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GEOLOGICAL REPORT

EASTERN 7 CLAIM BLOCK THUNDERWOOD PROJECT HEARST TWP, ONTARIO

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Submitted by:

LAC Minerals Ltd. Chris Pegg (3./777 December, 1990



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GEOLOGICAL REPORT - EASTERN 7 CLAIM BLOCK

THUNDERWOOD PROJECT

INTRODUCTION

During the period from September 15 to October 18, 1990, a geological mapping program was completed over seven (7) of the unpatented claims of the larger Thunderwood (Martin-Bird) property group. This package of claims is significant in that it may host the, as yet undiscovered, extension of the Martin-Bird gold-bearing zone.

LOCATION AND ACCESS

The Thunderwood property is located in central Hearst township, District of Temiskaming, in the Larder Lake Mining Division (Figures 1-3). It lies immediately adjacent to the southeast shore of the Southwest Arm of Larder Lake.

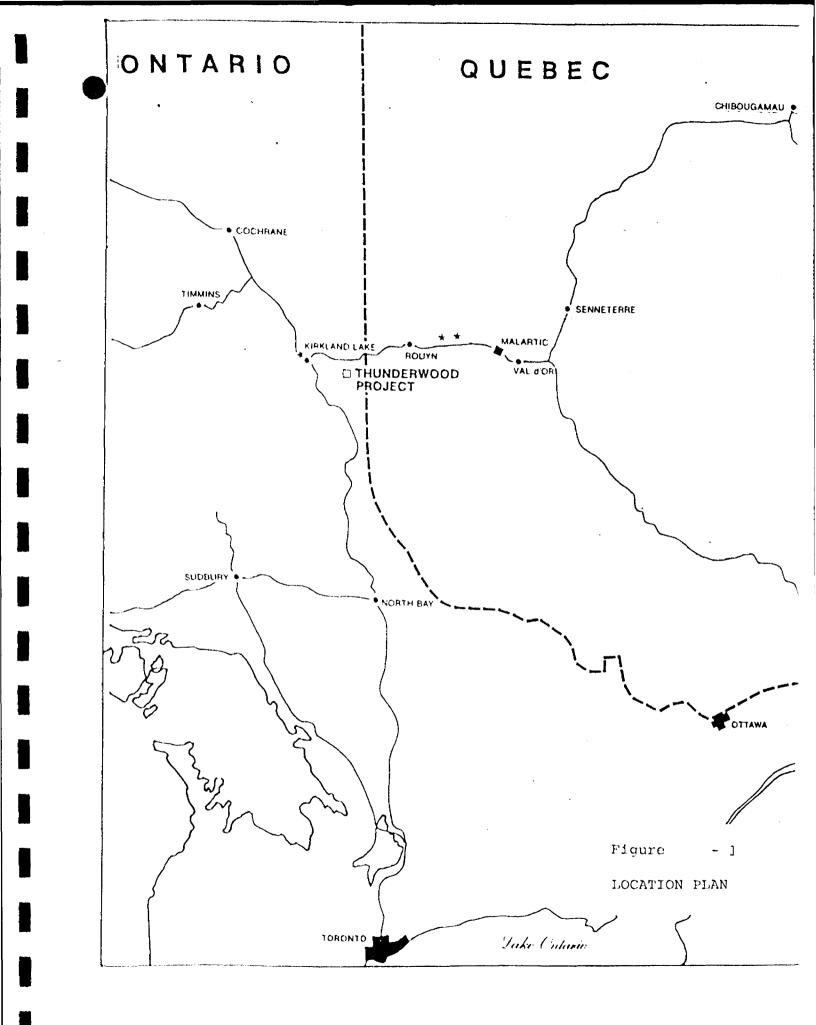
The property can be reached via a forty minute drive from the Town of Kirkland Lake. Highways 66 East and 624 South lead to the Martin-Bird mine access road which is located approximately three miles south of the town of Larder Lake. Then, from the former mine site, trails and baselines provide access to the eastern grid area.

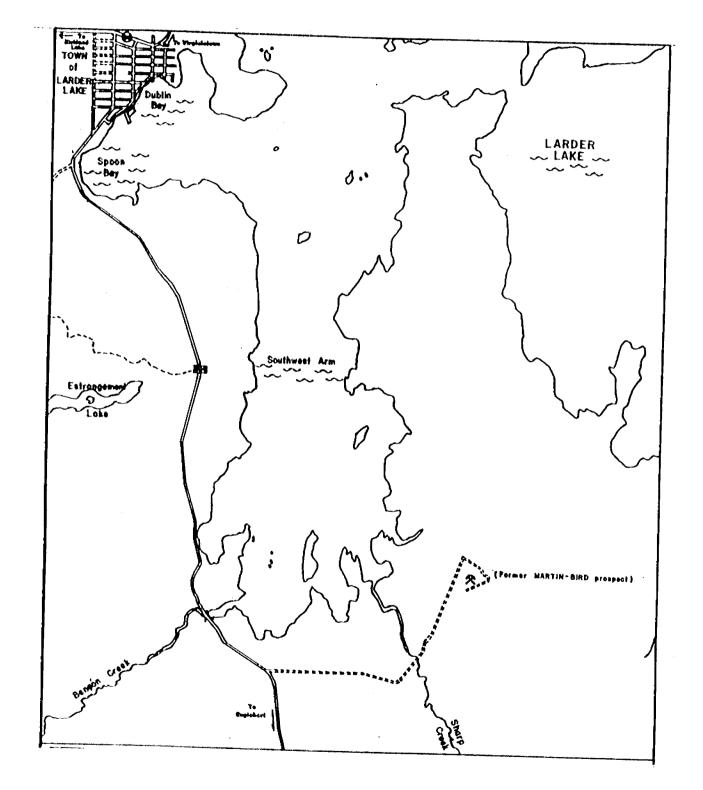
PROPERTY DESCRIPTION

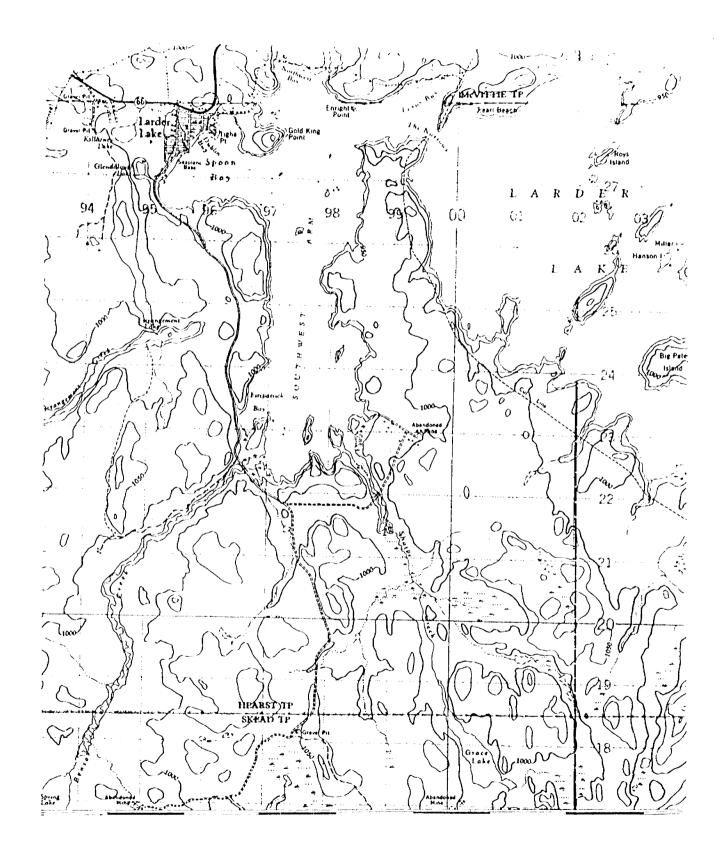
The claim group consists of seven contiguous unpatented claims listed as follows:

They were staked and recorded in March of 1987.

For the current program of geological mapping the original baseline and crosslines were re-established to provide continuity with previous surveys. The baseline is oriented at 050° azimuth with crosslines at 400 foot centres. The surrounding lease and







patent lines and pin positions provide fairly rigorous controls for data positioning.

The northern and southern portions of the claim ground were logged during the late 1980's (see Plan Kthu 2).

PREVIOUS EXPLORATION WORK

Numerous old claim posts and the presence of historical pits and trenches are all signs of former exploration on the claims.

Quinn-Hearst property interests once held claims L.25024 through to L.25027 and L.25061. These claims still exist today, however, only as surface rights patents. They were probably active during the late twenties and the 1930's, although little is known of the work that was done.

Velvet Larder ML held patented claims L.25084, 25083, and 40982, among others. These claims were probably active during the 1930's and 1940's.

It is likely that the Martin-Bird Gold Mining interests also performed some work on the claims, most likely some of the old trenching.

In 1973, Kerr Addison Mines Ltd. performed a geological survey on the claims.

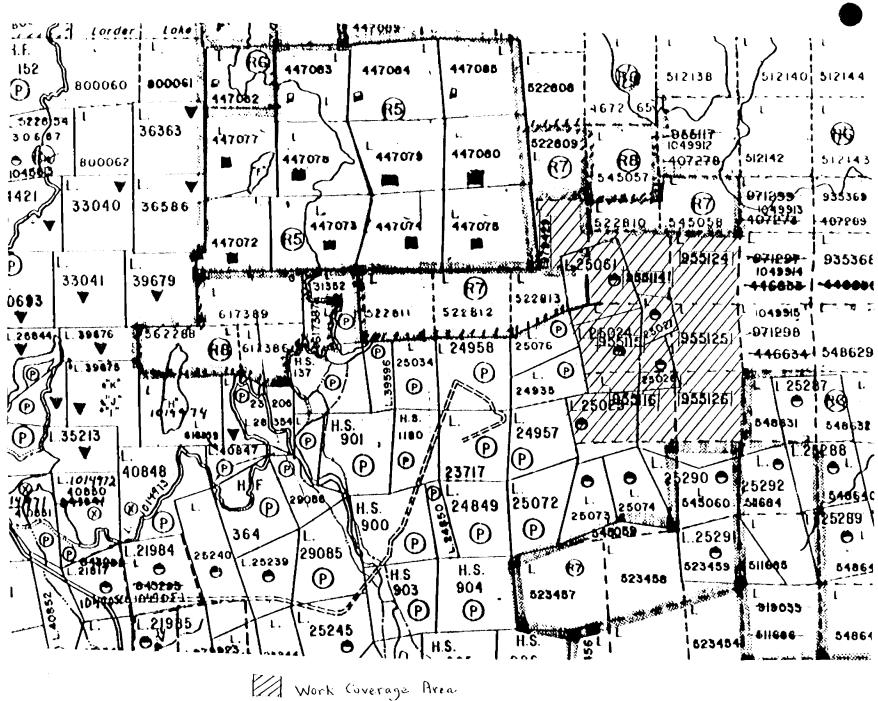
In 1980, Thunderwood Explorations Ltd. drilled one exploration hole (TS-80-Ex 2) for a total of 394 feet.

During the early 1980's, Long LAC Mineral Exploration Ltd. (LAC Minerals Ltd.) were active on the claim group performing ground geophysics, overburden stripping, humus geochemistry and diamond drilling (8 holes totalling 3655 feet).

REGIONAL GEOLOGY

The Thunderwood property is underlain by rocks of the Larder Lake Group. These consist largely of komatiitic flows and flow top breccias, high magnesium basalts, turbiditic sediments and related intrusives. Younger lamprophyre dyke swarms are seen locally. Structurally, the geological setting is highly complex having undergone at least two periods of folding. The claim group lies within a major NNW trending syncline that has been over printed by a more northeasterly trending series of crossfolds.

This NNW trending syncline forms the peninsula separating the SW Arm and the main body of Larder Lake and is flanked by faults of Temiskaming Rift Valley trend. The youngest rocks observed in



the area are Huronian in age and are seen adjacent to the Thunderwood ground, preserved as outliers within Temiskaming Rift Valley fault graben blocks.

A strongly defined schistosity at a 055° trend, probably related to the second period of folding, is, in places, highly evident. Lamprophyre dykes appear to have intruded preferentially in this direction.

The Quartz vein lodes at the Martin-Bird mine occur in this direction of schistosity and gold values are best developed where they intersect flectures in lean magnetite iron formation.

PROPERTY GEOLOGY

The seven claims were mapped at a scale of 1"=200 feet. Chris Burk of London, Ontario, mapped the western portion of the claim group, while Chris Pegg mapped the eastern half.

A. Lithologies

The project area is underlain by rocks of the Larder Lake Group. These are typically sequences of ultramafic to mafic flows and flowtop breccias interlayered with turbiditic greywacke assemblages. They are described more fully below:

i) Sediments

The sedimentary rocks represent the predominant rock type on the property. They consist largely of siltstones, mudstones, grits and argillites with minor chert and interflow sediments. Graphitic and carbonaceous sediments occur in two bands as defined from the induced polarization survey (IP anomalies 1, 11a and 11b). Their presence has been confirmed in diamond drilling, as well as in several outcrop occurrences.

The sedimentary sequence on the claim group has been interpreted as representing a turbidite terrain. Numerous exposures of trough crossbedding exist especially on the northern part of Line 8 west.

ii) Volcanics

Most of the observed volcanics on the property are ultramafic to mafic flows. The ultramafic rocks are largely dark polygonally jointed komatiitic flows showing no obvious spinifex textures or marked flow zoning. They were not especially obvious in outcrop as they tended to underlie low lying areas (recessive units) but were observed numerous times in drill core

Mafic pillowed basalt units form about 10% of the rock types present on the property. This rock type was especially prominent in flows lying adjacent to the large feldspar porphyry intrusive mapped out in the southern part of the property. Smaller pillowed flows were observed on the NW claim.

iii) Volcaniclastics

Two main varieties of volcaniclastics were differentiated in the current study.

The first is the more volcanic dominated interflow and flowtop breccia variety. It is observed more frequently in core than in outcrop. Fragments and/or clasts are largely of ultramafic volcanics. This rock type is typically accompanied by a large amount of sparry calcite alteration. Due to the strong deformation fabric in many of the rocks in the area, there is debate as to whether the rock should be classed as a conglomerate or an agglomerate. Most of this variety of volcaniclastic is found in the south and southwestern portion of the map area. It is usually found adjacent or interbedded with volcanic flow rocks.

The second variety distinguished is a more sedimentary dominated volcaniclastic. It may be correlatable with Unit 5 as mapped by J.E. Thomson, which lies to the north of the map area along the eastern flank of the peninsula. This unit occurs in the northern part of the map area along Lines 4W, 8W and 12W. The rock varies from clast supported to matrix supported and appears to lie sandwiched within the greywacke sequence. The clasts are highly variable ranging from large (2") angular feldspar porphyry fragments to small (4 mm) rounded sedimentary appearing clasts.

iv) Intrusives

A large intrusive of feldspar porphyry lies in the southern part of the map area. It shows a north-south elongation, a bimodal feldspar phenocryst population and forms a topographic high.

An intrusive syenite body was defined on the western side of claim 1.955124. It is characterized by its content of angular mafic inclusions.

Lamprophyre dykes are fairly common throughout the map area, especially in the zones where the 055 degree deformation fabric is strongly developed. Dykes vary from 6 inches to 20 feet wide and are fairly diverse in character. Some are biotite-rich, others are rich in garnets, some appear to be folded and some appear to be sill-form. The whole rock analyses performed indicate they are quite enriched in a multitude of trace elements.

A large diabase dyke is found in the southern map area. It trends ENE and is most prominent where it cuts the feldspar porphyry intrusive.

B. Structural Geology

Structural relations on the property are certainly of a complex nature reflecting at least two deformation events. This has resulted in some cross folding.

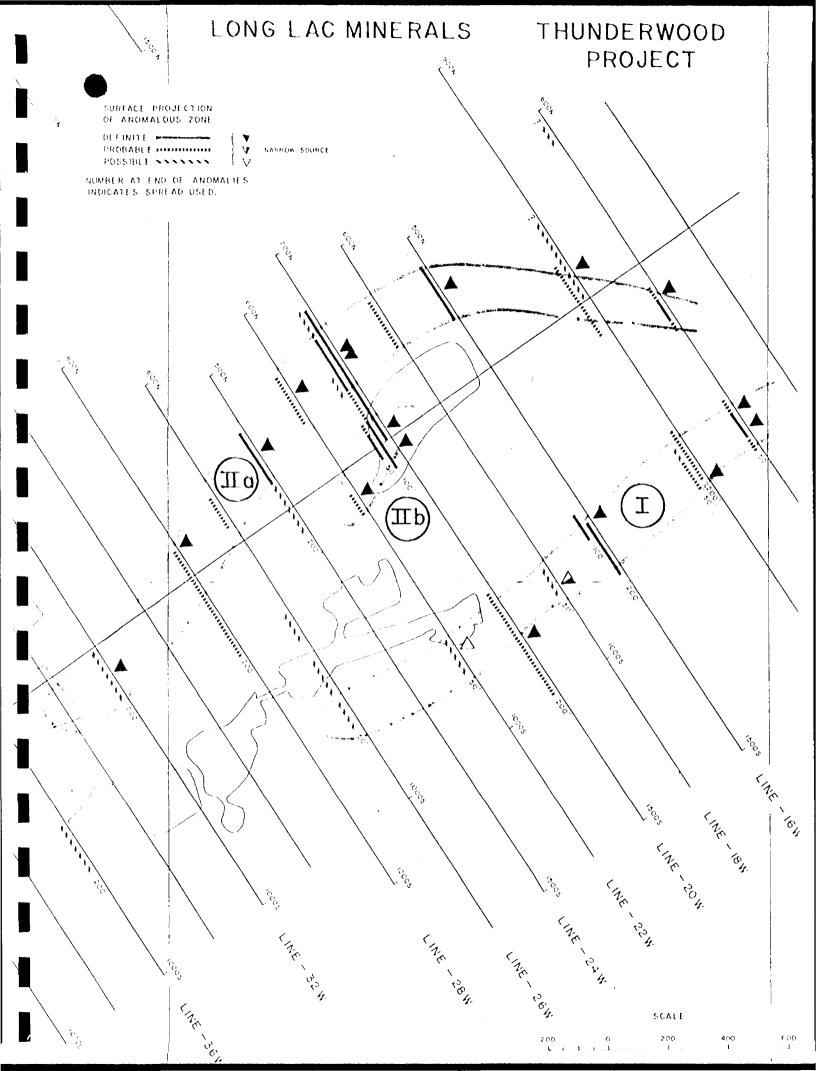
Generally, rocks in the map area strike roughly NNW and are often accompanied by a weak northerly trending penetrative schistose fabric. However, in the area adjacent to, and for several hundred feet on either side of the baseline, a strong secondary schistosity fabric overprints the initial NNW one. This secondary fabric is oriented at roughly 055 degrees. In this zone, a lot of the bedding strikes deviate towards the 055 degree trend. Outcrop evidence reveals strong bedding transposition and small scale folds along this 055 degree trend (ie. small fold @ BL+2W clearing). Dykes of lamprophyre and guartz-carbonate veins appear to occupy this trend as well.

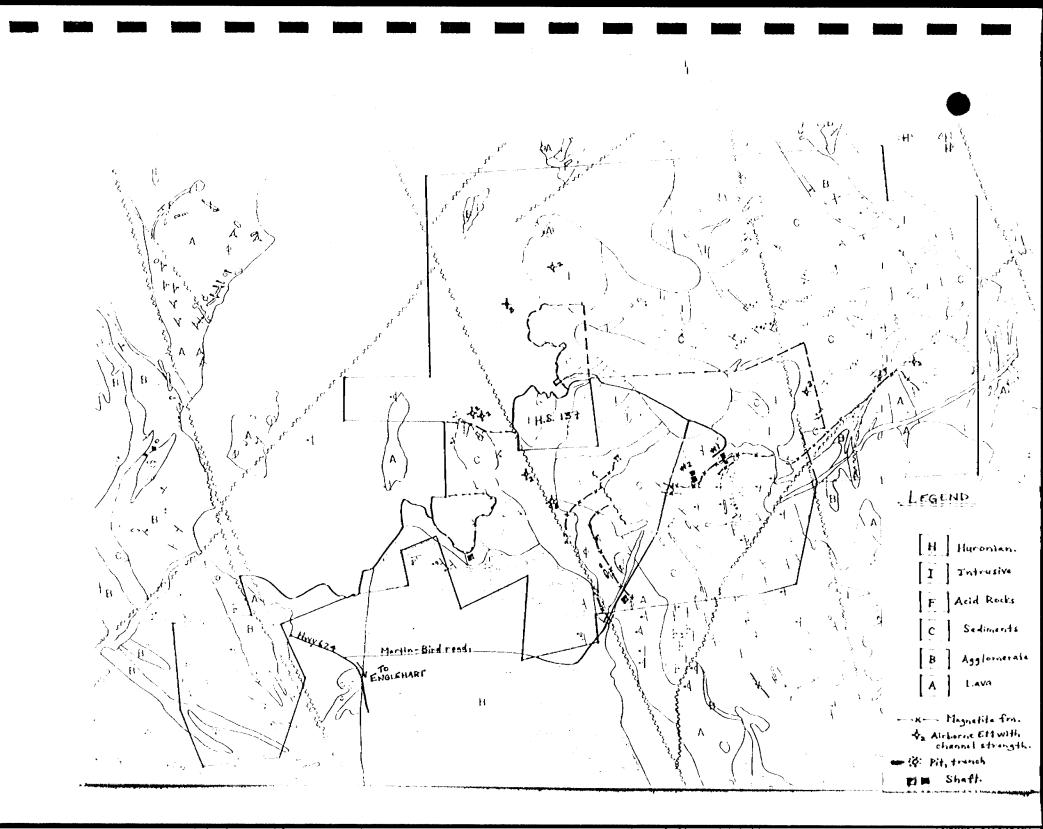
Closer scale mapping and stripping will be required to get a better understanding of the geology here.

C. Faults

The following is a listing of the most significant directions of faulting:

). Rift NNW	- 315-330	 produces some large fault scarp cliff faces (vertical and rotational movement)
2. E-W (ESE)	- 95-105	 indicated by low lying areas
3. NNE	- 10-20	 offsets and dislocates Martin-Bird ore zone
4. NF:	- 60-80	 055 degree trend (often filled by lamprophyre dykes or guartz veins some mineralized with gold)





D. Economic Geology

Quartz veining is prominently developed in all rock types on the property and generally trends N-S to NE/SW. Vein fillings are usually of whitish bull quartz. Numerous observed examples of folded quartz stringers and veins are suggestive of at least two periods of vein formation. Minor sulphides of iron, copper, and zinc can, at times, be seen in the veins.

In several localities on the claim group evidence of old trenching was found. Usually these trenches were put down on heavily quartz veined or on sulphide-bearing rocks. No significant values were returned upon resampling of these trenches.

The most significant appearing target at present would have to be the base metal potential of the two graphitic/carbonaceous units as traced out by IP Anomalies 1 and 11a.

RECOMMENDATIONS

- 1. Magnetic and VLF-EM surveys could be contemplated at a different orientation, especially in areas where strike is running parallel to the lines (ie: on claim L 979429).
- 2. Max-min could be contemplated from L0 to L16W south of the baseline to try to pin down the airborne conductor on L6W/6S.
- 3. More detailed mapping should be done using this map as a base. It would be especially important to try to use marker units to trace out the structural picture.
- 4. Overburden trenching or outcrop stripping is recommended at the following locales:
 - i) 1.8W/24400N area of anomalous gold grab and humus sampling
 - ii) 1.0/8S south Quartz veins and trenching
 - iii) SW ?????? area of anomalous grabs
 - iv) L4W/15N north 1P and arsenic humus anomaly
- 5. The following diamond drilling is recommended:
 - i) 1.36W/5S mag high; humus geochem (on patents)
 - ii) L0/4S, L6W/4S under hole LL-83-8
 - iii) 126W/4N (on patents)
 - iv) 16E/2N

It is recommended that the OGS be allowed access to do some geological studies on the Thunderwood Property, as they have recently requested.

CONCLUSIONS

6.

property is highly complex with The qeology of the superimposed deformational events and an involved history of The lithological package on the property consists of faulting. ultramafic to basaltic komatiitic flows and flow breccias interlayered with turbiditic sedimentary rocks. Numerous small lamprophyre dykes are commonplace.

Outcrop evidence appears to indicate that an older NNW deformation fabric has been overprinted by a secondary deformation event with a fabric axis trending roughly NE. This second deformation produced the strong 055° schistosity, so much in evidence on the property, which was later filled by the lamprophyre intrusives and the Martin-Bird type quartz stringer and lode zones.

Mapping can often be quite difficult and time consuming as manual stripping and poor outcrop frequency often lead to misidentifying the NNW or 055° foliations as bedding. The transposition of bedding by axial planar cleavage can also be deceiving when dealing with spotty exposures. Mechanical stripping in a few key areas would be useful in this sort of terrain. Being able to trace out a few more marker units would also help resolve the structural picture. It is obvious that some tight fold noses, such as seen on the L2W/Baseline bulldozer clearing, have been missed during mapping and are crucial keys to the puzzle.

Two zones of graphitic-rich sediments (indicated by IP anomalous zone] and]], although not well exposed in outcrop, are noted in drill core and occur at the interface between sediments and volcanic rocks (mainly ultramafics). It has not been established whether the [north (II) and south (I)] anomalous IP zones could represent a folded or thrusted repetition although at least one fold nose was noted nearby. These graphitic zones contain basemetal mineralization and should be evaluated on the basis of a volcanogenic massive sulphide model.

The types of gold targets that could be encountered in this terrain are as follows:

1.	Martin-Bird type -	Magnetite	iron	formation	hosted
		-guartz vein	lodes		

2. Kerr-Addison type - Pyritic/Albitite Flow ores

3. Kerr-Addison type - Green Carbonate/syenite dyke ores

4. Langmuir/Redstone type - Nickel/Precious metal sulphide ores

Work to date has failed to reveal any obvious areas of interest in terms of gold mineralization.

Although one of the prime objectives of this mapping program was to explore for the eastern extension of the Martin-Bird gold zone, this was not expecially fruitful as it appears the magnetite iron formation has been fault offset. Originally, it was felt that the iron formation of the Martin-Bird zone experienced a facies change into JP anomalous zone JI, however, more current thinking is leaning towards the idea of a fault offset to the zone (NNW trending fault). It is felt that a possible extension to the ironstone exists on the patents at 1.36W where a discrete magnetic high underlies the best gold humus anomaly on the property. The rocks seen on the NW claim appear to show the most similarities to the rocks in the Martin-Bird zone. A breccia zone identified just east of 1.8W shows many similarities to one seen close to the Number 1 shaft at the Martin-Bird zone.

Work is recommended to follow up these two areas of interest.

CERTIFICATE OF QUALIFICATION

1, Chris Pegg of P.O. Box 59, 10 Beaver Drive, Chaput Hughes, Ontario, POK 1AO, do hereby certify that:

- 1.] am a graduate of Queen's University, Kingston, Ontario and hold an Honours Bachelor of Science degree in geological sciences (1977).
- 2.] am a geologist employed by LAC Minerals Ltd. and have practised my profession continuously since graduation.
- 3.] personally supervised the fieldwork described herein.

Chris Pegg

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Ministry of Northern Development DOCUMENT and Mines W9008.001 **Report of Work Mining Act** 900 (Geophysical, Geological and Ghochemica Type of Survey(s) Mining Division Township or Area Survey Larder Lake Goological Hears Recorded Holder(s) Prospector's Licence Ltd AC linerals Address Telephone No. 1100, 20 Adolaide St E., Toronto ONT Ste (416)-367 -1031 Survey Company Namie and Address of Author (of Geo-Technic Ltd linerals POKIAD P.O. Box 54 Chaput-Hughes, ONT 15, 809 90 00, 10,90 Credits Requested per Eact/Clatherin Columns at right Mining Claims Traversed (List in numerical sequence) Special Provisions Mining Claim Mining Claim Mining Claim Days per Claim Geophysical Number Prefix Prefix Number Prefix Number For first survey - Electromagnetic 979429 Enter 40 days (This includes line cutting) - Magrietometer Ł 955114 For each additional survey. - Other 955115 using the same grid 20 Geolooical 955116 Enter 20 days (for each) 955124 Geochemical RECENTED Man Days Days per L 955125 Geophysical Ciaim 955126 HEV UP 1990 Complete reverse side and - Electromagnetic enter totai(s) here - Magnetometer LILLING LANDS SECTION - Other Geologica Geochemical **Airborne Credits** Days per Claim Note: Special provisions Electromagnetic credits do not apply to Airborne Magnetometer Surveys Other Total miles flown over claim(s) Total number of Date Recorded Holder or Agent (Signature) mining clainis covered Oct 18 190 by this report of work Certification Velifying Report of Work I hereby certify that I have a personal and intimate kr after its completion and annexed report is true ge of the facts set forth in this Report of Work, having performed the work or witnessed same during and/or Name and Address of Person Certifying P.C. Bux 59 Chaput-Hughes ONT * (705)-567-360 Oct 18/90 Certified By Received Stamp POKIAU. Chris For Office Use Only LARDER LAKE MINING DIVISION Total Days Date Recorded 34 Mining Recorder Ded 18/90. PM 4 06 90 DCT 18 Recorded 140 RECEIVED 312 189/061



Ministry of Northern Development and Mines

Geophysical-Geological-Geochemical Technical Data Statement

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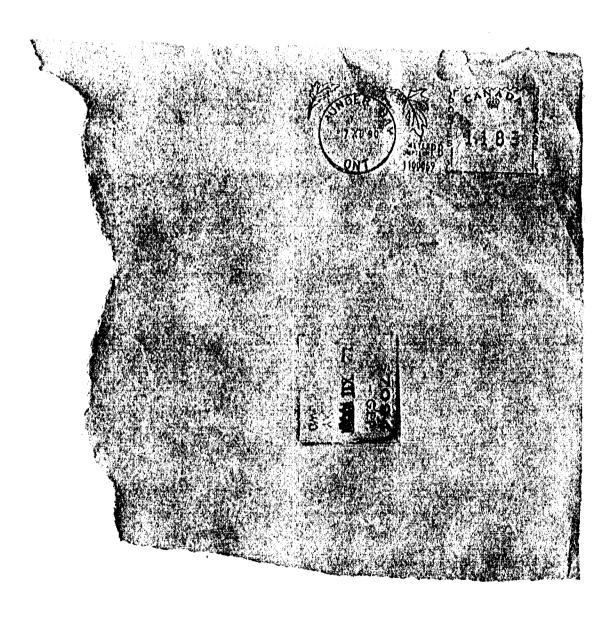
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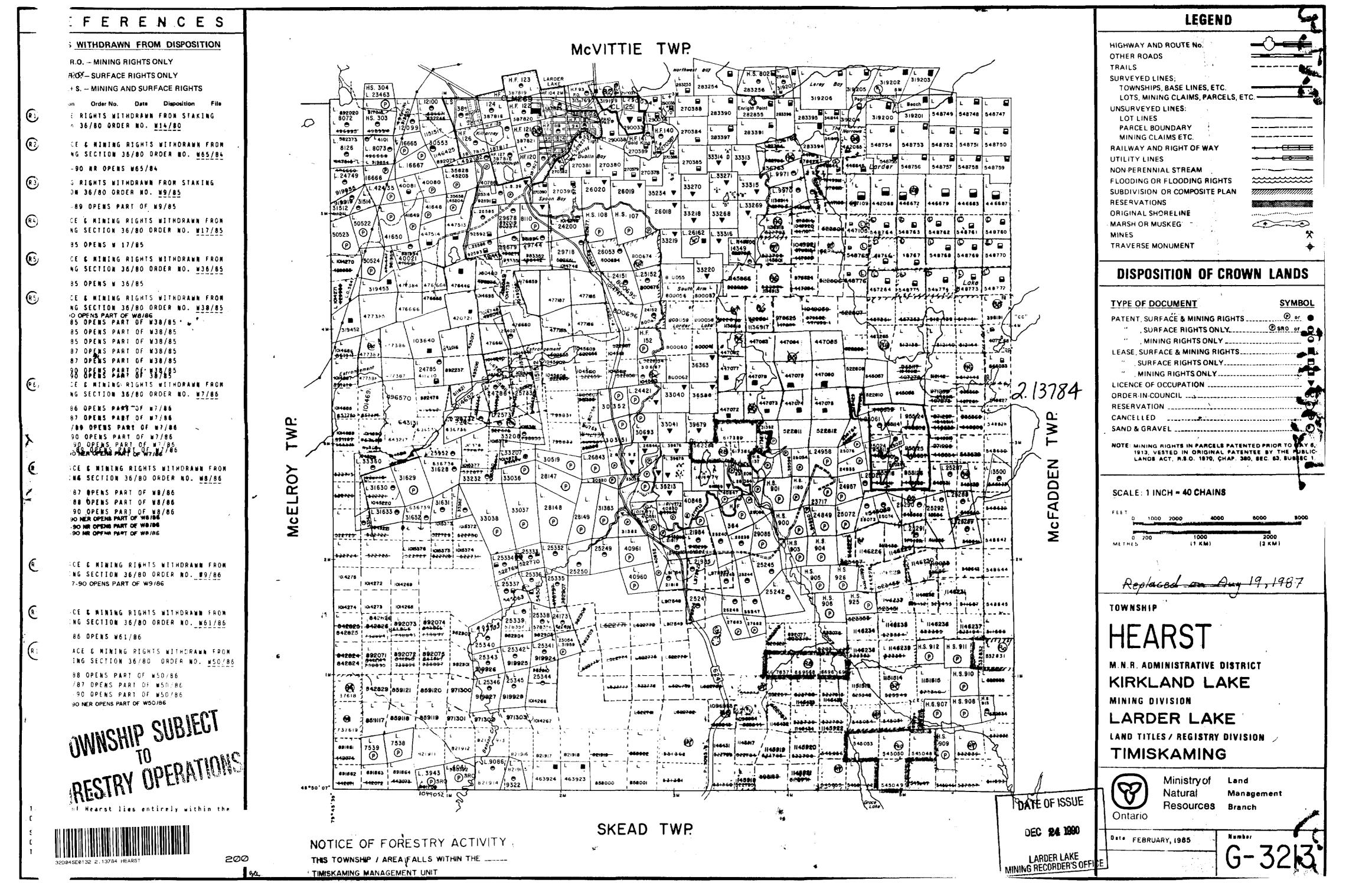
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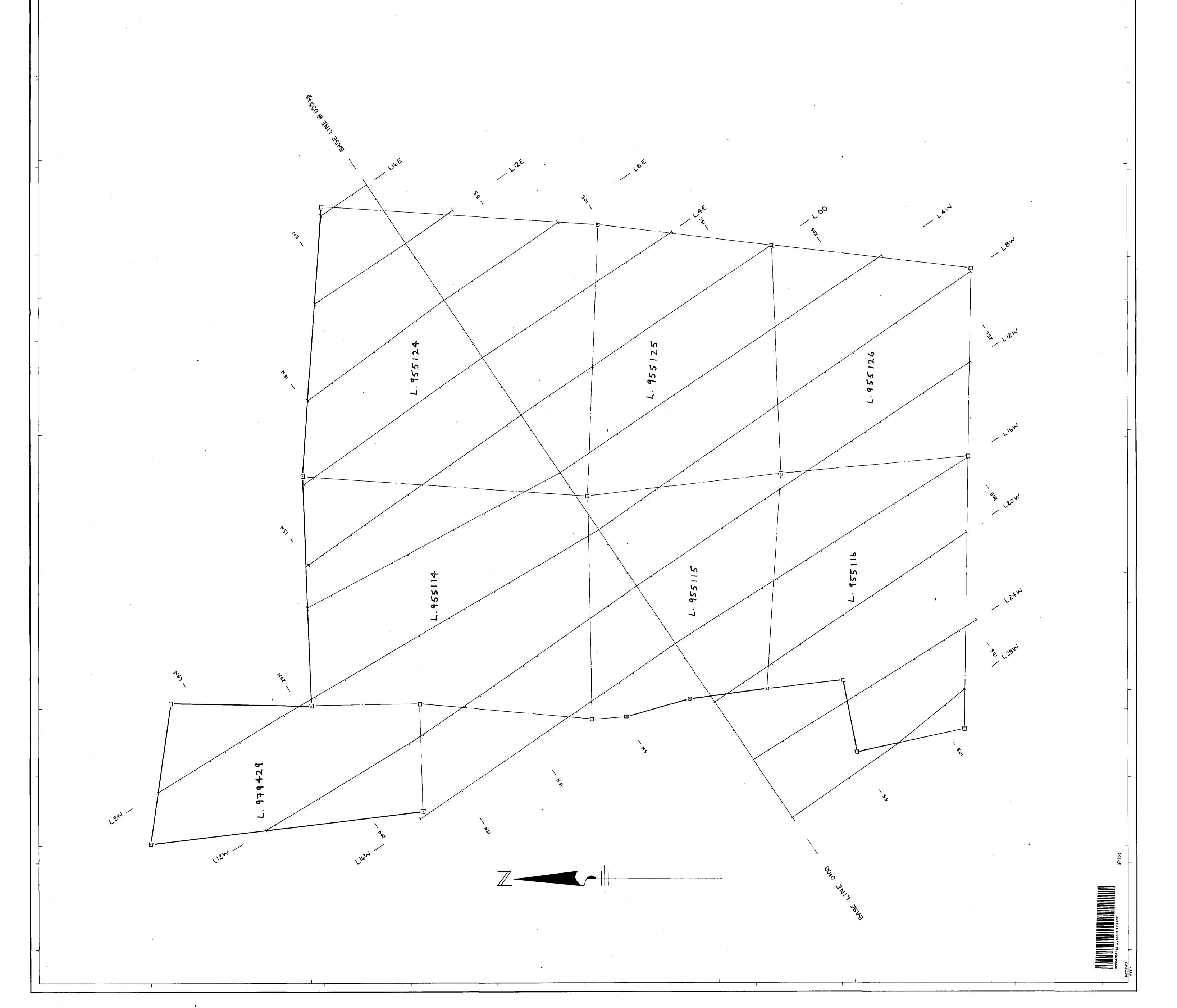
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