



SUNSET MINING CORPORATION LTD. (N.P.L.).

Report on the

A1 - Fargo - Kirk Claims

105-K-3

Whitehorse M.D., Y.T.

by

P.H. Sevensma, Ph.D., P.Eng.

February 21, 1969.

This report has been examined by  
the Geological Evaluation Unit.  
Approved as to technical worth by:  
*D. B. Craig*  
RESIDENT GEOLOGIST  
Approved as to cost in the amount  
of \$ 2000.00  
*R. J. Walker*  
INSPECTOR  
Approved as to representation work  
under Section 33(4) of the  
Mining Act.  
*W. J. [Signature]*  
COMMISSIONER OF THE M.T.A.



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- Fig. 1 - Claim location map                    1" =  $\frac{1}{2}$  mile
- Fig. 2 - Geochemical Survey                    1" =  $\frac{1}{2}$  mile
- Fig. 3 - Detailed Geochemical Survey       1" = 50'

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1. INTRODUCTION

The writer examined the A1 - Fargo - Kirk Group on October 6, 1966, on behalf of a potential buyer and recommended at that time a geochemical survey.

In 1967, Munster Mines Ltd., held the claims and conducted a reconnaissance geochemical survey, subsequently interpreted and reported upon by Ace R. Parker and Associates on maps dated September 9, 1967.

During 1968, some additional soil sampling was done in the vicinity of the showing by Mr. Mike Early, co-owner of the property.

Early in January, 1969, an aeromagnetic map on a scale of 1" = 1 mile, covering the map sheet on which these claims are located, was published by the Geological Survey of Canada as geophysics paper 4362, Buttle Creek, 105-K-3.

The writer has been requested to review the available data to determine whether further exploration of these claims is warranted.

## 2. PROPERTY

The property consists of the following forty contiguous claims:

<u>Claims</u>	<u>Grant No.</u>	<u>Expiry Date</u>
Al 1-16 incl.	Y24678-24693	May 16, 1969.
Fargo 1-16 incl.	Y24694-24709	May 16, 1969.
Kirk 1-8 incl.	Y24847-24854	May 29, 1969.

The group lies at about Lat. 62° 03' W., between elevations of 3,900' and 5,600', on claim sheet 105-K-3.

At the time of the writer's examination, several of the claim posts were observed in approximately the locations shown on the claim map, and it is assumed that when restaked, the same locations have been used.

At the time of writing, the writer had not investigated the official documents pertaining to the registered ownership of the claims.

## 3. ACCESS, CLIMATE

The claims are easily accessible from the new Ross River - Carmacks gravel highway and only require an eight mile tote-road for access by truck.

Their location is about 22 airmiles WNW of Ross River and about 22 airmiles SSE of the large open pit lead-zinc deposit of Anvil Mining Corporation.

The area is one of relatively light snowfall. Water and timber are plentiful near the main Tintina Valley, which lies at an elevation of about 2,200'.

#### 4. GEOLOGY

Recent detailed studies of the Anvil - Vangorda area have led to a re-evaluation of the age of the wallrocks of these major deposits, which are now considered to belong to the Lower Cambrian [Tempelman Kluit, paper 68-1A, pp 43-52, G.S.C., 1968].

Previously, the above formations had been alternatively assigned to the Precambrian and later to the Devonian Mississippian.

This new concept, based on fossil evidence, is of considerable importance, as it re-emphasizes the importance of the Cambrian, and especially of its lower members.

The Lower Cambrian throughout B.C. and the Yukon is the host rock of the majority of the significant lead-zinc deposits, important exceptions being the Precambrian Aldridge formation in the East Kootenay and the Triassic-Jurassic host rocks of the Keno Hill area.

Recognition of the Cambrian age of the Vangorda host rocks indicates the excellent potential of the phyllites of this age in the Central Yukon and a re-evaluation of many lead-zinc showings in this environment is now justified.

The Al-Fargo - Kirk showings lie in Cambrian phyllites very similar to those containing the Vangorda - Anvil deposits, and are situated at about the same distance South of a granodiorite intrusive as the latter.

The geological environment is thus favorable and on general principle these showings warrant investigation.

On the property, the host rocks consist of dark grey biotitic phyllites and quartzites and light grey to creamish carbonate-sericite

schists. To the NE, the sequence is more gneissic, and granodiorite occurs about 3,000' North of the NE corner of Fargo 3 claim.

Strikes of the formations are about E-W with steep North and South dips, but shallow dips have been reported by third parties in the West part of the claims.

References:-

- G.S.C. - Map 13-1961, sheet 105 K, 1961.
- P.H. Sevensma - Examination report Kirk Group, October 25, 1966.
- Ace R. Parker - Geochemical maps, 1" = 400', September 9, 1967.
- C.L. Smith - Examination of Kirk Group, August 17, 1968.
- M. Early - Detailed soil survey for lead, September, 1968.
- Ace R. Parker - Report on the Al-Fargo - Kirk Group, November 3, 1968.
- G.S.C. - Geophysics paper 4362, January, 1969.

5. SHOWINGS

The showings lie in a 30' - 50' wide draw striking about N 75° W in a shallow pass area between the two rounded summits indicated on the claim map. Three shallow pits within an area about 800' long exhibit galena-sphalerite mineralization with some quartz and calcite and without any pyrite or pyrrhotite, in narrow bands from 1" - 6" wide in the schists. Mineralization was noted over a stratigraphic width of about 30'.

The draw is overburden covered and the exposures are poor; the full width of the mineralized zone is nowhere exposed. At the far East end, a 2' zone is relatively well exposed. A representative sample taken by the writer at this location [sample no. 8098, report 3387-2

by Whitehorse Assay Office, dated October 15, 1966] assayed:

<u>Width</u>	<u>oz/t. Ag.</u>	<u>% Pb.</u>	<u>% Zn.</u>	<u>% Cu.</u>
2'	1.16	4.2	6.0	tr.

Two character samples of unknown width reported by Ace R. Parker assayed as follows [report by A.R. Parker, November 3, 1968]:

<u>No.</u>	<u>oz/t. Au.</u>	<u>oz/t. Ag.</u>	<u>% Pb.</u>	<u>% Zn.</u>	<u>% Cu.</u>
4023	.005	2.06	7.8	5.4	.1
4024	.005	6.04	18.3	19.2	.1
Average	.005	4.05	13.0	12.3	.1

Samples taken by Dr. C. Smith in August, 1968 assayed as follows:

<u>No.</u>	<u>Width</u>	<u>oz/t. Ag.</u>	<u>% Pb.</u>	
Kirk #1	4" - 6"	7.88	27.8	
Kirk #2	6" out of 30'	4.44	18.3	Main zone.
Kirk #3	?	6.28*	47.1	Galena & hematite.

\* = Unusually low silver-lead ratio.

The silver to lead ratio of around 0.3 is normal and comparable to the Anvil - Vangorda ratio.

The showings occur in different beds over a total stratigraphic width of at least 30'.

The grade of the writer's sample is a commercial grade if found in a large body. As narrower zones of higher grade are present, and as the total length of visible mineralization is about 800', with a suggested width of about 30', this prospect could be indicative of one or more nearby larger bodies of a commercial grade of the order of 10% - 15% Pb. and Zn.

Whether the zone is a true stratabound deposit or rather a bedding-vein type fracture-zone is not clear from the existing exposures.

In the writer's opinion, a reconnaissance soil survey appeared of interest at the time of his examination, and a survey of this type was carried out by Munster Mines Ltd. during 1967, supplemented in 1968 by a detailed survey by Mr. Early across the mineralized draw.

#### 6. GEOCHEMICAL RESULTS

The results of the soil sampling survey are of interest, even if the survey has been conducted by one of the owners of the property.

As the results correlate well with the structural data that may be inferred from the aeromagnetic survey published in January 1969, the writer believes that the soil-sampling data may be accepted with a reasonable degree of confidence.

The maps as compiled and interpreted by Ace R. Parker & Associates on a scale of 1" = 400' and issued on September 9, 1967, have been condensed by the writer into 1" =  $\frac{1}{2}$  mile summary maps, which may be compared to the topographical claim map on the same scale (fig. 1 & 2).

The samples were taken at a spacing of about 500' on lines mostly 400' apart, but with an unsampled area about 1,400' wide along the creek and the small lake on the SE part of the claims.

In the NW part of the claims, three of the lines are spaced at 200' and the sample spacing is also 200'.



The sample locations are shown only in relation to claim posts, but not in relation to permanent topographical markers. Values selected as threshold values are 50 p.p.m. for lead and 150 p.p.m. Zn. Background values are about 25 p.p.m. Pb. and 80 p.p.m. Zn.

The samples were assayed for silver as well, but the pattern of the Ag. values does not appear significant, as they all vary only from 0.5 to 2.0 p.p.m. Ag., except for one value of 2.5 p.p.m.

#### Metal Distribution

An anomalous area overlies the showing area but a stronger and more continuous anomaly in both Pb. and Zn. lies to the South, where lead exceeding 200 p.p.m. occurs over a length of 1,200' and zinc exceeding 900 p.p.m., with several values of 2,000 p.p.m. follows a curved zone some 2,800' long.

This zone shows a good build up and lies on a well drained SE slope.

The lower slopes do not show any effect of seepage and the anomalies undoubtedly reflect the presence of an unusual lead and zinc content of the immediately underlying formations.

Compared to the anomalies overlying the showing area, visible lead and zinc in place may well be present in significant amounts, as the values in both areas are of the same magnitude, but more extensive and continuous than near the showings.

In addition, this pattern is conformable to the aeromagnetic trend which suggests a broad formational fold in the area of the anomaly.

As there is neither pyrrhotite nor magnetite associated with the known showings, there is no evidence of any magnetic high;

the anomalous area appears instead to be more or less wrapped around a weak magnetic low.

Some isolated high values are scattered across the claims, indicating either some disintegrated float or, more likely, a local occurrence of lead-zinc in place.

As the hills are rounded and covered with disintegrated phyllites and a thin grassy cover, bulldozer stripping both in the showing area and in the area of the larger anomaly is expected to provide better and more reliable geological-mineralogical information than any other method.

The detailed soil sampling for lead conducted by Mr. M. Early along the N 75° W draw containing the showings is quite revealing of the values to be expected in the immediate surrounding of a mineralized zone (figure 3), where in general values of over 1,000 p.p.m. Pb. and up to 15,000 p.p.m. Pb. are normal.

It is noteworthy that the reconnaissance survey at relatively wide spacing failed to pick up values of this type, but did show a definite area of highs.

The detailed survey suggests that the 30' - 50' wide depression could be mineralized over most of its width and its full length and should be investigated by stripping and at least some drilling, especially at the West end.

## 7. RECOMMENDED PROGRAM

Construction of an eight-mile initially rough tote-road to the property is recommended, followed by bulldozer stripping in the anomalous areas.

This work should be started as early as possible in the period March - April and should not present undue problems on the Southerly slopes. Waterponds should be prepared at that time and a first phase of drilling should assess both anomalous areas with an estimated total of six holes each about 250' long, for a total of 1,500'.

This first phase of drilling, which may have to be preceded by some shallow electromagnetic work of the horizontal loop type, should permit pinpointing the best drill target for follow-up drilling.

Our estimate of minimum drilling requirement for the second phase is that the total indicated length of  $800' + 2,800' = 3,600'$  will warrant drilling at least over one third of its total length, i.e. 1,200'.

On the two target areas, this would require drilling on a total of five sections spaced at 400' with one  $-45^{\circ}$  hole 200' long and one  $-70^{\circ}$  hole 400' long on each section, i.e. a total of 3,000'.

Completion of this first stage of drilling will indicate whether expanded drilling is justified in a later second stage.

An allowance for IP work is provided for, as the first phase of stripping and drilling of 1,500' may indicate the necessity for work of this type before the second phase of drilling 3,000' is started.

While the first phase drilling is in progress, the tote-road can be improved from the top down and supplies moved in for the next phase of drilling.

It is normal to expect that the road will be partially unserviceable during break-up from about May 15th to the end of June and only an early start and proper location of the road will enable

completion of the first stage before break-up.

Success in the recommended program could lead to a much expanded program in the later part of the summer.

It is strongly recommended to prepare a topographical map on a scale of 1" = 1,000' of a 10 square mile area centered on the claims well ahead of the start of any work, as these maps always lead to considerable savings in subsequent field work.

Some additional soil sampling is also recommended on closer spacing near isolated highs.

#### 8. ESTIMATED COSTS

##### Stage 1, firm

##### Phase 1.

1. Topo map, 1" = 1,000', 10 sq. miles	\$1,000.00
2. Tote road, 8 miles @ \$1,250.00	10,000.00
3. Stripping, 100 hours @ \$40.00	4,000.00
4. Mapping, sampling, 1½ man/month	1,500.00
5. Camp installation, operation	2,500.00
6. Transportation, 4 wheel drive	2,500.00
7. EM, shallow, 10 line miles	2,000.00
8. 250 soil samples @ \$6.00	1,500.00
9. Assaying	1,000.00
10. Miscellaneous freight	1,000.00
11. 1,500' drilling, BQ, \$16.00 overall	<u>24,000.00</u>

\$51,000.00

Phase 2.

1. Road improvements, \$750.00 per mile	\$ 6,000.00
2. IP, 20 line miles @ \$300.00	6,000.00
3. 3,000' drilling @ \$15.00	<u>45,000.00</u>
	<u>\$57,000.00</u>

Phase 1 & 2.

Engineering & Supervision, 12½%	\$13,500.00
Contingencies, 15%	16,000.00
Overhead, administration, 10%	<u>14,000.00</u>
	<u>\$43,500.00</u>
Total estimated budget	<u>\$151,500.00</u>

Stage 2, contingent

No cost estimate can be made at this time.

9. SUMMARY and RECOMMENDATIONS

The A1 - Kirk - Fargo claims cover a lead-zinc showing intermittently and poorly exposed over a length of 800'. Commercial grades are present over sub-commercial widths, but total width of the zone is of the order of 30'.

Reconnaissance soil sampling has indicated one anomalous area significantly larger than the one overlying the showing area and of the same intensity, with peak values of about 3,000 p.p.m. Zn. and 370 p.p.m. Pb.

The showings lie about 1 mile South of a granodiorite intrusive in a Cambrian phyllite host rock, comparable to, and possibly the equivalent of, the Anvil - Vangorda host rocks.

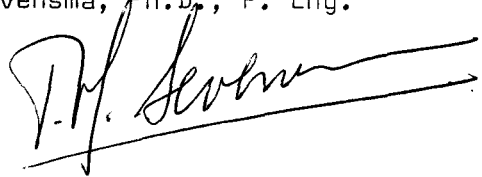
CERTIFICATE

I, PIETER H. SEVENSMA, of 908, 1280 Haro Street, in the City of Vancouver, in the Province of British Columbia, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist with a business address at 715-850 West Hastings Street, in the City of Vancouver, in the Province of British Columbia.
2. THAT I am a graduate of the University of Geneva, Switzerland [Physics and Chemistry, 1937; Geology and Mineralogy, 1937] where I obtained my Ph.D. in Geological and Mineralogical Sciences in 1941.
3. THAT I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers of the Province of British Columbia and of the Association of Professional Engineers of Yukon Territory.
4. THAT I have practiced my profession as a geologist for the past 30 years.
5. THAT the information contained in my report on the Al - Fargo - Kirk claims of Sunset Mining Corporation Ltd. (N.P.L.) is based on a personal examination of the showings on October 6, 1966 and on a study of the documents pertaining to all work carried out on the property since that date.
6. THAT I have no direct or indirect interest in any of the securities or properties of Sunset Mining Corporation Ltd. (N.P.L.), nor do I expect to receive or acquire any.

Dated this 21st day of February, 1969.

P.H. Sevensma, Ph.D., P. Eng.

A handwritten signature in black ink, appearing to read "P.H. Sevensma", written over a horizontal line.

Silver-lead ratios of about 0.3 are considered normal and are of the order of magnitudes prevailing in stratabound bodies.

Recent aeromagnetic maps show a close correlation between the shape of the 2,800' long main geochemical anomaly and folding suggested by the isomagnetic contours.

This combination of favorable factors warrants further investigation of these claims, and a budget of \$151,500.00 is recommended.

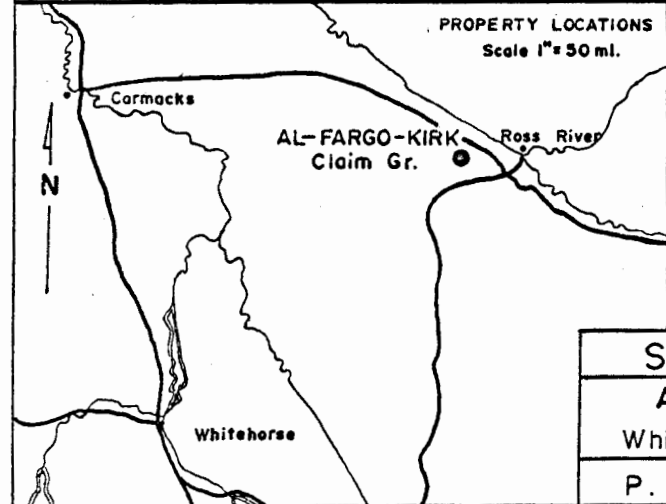
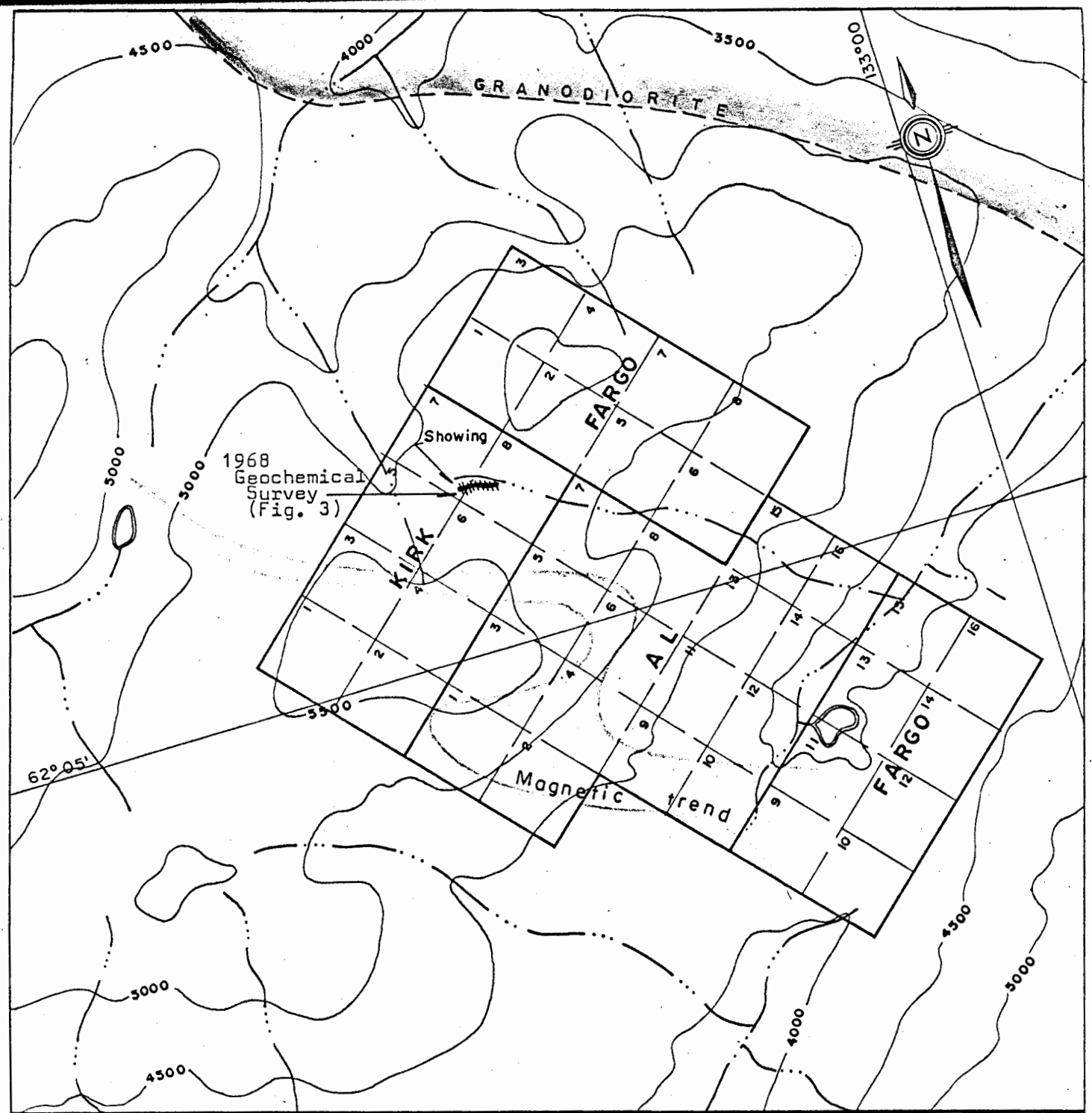
Respectfully submitted,

A handwritten signature in black ink, appearing to read 'P.H. Sevensma', with a horizontal line extending to the right from the end of the signature.

P.H. Sevensma, Ph.D., P. Eng.

Vancouver, B.C.

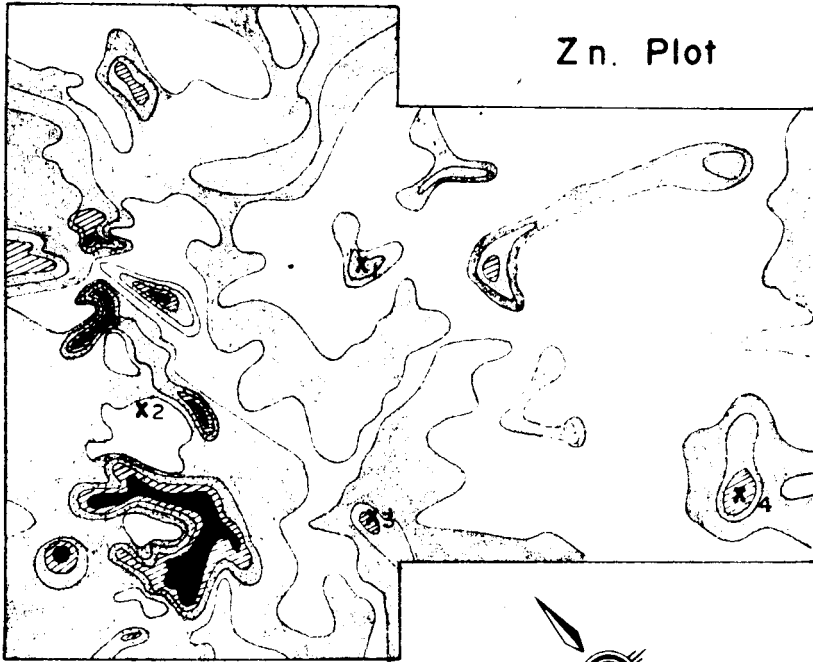
February 21, 1969.



SUNSET MINING CORP. LTD. (N.P.L.)	
AL-FARGO-KIRK	CLAIM LOCATION MAP
Whitehorse M.D.-Y.T.	105-K-3
P. H. Sevensma Consultants Ltd. Vancouver, B.C.	
Dwg. No.:	Fig. 1
Jan. 1969	Scale: 0 1/2 mile



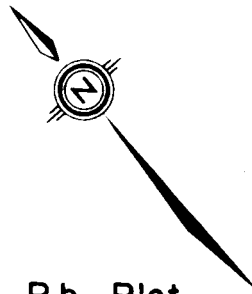
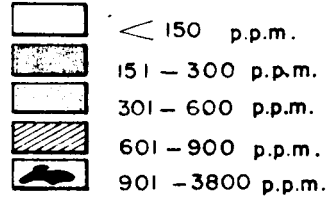
### Zn. Plot



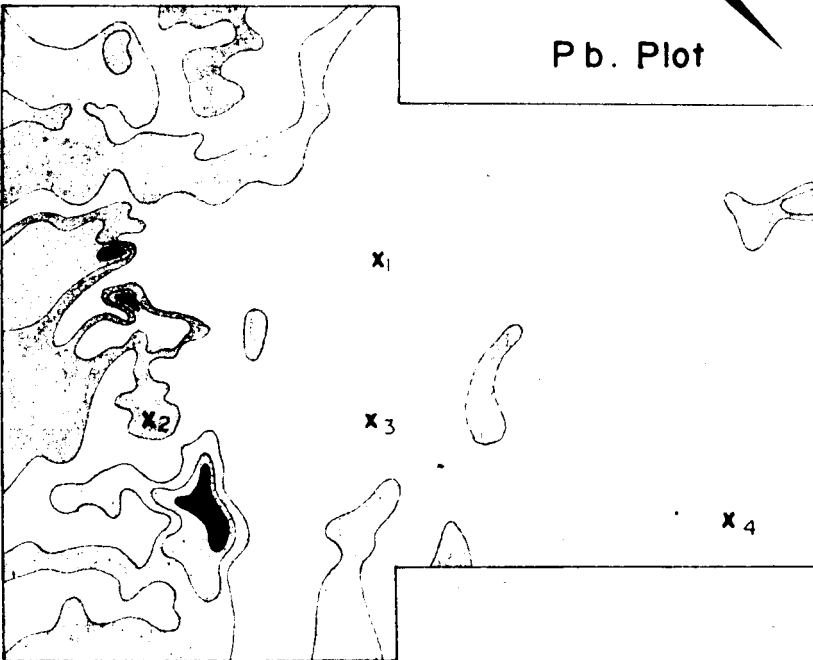
#### L E G E N D

Isolated values - Zinc

- X 1 12000 p.p.m.
- X 2 1800 p.p.m.
- X 3 800 p.p.m.
- X 4 10200 p.p.m.



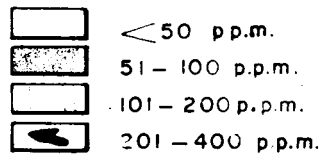
### Pb. Plot



#### L E G E N D

Isolated values - Lead

- X 1 2300 p.p.m.
- X 2 512 p.p.m.
- X 3 370 p.p.m.
- X 4 340 p.p.m.



Munster Mines Ltd. Geochemical Survey, Summer 1967  
 Generalization of compilation maps of Ace R. Parker, Sept. 9, 1967

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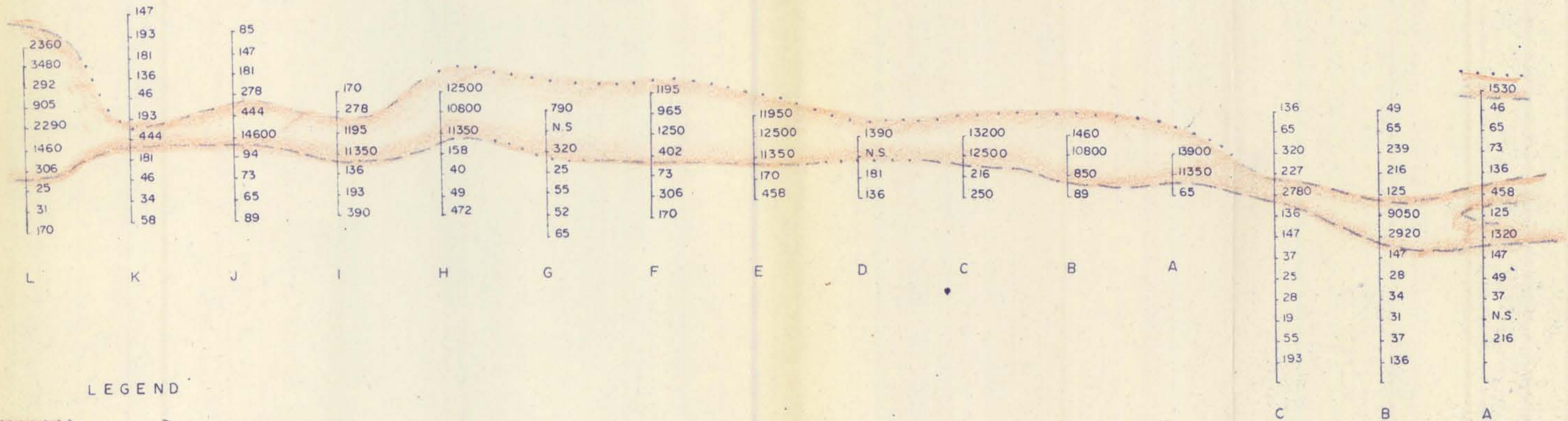
AL — FARGO — KIRK Soil Survey  
 Whitehorse M.D.—Y.T. 105-K-3

P. H. Sevensma Consultants Ltd. Vancouver, B.C.

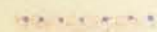



# ZONE 1. (A-L)

# ZONE 2. (A-C)



### LEGEND

 Defined  
 Assumed

Area of 300 to 15,000 pp.m. Pb

*P. H. Sevensma*

Pb. plot

Samples taken by owners, September 1968.  
 Assays by Barringer Research Ltd.  
 Report No. 81A Date, October 10, 1968.

SUNSET MINING CORP. LTD. (N.P.L.)	
AL - FARGO - KIRK detailed geochem.	
Whitehorse M.D.-Y.T.	105-K-3
P. H. Sevensma Consultants Ltd. Vancouver, B.C.	
Dwg. No.:	Fig: 3
Jan. 1969,	Scale: 0 50'