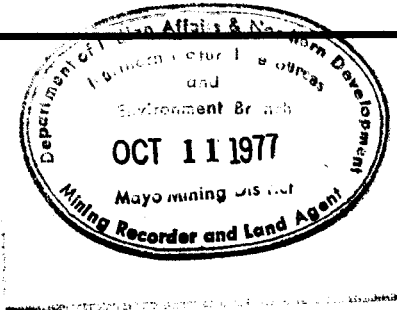




WELCOME NORTH MINES LTD. (N.P.L.)
 1027 - 470 Granville St., Vancouver, B.C. V6C 1V5 Telephone (604) 687-1658



GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

REP 1-48 MINERAL CLAIMS

Latitude 64°29'N

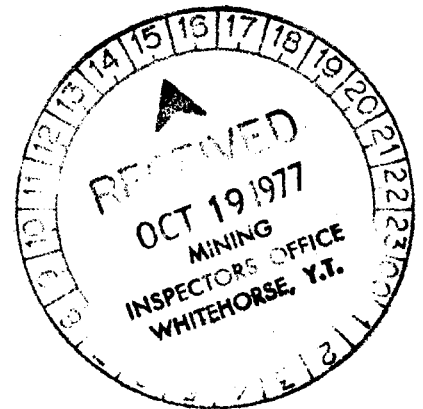
Longitude 132°05'W

MAYO MINING DISTRICT
 YUKON TERRITORY
 N.T.S. 106C/8

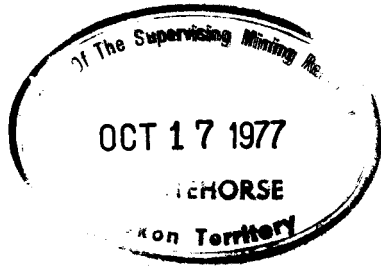


Work performed during period June 1 - July 31, 1977

G. F. McArthur
 M. L. McArthur



090225



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 \$ 18,955.80

J. A. Martin

A/ Resident Geologist or
Resident Mining Engineer

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

[Signature]
E. R. BAXTER
Supervising Mining Recorder

[Signature]
Commissioner of Yukon Territory

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INTRODUCTION

The REP 1-48 mineral claims were staked on August 17, 1976 to cover several occurrences of lead and zinc in carbonaceous limestone of the Road River Formation and older dolomites equivalent to the Franklin Mountain Formation.

SUMMARY

- 1) In 1976, prospecting discovered several occurrences of zinc and minor lead in Road River limestone and in underlying dolomites.
- 2) A geochemical grid was completed over mineralized areas on the claim group in order to delineate overburden-covered mineralization.
- 3) In 1977, geological mapping and chip sampling were done.
- 4) Anomalous areas within the 1976 geochemical grid were extended.
- 5) A 100-foot BQ diamond drill hole was completed on the A-Zone in July, 1977.

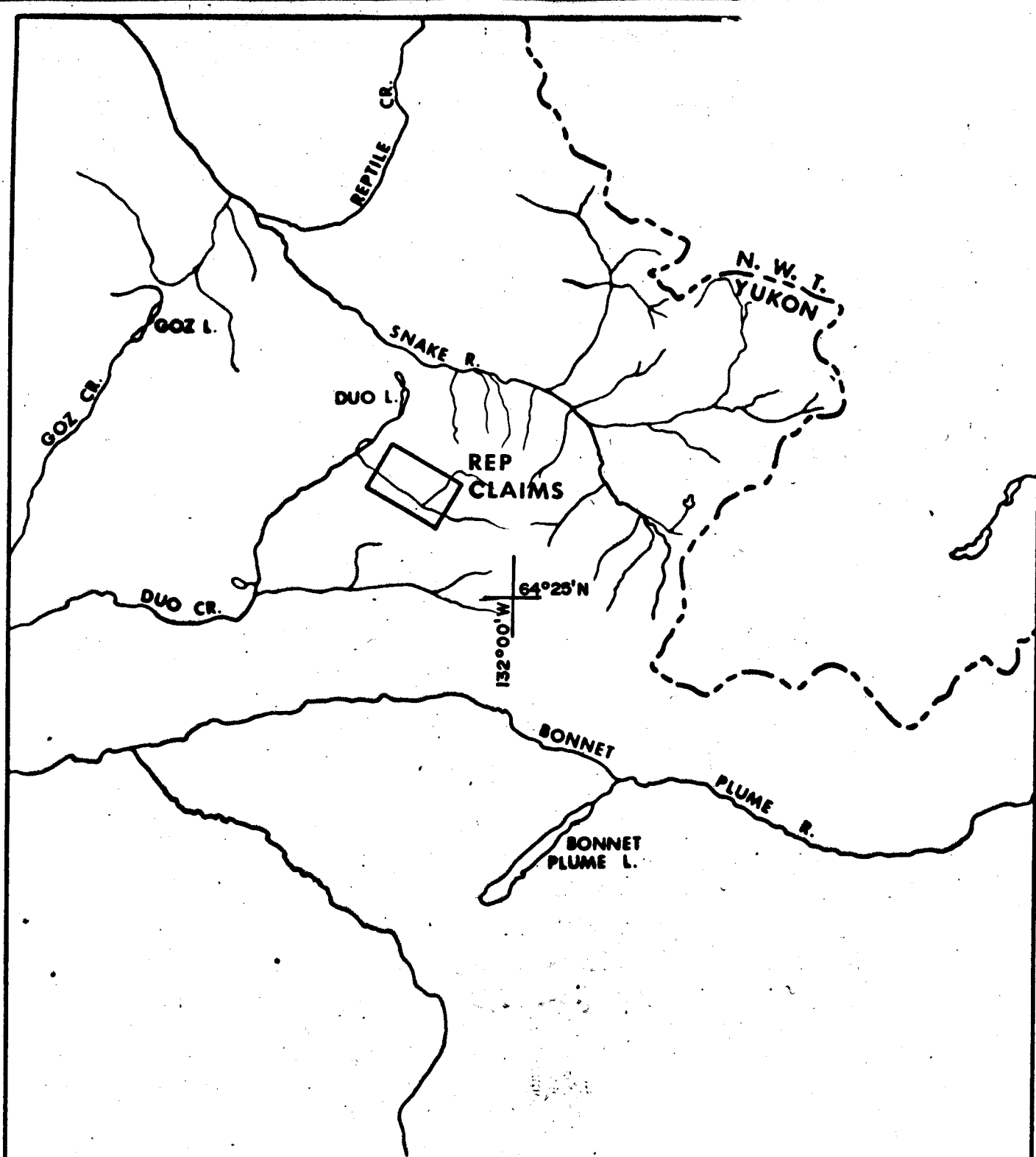
LOCATION AND ACCESS

The REP 1-48 mineral claims are located on Map Sheet N.T.S. 106C/8 in the Selwyn Mountains south of Duo Lakes on a branch of Duo Creek (Fig. 1 and 2).

Access to the property can be obtained by helicopter from Mayo, 128 miles to the west, or from Norman Wells, 168 miles to the east. Float-equipped aircraft can land at Duo Lake 3 miles to the north. The lake was free of ice by June 14 in 1977.

Distances to the nearest supply points are:

Ross River	176 miles
Mayo	128 miles
Norman Wells	168 miles



	WELCOME NORTH MINES LTD.	
	ARCTIC RED PROJECT	
REP 1-48 CLAIMS		
CLAIM LOCATION MAP		
Scale <u>1:250,000</u>	Date <u>SEPT 1976</u>	NTS/DEC/B
Revised: _____	By: <u>G. MCA.</u>	Fig. <u>1</u>

CLAIMS

The REP property is composed of 48 contiguous claims as listed below:

<u>Name of Claims</u>	<u>Tag Numbers</u>	<u>Recording Date</u>
REP 1-48	YA6523-YA6570	August 30, 1976

GEOLOGY

The REP property mineralization is located within a northwest trending graben at the contact between Cambrian-Ordovician dolomites and overlying shaley limestones. The stratigraphic section at the property is as follows:

- | | |
|--|--|
| Devono-Mississippian
(DMs) | - Besa River Formation
generally non-calcareous shales and siltstones;
often rusty-weathering |
| Ordovician-Devonian
(OSDr) | - Road River Formation
black, platy, argillaceous limestones and
calcareous argillites, interbeds of cherty
crinoidal limestone are common. |
| Upper Cambrian to
Lower Ordovician
(EOf) | - Franklin Mountain Formation
light grey dolomites, in part silicified;
chert breccia common. |
| Lower Cambrian
(Es) | - Sekwi Formation
light grey dolomite with upper orange-
weathering sandy dolomite and conglomerate. |

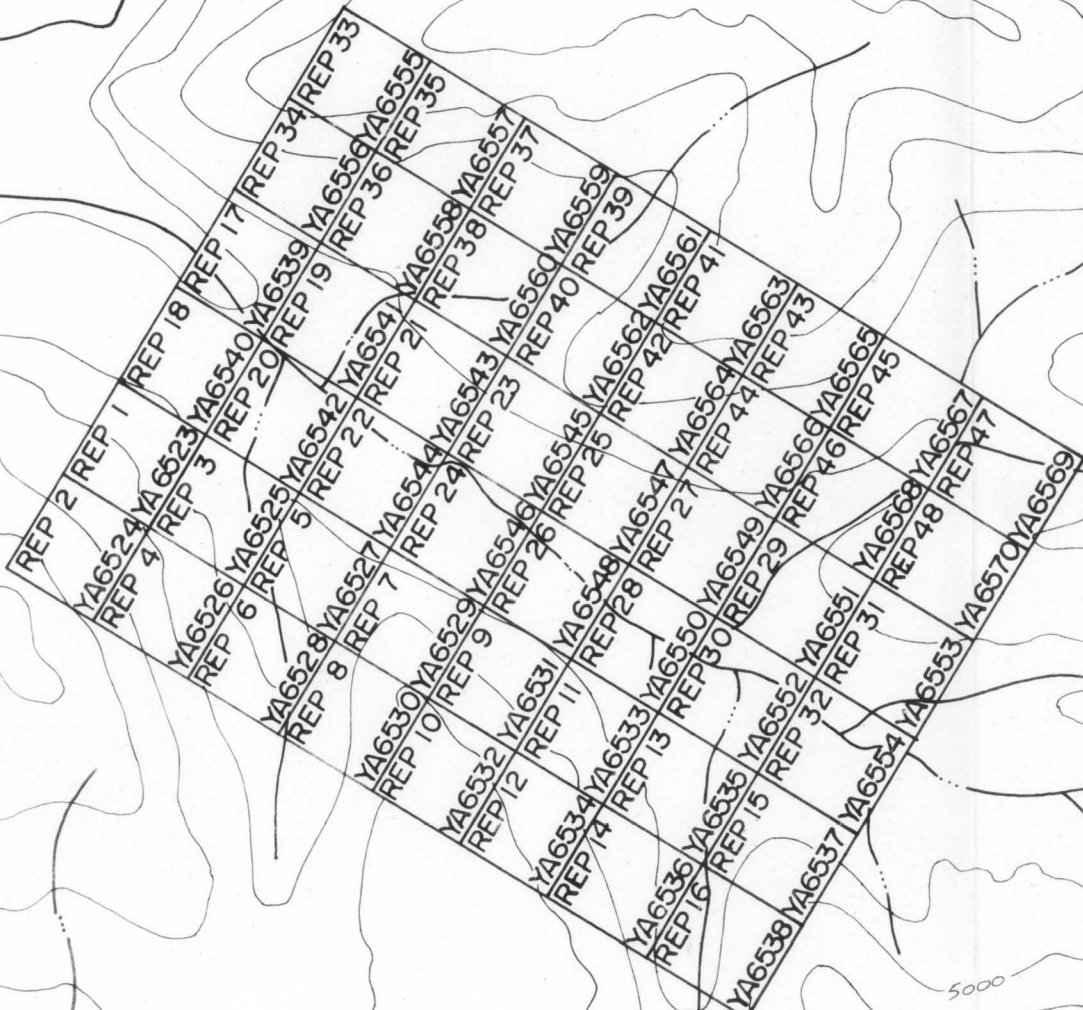
The Sekwi Formation is exposed on the face of a normal fault which forms the south wall of the main (Rep Creek) valley at the property. Cliffs of massive Franklin Mountain Formation dolomites cap the mountains to the north and south and underlie the Road River Formation in the valley floor. The Road River Formation outcrops on the dip slope of the north side of the valley and forms a syncline at the base of the normal fault to the south. Besa River shales do not outcrop on the property but are seen


64°30'N

132°00'W

Duo Lake

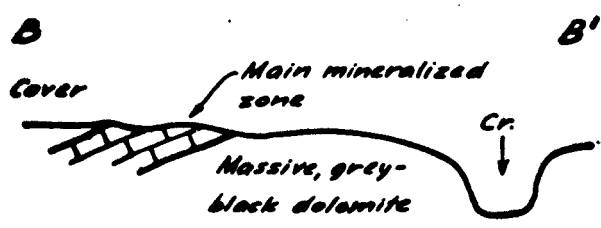
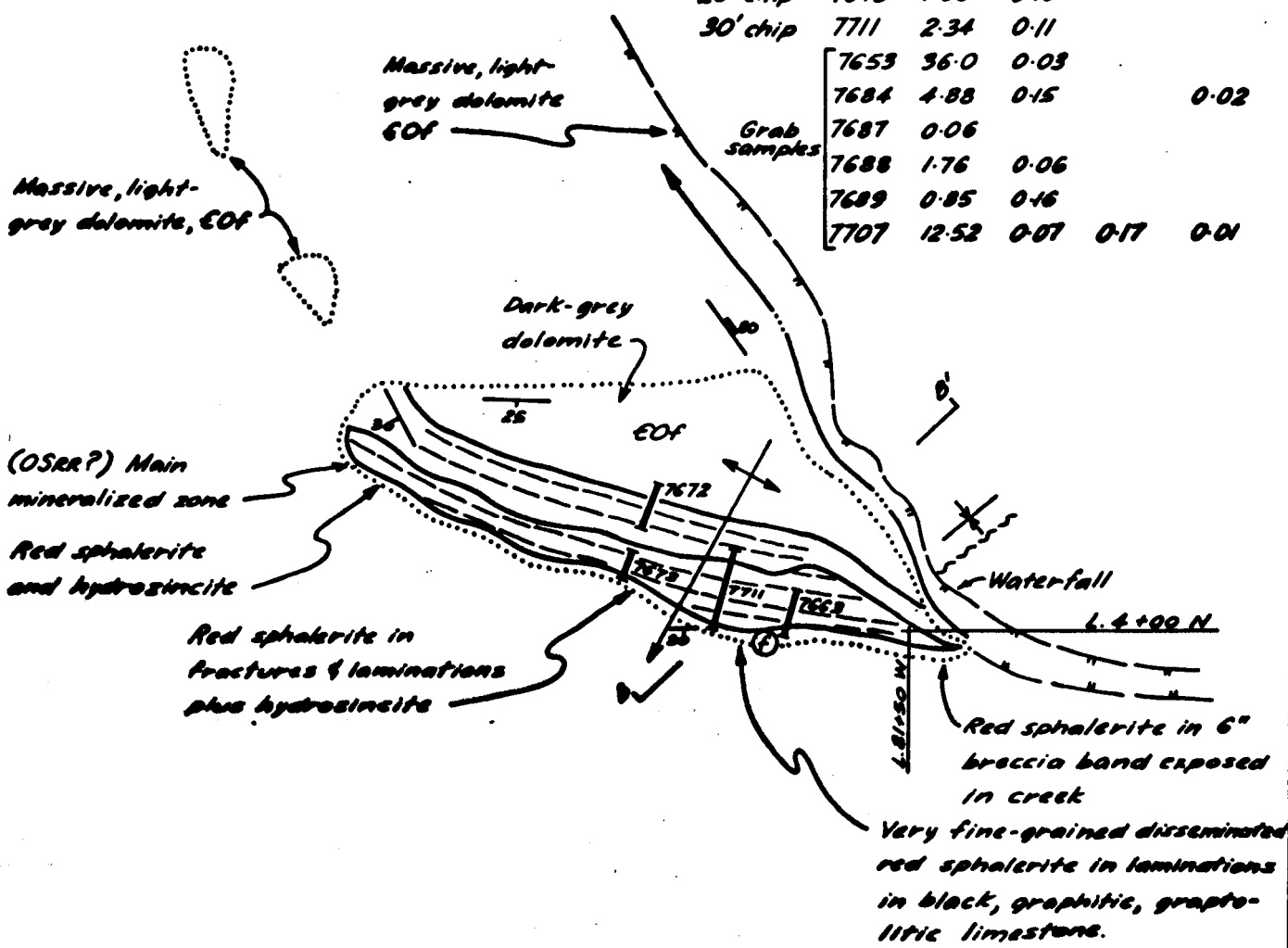
El. 7127'



 WELCOME NORTH MINES LTD.		
ARCTIC RED PROJECT		
REP 1-48 CLAIMS		
CLAIM MAP		
Scale: 1/2 mi. = 1 inch	Date: Aug. 1976	NTS/26C-8
Revised: Aug. 1977	By: M.M.A.	Fig. 2

1976 Assay Data


Sample	% Zn	% Pb	oz. Ag	% Cd
10' chip	7663	3.56	0.12	
10' chip	7672	0.37	0.01	
20' chip	7673	1.66	0.10	
30' chip	7711	2.34	0.11	
Grab samples	7653	36.0	0.03	
	7684	4.88	0.15	0.02
	7687	0.06		
	7688	1.76	0.06	
	7689	0.85	0.16	
	7707	12.52	0.07	0.01



**Section through A-Zone
View Northwest**

Legend
See figure 3



 WELCOME NORTH MINES LTD.		
ARCTIC RED PROJECT		
REP CLAIMS A-ZONE GEOLOGY		
Scale: 1" = 50'	Date: 30th 1976	NTS 105518
Revised: Aug. 1977	By: J. Crawford	Fig. 4

overlying the Road River Formation to the southeast along the southern normal fault.

MINERALIZATION

A Zone: Mineralization at the A Zone occurs where Rep Creek runs in a small canyon through the resistant dolomites of the Franklin Mountain Formation. Here, mineralization is of three types: a) sphalerite and quartz along fractures in the uppermost Franklin Mountain Formation dolomites, b) pyrite, sphalerite, galena, calcite, dolomite veins and crackle breccias, and c) red sphalerite along laminations in black shaley limestones of the Road River Formation. The mineralization in the Road River limestones is exposed over a thickness of 5 to 10 feet at the top of the outcrop and extends for about 100 feet along strike (see sketch map of A Zone, Fig 3). Graptolites were recovered from an unmineralized shaly carbonate at the top of the outcrop.

B Zone: The B Zone is located on the north side of the Rep Creek valley where the top of the Franklin Mountain Formation dolomite outcrops. Here, disseminated zinc mineralization, mainly hydrozincite, occurs associated with siliceous fracture fillings. A distinctive black chert breccia containing blocks of up to one foot in dimension lies at the top of this unit. Fragments of underlying dolomite are found in this breccia also, suggesting it may represent an unconformity. This breccia and adjacent light-grey dolomites contain honey-yellow sphalerite, locally grading to 7%, either as a breccia matrix or disseminations. Some disseminated colourless sphalerite occurs in the light-grey dolomites, particularly in a small outcrop approximately 2500 feet northeast of the A Zone. This mineralized outcrop (B Zone, west) has an associated high soil geochemical anomaly on a poorly drained bench below.

C Zone: The C Zone is found where a tributary of Rep Creek cuts through the Road River Formation below the normal fault on the southwest side of the claim block. Here, hydrozincite coats shaly bedding plane partings in

platy black limestones of the Road River Formation. Interbedded with the shaley limestones are thicker bedded carbonates which in general have no hydrozincite coatings. At the showing the incompetent limestones have been contorted into tight folds due to faulting.

Travertine: A 500-foot long travertine deposit has formed along the south side of Rep Creek about the centre of the claim block (Plate 1, L34+00W, 2+00S). The travertine readily reacts with zinc test solution but assays less than 0.5% zinc. Along the north side of Rep Creek there are two sulphurous coldsprings. Tuffa from these does not react to zinc test.

GEOCHEMICAL SURVEY

1) Method of Survey

Reconnaissance geochemistry on a 9000 foot x 4000 foot grid was conducted on the property from August 25 to September 1, 1976. This grid was extended to the north 1000 feet in 1977. Grid-controlled geochemistry utilized 400-foot line spacing with 200-foot sample sites along the line. Sample lines were compass and topofil surveyed. All samples were obtained with a prospector's grub hoe.

2) Method of Analysis

Samples were analyzed by Bondar-Clegg & Company Ltd. of Whitehorse, Yukon Territory, and by Acme Analytical Labs Ltd. of Ross River, Yukon Territory. Samples received were dried, screened to -80 mesh, weighed out to 0.5 grams and digested in hot aqua regia. They were then diluted, clarified for 20 hours and tested for lead and zinc by atomic absorption spectrophotometer.

Accuracy of the instrument ideally is 1 percent of the amount of metal present. Individual cathode lamps are used for each element determined and a direct readout in parts per million is given.

3) Treatment of Data

All results of the geochemical soil samples were treated statistically to determine background-threshold-anomalous values (Sinclair, 1975). Values are presented on Plate 1. Values are colour coded on the maps to aid in distinguishing anomalous areas.

4) Interpretation of Results

1976 geochemical soil sampling revealed several zones of anomalous zinc values. The mineralized travertine is well outlined with high values ranging from 4,300 to 14,000 ppm zinc. Anomalous values are also associated with known mineralization along the contact between Franklin Mountain Formation and Road River Formation.

On the east side of the grid there is an anomaly associated with hydrozincite-coated limestones of the Road River. The small outcrop exposed in the creek bank at the east end of a knoll was sampled but assays returned less than 0.2% zinc in all cases. The elliptical outline of this anomaly suggests that the same horizon subcrops around the topographic high.

It was interesting to note that grid sites resampled in 1977 gave lower zinc values. This can be explained by seasonal variation in groundwater movement and known as spring and fall flushing. The 1976 samples were taken in the late summer when the active layer was thawed and metal ions had been accumulating in the soil throughout the dry season. The 1977 samples were taken in the spring when high snow melt runoff was leaching the soil of metal ions which had accumulated during the winter. (Levinson, Exploration Geochemistry, page 420.)

The northeastern quadrant of the REP soil geochemistry grid illustrates the effect of vegetation on metal content of the soils. Samples taken from moss and grass covered talus slopes were in general, higher than those taken from areas of dense willow growth lower in the valley.

TABLE 1
1977 ASSAY DATA, REP CLAIMS

<u>SAMPLE NO.</u>	<u>SHOWING</u>	<u>TYPE</u>	<u>COMMENTS</u>	<u>% Zn</u>
1		5' vert. chip	0+00W 0+80N	0.10
2		1-1/2' vert. chip	0+00W 0+80N	0.13
3		5' vert. chip	33+50W 0+50N	0.03
17		Grab	brown-weathering band (33+50W 0+50N)	0.04
18		Grab	brown-weathering band (33+50W 0+50N)	0.03
19		Grab	differential weathering (33+50W 0+50N)	0.07
20		Grab	brown-weathering band (33+50W 0+50N)	0.07
21		Grab	brown-weathering band (33+50W 0+50N)	0.06
4		5' vert. chip	down creek from Post 1, REP 48	0.08
5		Grab	Travertine near Post 1, REP 31	0.01
6	B-Zone	10' vert. chip	west end outcrop	0.39
7	B-Zone	8' vert. chip	middle outcrop	0.16
8	B-Zone	5' vert. chip	east end outcrop	0.04
9	B-Zone	Grab	high-grade, east end	7.20
10	B-Zone	Grab	float, chert breccia	1.03
11	B-Zone	Grab	high-grade chert breccia	4.64
12	B-Zone W.	3' vert. chip	60+00W 18+00N	0.68
13	B-Zone W.	4' chip	60+00W 18+00N	1.12
15	B-Zone W.	Grab	disseminated honey sphalerite	0.36
14	B-Zone	Grab	chert breccia, south of Post 1, REP 37	0.24
16	B-Zone	Grab	light-grey dolomite, south of Post 1, REP 37	0.42
22	C-Zone	5' vert. chip	hydrozincite	0.10
23	C-Zone	5' vert. chip	hydrozincite	0.07
24	C-Zone	6' vert. chip	hydrozincite	0.08
25	C-Zone	15' vert. chip	hydrozincite	0.03
26	C-Zone	Grab	hydrozincite on black calcareous shale	0.08

CONCLUSIONS

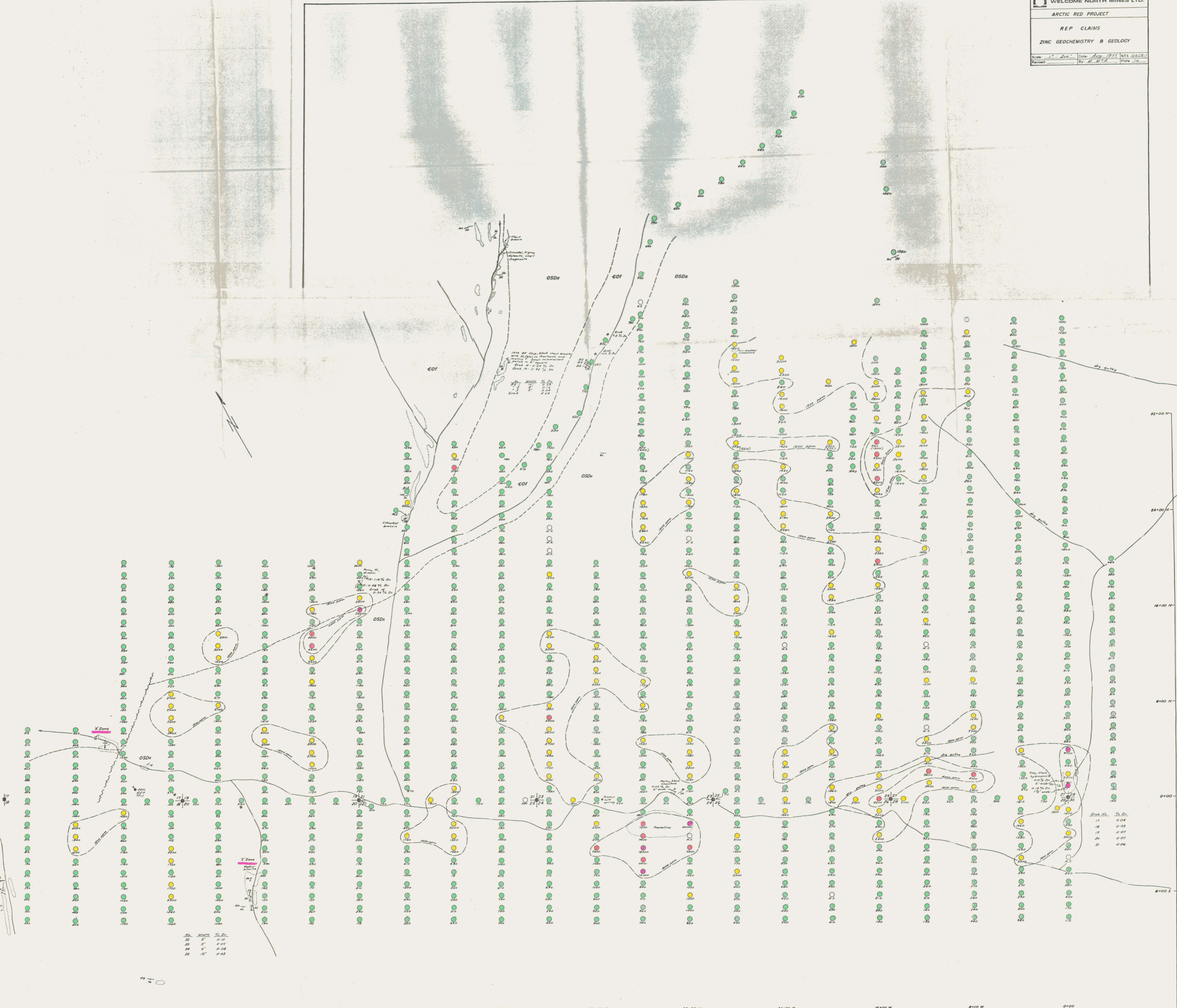
Sphalerite mineralization on the REP property occurs near the contact of Upper Cambrian to Lower Ordovician (€Of) Franklin Mountain Formation and younger Road River Formation (OSDr) carbonates, where it appears to favour black chert breccia. The mineralization is sparsely disseminated in the underlying €Of (Franklin Mountain Formation) dolomite except where honey-yellow sphalerite is disseminated in the matrix of the black chert breccia, which breccia may represent an unconformity. In the Road River Formation red sphalerite is the predominant type of mineralization. The sphalerite occurs in cross-fracture breccias and along bedding plane laminations in black, platy limestones. Hydrozincite occurs on bedding plane partings higher in the section.

Bedding in diamond drill hole REP 77-1 was unexpectedly steep and the contact between formations was consequently not intersected. This could be a result of simply folding or faulting associated with vertical movement along the breccia zone exposed in the creek at the A-Zone.

RECOMMENDATIONS

No further work is recommended.

Martha L. McArthur
Gerald F. McArthur



Sp.	Mg/Zn	Zn/Zn
22	0.00	0.00
23	0.07	0.07
24	0.08	0.08
25	0.08	0.08

Sp. No.	Zn
17	0.04
18	0.03
19	0.07
20	0.01
21	0.04

LEGEND

- Franklin Mn. Fm.
COF Light grey, medium crystalline dolomite
- Road River Fm.
OSDx Paley limestone, blue graphitic dolomite
- Biologic contact approx.
- Creek
- Outcrop
- Flow assurance
- Reading indicated
- Anticline
- Claim post
- Soil sample site with ppm
- Center of magnetic zone
- Clip sample site

Color	Zn ppm
Green	< 4000
Yellow	4000 - 10000
Orange	10000 - 20000
Red	20000 - 30000
Purple	> 30000