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REPORT ON
GEOLOGICAL SURVEY
~~SPANISH RIVER GROUP OF CLAIMS~~
NAIRN TOWNSHIP
~~SUDBURY MINING DIVISION~~
SUDBURY MINING DIVISION
PROVINCE OF ONTARIO.

by

O. S. Langley,

Exploration Department,
Canadian Johns-Manville Co. Limited.

January 10th, 1968.
Matheson, Ontario.



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List of Maps Accompanying this Report:

Legend Sheet - Nairn Township

Location Map - on a scale of 1" = 1/2 mile.

Geological and Topographic Plans on a scale of 1" = 200' -
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REPORT ON GEOLOGICAL SURVEY
SPANISH RIVER GROUP OF CLAIMS
NAIRN TOWNSHIP
SUDBURY MINING DIVISION
PROVINCE OF ONTARIO.

Introduction:

The following report describes the geological survey completed during the summer of 1967 on Canadian Johns-Manville Company Limited claims located in Nairn Township, Sudbury Mining Division, Province of Ontario.

Cutting and chaining of picket lines were contracted to L. Lavoie of Amos, Quebec. Picket lines spaced at 300 foot intervals were cut at right angles to northeasterly trending base lines. Pickets were fixed every 50 feet along these offset lines by chainage.

The geological mapping was done by the writer, G. S. Longley, with Albert Adams of Nairn Centre and Douglas Anderson of Shillington as assistants.

Property:

The claims mapped are situated in the northwest part of Nairn Township and are identified as follows; -

Group 1 - comprising 26 claims numbered S-138888 to 138913 inclusive and encompass all of Lots 10 and 9 and the west one-half of Lot 8 in Concession V, as well as the south one-half of Lot 9 and the west one-half of the south one-half of Lot 8, in Concession VI.

Group 2 - comprising 4 claims numbered S-139650 - 59 - 70 - 71 and encompass the east one-half of Lot 11 in Concession V.

A total of 30 claims, covering approximately 1,200 acres, was mapped during the course of this work.

Location and Accessibility:

The Canadian Johns-Manville claims are located in the northwest part of Nairn Township, Sudbury Mining Division, Province of Ontario. Ready access is provided by a road recently constructed by the Ontario Hydro Commission which starts from Highway No. 17 west of the bridge across the Spanish River. This road connects

with the Sand Bay road which crosses the northeast corner of the claims group. A branch road leading to several deserted farms provides access to the north-central section of the property.

Topography:

The topography of the claims group is extremely rugged and is characterized by extensive rock outcrops. In the northwest section of the claims the major Mississagi quartzite ridge reaches a height of 1160 feet above sea level. Gabbro and quartzite are well exposed in lower rounded hills and ridges to the south and east. The most rugged cliffs seen were on the gabbro hills in Concession V near the boundary between Lots 8 and 9. The south facing cliffs were 100 feet high extending for 1000 feet. One peak has an estimated 200 foot vertical cliff.

There are no lakes on the property but there are a number of beaver ponds. These ponds are apt to change from year to year due to trapping and the activities of the beaver so may not be as shown on the older maps. One small natural pond has a strong sulphur odor.

The claims are well wooded except the higher hills. There are no indications of fire having burned the claims. The growth is thin on the hills with scattering jackpine, scrub oak, soft maple and sumac. The northwest part of the claims in Concession VI shows the growth as hardwood with poplar and soft maple being the most common. Evergreens predominate on the remainder of the claims. There are some scattering white pine two feet in diameter. Along one northern slope there is hemlock almost as large.

The north-central and northeast areas of Concession V are low with some swamp with black ash eight inches in diameter. This is generally covered with spruce, balsam and pine with white and yellow birch and other hardwood.

The southeast corner of the property south of the gabbro bluffs is smooth rolling upland with pine, spruce and balsam.

Topography: (cont'd)

The tornados that hit Baldwin and Grigg Townships in recent years missed this part of Nairn Township. Much of the area is very good travelling with moderately thick underbrush. The cliffs make some areas relatively inaccessible.

Previous Work:

Nairn Township was mapped in detail by R. Ginn during the field season of 1958. A report and a geological plan, on a scale of one inch equals one-half mile, were published in Geological Report No. 35 of the Ontario Department of Mines entitled "Nairn and Lorne Townships" and dated 1965.

The Spanish River Group of claims was obtained by this Company as part of a major program, to acquire by staking, claims covering the Mississagi quartzite along favourable contact zones in the Sudbury Area. The line cutting, chaining and geophysical survey were carried out during the early winter of 1967 to check for sulphide mineralization and to delineate the gabbroic intrusives and any magnetic formations in the sedimentary rocks. This geophysical work was reported as dated September 9th, 1967.

A short piece of handsteel was found but no trenching was noticed.

Line Cutting and Chaining:

Due to the extremely rugged nature of the terrain, it was necessary to establish the base lines along topographic breaks and to have same paralleling the strike of the regional fault systems - northeasterly trend.

Base Line "B" was started in a topographic low in the east-central section of Lot 8, Concession V and was cut to the southwest for a length of 6,000 feet. Rugged topography necessitated an offset of 200 feet to the northwest from which point the base line was cut to the southwest for a length of 300 feet. A scarp face made it necessary to offset this base line to the northwest, a distance of 700 feet, where the southwest trend was resumed for a further length of 600 feet.

A second offset of 70 feet to the southeast was required from which point the base line was continued for a length of 2,450 feet with a more sharply

Line Cutting and Chaining: (cont'd)

southwest strike. Parallel picket lines were established along this staggered base line at 300 foot intervals and were cut to the southeast to the claim boundary. These lines were tied in by chainage along the line between Concessions IV and V.

A second base line, "A", was started from the northeast side of a beaver pond in a depression at the edge of an open field and was cut to the southwest for a length of 8,700 feet, terminating north of a second beaver pond in low terrain. Location of this base line was carefully checked on aerial photographs. This base line crossed the boundary between Lots 9 and 10 at 0435 feet south of the line between Concessions V and VI. Lines were cut north at right angles to the limit of the group and were tied in along east-west lines established for this purpose.

Picket lines, started from base line "B", were carefully tied in along line "A" by chainage. Pickets with numbered locations were fixed at 50 foot intervals along the offset lines by chainage. This chaining was rendered extremely difficult and progressed slowly due to the rugged terrain.

Line cutting and chaining were contracted to L. Lavoie of Amos, Quebec and were carried out during the latter part of 1966 and early winter of 1967. A total of 41.29 miles of base, picket and tie lines were cut and chained as part of this program.

Work Procedure:

Traverses for geological mapping were made along the northwest offset lines and along most of the base lines. Some traversing was done between the lines but this did not include thorough coverage so some outcrops were probably missed. The additional information that this mapping contributes includes extra outcrops, some dip readings not previously recorded and greater detail on some contacts. The best dip readings were found on north facing cliffs.

Only two iron pins were found which are on the south boundary of the property. One is between Lots 8 and 9 and the other between Lots 10 and 11, both between Concessions IV and V.

General Geology:

The Spanish River Group of claims lie in an area of Huronian Sediments with the granitic basement to the north and the sediment tops to the south - south-east. The rocks on these claims belong to the lower units of the Huronian Sediments. The two main units are the Lower (Katinenda) Quartzite and Lower (Nordic) Argillite. Extensive gabbro bodies intrude these formations.

The Baldwin anticline is well exposed in the quartzite hill in the northwest corner of the claims. The quartzite makes a reversed "S" fold with the southern part interrupted by gabbro and cut off by the Worthington fault. The argillite is characterized by the development of garnet and staurolite with local biotite, chlorite and sericite.

The following legend is condensed from Map 2062 published by the Ontario Department of Mines.

Table of Formations

CENOZOIC

Recent

Muck; lake and stream deposits

Pleistocene

Sand, gravel, Clay.

Unconformity

PRECAMBRIAN

POST-SEDIMENTARY INTRUSIVE ROCKS

Basic Intrusive Rocks

Metagabbro and granitophyre.

Intrusive Contact

Folding and Faulting

SEDIMENTARY ROCKS

Conglomerate or Sudbury Breccia

Lower (Nordic) Argillite Unit

Lower (Katinenda) Quartzite Unit

Lower (Matinenda, Mississagi) Quartzite:

The lowest member of the Mississagi formation is found northeast of a beaver pond on Lot 11, Concession V. This is an altered garnetiferous argillite. It dips 55° east indicating the plunge of the Baldwin anticline in this area. This is probably an interbed in the quartzite.

The lower quartzite is well exposed on the Spanish River Group. It is generally a white massive very hard fine grained quartzite. A light yellowish staining is fairly common. A simple test that is probably quite reliable is that quartzite cannot be scratched with a knife whereas greywacke can be scratched perhaps with difficulty.

Towards the southeast side of the hill in the northeast corner of the claims there are some ridges running parallel to the strike. Near the top of the quartzite on the north facing 30 foot cliffs there are thin beds of greywacke showing the dip of the formation at between 40° and 50° southeast. I failed to find satisfactory dips on the north limb of the anticline. One dip of 75° N was seen north of the property but this does not check with the ones on the Ontario Department of Mines map No. 20b2.

The quartzite extends south and east from the hill but is interrupted by gabbro and is partially covered by overburden so it is difficult to be certain of its size and shape.

Lower (Nordic) Argillite Unit:

The lower argillite unit is highly altered and the exposures are quite scattered. Staurolite schist is the most common type southeast of the quartzite hill. Garnets are commonly present with the staurolite developed by a higher grade of metamorphism. Biotite schist occurs near the gabbro. Sericite and chlorite are also found. The garnets are quite completely altered to chlorite and the staurolite is partially altered.

Conglomerate or Sudbury Breccia:

In Lot 9, Concession V and near the north edge of Lot 8, Concession V, there are a number of exposures that resemble conglomerate but may be Sudbury breccia as most of the exposures are close to the gabbro intrusive. They strike in a general NNE direction close to the general strike of the area. They should be checked for rock type and radioactivity.

Matagabbro and Granitophyre:

Little attention was given to the structure or texture of the basic intrusive. It is a dark coloured medium grained rock. On the NW 1/4 of the north half of Lot 7, Concession V, there are sections predominantly hornblende and also a small segregation of pink granitophyre.

Recent and Pleistocene:

The recent and pleistocene deposits are considered to be quite thin on these claims. Along some of the streams there are sandy banks twenty feet high. The overburden seems quite free of boulders except in the talus below the cliffs and on some steep slopes.

Structure:

The quartzite and gabbro are found on the hills. The staurolite and garnetiferous argillite is found on the lower ground. The general strike is N70°E but this is altered by the Baldwin anticline in the northwest corner of the property. The general sequence is for the younger rocks to be to the southeast.

There are indications of minor synclines and anticlines south of the Baldwin anticline. One interesting observation was made of an anticline 100 feet east on line 24+00 and 900 feet north. This west facing bluff showed a vertical dip to the north and a 35° dip to the south.

The property lies between the Fairbank Lake fault to the north and the Worthington fault to the south.

Conclusions:

The geology of the claims is a good illustration of competent and incompetent rocks. The competent quartzite and gabbro stand up as hills with the soft garnet-staurolite schist exposed on the low ground.

The quartzite shows minor alteration except becoming compact. The garnet-staurolite schist has minor resemblance to the original greywacke - argillite.

Each of these members is estimated at 800 feet thick on the property. As only the upper section of the Lower Quartzite is exposed the total thickness of the formation is probably much greater.

Recommendations:

With the uranium prospects in Baldwin Township to the west and the prospect of a uranium mine in Hyman Township to the north, the mineralization should extend into Hairy Township. Deep diamond drilling would be the best way to locate such deposits.

C. S. Longley

Submitted by: C. S. Longley,
January 10th, 1968.



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REPORT ON GEOPHYSICAL SURVEYS
SPANISH RIVER GROUP OF CLAIMS
NAIRN TOWNSHIP
SUDBURY MINING DIVISION
PROVINCE OF ONTARIO

by

F. J. Eveleigh

Exploration Dept.,
Canadian Johns-Manville Co. Limited.

September 9th, 1967
Matheson, Ontario.

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List of Maps Accompanying Reports

Electromagnetic Profile Plans on a scale of 1" = 200' for Sheets:
Numbered 21, 22, 26, 27, 31, 32.

Geo-Magnetic Contour Plans on a scale of 1" = 200' for Sheets
numbered 21, 22, 26, 27, 31, 32.

Geological Legend Sheet - Baldwin - Maira Townships

Legend Sheet - Province of Ontario.

Location Map showing Map Sheet Layout.

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REPORT ON GEOPHYSICAL SURVEYS,
SPANISH RIVER GROUP OF CLAIMS,
HAIRN TOWNSHIP,
SUDBURY MINING DIVISION,
PROVINCE OF ONTARIO.

Introduction

The following report describes the geophysical surveys completed during the winter of 1967 on Canadian Johns-Manville Company Limited claims located in Hairn Township, Sudbury Mining Division, Province of Ontario.

Cutting and chaining of picket lines were contracted to L. Lavoie of Anos, Quebec. Picket lines spaced at 300 foot intervals were cut at right angles to north-easterly trending base lines. Pickets were fixed every 50 feet along these offset lines by chaining.

Magnetometer surveying was conducted by E. Vekhalanti, geophysical operator and fieldman with Canadian Johns-Manville Company Limited using a Jalander type instrument. W. Scott assisted during the course of this program. Readings were recorded at 50 and 25 foot intervals - spacing being dependent upon the magnetic intensity of the underlying formations. The results of this survey are shown on the accompanying "Geomagnetic Contour Plans" on a scale of one inch equals 200 feet.

Electromagnetic surveying was carried out by R. Haley, geophysical operator with this Company, using a McPhar Vertical Loop reconnaissance unit. B. Jeffrey assisted during the course of this work. Electromagnetic readings were recorded at 100 foot intervals along the offset lines and the results of this survey are shown on the accompanying "Electromagnetic Profile Plans" on a scale of one inch equals 200 feet.

Supervision and interpretation of this work were the responsibility of the writer, Regional Geologist with Canadian Johns-Manville Company Limited at Matheson, Ontario.

Remarks

The claims surveyed are situated in the northwest part of Hairn Township and are identified as follows; -

PROPERTY: (cont'd)

Group 1 - comprising 26 claims numbered S-138888 to 138913 inclusive and encompass all of Lots 10 and 9 and the west one-half of Lot 8 all in Concession V, as well as the south one-half of Lot 9 and the west one-half of the south one-half of Lot 8, all in Concession VI.

Group 2 - comprising 4 claims numbered S-139650 - 59 - 70 and 71 and encompass the east one-half of Lot 11 in Concession V.

A total of 30 claims, covering approximately 1,200 acres, was surveyed during the course of this work.

LOCATION AND ACCESSIBILITY:

The Canadian Johns-Manville claims are located in the northwest part of Haina Township, Sudbury Mining Division, Province of Ontario. Ready access is provided by a road recently constructed by the Ontario Hydro Commission which starts from Highway No. 17 at a location midway between the villages of Haina Centre and McKerrow. This road connects with the Sand Bay road which crosses the northeast corner of the claims group. A branch road leading to several deserted farms provides access to the north-central section of the property.

TOPOGRAPHY:

The topography of the claims group is extremely rugged and is characterized by extensive rock outcrops. In the north-central section of the claims the major Mississagi quartzite ridge reaches a height 1150 feet above sea level. Gabbro and conglomerate are well exposed in lower rounded hills and ridges to the south and east of the quartzite.

Tree growth is sparse on the quartzite hills and consists of sumac, scrub oak and soft maple. In the lower areas poplar, birch and oak occur extensively.

One small creek, dammed in places by beaver, was noted in the north part of the surveyed area.

PREVIOUS WORK:

Haina Township was mapped in detail by R. Ginn during the field season of 1958. A report and a geological plan, on a scale of one inch equals one-half mile, were published in Geological Report No. 35 of the Ontario Department of Mines

Previous Work (cont'd)

entitled "Haira and Lorne Townships" dated 1963.

Checking the assessment records on file at the Resident Geologist's office in Sudbury failed to reveal any data covering previous exploration work on this claims group.

These claims were obtained by this Company as part of a major program, to acquire by staking, claims covering the Mississagi quartzite along favourable contact zones in the Sudbury Area. The line cutting, chaining and geophysical surveys were carried out during the early winter of 1967 to check for sulphide mineralisation and to delineate the gabbroic intrusives and any magnetic formations in the sedimentary rocks.

Detailed geological mapping, which is being carried out by G. Longley, geologist with this Company, is currently in progress on the property.

Line Cutting and Chaining

Due to the extremely rugged nature of the terrain, it was necessary to establish the base lines along topographic breaks and to have same paralleling the strike of the regional fault systems - northeasterly trend.

Base line "B" was started in a topographic low in the east central section of Lot 8, Concession V and was cut to the southwest for a length of 6,000 feet. Rugged topography necessitated an offset of 200 feet to the northwest from which point the base line was cut to the southwest for a length of 300 feet. A scarp face made it necessary to offset this base line to the northwest a distance of 700 feet where the southwest trend was resumed for a further length of 600 feet. A second offset of 70 feet to the southeast was required from which point the base line was continued for a length of 2,450 feet with a more sharply southwest strike. Parallel picket lines were established along this staggered base line at 300 foot intervals and were cut to the southeast to the claim boundary. These lines were tied in by chainage along the line between Concessions IV and V.

Line Cutting and Chaining (cont'd)

A second base line, "A", was started from the northeast side of a beaver pond in a depression at the edge of an open field and cut to the southwest for a length of 8,700 feet, terminating north of a second beaver pond in low terrain. Location of this base line was carefully checked on aerial photographs. This base line crossed the boundary between Lots 9 and 10 at 0435 feet south of the line between Concession V and VI. Lines were cut north at right angles to the limit of the group and were tied in along east - west lines established for that purpose.

Picket lines, started from base line "B", were carefully tied in along base line "A" by chainage and were extended north of "B" to the boundary of the claims. The ends of these lines were tied in by chainage along picket lines established for that purpose.

Pickets with numbered locations were fixed at 50 foot intervals along the offset lines by chainage. This chaining was rendered extremely difficult and progressed slowly due to the rugged terrain.

Line cutting and chaining were contracted to L. Lavoie of Amos, Quebec and were carried out during the latter part of 1966 and early winter of 1967. A total of 41.29 miles of base, picket and tie lines were cut and chained as part of this program.

Magnetometer Survey

A magnetometer survey was conducted over the Spanish River Group of claims by E. Vekhalakti, fieldman and geophysical operator with Canadian Johns-Manville Company Limited. W. Scott assisted during the course of this work.

Magnetic readings were recorded using a Jalander type instrument having sensitivities of 10, 30 and 100 gammas per division for scales 1, 2 and 3, respectively. This instrument was checked immediately prior to starting the Mairn Township survey and utilizing the value of a fixed known Company base station at the former Munro Mine near Matheson, a gamma value of 1220 on the Jalander would correspond

Magnetometer Surveys (cont'd)

closely with an absolute value of 57,599 \pm 15 gammas.

On the claims surveyed only one main base control station was established. This station was located on the north side of the clearing of the right-of-way for a new Hydro Electric Power Commission transmission line and was situated exactly at 22450 feet south of base line "B" on picket line 9400 West. The value of this station was fixed at 850 gammas.

Using a Skidoo to move quickly along the south boundary of the claims, this base station was read prior to starting and immediately after completing picket line traverses. The rugged terrain made traverses relatively short and consequently only two readings were recorded daily on the base station. These were as a check on the working condition of the instrument and to record the daily diurnal variation.

Stations were spaced at 25 or 50 foot intervals along the offset lines - spacing was dependent upon the magnetic intensity of the underlying formations.

A total of 3,330 stations was recorded on the claims group during the course of the magnetometer survey.

Electromagnetic Surveys

An electromagnetic survey was conducted over the Haira Township claims by R. A. Haley, geophysical operator with Canadian Johns-Manville Company Limited. B. Jeffrey assisted during the course of this work. The survey was carried out during the period January 4th to February 18th, 1967.

Readings were recorded using a McPhar vertical loop reconnaissance electromagnetic unit on a frequency of 1,000 cycles per second. The McPhar unit is suitable for use as a reconnaissance and relatively detail electromagnetic unit, employing three separate configurations for different geological conditions. In this case the transmitter was held vertically at a distance of 500 feet from the receiver; the receiver was tilted about the axis joining the two coils until a null was observed. This configuration is the most suitable for steeply dipping conductors, giving a minimum response from flat-lying overburden, and is relatively

Electromagnetic Survey (cont'd)

unaffected by elevation differences.

The transmitter and receiver were moved on separate lines, 400 feet apart, and readings were recorded at 100 foot intervals. Under these operating conditions, a depth penetration of 200 feet would be attained. Null widths which were extremely low were recorded at each station but have not been shown on the accompanying plans.

Walki-Talki units were used by operators of the transmitting and receiving coils for position control during the survey.

A total of 1,750 stations was recorded on the Spanish River Group of claims.

The results of the McPhar survey are shown on the accompanying "Electromagnetic Profile Plans" on a scale of one inch equals 200 feet.

General Geology

The geology of the area - Naira and Lorne Townships - was mapped in detail by R. M. Ginn and assistants and the results are shown on Map No. 2062 which accompanies "Geological Report No. 35" issued by the Ontario Department of Mines. In order to show the general geology of the region discussed in this report, the following "Table of Formations" has been included and was taken directly from G.R. No. 35. Note that only the major units have been shown for purpose of this report.

Table of Formations

CRETACEOUS

Recent

Muck, lake and stream deposits.

Pleistocene

Sand, gravel, clay.

Unconformity

PRECAMBRIAN

Keweenaw (?)

Olivine diabase.

Porphyritic olivine diabase.

Table of Formations (cont'd)

Intrusive Contact
Faulting

POST-SEDIMENTARY INTRUSIVE ROCKS

Basic Intrusive Rocks
Undifferentiated.
Olivine diabase (possibly Keweenaw).
Metagabbro.

Intrusive Contact
Folding and Faulting

SEDIMENTARY ROCKS

Upper Quartzite Unit
Upper Argillite Unit
Upper Conglomerate Unit
Middle Quartzite Unit
Middle Greywacke Unit
Lower Conglomerate Unit
Lower Argillite Unit
Lower Quartzite Unit

On the claims surveyed, rock types are limited to quartzites of the Lower Missisquoi Formation; argillites and greywackes and their metamorphosed equivalents of the Nordic Formation; conglomerates which occur along the base of the Nordic sediments, and sills of gabbroic intrusives.

The major structural feature on the Spanish River Group of claims is the Baldwin Anticline. This structure plunges gently to the east, strikes approximately N70°E and crosses the northern section of the property. The Fairbank Lake fault is located immediately to the north of the claims while the Worthington fault crosses the southeastern part of the surveyed area. These faults strike in a general north-northeast direction and occurred prior to intrusion of the gabbro sills.

Detailed geology of the Spanish River Group of claims will be discussed in G. Longley's report which will be filed for assessment purposes during the latter part of 1967.

Interpretation of the Magnetometer Survey

The interpretation has been based upon a study of the contoured magnetometer plans, R. Ginn's geological plan and report covering Maira and Lorne Townships, aerial photographs and results of the geological mapping and prospecting currently being conducted on the group by G. Longley.

On the Spanish River claims magnetic readings are relatively low in value and uniform throughout. The maximum range is from a low of 400 to a high of 1,200 gammas, however, the great majority of the readings are within the limits of 600 and 900 gammas. Lines of equal magnetic intensity have been drawn at 550, 750, 950 and 1,000 gamma levels to emphasize trends in the formations.

A study of the "Geomagnetic" plans indicates that it is impossible to differentiate between any of the sedimentary formations - Nordic, Mississagi and the basal conglomerate - utilizing the magnetic data. Similarly the extensive gabbroic intrusives cannot be outlined on this basis. Readings over all the rock types range in general from the lower to the upper limit of gamma values.

Consequently the results of G. Longley's geological survey have been used extensively for the interpretation shown on the accompanying plans.

Structurally, the Baldwin anticline and several strong northeasterly trending fault zones cross the claims group. These structures have not been shown on the plans. Several tentative cross structures, striking parallel to the picket lines and at right angles to the aforementioned regional faults, have been indicated by the magnetic survey. These structures occur between picket lines 54+00 and 57+00 West; 36+00 and 39+00 West and 18+00 and 21+00 West mainly on Sheet No. 26. Some have not been marked on the accompanying plans due to lack of both geologic and topographic indications of their occurrence.

Interpretation of the Electromagnetic Survey:

The interpretation has been based upon a study of the Electromagnetic Profile Plans, topographic features and the results of geological mapping and prospecting currently in progress on the claims group.

Electromagnetic conducting zones on the Spanish River Group of claims are, in general, caused by the extremely rugged topography, not by disseminated sulphide mineralization. Locations of steep slopes, scarps, draws, etc. were carefully recorded by the geophysical operator during the course of the survey and these features have been shown on the accompanying plans. In a majority of instances crossovers and weak to moderate angles correspond with these topographic features. Pronounced topographic effects occur along ridges in the quartzite and gabbro on Sheet No. 21 and along the axis of the Baldwin anticline on Sheet No. 26.

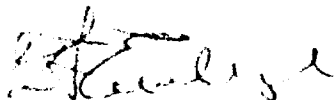
Exceptions occur on Sheet No. 31 where a weak crossover occurs over the gabbro intrusive along the north claim boundary; on Sheet No. 32 where another weak crossover has been delineated over the gabbro in the northeast corner of the claims; on Sheet No. 21 where weak to moderate angles and occasional weak crossovers have been recorded, and in the northeast part of Sheet No. 26 where a weak angle has been recorded in the Nordic formations. Note that these weak conducting zones have been outlined on the accompanying plans using a lavender coloured pencil.

Note that none of the zones outlined by this survey are indicative of economic sulphide mineralization. However, conductors in the gabbro will be prospected as part of the geological survey which is currently in progress.

Conclusions and Recommendations:

Geophysical surveys, both magnetic and electromagnetic, have failed to reveal any anomalies or conducting zones of interest on the Maira Township claims. However, due to the proximity of the Quebec-Mattagami operation and the occurrence of the lower member of the Mississagi quartzite formation in the Baldwin anticline in the north part of the property, it is recommended that the current geological program be completed and a scintillator survey started.

Further work would be dependent upon results obtained from these programs and new developments in the area.



F. J. Evelogh,

September 9th, 1967.

DETAILED ASSESSMENT REPORT
SPANISH RIVER GROUP OF CLAIMS
MAIRN TOWNSHIP
SUDBURY MINING DIVISION
PROVINCE OF ONTARIO.

Line Cutting and Chaining:

This work was contracted to L. Lavoie of Amos, Quebec and his men carried out the work during the latter part of 1966 and the early part of 1967. Note that this line cutting is not being filed at the present time but will be filed later this year with the geological survey.

Magnometer Survey:

This survey was conducted by E. Vekhalhti, geophysical operator and fieldman with Canadian Johns-Manville Company Limited using a Jalander type instrument. W. Scott assisted during the course of this work.

E. Vekhalhti - operator - Matheson -	Jan 4th - Feb 16th, 1967 -	38 x 7 -	266 man dys
W. Scott - assistant - Kirkland Lake -	" " " "	38 x 7 -	266 " "
Total			532 man dys.

Electromagnetic Survey:

This survey was carried out by R. Haley, geophysical operator with this Company using a McPhar vertical loop type reconnaissance unit. B. Jeffrey assisted throughout the survey.

R. Haley - operator - Matheson -	Jan 4th - Feb 18th, 1967 -	40 x 7 -	280 man days
B. Jeffrey - assistant -	" " " "	40 x 7 -	280 " "
Total			560 man days

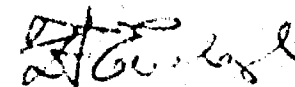
Office Work:

This work was carried out by Canadian Johns-Manville Company Limited personnel from the Northern Ontario Office at Matheson, Ontario.

M. Bruce - calculations, drafting -	June 5th-30th, 1967 -	20 x 7 -	140 man days
M. E. Evelagh - typing	Sept 9th, 1967 -	1 x 7 -	7 " "
F. J. Evelagh - interpretation, report	Sept 1st - 8th, 1967 -	6 x 7 -	42 " "
Total			189 man days



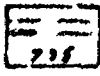
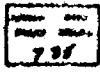
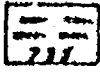
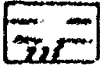

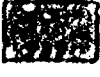
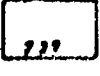
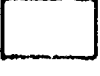
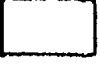
Assessment Work Filed:

Magnetic and electromagnetic surveys and office work - totalling 1.281 man days equivalent to 42.7 man days assessment work per claims hereby filed on mining claims S-138888 to 138913 inclusive and S-139650 - 59 - 70 and 71.


F. J. Evelagh,
September 9th, 1967.

LEGEND SHEET

BALDWIN + NAHAN TWPS.

-  17 Granite
-  16 Gabbro
-  106A Garnet Schist
-  10 106 Greywacke
-  105 Staurolite Schist
-  108 Biotite Schist
-  9 Minclemagi Quartzite
-  9A Basal Conglomerate
-  1 Andesite etc.
- 
- 

Nordic Formation

EASTERN ONTARIO
MINING DIVISION



69.2214
PARLIAMENT BUILDINGS
TORONTO 2, ONTARIO
TEL. 365-1322

DEPARTMENT OF MINES

OFFICE OF MINING RECORDER

January 10th, 1968



411055E0056 0020A1 NA1RN

900

Dear Sir:

Subject: Geological and Geophysical Surveys

The assessment work credits as shown on the attached list have been approved as of the above date. Please inform the recorded holder and so indicate on your records.

Yours truly,

A handwritten signature in cursive script, appearing to read "Fred W. Matthews".

Fred W. Matthews,
Mining Recorder.

:SMM

cc. Canadian Johns Manville
Co. Ltd.

Dr. J. F. Donovan ✓

Mr. K. H. Hallock
Mining Recorder
Sudbury, Ontario

File: 63.2214

THE MINING ACT
Assessment Work Credits

Name: CANADIAN JOHN'S MANVILLE CO. LTD.

Township or Area: HAIRM TWP.

Number of Assessment work days per claim:

Geophysical 42.7

Geological

Geochemical

Mining Claims: \$ 138888 to 138913 incl.

\$ 139650

\$ 139659

\$ 139670, 139671

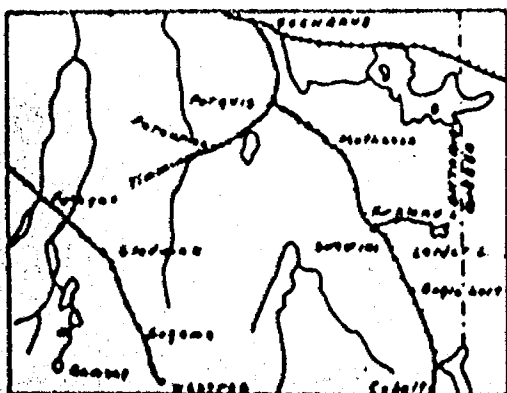
GEOLOGICAL LEGEND

- 6 Quartz diabase, diabase
- 5 Granite 5a, Syenite 5b, Feldspar porphyry 5c, Quartz feldspar 5d, Felsite 5e, Lamprophyre 5f
- 4 Diorite 4a, Gabbro diabase 4d
- 4c Peridotite & Dunite (Serpentinized)
(Asb. - Asbestos recognized)
- 4d Pyroxenite
- 3 Rhyolite
- 2 Andesite basalt pillow lava 2a,
Diabasic lava 2b, Spherulitic lava 2c,
Fragmental lava 2d, Tuff & Chert 2e,
Talo-chlorite schist 2f
- 1 Graywacke 1a, Arkose 1b, Quartzite 1c,
Argillite or shale 1d, Conglomerate 1e,
Iron formation 1f, Chlorite schist 1g
- Cb Carbonate rock

GEO-CHEM SYMBOLS

Q.T.-T.H.M. - Quick Test - Total Heavy Metals.
H.X.-T.H.M. - Hot Extraction - Total Heavy Metals.

- | | |
|--|---|
| γ Nil | e 1 - 100 |
| w 101 - 200 | l 201 - 400 |
| a 401 - 500+ | * Power Auger |
-
- | | |
|-------------------|-------------------|
| R.S. - Red sand | W.S. - White sand |
| B.S. - Brown sand | Cl. - Clay |
| B.M. Black Muck | |



LOCATION SKETCH - 1" = 50 Miles

TOPO-SYMBOLS

- Outcrop
- Higher ground
- Scarp
- Muck or Swamp
- Creek
- Drill hole
- Bush road
- Direction in which lava flows
face, indicated by shape of
pillows

ELECTRO-MAG SYMBOLS

- Scale - 40 units - 1"
S - Strong
M - Medium
W - Weak
- RONKA H.L. UNIT
- In phase curve
 - Out phase curve
- NPCS Not proper coil spacing
East - Positive. West - Negative

M'PHAR V.L. UNIT

- Dip angle profile
North & East Positive
South & West Negative
- CONDUCTOR
- Geol. Survey by -
- Mag survey by -
- E.M. survey by -

GEO-MAG SYMBOLS

- Contour interval 500 gammas
- Magnetic Base Control Station
- Geological Contact
- Fault Zone - G - Geological
M - Magnetic
T - Topographic

CANADIAN JONNS-MANVILLE CO. LTD.
MATHURIN

LEGEND SHEET
PROVINCE OF ONTARIO

SCALE DATE SEPT. 1966

DRAWN BY

THE NO

APPROVED P.J.B.

HYMAN TWP.

VI

(P)

139808 139809 139810
139811 139812 139813

139814 139815 139816
139817 139818 139819

139820 139821 139822 139823 139824 139825

139826 139827 139828 139829 139830 139831

SHEET 26

SHEET 27

139832 139833 139834 139835 139836 139837

139838 139839 139840 139841 139842 139843

SHEET 21

SHEET 22

NAIRN TWP.

SPANISH RIVER
G.P.R.
A.R.R.
HWY #12

BALDWIN TWP.

IV

III

12 11 10 9 8 7 6 5

CANADIAN JOHNS-MANVILLE CO. LTD.

MATHERON

ONTARIO

LOCATION MAP
SPANISH RIVER GROUP
NAIRN TWP.

SCALE 1" = 1/4 MI.

DATE Oct. 1967

DRAWN MR.

TRACED

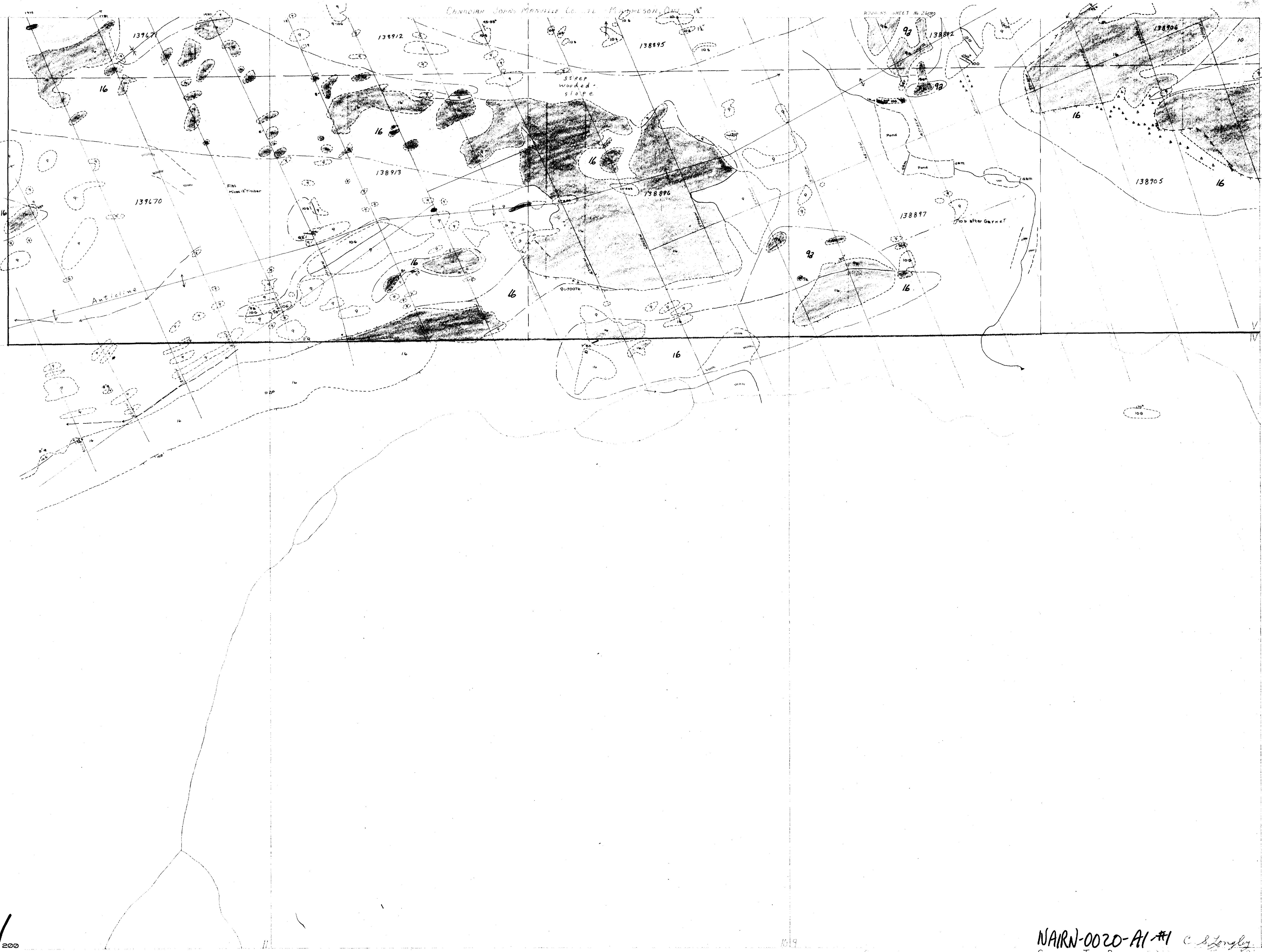
APPROVED P.J.E.

[Handwritten signature]

FOR ADDITIONAL
INFORMATION

SEE MAPS:

NAIRN-0020-A1 #1-18



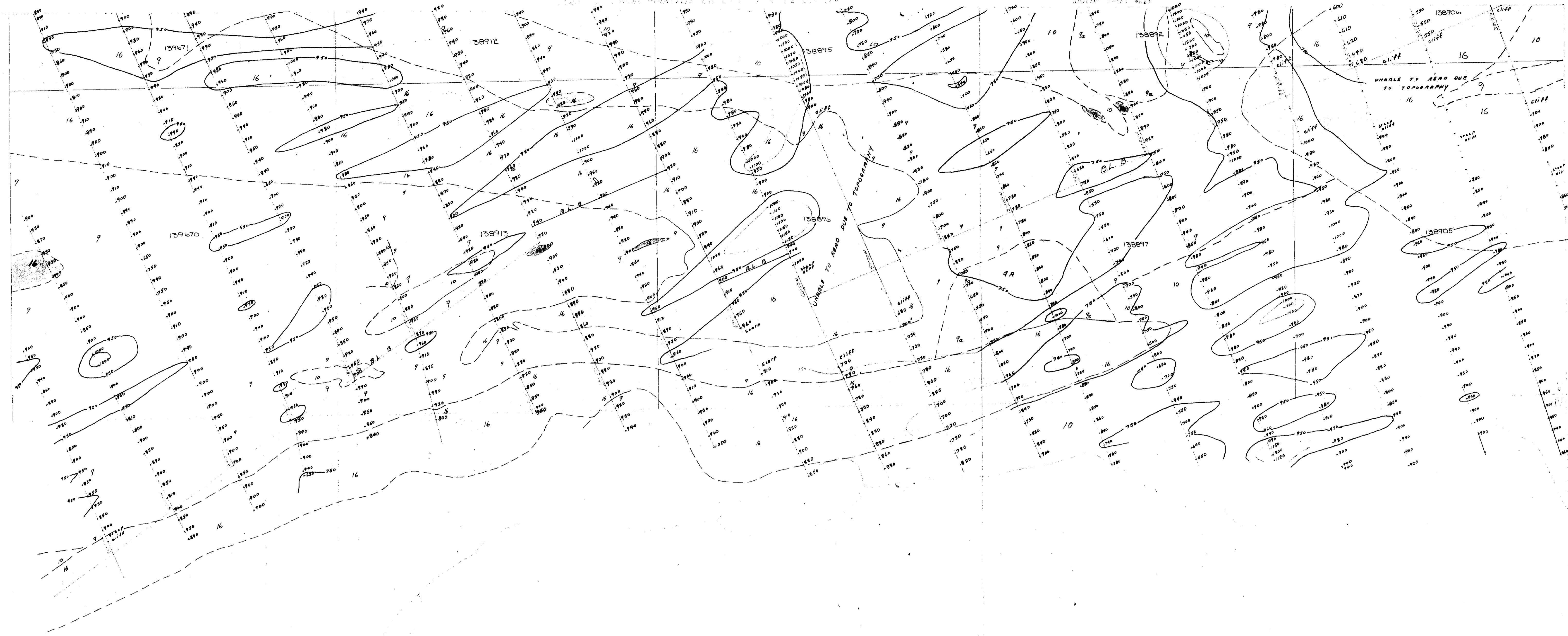
RD2015 BRLOWN SHEET No. 25

RD2015 SHEET No. 27



200

NAIN-0020-A1-#1 C. Stongly
GEOLOGICAL + TOPO PLAN

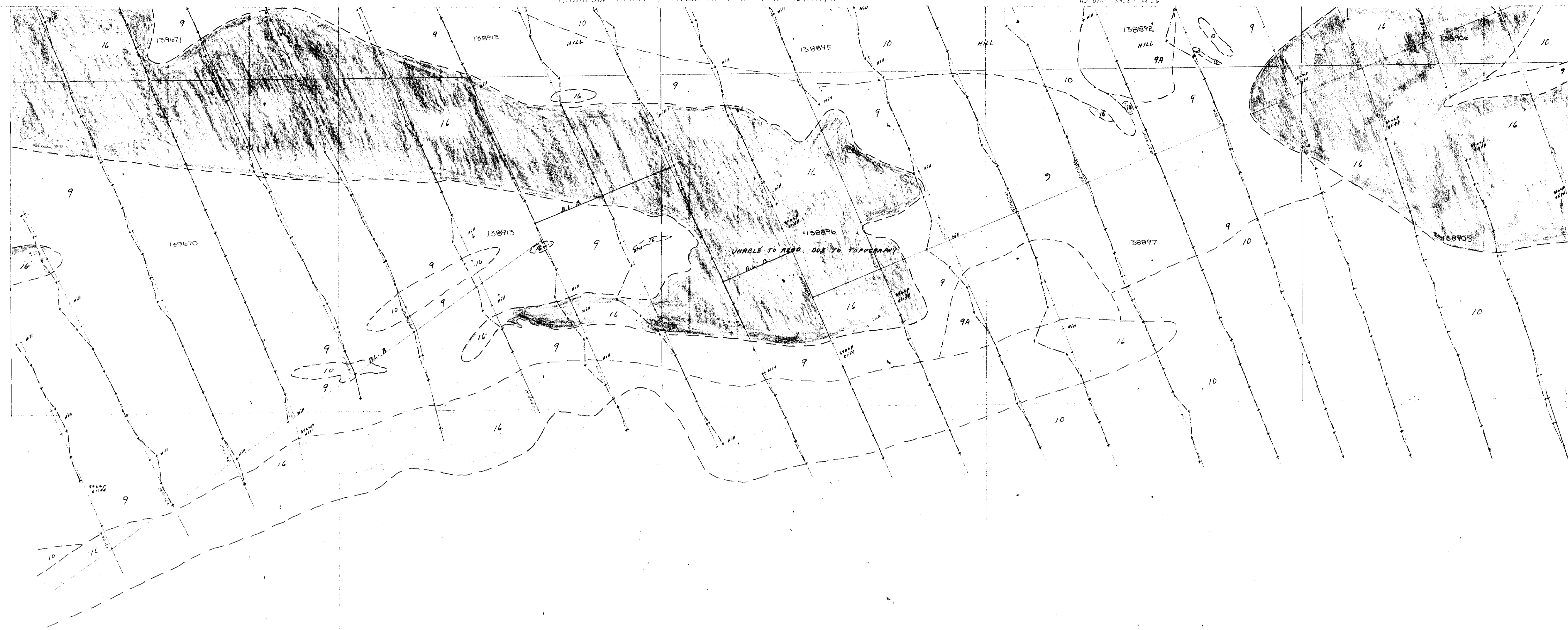


ADDITIONAL SHEETS IN SERIES 1, 2, 3, 4, 5

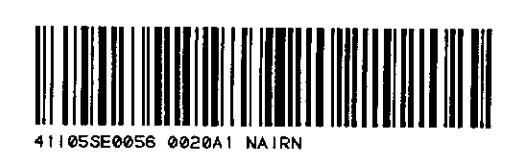


210

NARN-0020-A1-#2
Geophysical Survey for Ont. Geo-Magnetic Contour Plan SEPT. 67
1:25000 Scale



ADDITIONAL SHEET No. 25

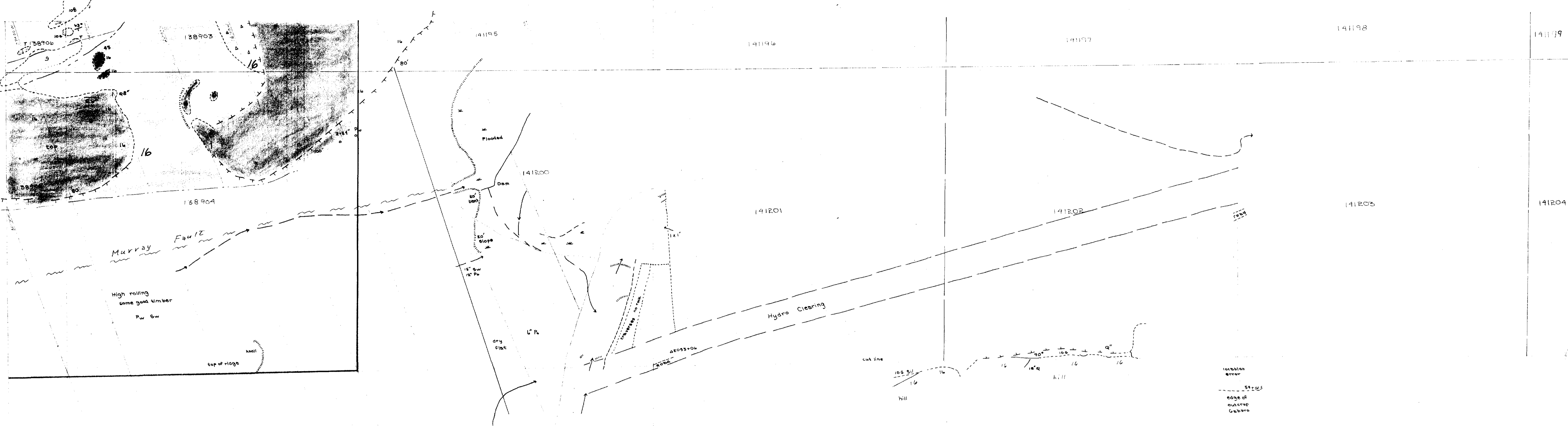


220

10.9

SPANISH RIVER GR. SEPT. 67

NAIRN-0020-A1-#3 *[Signature]*
 ELECTRO MAGNETIC PROFILE PLAN 1:200 NAIRN TWP 21

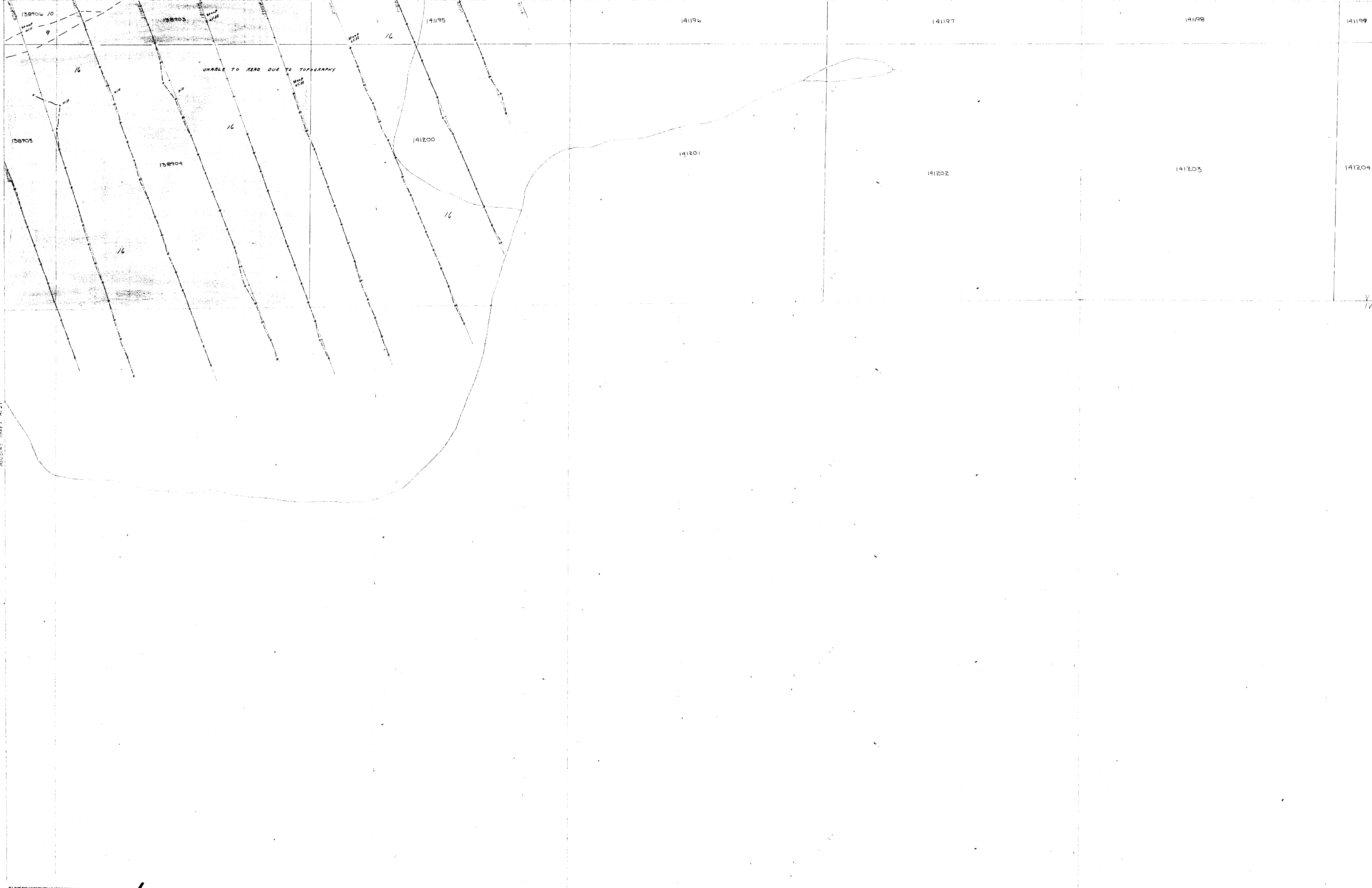




240

817

NAIRN-0020-A1-75
 SPANISH RIVER BR. ONT. GEO-MAGNETIC CONTOUR PLAN SEPT. 67



SECTION SHEET 621

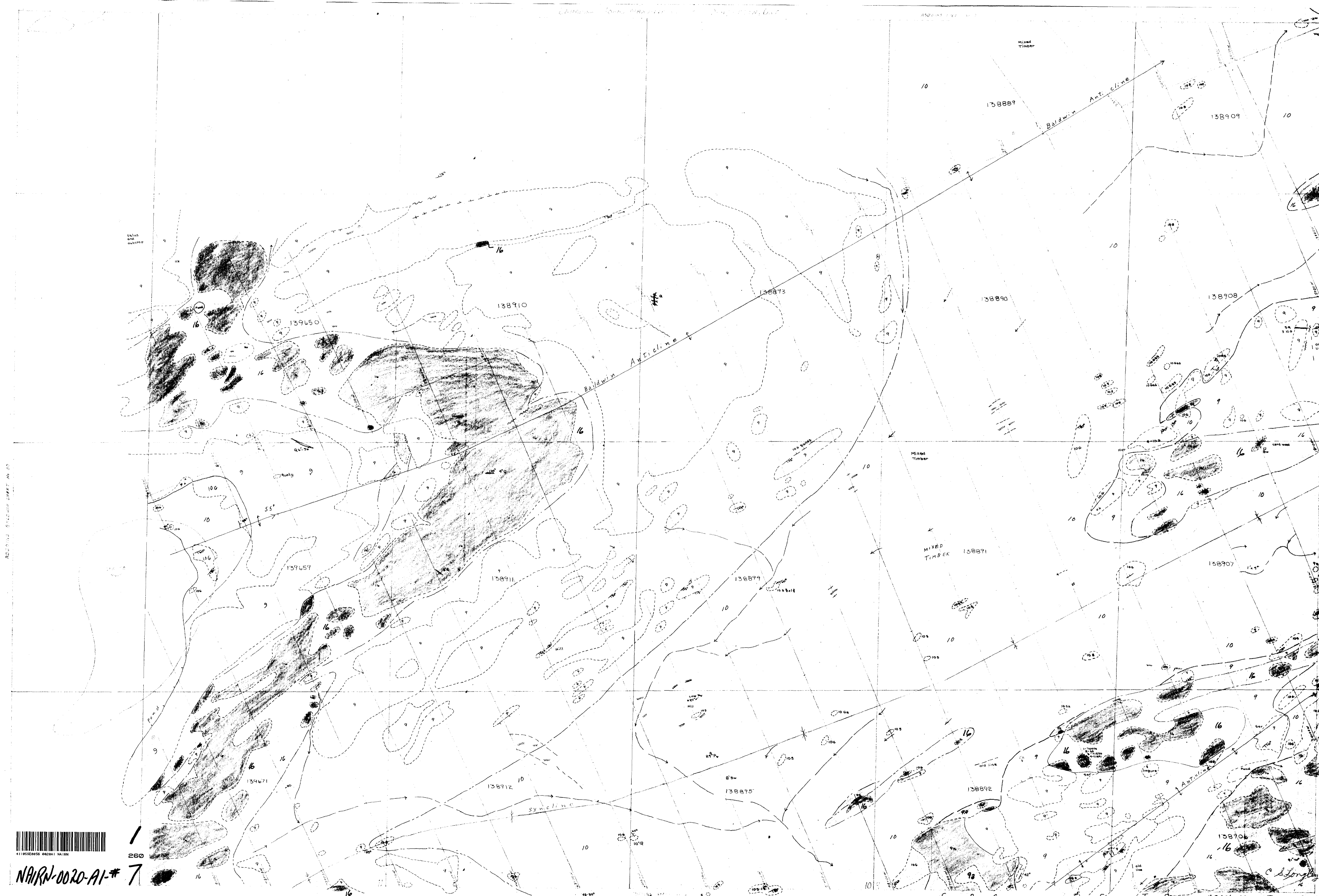


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817

716

NAIRN-0020-A1 #6 *Stamper*



NAIN-0020-AI-# 7

260

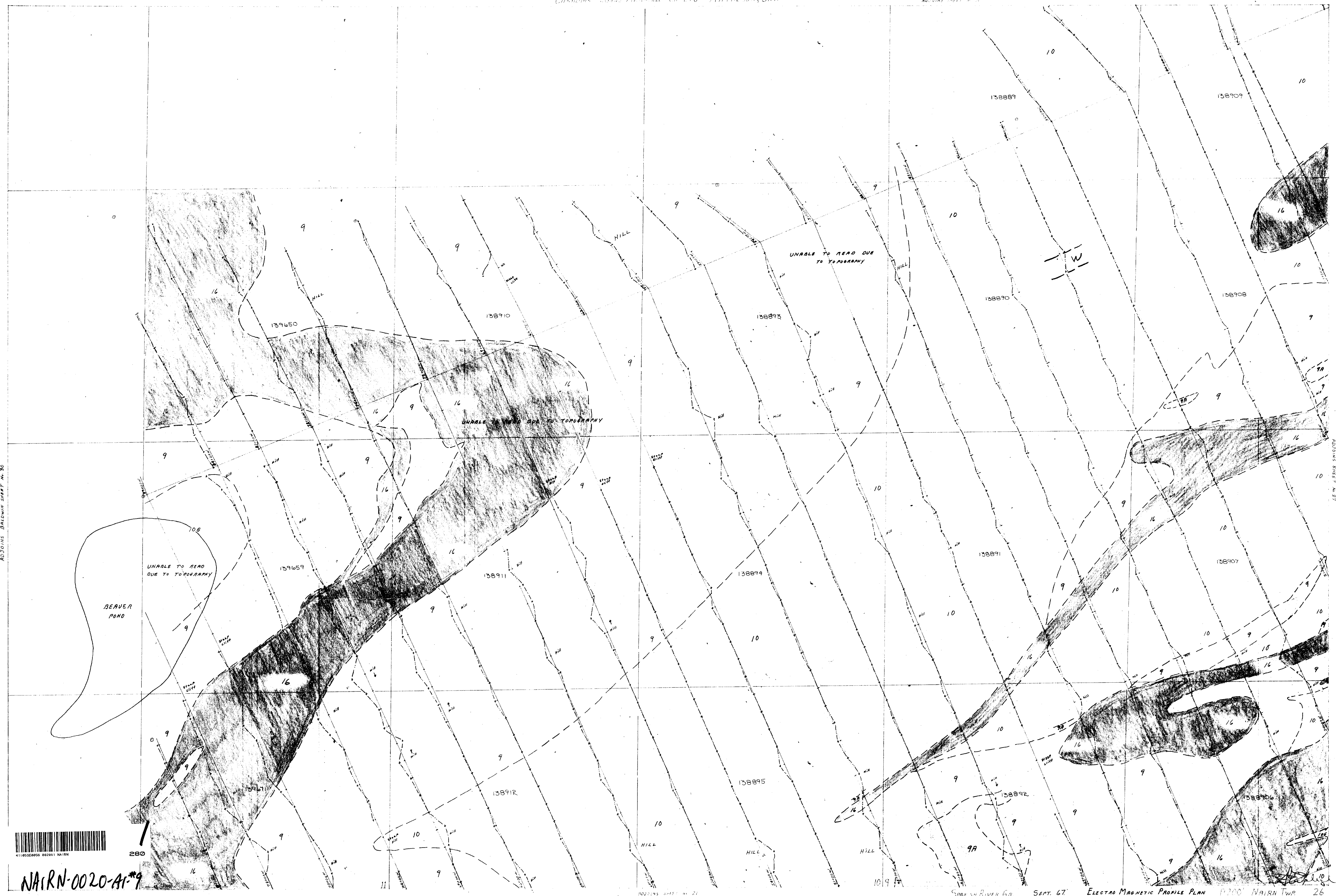
AND HIS BALCONY SHEET No. 20

NAIRN-0020-A1-#8
270



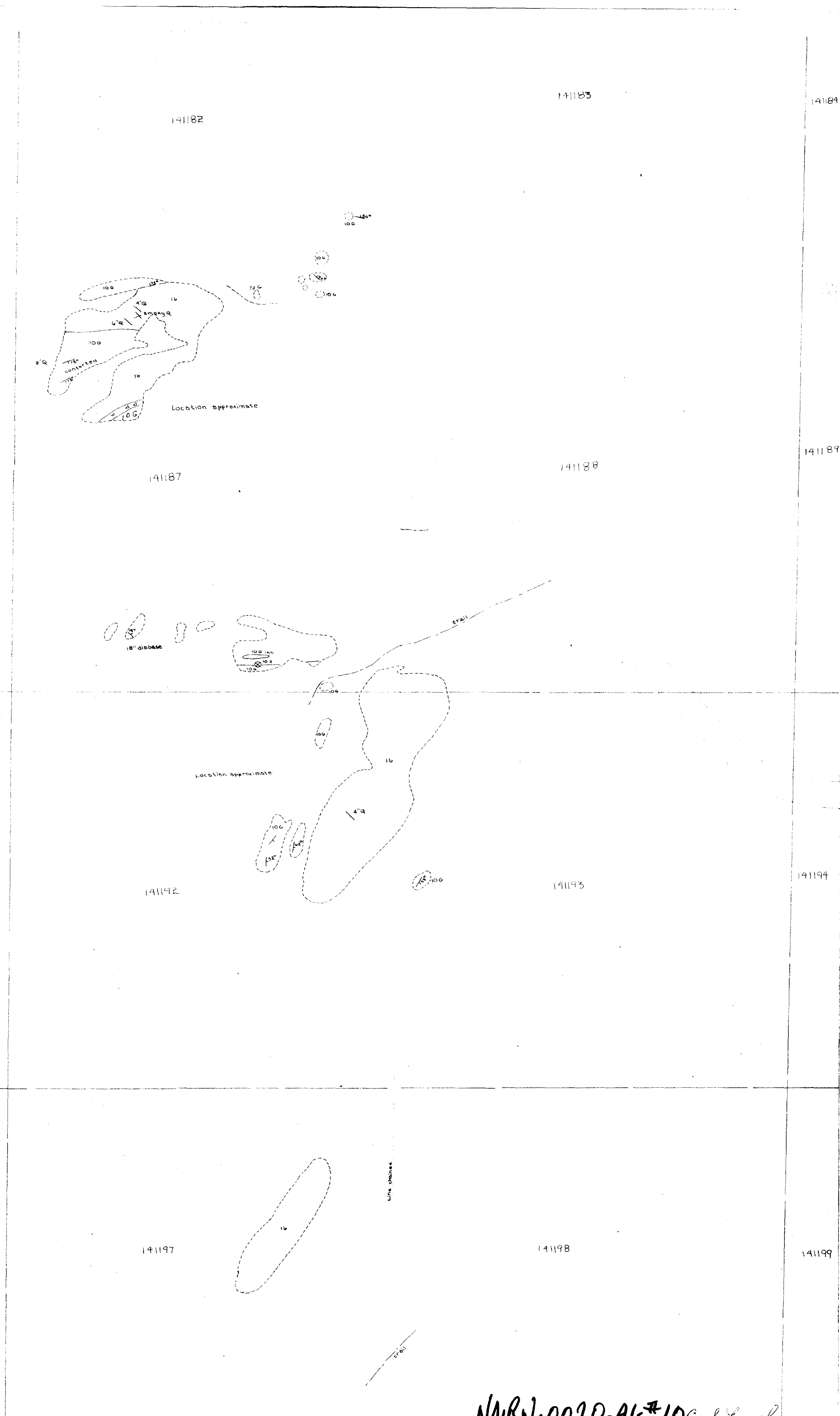
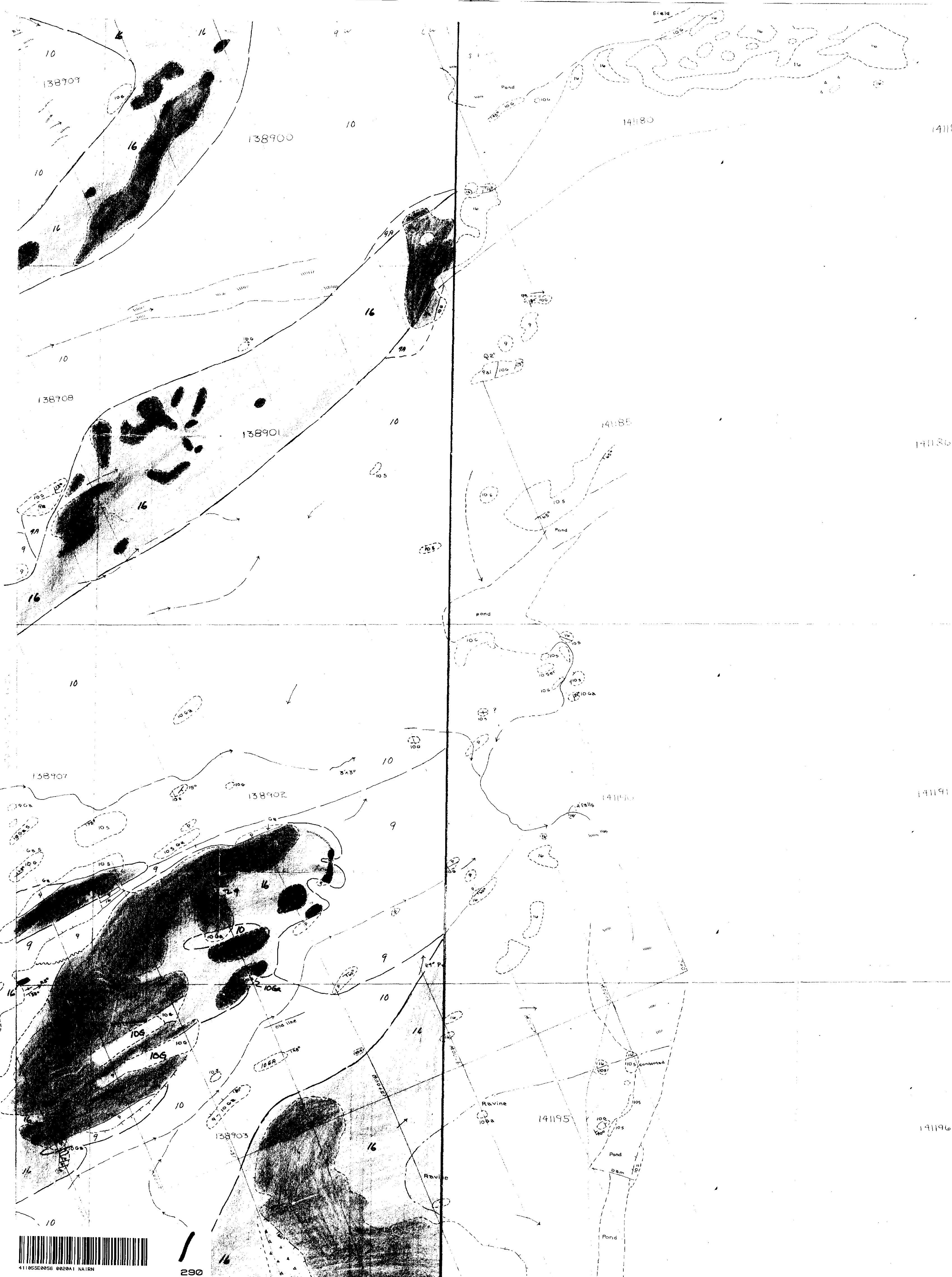
ADJOINS SHEET 26

ADJOINS SHEET 27



NAIRN-0020-AI-#9

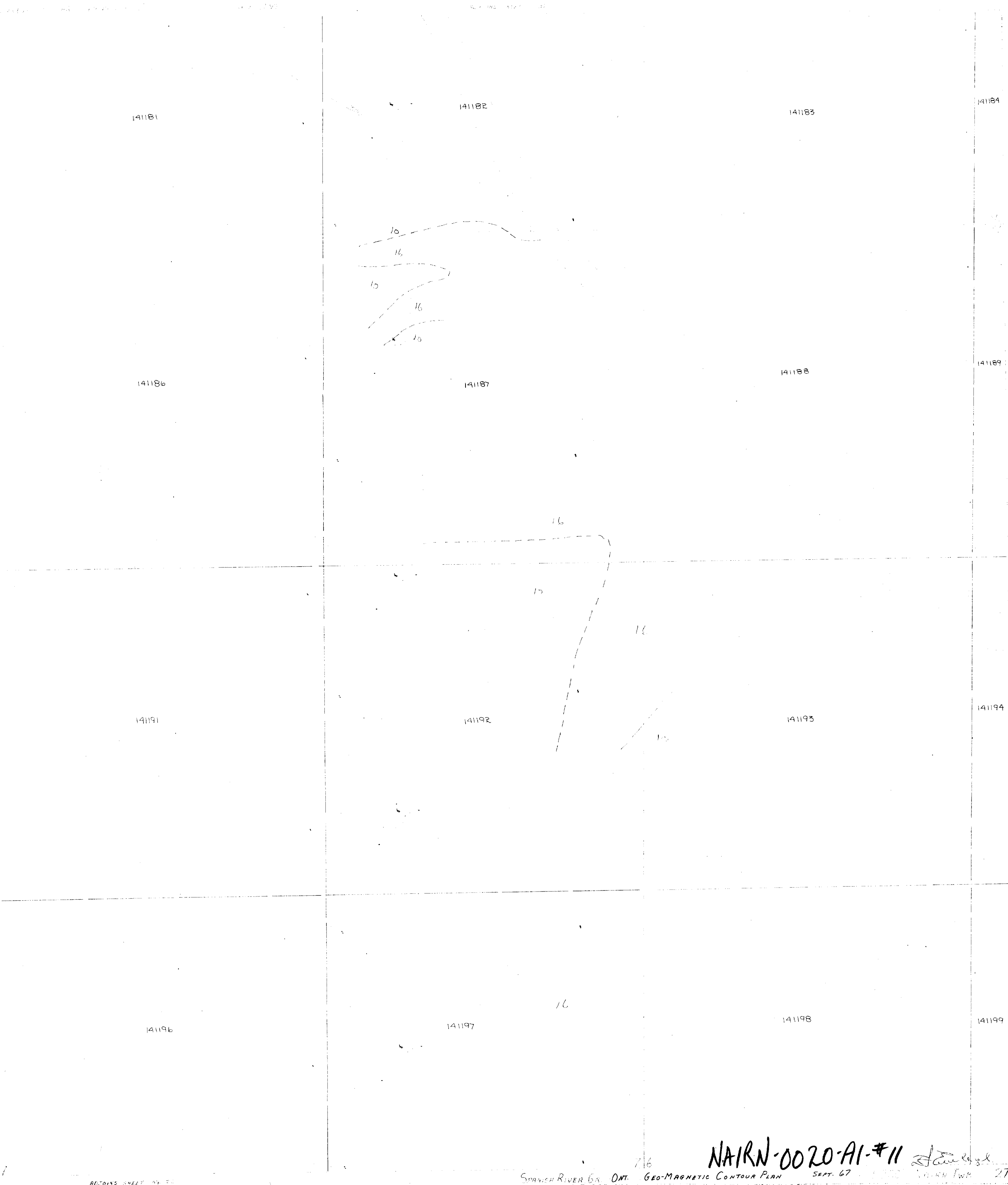
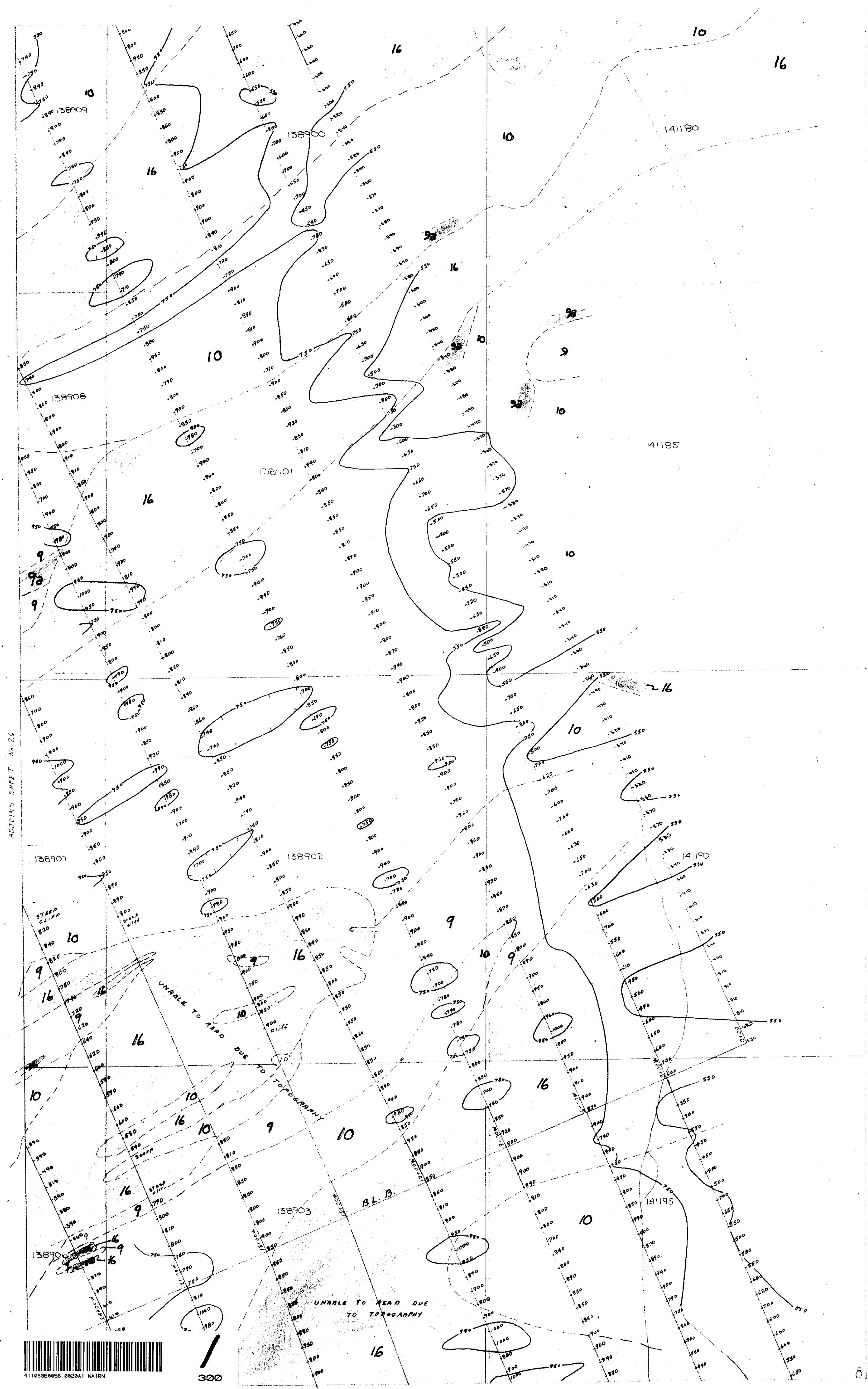
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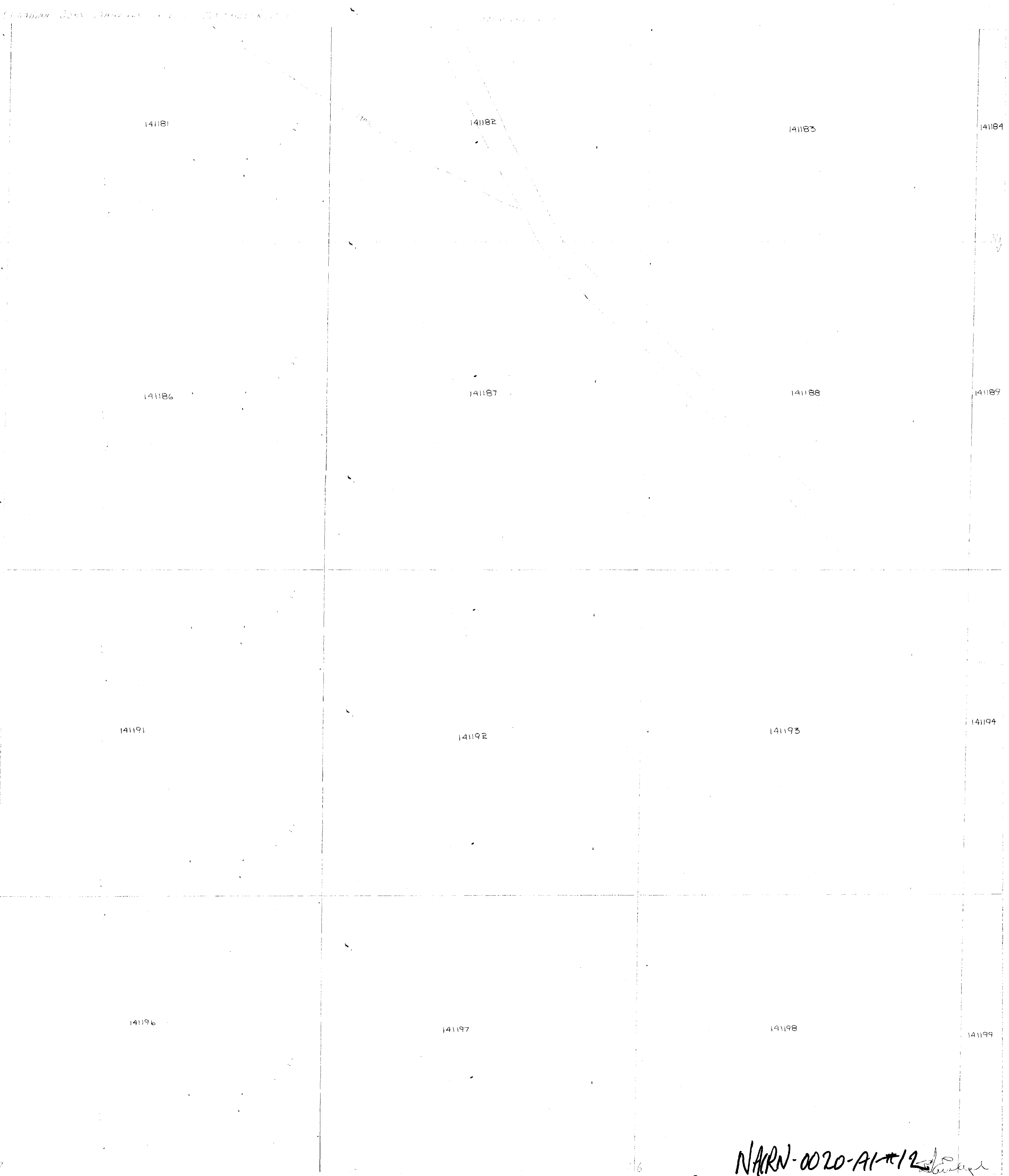
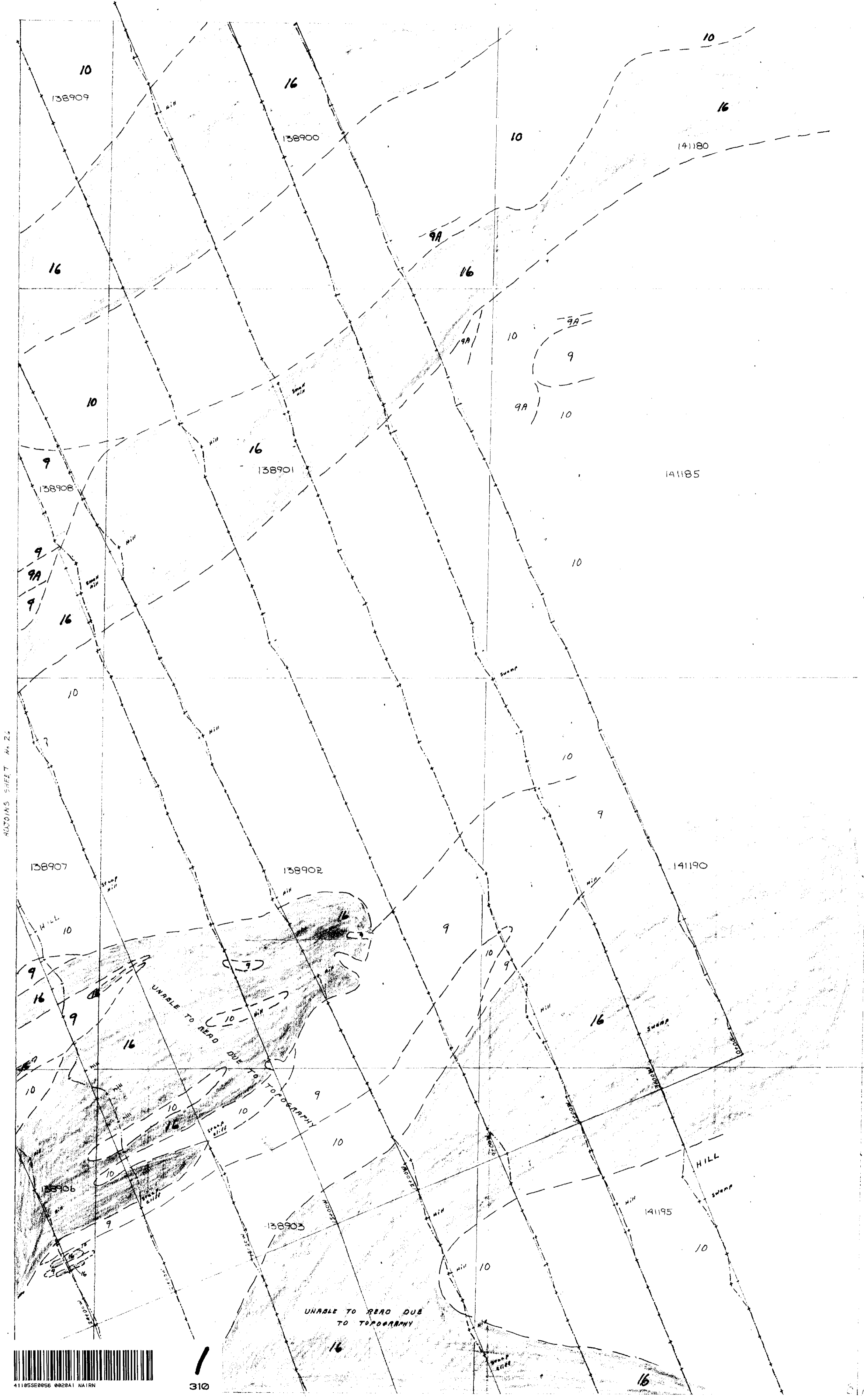
SPANISH RIVER GR.

NAIN-0020-A1-#10C *L. Longley*
 GEOLOGICAL + TOPO PLAN 1"=200' NAIN TWP.



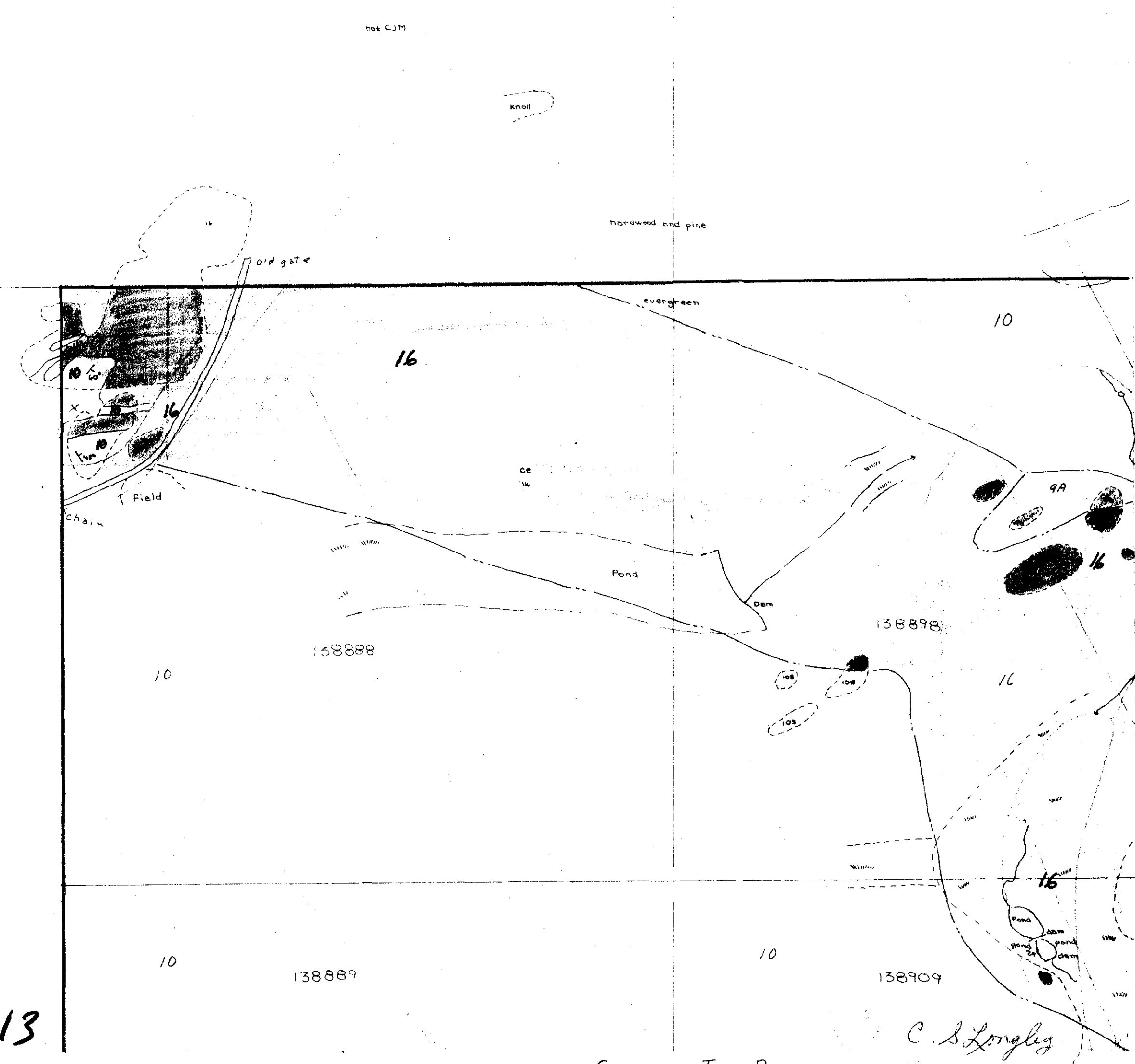
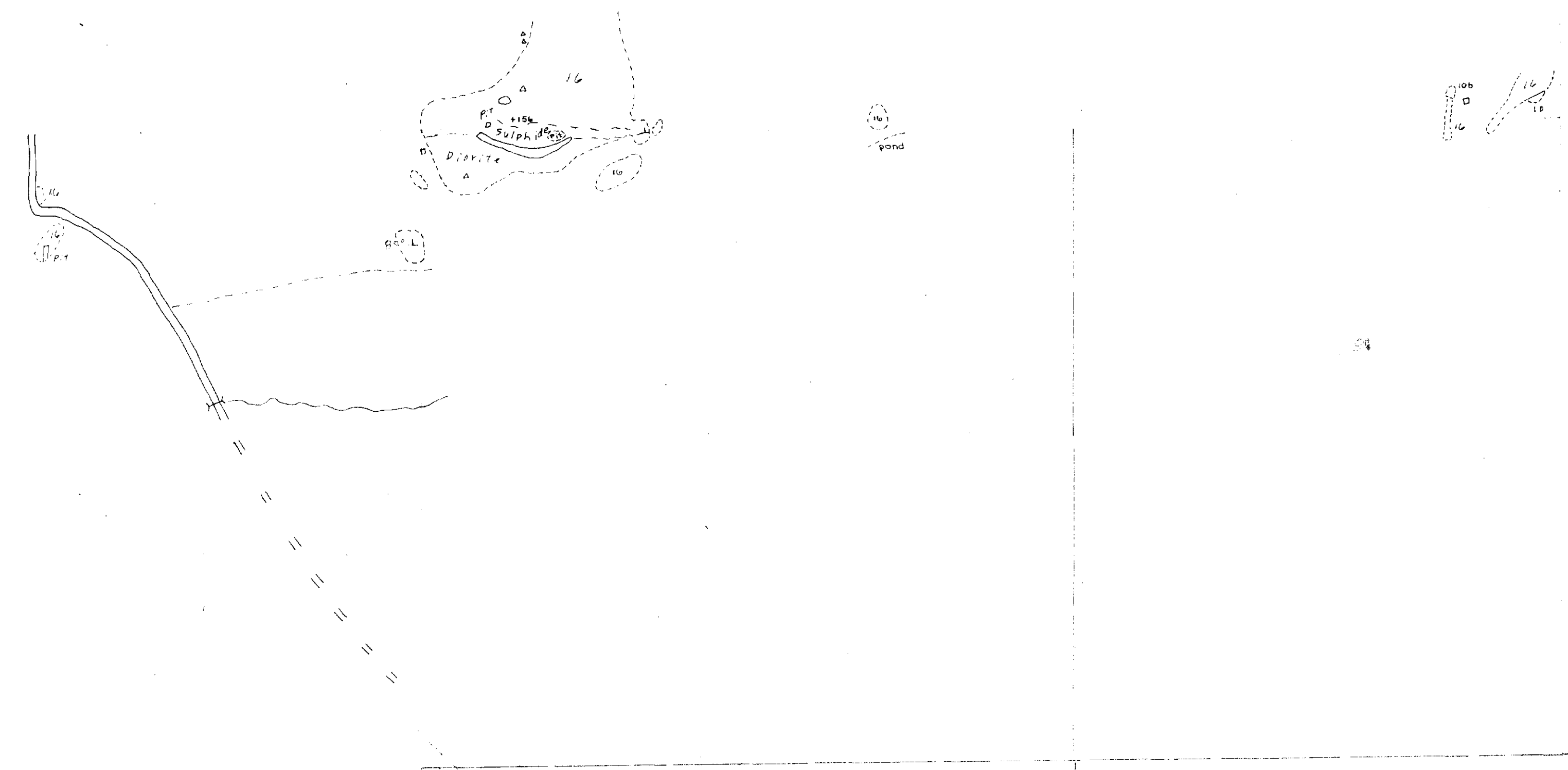
300

NAIRN-0020-A1-#11
 SPANISH RIVER, FLA. DWT. GEO-MAGNETIC CONTOUR PLAN
 SEPT. 67



NARN-0020-A1-12
ELECTRO MAGNETIC PROFILE PLAN

Section Top

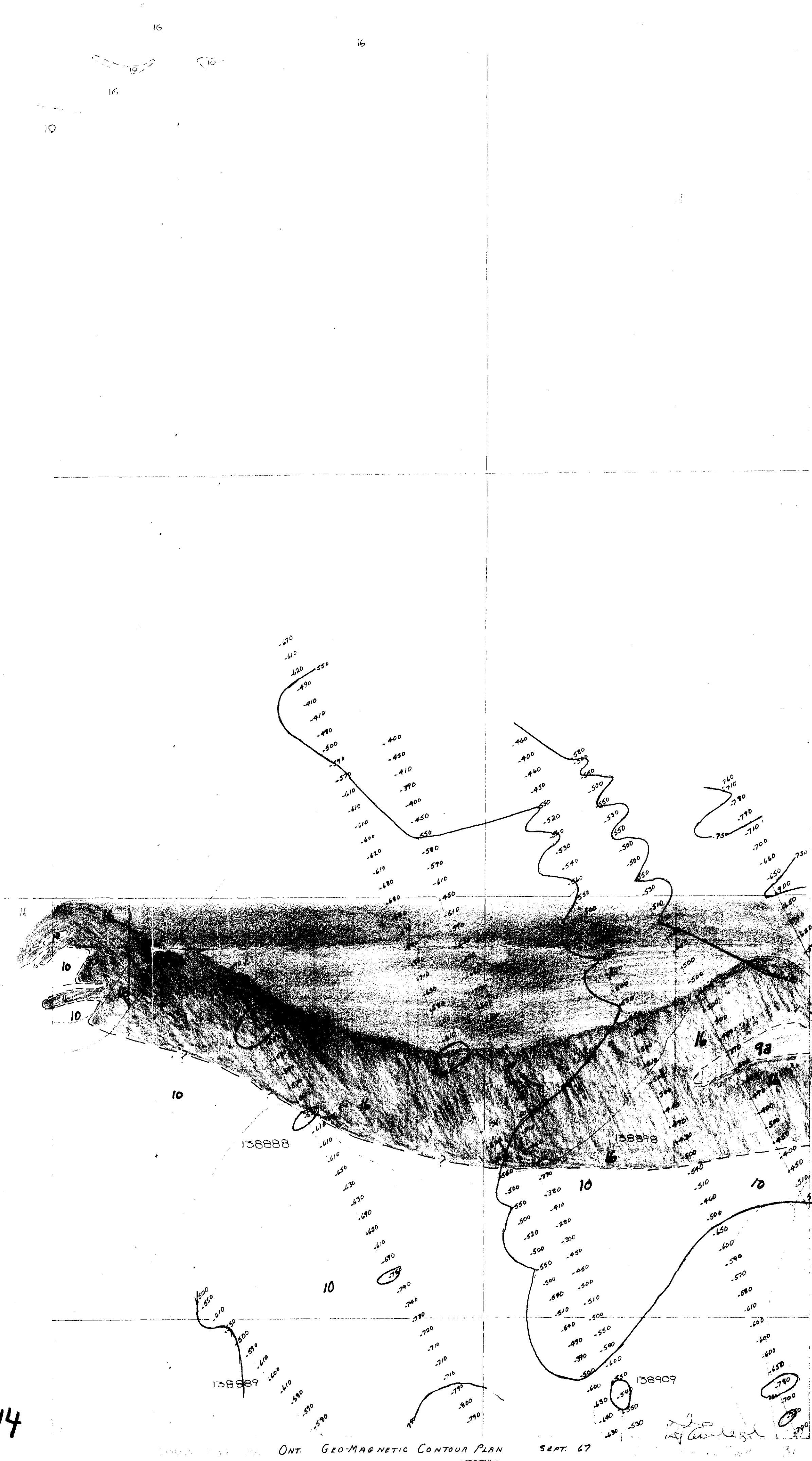


NAIRN-0020-A1-#13

GEOLOGICAL + TOPO PLAN

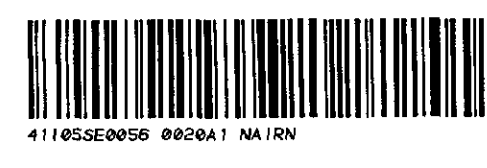


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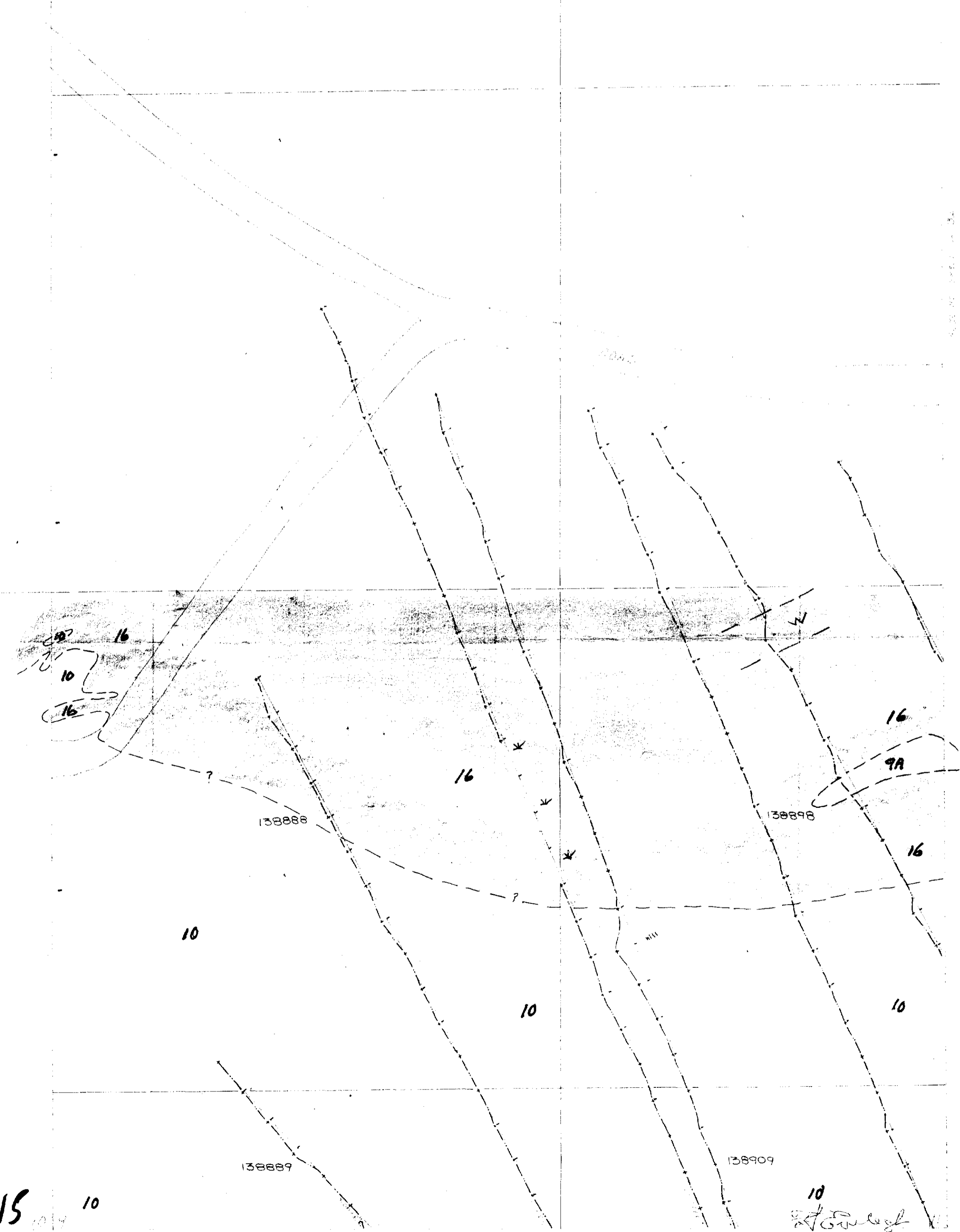
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ONT. GEOMAGNETIC CONTOUR PLAN SEPT. 67



330

HYMAN TWP.



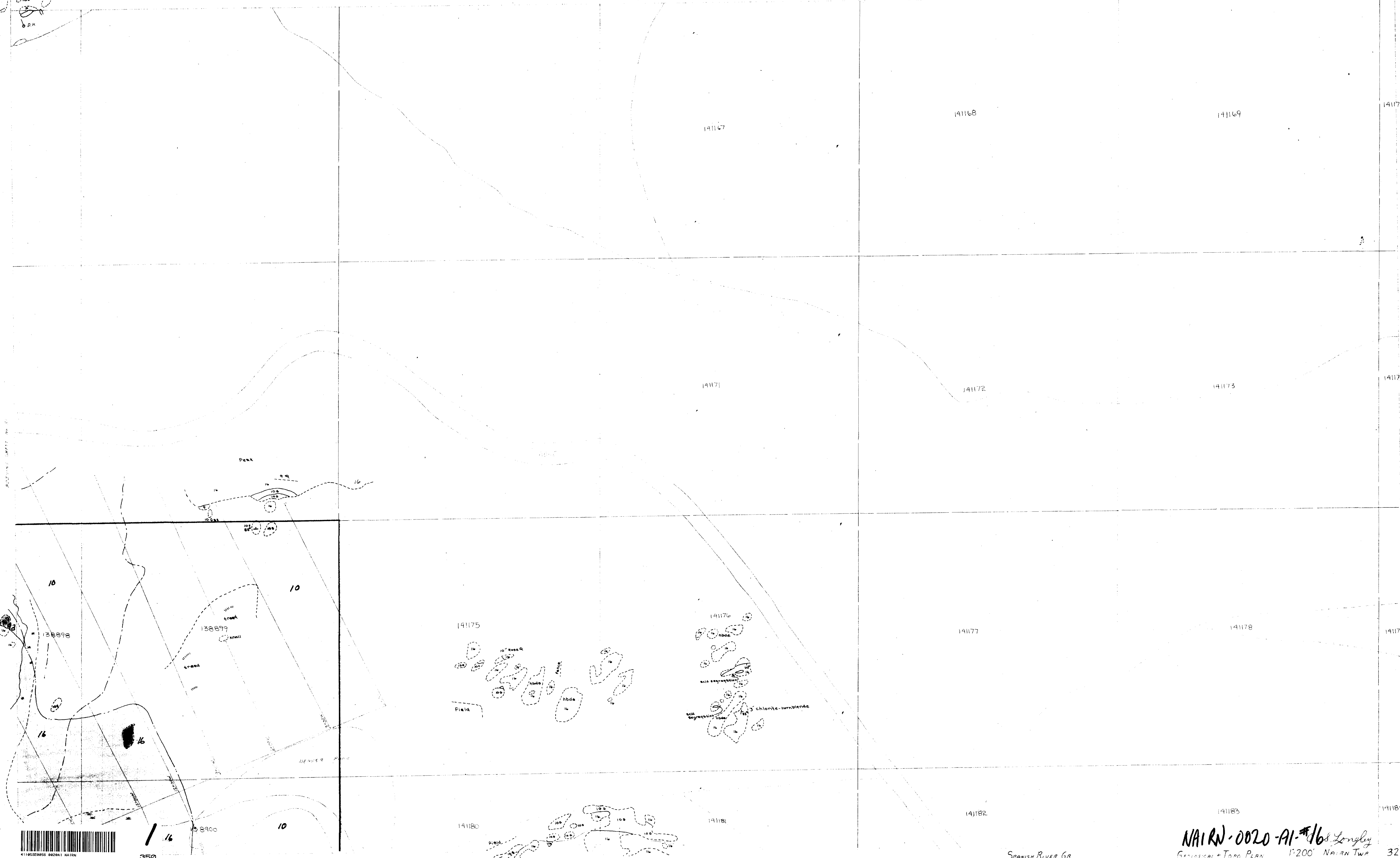
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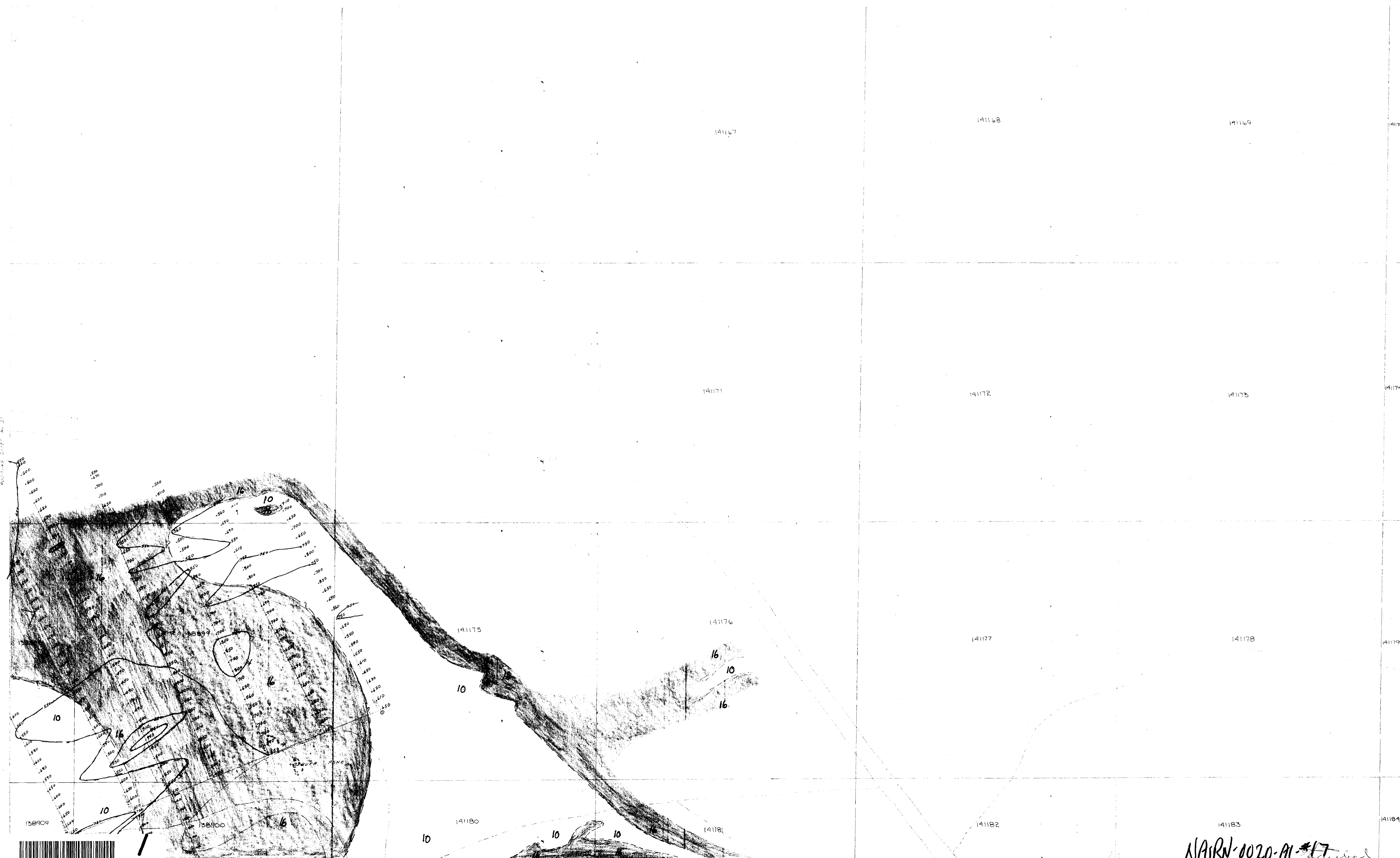
HYMAN TWP

Handwritten notes: "Cross" and "DPH" with a small sketch of a cross.



350

NAIN-0020-AI-16 Longly
Geological & Topo Plan 1:200 NAIN TWP



RODONS SHEET No. 27

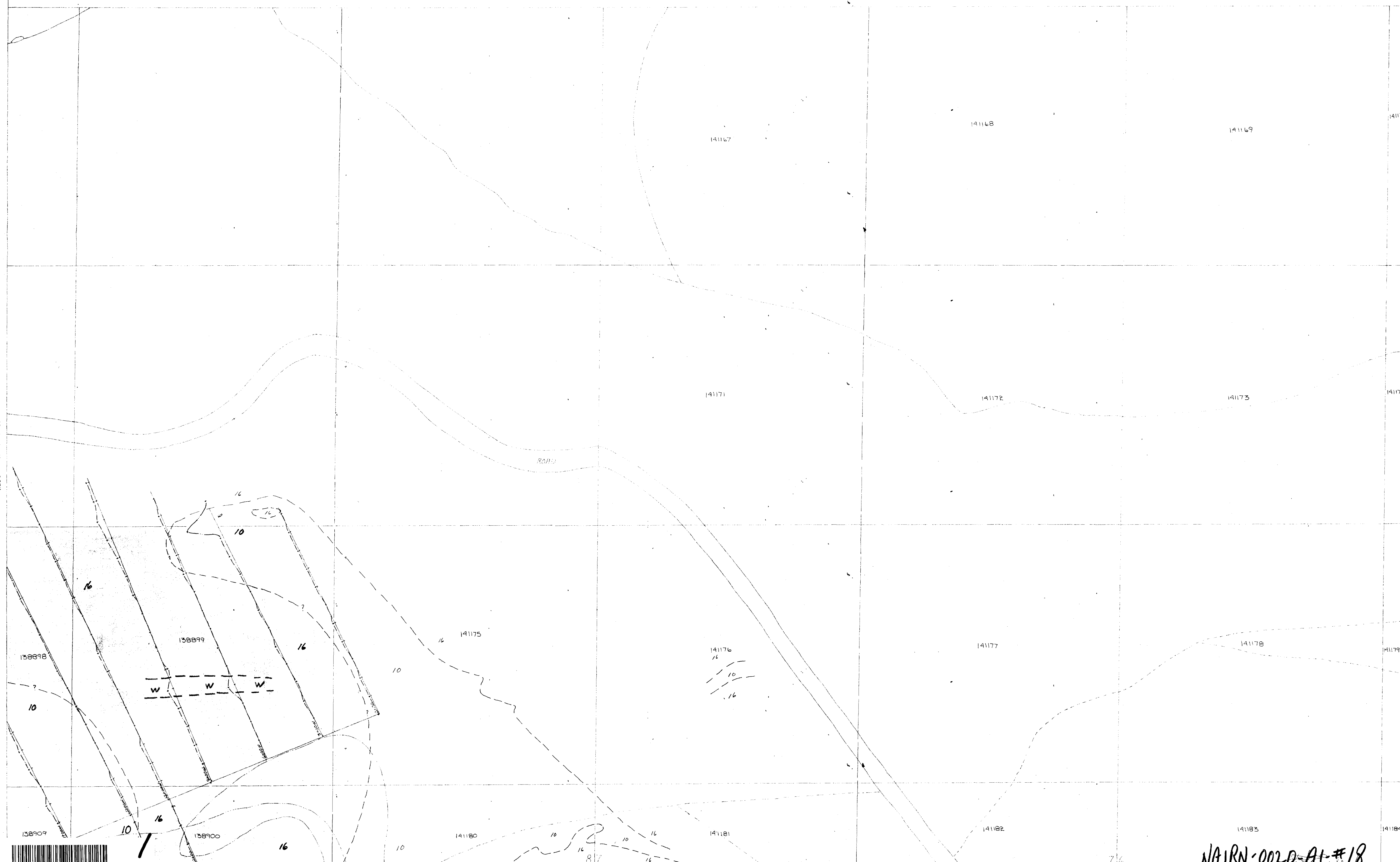


360

RODONS SHEET No. 27

NARRN-0020-A1-17
[Signature]

HYMAN TWP



ADJOINING SHEET NO. 17



370

ADJOINING SHEET NO. 20

Sept. 67

736
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 ELECTRO-MAGNETIC PROFILE PLAN
 32