formation throughout the district, is, at best, relatively unknown, due primarily to its highly-erodable characteristics.

The Cambrian carbonaceous rocks, limestone and minor dolomite, that underlie the shale-argillite sequence are exposed as windows in the lower flanks of the ridges in northwest-trending bands. This relatively simple relationship is complicated by steep folding, by possible thrust faulting parallel to the northwest-trending contacts, and by topography because of the gentle southwest dip of the argillite-carbonate contact.

The area was extensively glaciated during the Pleistocene Period.

PROPERTY GEOLOGY

MAPPING TECHNIQUES:

Field locations for the geological mapping were determined with reference to a grid already laid out for use in geochemical soil sampling (ref. Geochemical Report, R.S. Adamson, October 9th, 1973), supplemented by pace-and-compass traversing to establish intermediate locations. The base-line of the grid coincided with the central location line of the claim block, on a bearing of 295°. Cross-lines ran at right angles to the base-line at intervals of 800 feet on the base-line, and stations were marked at 200-foot intervals along the cross-lines.

Aerial photographs were not available at the time of mapping, but were used later in order to assist in the interpretation of geologic structure.

GENERAL:

The geology of the MTX property is best revealed by extensive rock exposures that crop out on the hill that lies in the southeast and northeast quadrants. Approximately one-third of the claim group contains outcrops. The overburden-covered valleys of the Pelly River to the northwest and the several creeks noted above mask the geology on the remaining two-thirds of the property.

Outcrops consist of grit, sandstone, conglomerate and slaty shale which form part of the predominantly argillaceous unit, of Late Ordovician to Mississippian age, discussed above. The critical graptolitic shale formation should occur stratigraphically lower than the sandstones, conglomerates, etc., seen in outcrop, and thus may underlie some part of the lower slopes that are thickly forested or otherwise covered by overburden; it may also be capped by the above arenaceous rocks at higher elevations.

The effects of glaciation in the property area are seen in the sub-parallel linear orientation of smooth, elongate outcrops over portions of the upland plateau areas, with some evidence of glacial plucking and "roches moutonnees". Thick deposits of till that mask bedrock on a spur between two of the larger creeks appear to be the remains of a lateral moraine.

LITHOLOGY:

Most of the rocks exposed within the property boundaries correspond stratigraphically to the upper members of the unit mapped by the Geological Survey of Canada (Map 8-1967) as "18b", i.e. chert pebble conglomerate, chert sandstone, sandstone, shale and argillite.

The conglomerate is exposed in at least five or six different stratigraphic horizons, but in the absence of good marker beds, correlation is only tentative. It consists of mostly elongate, rounded to flattish pebbles of chert, of various colours, but also includes black shale and brownish siltstone pebbles. The matrix is dense, commonly fine-grained, and siliceous; overall colour is dark grey, and these members weather black and are conspicuously resistant to erosion. A planar structural fabric is seen in some conglomerate beds, but this is distinct from bedding orientation.

Sandstone is generally fine- to medium-grained, ranging from brownish and rusty-weathering to dark grey and black-weathering. The darker varieties are generally highly siliceous, but most of the sandstone contains at least 25% quartz grains. In some sandstones, the coarser grains can be identified as chert, and commonly these sandstones are gradational with a fine to coarse chert grit in which angular chert grains are conspicuous. The sandstone and chert-grit beds range from a few inches to five feet in thickness, but are most commonly thick and relatively resistant to erosion.

Thinner-bedded sandstone is commonly interbedded with slaty and fissile black shale or argillite, invariably non-calcareous and non-fossiliferous where seen on the property. By contrast, the graptolitic shales known elsewhere to be ore-bearing are generally calcareous. The limestones of Cambrian age that typically underlie the graptolitic shales elsewhere in the Summit Lake district are not exposed on this property, (but have been mapped by the Geological Survey within 1-2 miles to the east.

In the north-central and southwestern parts of the property, intermittent outcrops expose finely fissile black slate, and thin-bedded black chert was seen in one place, near the base of the exposed portion of the local stratigraphic sequence. The chert beds were from 1 inch to 3 inches thick, were slightly crenulated, and irregularly interbedded with black shale.

No mineralization was seen in any of the rocks exposed in the topographically-higher portions of the property. A large gossan, approximately 175 feet square, lies at the foot of the outcrop area on the west-facing slopes overlooking the Pelly River, and may coincide with a transition from the more competent arenaceous upper members to predominantly shaly lower members of the "Unit 18b" mapped by the Geological Survey of Canada. Even the gossan showed no signs of sulphide mineralization.

STRUCTURE:

In the northern half of the property, beds dip relatively gently to sub-horizontally, and tend to form mesa-like topography on the higher ground. A few dips range as high as 50°, but most are in the range of 10 to 35°. Exposures in a large cirque off the northeast corner of the claim group suggest that there is shallow synclinal warping in two directions, with a roughly north-south axis in the northeast corner truncating an ill-defined east-west axis over most of the exposed outcrop area to the west.

By contrast, in the southeast corner of the property, easterly dips of 50 to 60° are seen, with an abrupt transition to the gentler dips noted above but masked to some extent by expanses of talus. A zone of disturbed bedding and brecciation in the creek-bed at the foot of a large cirque could be part of a fault zone that would account for the discontinuity of the attitudes described above, and air photographs show a lineation that would be consistent with faulting along this line (ref. map, Figure 2).

Shallow-dipping conglomerates and grits in the north-central portion of the property are flanked immediately to the north by slates with vertical cleavage and possibly also vertical bedding. Similarly, in the southwestern quadrant of the claim block, bedding in black slate dips 60° to the southwest, and cleavage ranges from 60° to vertical. Air photo interpretation also suggests sub-vertical structure in rocks along the south-central to southeastern boundary of the claim block, which would be consistent with structures in the southwestern quadrant mentioned immediately above, but discordant with those on the south side of the suggested fault line (ref. map.) The property area appears to have been subjected to complex faulting and folding.

As already noted, slaty cleavage is generally steeply-dipping or vertical, and distinct bedding is rarely seen. However, there are indications in at least one outcrop of a high angle between cleavage and colour banding that may be equivalent to the original bedding, and elsewhere cleavage is parallel to bedding. Strong folding in slates, isoclinal in places, is known to be a characteristic of the general area.

MINERALIZATION:

As noted already under "Lithology", there is no mineralization in the rocks exposed in the outcrop areas on the property.

CONCLUSIONS & RECOMMENDATIONS

1. The outcrop areas within the MTX claim group expose only a portion of the upper part of the Upper Devonian-to-Mississippian stratigraphic sequence as mapped by the Geological Survey of Canada and designated "Unit 18b" in Map 8-1967 (Nahanni).

2. Calcareous graptolitic shales, of Ordovician or Silurian age, known to be ore-bearing elsewhere in the Summit Lake zinc-lead district may lie at moderate depth below the topographically lower areas on the property, but are nowhere exposed. Limestones of Cambrian age that typically underlie the graptolitic shales are mapped within 1-2 miles to the east of the property, but are not exposed within the property itself.

3. There is no visible mineralization in outcrop on the property.

RECOMMENDATIONS:

1. Structural and stratigraphic relationships in the vicinity (within 1-2 miles) of the property should be examined to determine whether the sequence of strata exposed within the claim group might be underlain at a reasonably accessible depth by strata of critical economic interest, i.e. the potentially ore-bearing graptolitic shales.

2. Trenching, or shallow drilling, should be undertaken to test for the presence of critical strata if reconnaissance mapping, as in 1.) immediately above, appears to warrant it. Such work should be coordinated with the trenching, etc., recommended in the Geochemical Report by R.S. Adamson, October 9, 1973.

Respectfully submitted,
DOLMAGE CAMPBELL & ASSOCIATES LTD.

P.J. Street, M.Sc.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON

R.S. Adamson, P.Eng.

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

To WIT:

In the Matter of

NRD MINING CO. LTD. - MTX MINERAL CLAIMS NOS. 1-63 inclusive

I, R.S. Adamson

of #1000 - 1055 W. Hastings Street, Vancouver 1, B.C.

in the Province of British Columbia, do solemnly declare that

Expenditures for work performed on the MTX mineral claims between August 27 and September 3, 1973 are as follows:

WAGES - 7 days @ $100.00 = $700.00 2 days @ $ 35.00 =$ 70.00	$770.00
MAINTENANCE - 9 man/days @ $15./day	$135.00
TRANSPORTATION - HELICOPTER - 3 hrs. 10 mins. @ $160./hr.	$500.00
TYPING, SECRETARIAL, DRAUGHTING	$150.00
SUPERVISION & REPORT	$450.00
TOTAL:-	$2005.00

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City of Vancouver, in the Province of British Columbia, this 14 day of November, 1973, A.D.

R.S. Adamson

A Commissioner for taking Affidavits for ~~British Columbia~~ or Yukon
A Notary Public in and for the Province of British Columbia

APPENDIX NO. 2

DETAILED ACCOUNT OF EXPENDITURES

WAGES: -

P.J. Street, M.Sc., - 4598 W. 14th Ave., Vancouver 8, B.C. 7 days @ $100.	$700.00
J. Sanford - 4598 W. 14th Avenue, Vancouver 8, B.C. 2 days @ $35.00	$ 70.00
TOTAL:-	$770.00

SUPERVISION & REPORT: -

P.J. Street, M.Sc., - 4598 W. 14th Ave., Vancouver 8, B.C. 3 days @ $100.	$300.00
R.S. Adamson, P.Eng., - 1000 - 1055 W. Hastings St., Vancouver 1, B.C. 1 day @ $150.00	$150.00
TOTAL:-	$450.00

LEGEND

- BEDDING ATTITUDE (dipping, vertical)
- JOINTING (vertical)
- SLATY CLEAVAGE (dipping, vertical)
- DIRECTION AND PLUNGE OF FOLD AXES
- FAULT (assumed)
- SYNCLINAL AXIS
- OUTCROP AREA

TABLE OF FORMATION

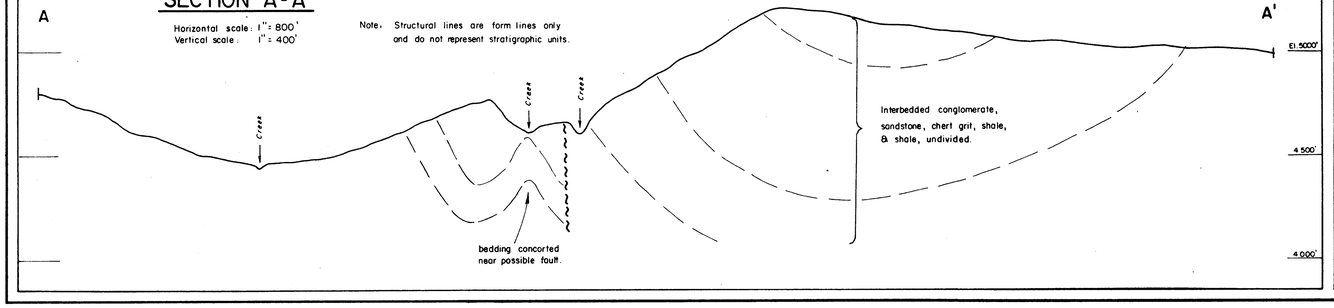
'UNIT 18b', undivided, comprising interbedded conglomerate, sandstone, chert grit, shale and slate.

No significant subdivisions of this unit can be mapped within the area of the claim group.

SECTION A-A'

Horizontal scale: 1" = 800'
Vertical scale: 1" = 400'

Note. Structural lines are form lines only and do not represent stratigraphic units.



inches 0 1 2
0 1 2 3 4 5 centimetres

YUKON GEOLOGICAL SURVEY

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.

R.S. Adamson

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. S. ADAMSON

DOLMAGE-CAMPBELL & ASSOCIATES CONSULTANTS
VANCOUVER, CANADA

NRD MINING CO. LTD.
VANCOUVER, CANADA

MTX CLAIMS

PROPERTY GEOLOGY

SCALE: 1" = 800'	NOV., 1973	FIG. 2

DWG G73-172

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