



42C16SE0001 2.12778 IRVING

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REPORT ON THE
COMBINED AIRBORNE MAGNETIC AND
VLF-ELECTROMAGNETIC SURVEY
ON THE PROPERTY OF
MANRIDGE EXPLORATIONS LIMITED
HAWKINS AND IRVING TOWNSHIPS
SAULT STE. MARIE MINING DIVISION, ONTARIO.

RECEIVED

SEP 29 1989

By MINING LANDS SECTION

H. Ferderber Geophysics Ltd.

2.12778

August 17, 1989
Val d'Or, Quebec

R.A. Campbell, B.Sc.,
Geologist.

REPORT ON THE
COMBINED AIRBORNE MAGNETIC AND
VLF-ELECTROMAGNETIC SURVEY
ON THE PROPERTY OF
MANRIDGE EXPLORATIONS LIMITED
HAWKINS AND IRVING TOWNSHIPS
SAULT STE. MARIE MINING DIVISION, ONTARIO.

INTRODUCTION

On June 28, 1989 a combined magnetic and VLF-electromagnetic survey was carried out on the property of Manridge Explorations Limited in the Townships of Hawkins and Irving, Sault Ste Marie Mining Division, Ontario. Magnetic and VLF-electromagnetic data was collected by the airborne division of H. Ferderber Geophysics Ltd. The survey was flown from a base at Wawa, Ontario. A total of 72.9 miles of data was collected.

The magnetic survey provides data which outlines the underlying geological structures and identifies any potential economic concentrations which may contain variations in accessory magnetic minerals. The VLF-electromagnetic survey helps define conductive zones which may represent shear zones and/or metallic sulphide deposits containing gold and/or base metal mineralization.

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PROPERTY DESCRIPTION, LOCATION AND ACCESS

The Manridge Explorations property is comprised of 40 claims, 6 in Hawkins Township, and 34 in Irving Township, Sault Ste. Marie Mining Division, Ontario. The claims cover approximately 640 hectares, are registered with the Ontario Mining Recorder's Office at Sault Ste. Marie and are listed in Appendix 1.

The property is located approximately 9 miles south of the small railway village of Oba and 53 miles south-southwest of the town of Hearst. Access can be reached by taking Highway 583, south from Hearst, for 24 miles then travelling over a gravel road for 47 miles until Oba. A gravel road south from Oba passes within 2.5 miles of the northern boundary. The Algoma Central Railway passes through the centre of the claim group.

The property is forested with a small lake lying in the eastern half of the claim group. The western lake of the Akron Lakes is located along the eastern boundary. Topographic relief in the area is generally low.

Supplies, services and manpower are available in the Hearst-Kapuskasing-Hornepayne area.

GEOLOGY

The Ontario Department of Mines, Geological Compilation Sheet 2220, the Manitouwadge-Wawa Area map outlines the geology underlying the claim block. The geology map indicates that approximately 80 per cent of the property is underlain by Early Precambrian (Archean) felsic igneous and metamorphic rocks. A narrow band of mafic metavolcanic rocks with minor amounts of serpentinite strikes south-southeast across the western half of the property. A parallel trending diabase dyke intrudes the felsic igneous and metamorphic rocks, west of the mafic metavolcanic unit.

A short, 0.5 mile long, lineament-fault zone strikes south from the small lake. Series of west-southwest trending lineaments-fault zones lie northeast and southwest of the claim group.

An asbestos showing has been found in igneous ultramafic rocks (serpentinite) within the mafic metavolcanic band, near the north-central boundary. Molybdenum occurrences have also been outlined in a second mafic metavolcanic unit, 0.8 to 1.0 miles north of the property. The Shenango Prospect is also located in mafic metavolcanic rocks, approximately 4 miles north of the claim block. In 1936, 1937 and 1945, 67 oz. of Au and 37 oz. of

-4-

Ag were recovered from 2,400 tons of ore. Mineralization was found in auriferous quartz veins lying along the southern contact of a magnetic anomaly that strikes westward from the central part of Hawkins Township across Derry Township. The results of a recent airborne magnetic and electromagnetic survey by Aerodat for the Ministry of Northern Development and Mines, maps 20832 and 20831 show that a weak electromagnetic anomaly is located near this gold prospect.

INSTRUMENTATION AND SURVEY METHODS

The survey was completed using a 1972 Cessna 172, fixed-wing aircraft, call letters CF-EWK, owned and operated by H. Ferderber Geophysics Ltd. The pilot and navigator/operator were Y. Saucier and Dan Thai, respectively, of Val d'Or.

Geophysical sensors were mounted in modified wing tips. The geophysical, navigation and data acquisition systems are described in the following pages.

Magnetometer

The magnetometer used was GEM Systems GSM-11, high sensitivity airborne proton (Overhauser) magnetometer. The instrument continuously measures the Earth's magnetic field at a 0.01 gamma sensitivity for 1 reading per second or 0.05 gamma to

-5-

10 readings per second at a 0.1 gamma absolute accuracy. For this survey four readings per second were measured at a sensitivity of 0.04 gammas. The analog output is on 3 channels, from 1 to 10,000 gammas full scale.

VLF-EM System

A Herz Totem 2A VLF-EM System was used to measure the changes in the total field and in the vertical quadrature field on two frequencies simultaneously, with an accuracy of 1%. The primary transmitting station of Annapolis, Maryland (NSS), frequency 21.4 KHz was employed in survey.

Radar Altimeter

The ground clearance was measured with a King 10/10 A radar altimeter. The survey was flown at a mean clearance of 300 feet with the altimeter producing an accuracy of 5% (15 feet) at this altitude.

Tracking Camera and Video Centre

A RCA TC-200 colour video camera and Galaxy 200 video centre was used to record the flight path on standard VHS type video tapes. Manual fiducials were indicated on the picture

frames for reference with digital printout. Flight path recovery was aided using a Panasonic Colour Video Monitor-S1300 and Video Cassette Recorder AG-2500.

Data Acquisition System

A Picodas Group Inc. PDAS 1100 data acquisition system featuring seven analog inputs with two frequency inputs and external interfacing was used. A Termiflex Corp. ST/32 Keyboard control unit and Sharp Corp. LCD display unit are connected to the data acquisition system. At present this system stores the altimeter VLF-1 inphase, VLF-1 quadrature, VLF-2 inphase, VLF-2 quadrature, magnetic field (coarse), magnetic field (fine), and the fourth difference (noise), and fiducials on 3.5 inch floppy disk drive. The data is then printed out in digital and profile form.

The survey was conducted on lines orientated at 045 and 225 degrees, at an average aircraft altitude of 300 feet. The lines were flown at spacings of 440 feet at a speed of approximately 90 miles per hour. Navigation was visual using airphoto mosaics, at a scale of one inch to 1320 feet, manual fiducials and the flight path recovery system as references.

DATA PRESENTATION

Flight lines, fiducial points and geophysical responses were reproduced from the airphoto mosaics at a scale of one inch to 1320 feet (1:15,840). The outline of the claim block and claim map are shown on each map sheet.

The aeromagnetic data was corrected for diurnal variations by using base lines as references. The data was contoured at 25 and 100 gamma intervals and presented on Map MG-1.

The VLF-EM data was transferred from the Totem 2A memory to profiled form. Base values were determined for the VLF-EM profiled data. These values were used to correct variations in the transmitter strength and the corrected values were plotted on Map EM-1. The positive values were contoured at intervals of 2%. The conductor axes were determined and labelled A, B, C, etc. No priority was attached to the labelling system.

SURVEY RESULTS AND INTERPRETATION

Magnetic Survey

The main features delineated by the magnetic survey are four series of southeast trending magnetic highs. The strongest and broadest series of highs lies across the central part of the property. Values of up to 500 gammas above background indicate that these highs are caused by igneous ultramafic rocks

(serpentinite) within a band of mafic metavolcanics. A probable second small band of mafic metavolcanics is defined by two highs situated over the western-most claims.

The two other series of highs, the eastern-most and second most westerly highs, exhibit magnetic values and shapes indicative of diabase dykes. The eastern-most dyke appears to be covered by a thicker layer of overburden, producing a slightly broader anomalous zone.

Magnetic relief and susceptibilities are lower over the rest of the property, as expected, if these areas are underlain by felsic igneous and metamorphic rocks. A narrow, linear magnetic low strikes south-southeast, along the eastern edge of the series of highs representing the mafic metavolcanics containing igneous ultramafic rocks. This low defines the position of a possible lineament-fault zone.

VLF-Electromagnetic Survey

Five conductive zones lie over the Manridge Explorations' claim block. Zone A is comprised of 3 southeast striking conductive zones along Oba River and the lake just east of the river. The south-southeast trending lineament cuts across this zone, offsetting the eastern-most conductor. The western two conductors are located along the eastern edge of the mafic

metavolcanic unit, near the asbestos showing, and the eastern conductor is thought to lie within felsic igneous and metamorphic rocks. Zone A could define a shear zone following a linear overburden trend within felsic igneous and metamorphic rocks and along a mafic metavolcanic contact.

Zone B is a short, one-line conductor, located within a magnetic high representing a diabase dyke. It could represent a weak shear within the dyke.

Zone C, comprised of two conductors, strikes northwest across the southeast property boundary. It may represent a possible southern extension of the fault zone, defined by the magnetic survey, within felsic igneous and metamorphic rocks.

Zone D is a two-line conductor, lying along the Oba River, the railroad tracks and the western edge of the metavolcanic unit. The conductor could be caused by conductive overburden or culture.

Zone E strikes northwest across the southern boundary, approximately 0.5 miles southwest of Zone C. The conductor is located along a creek within the mafic metavolcanic unit. It may be caused by conductive overburden following a linear trend representing a lineament-shear zone in mafic metavolcanic rocks.

CONCLUSIONS AND RECOMMENDATIONS

The combined airborne magnetic and VLF-electromagnetic survey was successful in helping define the geology and in delineating five conductive zones on the Manridge Explorations' property in Hawkins and Irving Townships. A band of mafic metavolcanic rocks, containing serpentinite and asbestos, strikes southeast across the central part of the claim block. A possible second unit of mafic metavolcanics lies over the southwestern-most claim. Two similar trending diabase dykes are situated to the east of both metavolcanic bands. The rest of the property is probably underlain by felsic igneous and metamorphic rocks and a possible south-southeast striking fault lies in these rocks, just east of the central mafic metavolcanic band.

Of the five conductive zones outlined on the property by the VLF-EM survey, Zones A, B, C and E could define the positions of possible shear zones. The best potential targets for gold mineralization are the intersections of the conductors of Zone A and the south-southeast fault, and Zone E which is situated within the mafic metavolcanic unit.

Further exploration, comprised of complete geological mapping and sampling and ground magnetic and horizontal loop-electromagnetic surveys, should be completed over the claim

-11-

block. Potential targets for gold mineralization could then be tested by detailed induced polarization, prior to diamond drilling.

Respectfully submitted,

H. Ferderber Geophysics Ltd.



August 17, 1989
Val d'Or, Quebec

R.A. Campbell, B.Sc.,
Geologist.

APPENDIX 1 - CLAIM LIST

SSM	1049651	SSM	1049690
	1049652		1049691
	1049653		1049692
	1049654		1049693
	1049655		1049694
	1049656		1049695
	1049657		1049696
	1049658		1049697
	1049659		1049698
	1049660		1049699
	1049661		1049700
	1049662		1049701
	1049663		
	1049664		
	1049665		
	1049677		
	1049678		
	1049679		
	1049680		
	1049681		
	1049682		
	1049683		
	1049684		
	1049685		
	1049686		
	1049687		
	1049688		
	1049689		



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900

W8905.163

2.12778

Type of Survey(s) **Airborne magnetic and VLF-electromagnetic** Hawkins & Irving (Wawa)

Claim Holder(s) **MANRIDGE EXPLORATIONS LTD.** Prospect's Licence No. T 5258

Address **Suite 2314; 401 Bay St., Toronto Ontario** M5H 2Y4

Survey Company **H. Ferderber Geophysics Ltd.** Date of Survey (from & to) **28 06 89** to **28 06 89** Total Miles of line Cut **72.9**

Name and Address of Author (of Geo-Technical report) **R.A. Campbell, 169 Perreault Ave., Val d'Or, Quebec J9P 2H1**

RECEIVED

OCT 19 1989

MINING LANDS SECTION

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
For each additional survey: using the same grid: Enter 20 days (for each)	Geological	
	Geochemical	
Man Days Complete reverse side and enter total(s) here	Geophysical	Days per Claim
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
Airborne Credits	Electromagnetic	35.8
	Magnetometer	35.8
	Radiometric	

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
OFFICE
NOV 24 1989
RECEIVED

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
SSM	1049651		SSM	1049686	
	1049652			1049687	
	1049653			1049688	
	1049654			1049689	
	1049655			1049690	
	1049656			1049691	
	1049657			1049692	
	1049658			1049693	
	1049659			1049694	
	1049660			1049695	
	1049661			1049696	
	1049662			1049697	
	1049663			1049698	
	1049664			1049699	
	1049665			1049700	
	1049677			1049701	
	1049678				
	1049679				
	1049680				
	1049681				
	1049682				
	1049683				
	1049684				
	1049685				

SAULT STE. MARIE
MINING DIV.
RECEIVED
OCT 11 1989
A.M. 7:30 P.M. 10:11:12:13:14:15:16

Expenditures (excludes power stripping) **RECORDED**

Type of Work Performed

Performed on Claim(s) **OCT 11 1989**

Receipt No. _____

Calculation of Expenditure Days Credits

Total Expenditures \$ _____ + 15 = Total Days Credits _____

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Total number of mining claims covered by this report of work. **40**

Date **Sept 29 89** Recorded Holder or Agent (Signature) *Ronald E. Gaud*

For Office Use Only

Total Days Cr. Recorded **2864** Date Recorded **Oct. 11/89** Mining Recorder *C. A. Kuyb*

Date Approved as Recorded **15 Nov 89** Branch Director *[Signature]*

R.M.

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying **R.A. Campbell, 169 Perreault, Val d'Or, Quebec J9P 2H1**

Date Certified **Aug. 21, 1989** Certified by (Signature) *RA*



Ontario

Ministry of Northern Development and Mines

Geophysical-Geological-Geochemical Technical Data Statement

2. 12778

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Airborne magnetic and VLF-electromagnetic
Township or Area Hawkins & Irving
Claim Holder(s) Manridge Explorations Ltd.
Ste 2314 - 401 Bay St. Toronto Ont. M5H 2Y4
Survey Company H. Ferderber Geophysics Ltd.
Author of Report R.A. Campbell
Address of Author 169 Perreault Avenue, Val d'Or, Que
Covering Dates of Survey June 28, 1989
(linecutting to office)
Total Miles of Line/GW Flown: 72.9

MINING CLAIMS TRAVERSED
List numerically

SSM 1049651 et al
(prefix) (number)
(see attached list)

Table with 1 column for listing mining claims, containing one entry: SSM 1049651 et al (see attached list)

SPECIAL PROVISIONS
CREDITS REQUESTED

DAYS per claim

- Geophysical
-Electromagnetic
-Magnetometer
-Radiometric
-Other
Geological
Geochemical

ENTER 40 days (includes line cutting) for first survey.
ENTER 20 days for each additional survey using same grid.

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer 35.8 Electromagnetic 35.8 Radiometric
(enter days per claim)

DATE: Aug. 21, 1989 SIGNATURE: RAC
Author of Report or Agent

Res. Geol. Qualifications 2.6609

Previous Surveys

Table with 4 columns: File No., Type, Date, Claim Holder

TOTAL CLAIMS 40

OFFICE USE ONLY

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth - include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) Magnetic and VLF-Electromagnetic

Instrument(s) GEM Systems GSM-11 magnetometer and Herz Totem 2A VLF-EM
(specify for each type of survey)

Accuracy 0.04 gammas and 1%
(specify for each type of survey)

Aircraft used Cessna 172 fixed-wing

Sensor altitude 300 feet

Navigation and flight path recovery method Navigation was visual on airphoto mosaics

~~Flight path recovery was obtained with a RCA colour Video camera, Panasonic~~
colour video monitor

Aircraft altitude 300 feet Line Spacing 440 feet

Miles flown over total area 72.9 miles Over claims only 35.8 miles

REFERENCE

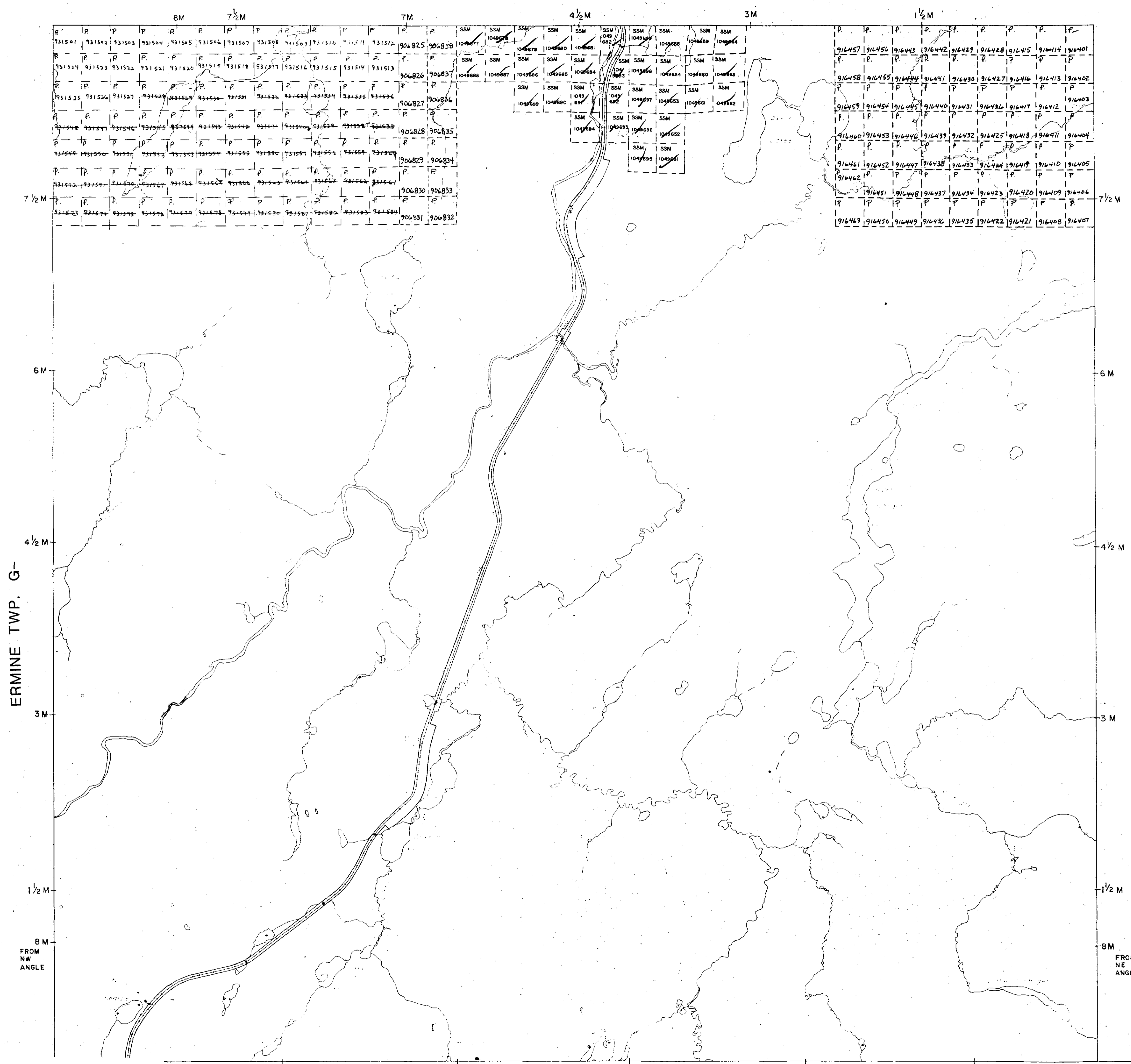
AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description Order No. Date Disposition File

Proposed Forestry Work in Township
1988/89 Work Schedule available for
viewing upon request.

F. J. KINS TWP. G-



REFERENCE

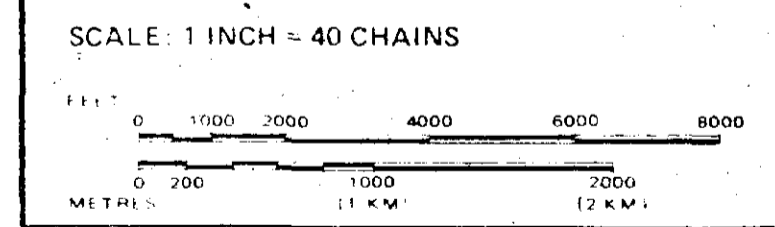
LEGEND

- HIGHWAY AND ROUTE NO.
- OTHER ROADS
- TRAILS
- SURVEYED LINES
- TOWNSHIPS, BASE LINES ETC.
- LOTS, MINING CLAIMS, PARCELS ETC.
- UNSURVEYED LINES
- LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	○
" MINING RIGHTS ONLY	◐
LEASE SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	◼
" MINING RIGHTS ONLY	◻
LICENCE OF OCCUPATION	◊
ORDER IN COUNCIL	◌
RESERVATION	⊙
CANCELLED	⊖
SAND & GRAVEL	⊕

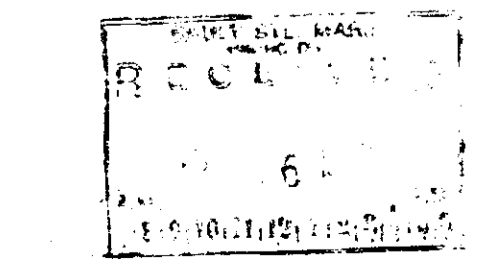
NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.



TOWNSHIP
IRVING
M.N.R. ADMINISTRATIVE DISTRICT
HEARST
MINING DIVISION
SAULT STE. MARIE
LAND TITLES / REGISTRY DIVISION
ALGOMA

Ministry of Natural Resources
Land Management Branch
Ontario
Date: DECEMBER, 1982
Number: **G-2289**

DATE OF ISSUE
JUN 30 1989
SAULT STE. MARIE
MINING RECORDER'S OFFICE



FRANZ TWP.

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M + S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
(43)		4/10/72		64585

Proposed Forestry Work in Township
1982-83 Work schedule available for
viewing upon request

DATE OF ISSUE

AUG 15, 1983

SAULT STE. MARIE
MINING RECORDER'S OFFICE

LEGEND

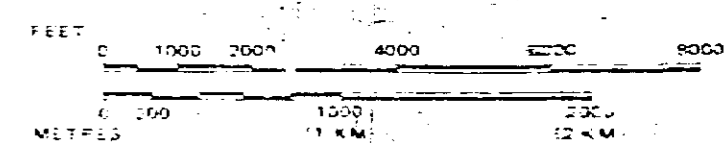
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
TOWNSHIPS, BASE LINES, ETC.
- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS, ETC.
- RAILWAY AND RAILWAY
- UTILITY LINES
- NON PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRANSVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT SURFACE & MINING RIGHTS	—●—
" SURFACE RIGHTS ONLY	—○—
" MINING RIGHTS ONLY	—○—
LEASE SURFACE & MINING RIGHTS	—○—
" SURFACE RIGHTS ONLY	—○—
" MINING RIGHTS ONLY	—○—
RIGHT OF OCCUPATION	—○—
ORDER OF COUNCIL	—○—
CANCELLED	—○—
SAND & GRAVEL	—○—

NOTE: MINING RIGHTS ARE HELD BY THE CROWN IN 1913 VESTED IN ORIGINAL PATENT AS BY THE FUEL & LANDS ACT R.S.O. 1970 CHAP. 286 SEC. 43 SUBJECT 1

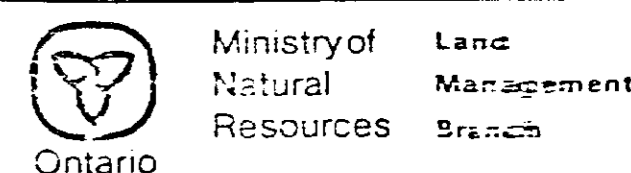
SCALE: 1 INCH = 40 CHAINS



TOWNSHIP

HAWKINS

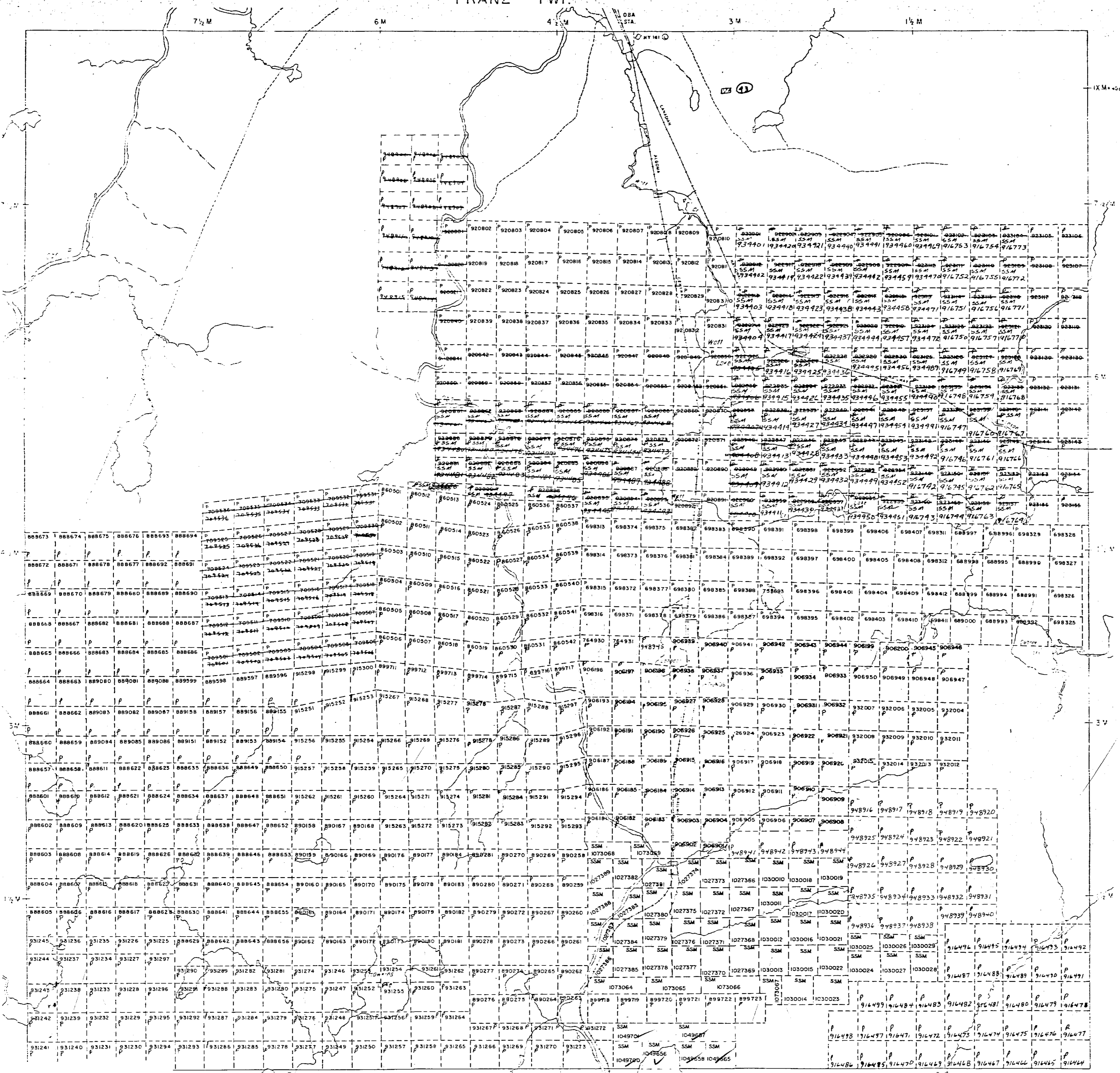
M.N.R. ADMINISTRATIVE DISTRICT
HEARST
MINING DIVISION
SAULT STE. MARIE
LAND TITLES / REGISTRY DIVISION
ALGOMA



Date: MARCH 3, 1983
Checked by: LP
G-2316

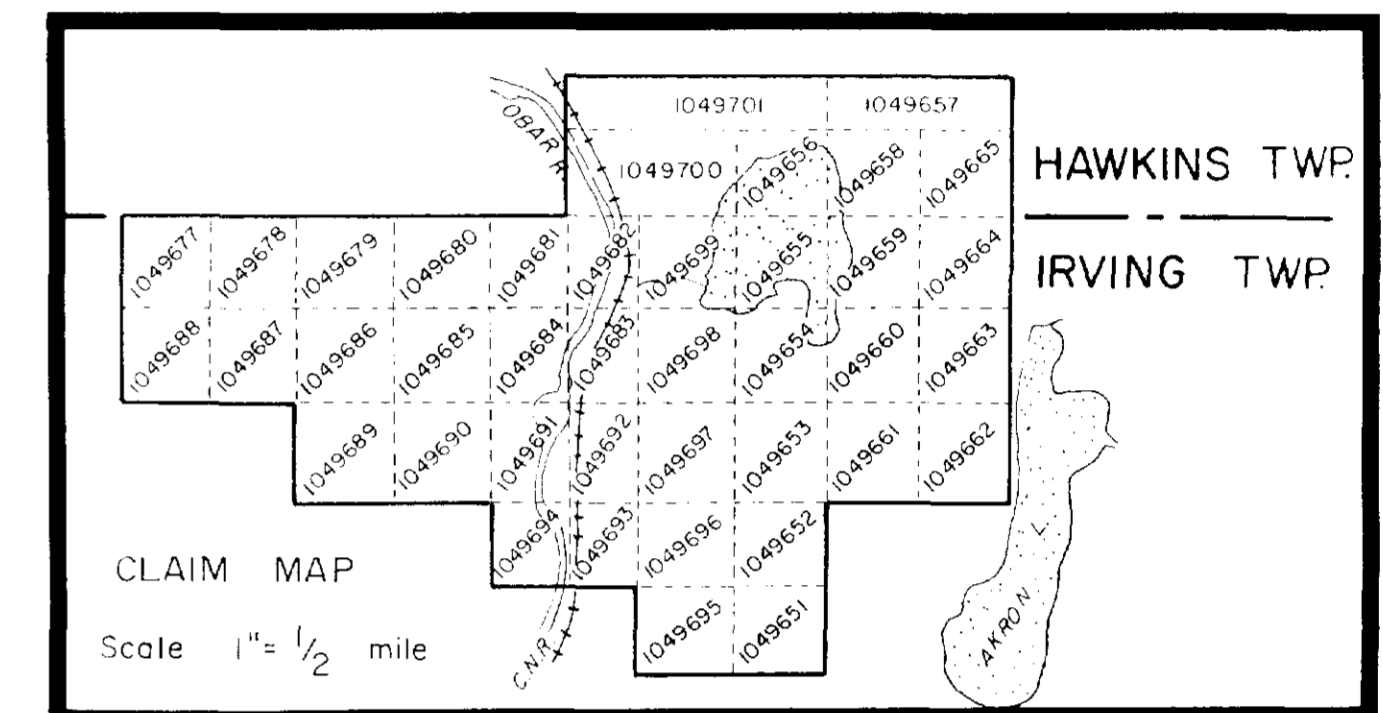
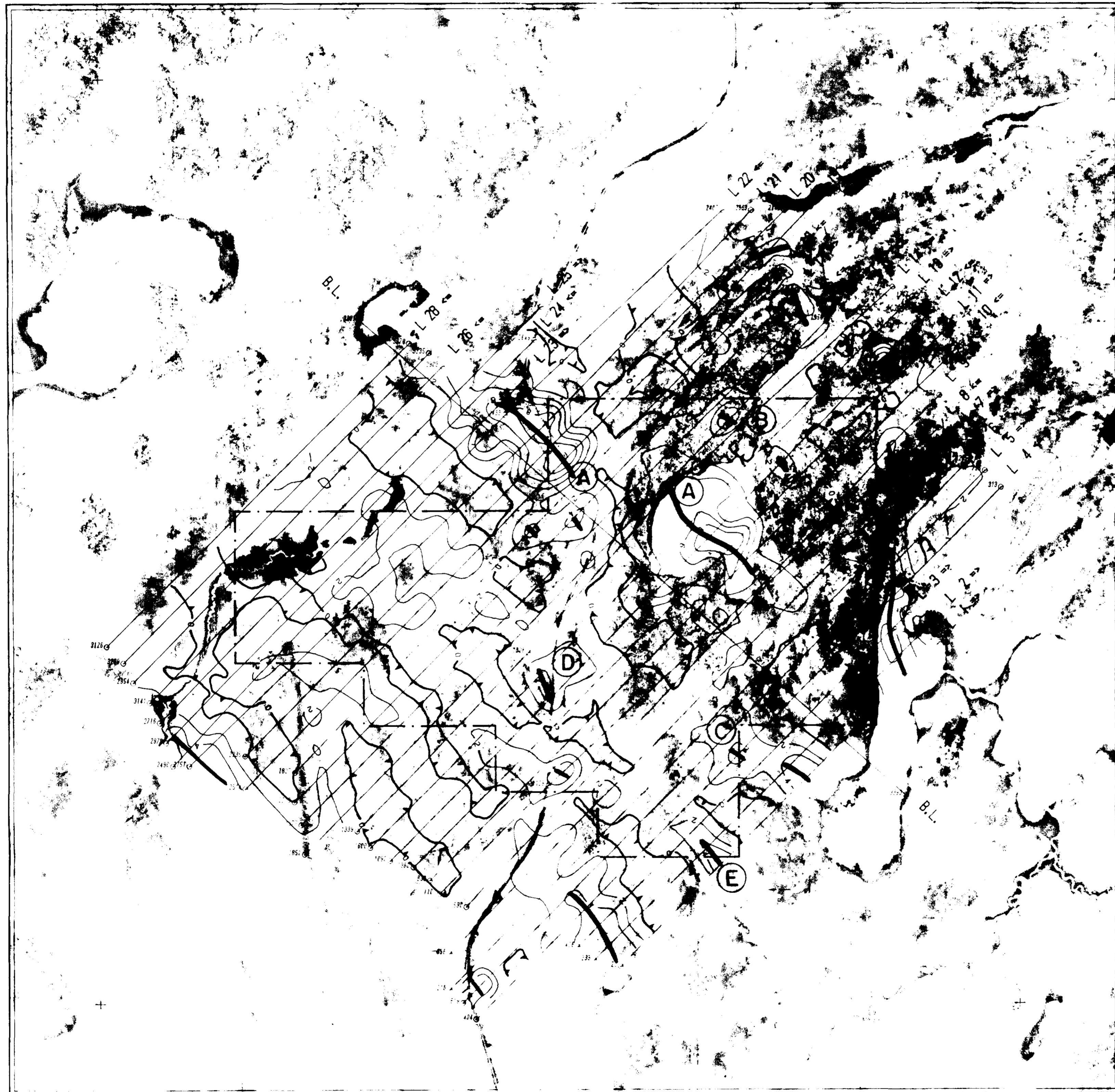
DERRY TWP.

WALLS TWP.



IRVING TWP.





LEGEND

Total Field Contour Interval 2 %

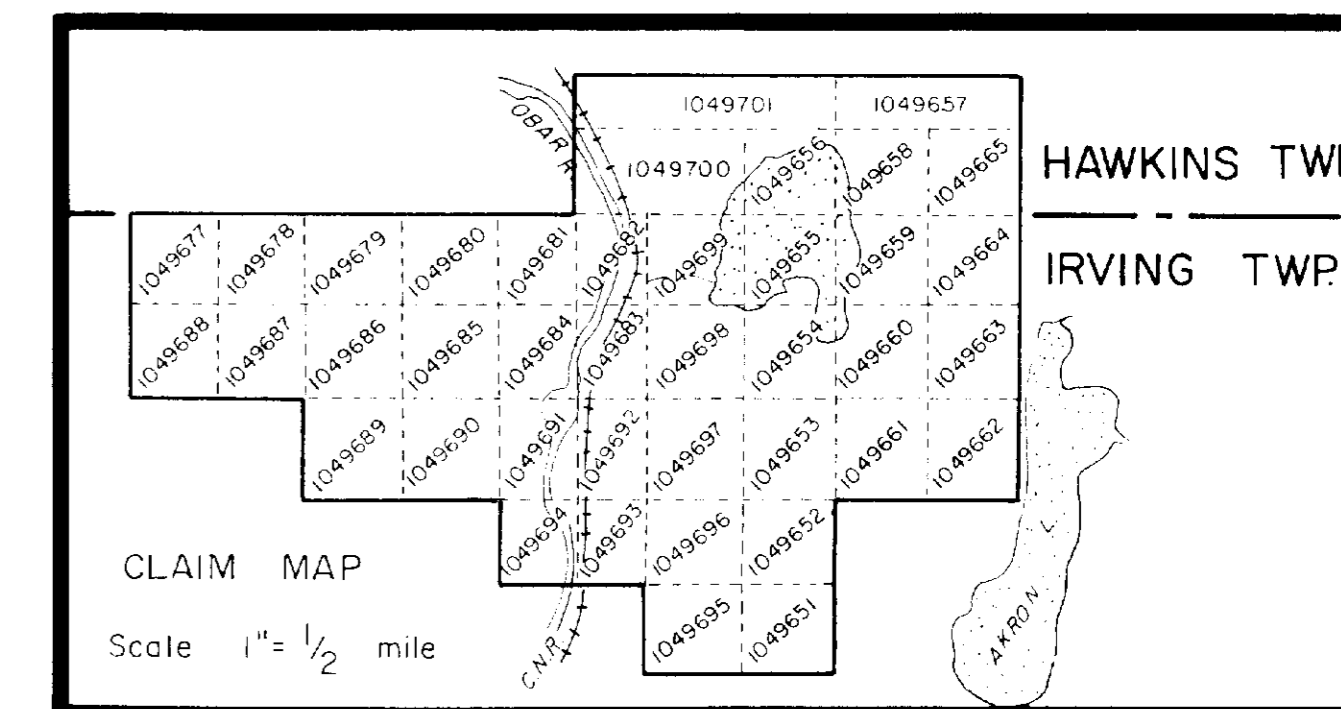
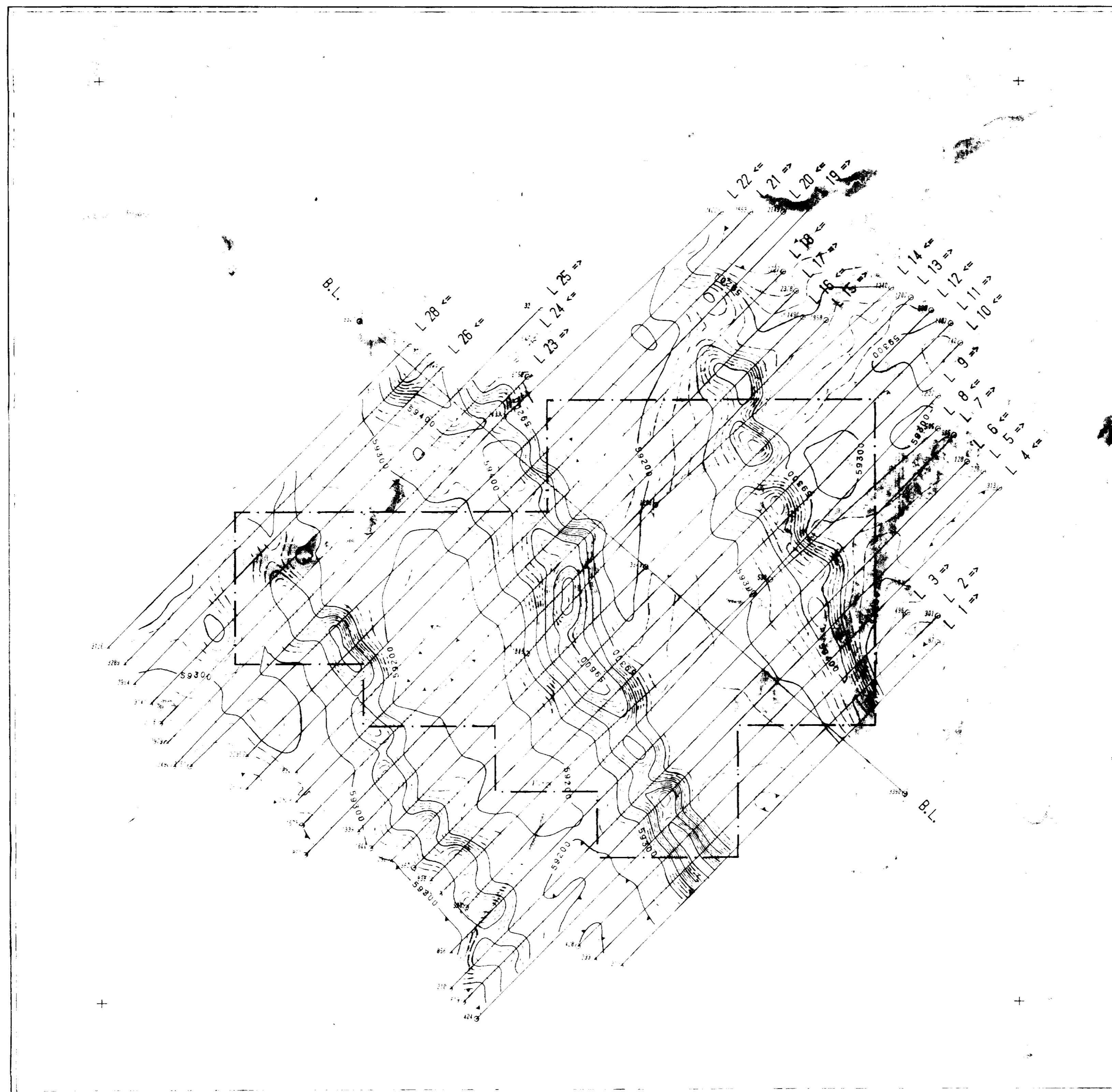
- Fiducial Point
- Line Direction
- Property Boundary
- Conductor Axis
- VLF Low
- 10 %
- 2 %

STATION USED: Annapolis, MA USA (21.4 kHz)

2.12778

TYPE OF WORK		AIRBORNE VLF -- ELECTROMAGNETIC SURVEY	
CLIENT			
MANRIDGE EXPLORATIONS LIMITED			
PROJECT		AREA	
2.12778		Irving & Hawkins Townships	
DRAWN BY		SCALE	DATE
KBL		1" = 1/4 Mile	August 1989
DRAWN BY		MAP OR SHEET NO.	
KBL		EM -- 1	





LEGEND	
Total Field Contour Interval 25 gammas	
•	Fiducial Point
<=	Line Direction
---	Property Boundary
▲	Magnetic Low
—	1000 gammas
---	100 gammas
---	25 gammas

3.12778

TYPE OF WORK		AIRBORNE MAGNETOMETER SURVEY	
CLIENT			
MANRIDGE EXPLORATIONS LIMITED			
PROJECT		AREA	
3.12778		Irving & Hawkins Townships	
DRAWN BY		SCALE	DATE
H. FERDERBER GEOPHYSICS LTD.		1" = 1/4 Mile	August 1989
KBL		MAP OR SHEET NO. MG - 1	

