



52F05SE0142 63.312 ROWAN LAKE

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SUMMARY

Geological and geomagnetic surveys of the Denlake property indicate that the greater portion of the claim group is underlain by granite and quartz diorite. It is unlikely that mineral deposits of interest occur in these rocks.

Additional large sections are underlain by recrystallized andesite and amphibolite in which no structures nor mineralization of interest were seen.

Copper and pyrite mineralization and rust stains are confined to two relatively small areas of less altered andesite in the southeastern and northern portions of the property and the magnetic results suggest the possibility of a third area of fresher andesite and mineralization in the southwestern portion of the group.

A north-south fault has been assumed to account for a disparity in geology on either side of a narrow swamp in the southwestern portion of the property.

Surface prospecting of rust and mineralized zones observed or indicated by the magnetics has been recommended where shallow overburden permits.

Winter electromagnetic surveying of the fault zone and the anomaly in the southwestern corner is proposed should commitments permit, with the alternative of limited diamond-drilling.

63.312

INTRODUCTION

Although gold occurrences have been known to exist in the Atikwa - Rowan Lake area since the late nineteenth century and nickel had been found in the northern part of the area in the 1950's, the recent promising discoveries of copper and gold at the Atikwa Lake property of Noranda Mines Limited has aroused new interest in this area and hundreds of claims have been staked between Rowan and Populous Lakes.

Preliminary prospecting has revealed other copper occurrences one of which lies on the property of the Denlake Mining Company.

Experience at the Noranda property has indicated the advisability of close geological inspection of the outcrops accompanied by geophysical surveying to indicate possible favourable zones for more intensive investigations since the natural outcrops of the deposits, particularly the gold deposits, are most inconspicuous and deceptive.

Geological and geomagnetic surveys of the Denlake property were therefore carried out in June and July of 1952.

PROPERTY, LOCATION, ACCESS

The property of the Denlake Mining Company Limited consists of 16 unsurveyed claims numbered:

K 15294 to K 15302 inclusive

K 15313 to K 15319 inclusive

located in the angle formed by the south shore of Denmark Lake and the west shore of Rowan Lake in the extreme southern limits of the Atikwa Lake area, Kenora district, Ontario.

The claim group lies about 50 miles southeast of the town of Kenora on the Canadian Pacific Railway and about 16 miles east of the Kenora - Fort Francis highway at Sioux Narrows.

The property may be reached either by air from Kenora or Fort Francis or by water from the highway. Of the two methods, the water route offers the advantages of being less expensive and less subject to weather delays. Mr. Perkins, who runs the fishing lodge on the portage between Denmark and Rowan Lakes, makes the trip with a spacious 18-foot boat from Regina Bay via Dogpaw and Caviar Lakes to the property for about \$25.00 including the hire of tractors on the three portages involved. Mail and supplies are easily obtained through either Perkins' Camp or Motlong's Camp on Caviar Lake where there is a radio-telephone to Kenora.

#### SURVEY PROCEDURE

Various sources of information suggested that the rocks in the southern portion of the Denlake property where the showings are located, trend about east-west. Traverse lines were accordingly run in a north-south direction to agree with the direction of the lines on the Noranda Rowan Lake property which adjoins on the south.

It was originally intended to use the Fourth Base Line (Speight 1927) as a main baseline but this was found impracticable due to the intervention of a flooded beaver swamp. The main baseline was therefore run about 400 feet to the north of the Fourth Base Line.

Due to the irregular shape of the property and topographic features, six different baselines were required which have been designated as the "'2400' Baseline", "'2800' Baseline" et cetera, according

to their distance north or south from the 'O' Baseline'. From the baselines, north-south picket lines were run at 500-foot intervals and, wherever feasible, the deviation of these lines from the north-south direction was determined by chaining between the ends of the lines.

Rock outcrops and topographic features were mapped by pace and compass from the 100-foot chainage stations on all lines.

Magnetic observations were made at 100-foot intervals with intermediate observations where required.

Due to the abundance of outcrop and geological detail it was found necessary to make separate geological and geomagnetic maps at a scale of 200 feet to the inch.

#### TOPOGRAPHY

With the exception of large cedar swamps in claim K 15254, around the small lake in K 15301 and in K 15500 and 15515, rock outcrops are abundant forming ridges trending generally in a north-south direction.

Some of these ridges are of great height, probably none exceed 200 feet above lake level, but especially in the granite areas, they persist for considerable distances.

Abundant water is available from Lenmark and Rowan Lakes, from the small lake in K 15301 and in lesser quantities, if required, from the small stream which crosses 'O' Baseline near 1300W and from the cedar swamps which were inundated by heavy rains at the time of the surveys.

#### REGIONAL GEOLOGY AND DEVELOPMENTS

According to regional geological mapping by E. N. Burwash<sup>1</sup>, the Lenlake property lies on the northern fringe of a large belt of

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1. Burwash, E. N. "Muskagi Lake Area" Ont. Dept. Min. An. Rept. Vol. 42, Part 4, Map 42b

Kewatin volcanic rocks which extends to the east for many miles. A few miles to the west of Denlake, the volcanic belt swings around to a northerly strike. The angle so formed is occupied by an intrusive complex of granite and granodiorite which Burwash considers to be mostly of Laurentian age. This again is intruded by pink granite of Algonquin age according to Burwash.

The recent copper and gold discoveries of the area have been made in the volcanic rocks at no great distance from the contact of the granite complex.

Chief among these, of course, are the finds at Horanda's Atikum Lake property which lies about  $4\frac{1}{2}$  miles almost due north of the Denlake showings. The original showing here lies on the side of a rock ridge and is a rich copper replacement deposit in fractured andesite pillow lavas. This is of comparatively limited extent and an drilling was found not to extend to depth.

A few hundred feet to the west of this occurrence, however, diamond drilling of a geophysical anomaly has indicated a potentially large tonnage of low-grade copper ore lying beneath low ground. The copper occurs both in chalcopyrite and primary chalcocite apparently replacing pillow selvages in andesite.

To the north of the copper deposits, gold has been found under peculiar geological circumstances in three places. The first gold occurrence has been investigated by closely-spaced rock trenches and drilling. In appearance, the occurrence is very unimpressive, presenting the aspect of almost massive andesite cut by porphyry and fine-grained basic dykes. The surface is only slightly rust-stained, sulphides are sparsely distributed and quartz and carbonate virtually absent. Nevertheless, commercial values persist over large widths and free gold has frequently been

found in black hornblende alteration.

No controlling major structure has yet been defined in the vicinity of these deposits, there is no strong shearing nor heavy gossan and an examination emphasizes the necessity of careful investigation of even slight rust stains in the volcanics and the value of geophysical investigation even in this region of abundant outcrop.

At Noranda's Rowan Lake property, which adjoins Denlake on the south, copper has been found on the east side of a small lake almost due south of the Denlake showings. Drilling is also underway on the Noranda group to investigate a geophysical anomaly found in the channel between the islands and the west shore of Rowan Lake very close to the Denlake east boundary.

The Denlake copper showings and their relation to other occurrences will be described in a following section.

#### GEOLOGY OF THE DENLAKE PROPERTY

Although granitic intrusive rocks predominate on the Denlake property, volcanic rocks in various stages of metamorphism are also represented.

##### Volcanic Rocks

Andesite: Dark green, fine-grained relatively fresh andesite which occasionally shows pillow structure, is best developed in the southeastern corner of the property in claims K 15501 and 15502. About a 650-foot width of andesite occurs here trending east-west between the south boundary of the group and the southern contact of an intrusive mass. To the east, near Rowan Lake, the volcanic contact swings to the north and west around the nose of this intrusive and relatively fresh andesites

were found extending as far as 1,600 feet north from the south boundary to the main intrusive contact. To the west, the fresher andesite continues along the south boundary almost to line 12<sup>s</sup> ('0' Baseline) where on the western side of a narrow swamp it abruptly changes to amphibolite and massive recrystallized andesite.

A second smaller patch of relatively fresh andesite occurs in the extreme northern portion of the property on the shores of Denmark Lake. This grades westward and southward toward the main intrusive contact, into more highly metamorphosed volcanics.

Small patches of relatively fresh andesite may occasionally be found among the highly metamorphosed volcanics as on the northern boundary of K 15315.

Recrystallized 'andesite', amphibolite, et cetera: The larger areas of "greenstone" were found to consist of plagioclase-amphibolites, hornblende chlorite schists and somewhat fine-grained black, massive hornblende rocks.

These are generally found in proximity to the intrusive rocks, grade into the fresher andesites where the two types occur together and the finer-grained varieties contain vestiges of fresher andesite and volcanic structures. There is little doubt therefore, that these rocks were derived from volcanics by contact metamorphism.

#### Intrusive Rocks

Intrusive rocks occupy at least 75% of the eastern portion of the property and consist of a main central mass covering all of claims K 15294, 15295, 15296, 15298 and 15299 with satellite masses occurring in all the other claims.

Granite: The main central mass consists predominantly of pink to light-grey hornblende granite composed of a pink and white feldspar, quartz and hornblende with minor amounts of biotite. This rock occurs in large ridges which trend roughly north-south.

Quartz-diorite: Along the southern and eastern margin of the main central mass, in the satellitic intrusive masses and at two localities within the main intrusive but close to inclusions of recrystallized andesite, occur dark-coloured, massive, coarse to fine-grained quartz-diorite.

This rock is composed of much hornblende with white feldspar, probably plagioclase, and opalescent quartz eyes. In some places it is intimately associated with amphibolites derived from volcanic rocks and differentiation becomes very difficult.

The mode of occurrence of this rock as described above suggests that it is a phase of the granite whose composition has been altered by assimilation of the more basic volcanic material which it intrudes, rather than a much older intrusive than the pink granite.

Feldspar porphyry: Three narrow zones of a peculiar type of feldspar porphyry were found in claims K 15298 and 15301. This rock has a fine-grained, green chloritic and hornblende groundmass very similar to andesite but is filled with large phenocrysts of white or yellowish feldspar up to one inch or more in diameter. The porphyry occurs in both recrystallized andesite and in the granitic intrusives close to their contact with greenstone.

Where found in isolated outcrops the rock certainly appears to be an intrusive but its mineralogical composition and mode of occurrence



in or close to the greenstone suggests to the writer that it represents porphyritized andesite and is another expression of the contact metamorphic effect of the granitic intrusives.

#### STRUCTURAL GEOLOGY

All the volcanic rocks on the Denlake group lie close to intrusive contacts and the few strikes obtainable on streaky flow structures or schistosity varied from north-west through north to east-west and are apparently controlled by the intrusive contacts which they parallel.

No pillows sufficiently well-formed to indicate flow-top direction were observed and no pronounced shearing was seen.

The geology in the vicinity of the small lake in K 15501 suggests the presence of a fault striking slightly east of north which may be of considerable magnitude. Due south of the lake are three outcrops of relatively fresh andesite entirely similar to the rocks which occur in the vicinity of the showings. Less than 200 feet to the west of these outcrops, across a swamp which trends north, are several outcrops of coarse amphibolite and dark, massive recrystallized andesite which are markedly different from the rocks which lie to the east.

In addition, intrusive contacts to the east of the lake trend generally in an east-west direction whereas to the west the amphibolitic rocks are cut by north-south trending quartz-diorite dykes. Together with topographic evidence, these features suggest a line of discordance in the vicinity of the west side of the small lake. This is presumed to be a fault.

The distance to which the presumed fault extends to the north could not be determined due to the large amount of swamp in the northeastern

portion of the property.

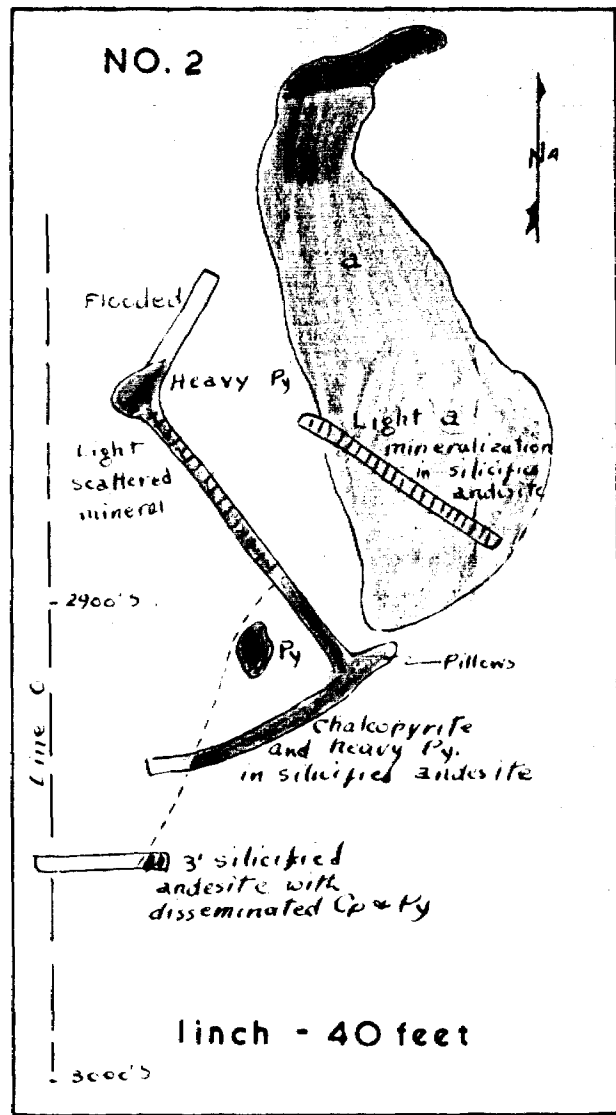
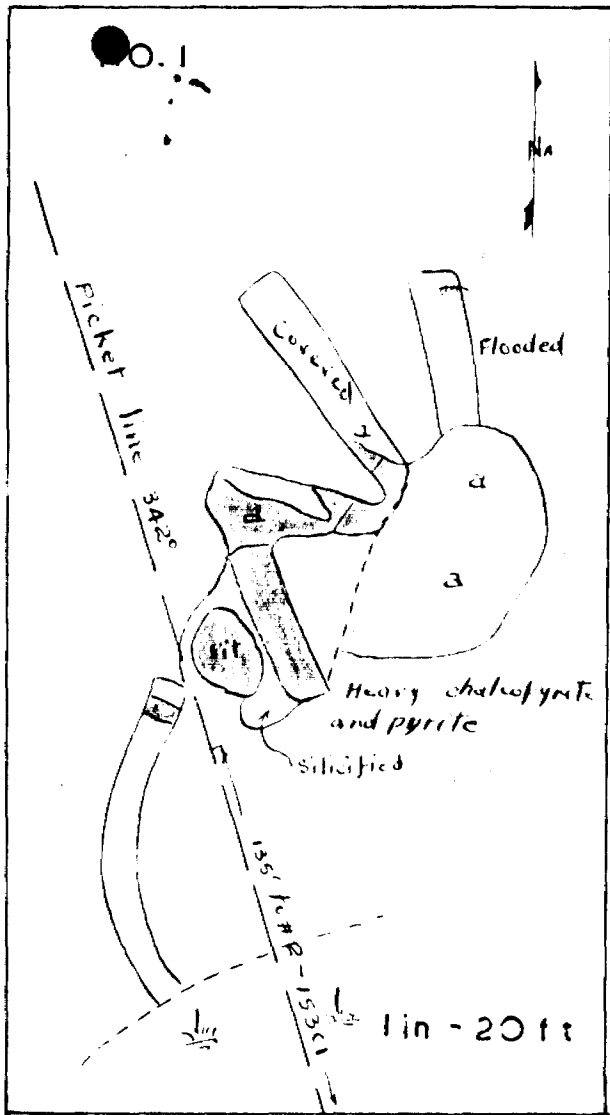
It is interesting to note, but perhaps nothing more than a coincidence, that (1) a showing on the Noranda Kowan Lake property lying just east of a small lake in the same topographic depression as the lake on Kenlake ground, (2) the Kenlake showing which lies about 1,000 feet east of the fault, (3) the approximate location of the Noranda Atikwa Lake deposits, (4) the shaft of the old Nina gold mine and (5) the approximate location of the old Empire mine workings all lie along a line trending  $N20^{\circ}E$  from the Kenlake showing.

#### ECONOMIC GEOLOGY

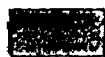


At the present time copper and gold are the sought-after minerals in the Kenlake area with nickel a bare possibility as the strike of the nickel-zone appears to trend west of south from the Kenora Nickel property which lies about 9 miles due north of Kenlake.

On the Kenlake property itself, two occurrences of copper-bearing mineralization have been opened up by trenching. The No. 1 showing lies about 100 feet north of the No. 2 post of K 15501 with the No. 2 showing some 400 feet away in a  $N20^{\circ}E$  direction. Between the two occurrences rust and pyrite mineralization were found in the outcrops suggesting that No. 1 and No. 2 showings may lie in the same zone of mineralization.

As shown in the accompanying sketch, No. 1 showing is a replacement deposit on the west side of an andesite outcrop containing heavy mineralization of chalcopyrite, pyrite and pyrrhotite in black hornblende groundmass. As revealed in the trenches, the deposit is pear-shaped having a width of about 15 feet at the southwest end,



DENLAKE COPPER SHOWINGS

-  Quartz diorite
-  Andesite
-  Sulphide mineralization

tapering to about 5 feet in a strike-length of 30 feet to the northeast. Encouraging copper assays and low gold values are reported from this zone.

In the No. 2 showing, mineralization occurs over a strike-length of 100 feet and widths up to 25 feet of mineralized material. The sulphide mineralization here occurs in silicified andesite on the west side of an andesite outcrop. Heavy pyrite, but generally light chalcopyrite, mineralization was observed in this zone from which as yet no assays have been reported.

Several zones of rust and pyrite mineralization were observed at widely separated localities as indicated on the geological map. Four grab samples of this type of material were assayed but returned only a trace of gold. Since no chalcopyrite was visible in these they were not assayed for copper.

#### RESULTS OF THE GEOMAGNETIC SURVEY

Results of the magnetometer survey are shown in the accompanying geomagnetic map on which the contour lines represent lines of equal vertical magnetic intensity.

In general, magnetic intensity is variable over all the rock types although over the pink granite the field is somewhat more uniform. Without the geology observed in outcrops therefore, the magnetic results would be of little value in tracing contacts between granite, quartz diorite and volcanics.

Pronounced anomalies up to 8000 gamma or more occur over quartz diorite areas. From observations in the outcrops however, it is evident that these are caused by sporadic magnetite and have no economic significance.

In the areas of fresher andesite, the magnetic anomalies show a consistent association with zones of rust and mineralization. For instance in claim K 15515 an anomaly with a peak value of 4128 gammae occurs over the pyritic rust zone observed on the shore of Denmark Lake. The anomaly and therefore presumably the mineralized zone, extends for at least 400 feet to the east across line 6E. In neighbouring claim K 15516 an anomaly with a peak of 8692 gammae occurs on line 6 ('2800' Baseline) over an outcrop of andesite containing cubic pyrite. The anomaly persists with lower intensity westward for 600 feet.

In the southeastern andesite area, a high reading of 3204 gammae was obtained over the No. 2 showing. This anomaly extends west of south over the No. 2 showing. This supports the conclusion drawn from geological observations that Nos. 1 and 2 showings occur in the same mineralized zone.

A reading of 2152 gammae occurs over a narrow zone of light rust at 400'N line 0 ('5500' Baseline).

High readings were observed along the shore of Rowan Lake on line 6 ('5500' Baseline) close to the zone now being investigated by a neighbouring company. The anomaly on Denlake, however, occurs over quartz diorite and recrystallized andesite and no mineralization of interest was observed here.

In the far southwestern corner in claim K 15515 a strong anomaly zone extends in a southeasterly direction from the north boundary for a distance of about 1,100 feet. This lies in an area underlain predominantly by recrystallized andesite and amphibolite close to an intrusive contact. However, the western side of an outcrop between lines 30 and 35 ('2400' Baseline) was found to consist of fresher andesite containing at least one

zone of heavy rust. There is a reasonable possibility therefore, that the anomaly zone may indicate a zone of sulphide mineralization in fresher andesite. This is supported by the presence of a small outcrop of fresher andesite near 250'N line 55 ('2400' Baseline) which lies on the southwestern flank of the anomaly.

#### CONCLUSIONS AND RECOMMENDATIONS

The discoveries of copper and gold made to date in the Atikwa Lake Area occur in the volcanic rocks and it is unlikely that economic mineralization will be found in the intrusives. Certainly no surface indication of mineralization was observed in the large areas underlain by such rocks on the Denlake property. These may therefore be eliminated from serious consideration as possible host rocks for mineral deposits.

Likewise the areas of recrystallized andesite and amphibolite appear to offer little promise as regards mineralization. Locally, light rust stains and disseminated cubic pyrite, which is a not uncommon accessory in metamorphic rocks, may be found but for the most part these rocks are dense, massive and barren.

The areas which show possibilities of containing economic mineralization thus reduce to the southern portions of K 15501 and 15502 in the southeastern corner of the property, and the smaller section in the northern portion of K 15515 and 15516. These contain the fresher andesite and show rust staining, fracturing and sulphide mineralization.

The southeastern corner is of the greater importance since it contains the larger andesite area, known copper mineralization and lies in proximity to a possible north-south fault.

As discussed in the previous section the extent of the mineralized zones is indicated by the magnetic anomalies.

It is therefore recommended that the zones of rust and mineralization observed and indicated magnetically be further investigated by thorough prospecting including careful panning of surface material.

It is specifically recommended that at least one rock trench be blasted completely across the rust zones in the outcrop which lies between No. 1 and No. 2 showing to determine if copper mineralization extends between the two showings.

Two zones of interest cannot be investigated by surface prospecting. These are (1) the zone along the eastern side of the presumed fault which is covered by lake and swamp, (2) the anomaly zone in K 15515 which also lies in a large swamp.

If commitments permit, it is suggested that an electromagnetic survey be made of these zones after freeze-up followed by diamond-drilling if conductors are indicated. Should this not be feasible a limited drilling program may be undertaken directly to test these zones as follows:

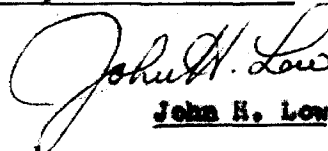
Hole No. 1 to cover the section between 250'N and 700'N,  
line 55 ('2400' Baseline).

Hole No. 2 to cover the section between 200'S and 200'N,  
line 27, ('2400' Baseline).

Hole No. 3 to cover the section between 200'S, line 6W ('5000'  
Baseline) and 52'S, line 12W ('0' Baseline).

Respectfully submitted,

Gardiner, Low and Merrow

  
John H. Low

Toronto, Ontario  
July 26, 1952

APPENDIX

Property: The property of Ouelake Mining Company Limited,  
Suite 723, 36 Sparks Street, Ottawa 4, Ontario

Claim Numbers: K 15294 to K 15302 inclusive  
K 15313 to K 15319 inclusive  
Atikva Lake Area, Kenora District, Ontario

Field Work:

Line-cutting: E. Angiehart, Rouyn, P. Q.  
E. Letellier, Halleybury, Ont.  
A. Nelson, Halleybury, Ont.

April 17 - May 13, 1952

Geological Field Work:

M. C. Gardiner, Halleybury, Ont.  
John H. Low, Toronto, Ont.

June 12 - July 6, 1952

Geophysical Field Work:

R. A. Watt, North Bay, Ont.  
E. Atkinson, Halleybury, Ont.

June 12 - July 7, 1952

Maps, Reports et cetera

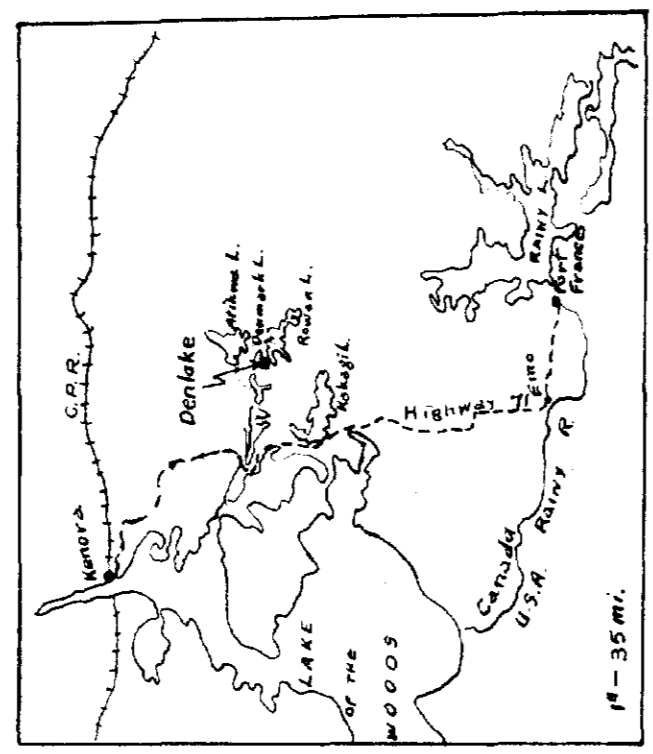
M. C. Gardiner and John H. Low

Geological: July 8 - 18, 1952  
Geophysical: July 19 - 26, 1952

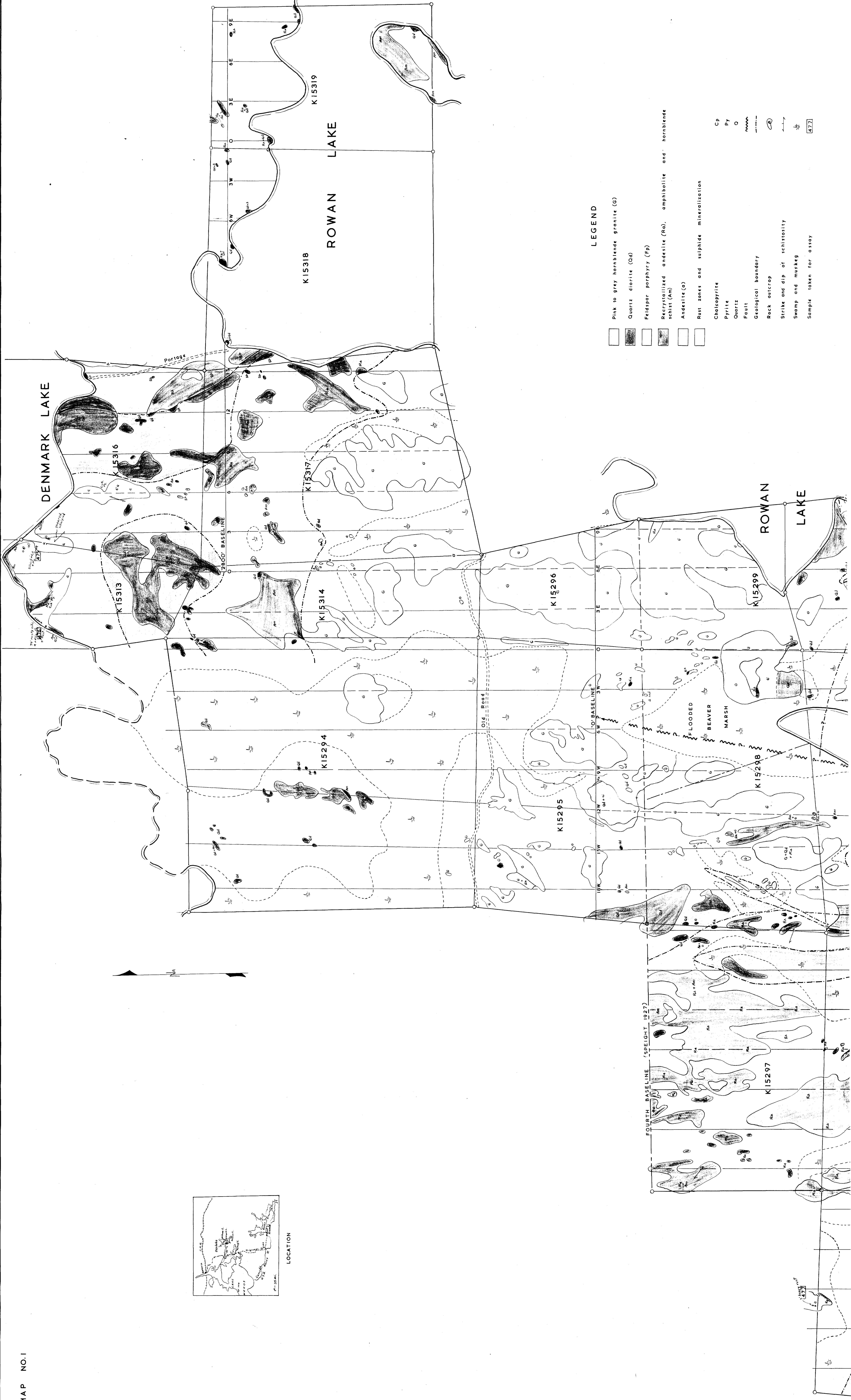
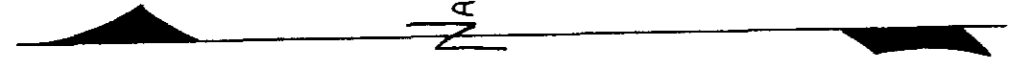
Man-days

Line-cutting	27 x 3 =	81
Geological mapping: 24 10-hour days	30 x 2 =	60✓
Geophysical survey: 26 10-hour days	32 x 2 =	64✓
Maps, Reports et cetera	18 x 2 =	36
		—
Total		241



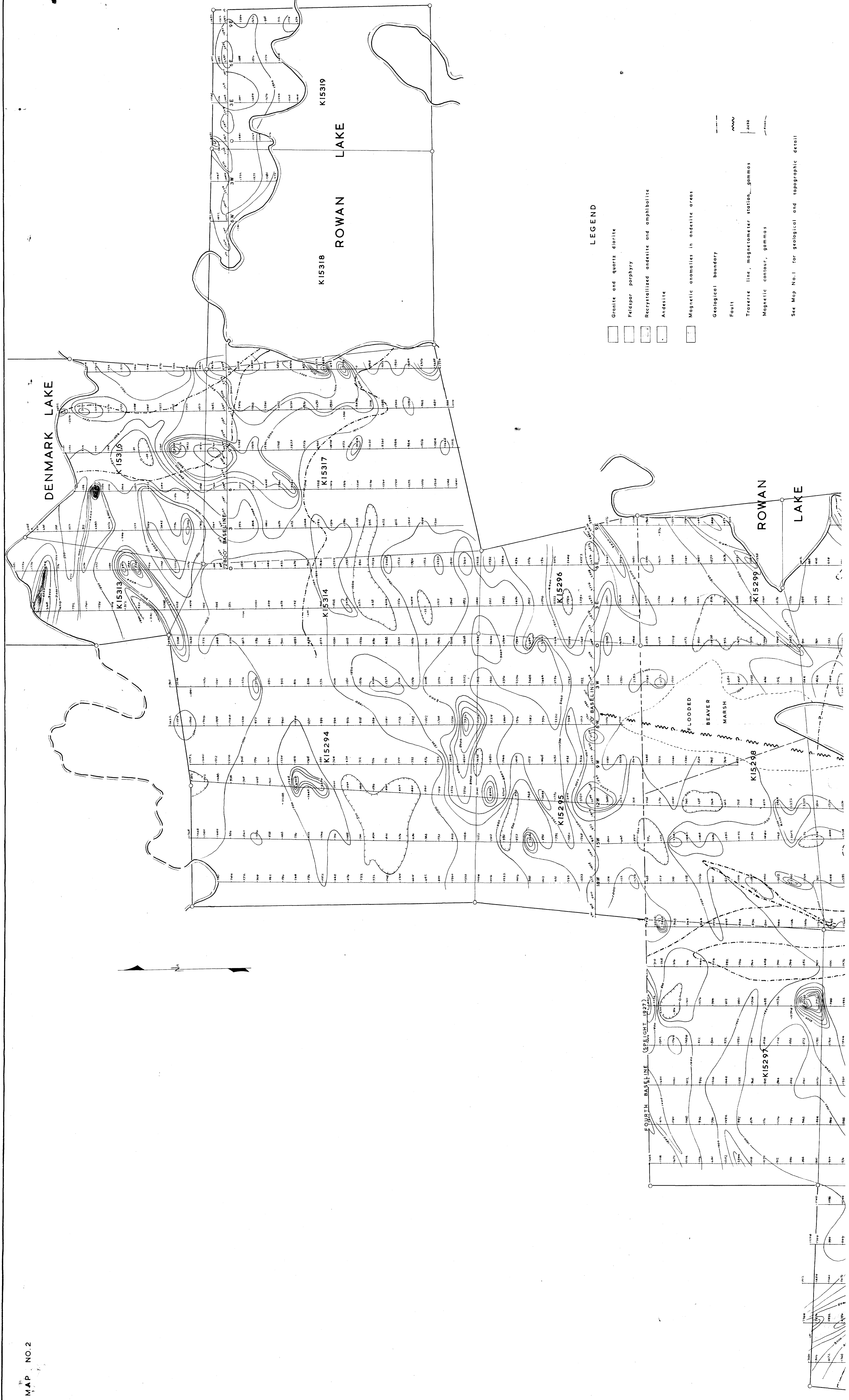


LOCATION

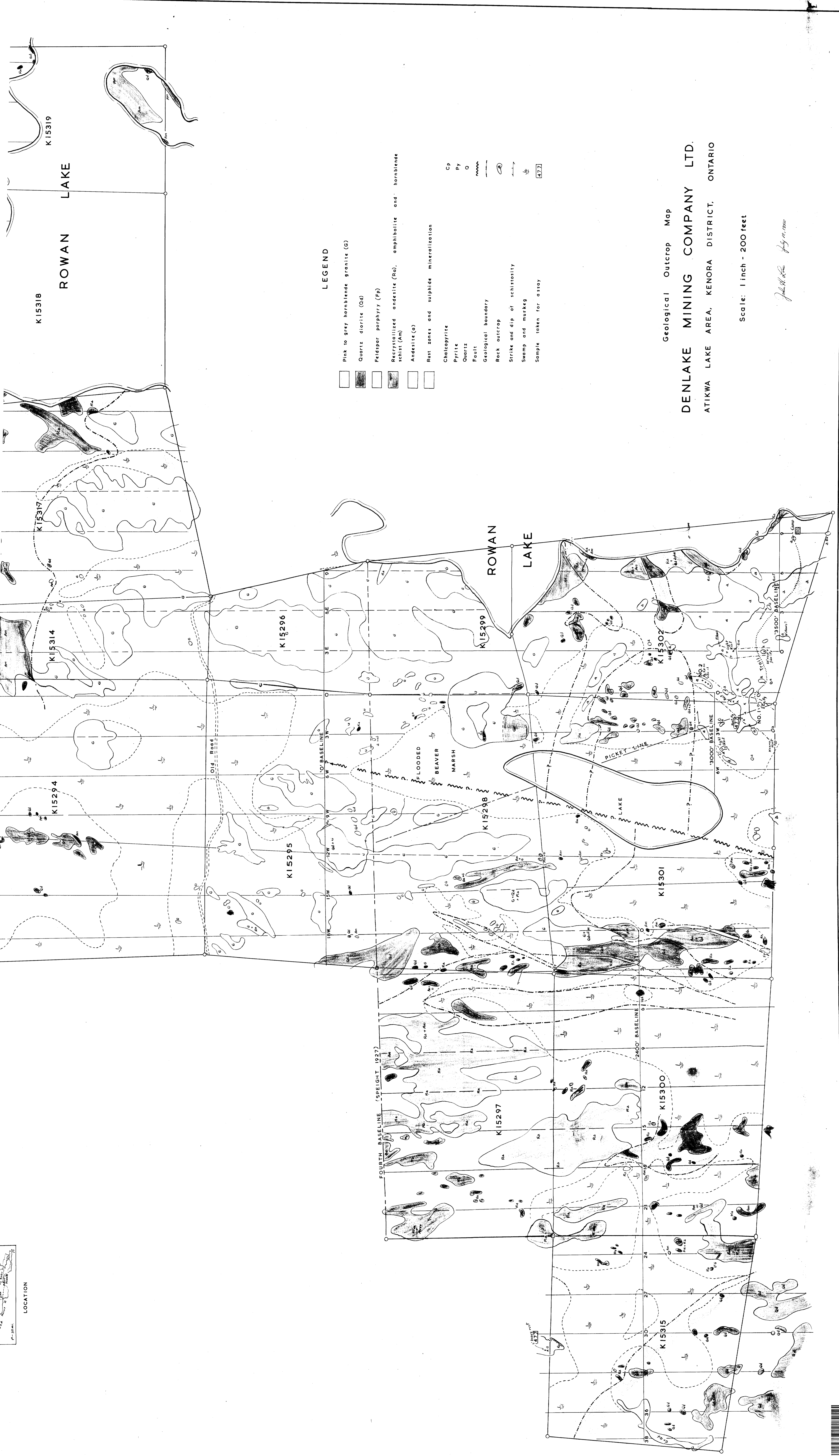
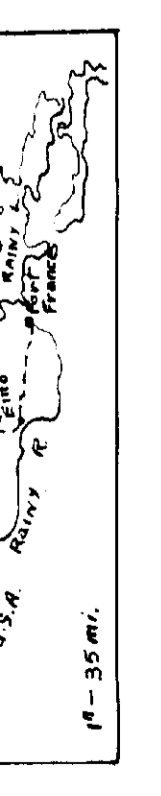


LEGEND

- Pink to grey hornblende granite (G)
- Quartz diorite (Qd)
- Feldspar porphyry (Fp)
- Recrystallized andesite (Ra), amphibolite and hornblende schist (Am)
- Andesite (A)
- Rust zones and sulphide mineralization
- Chalcopyrite
- Pyrite
- Quartz
- Fault
- Geological boundary
- Rock outcrop
- Strike and dip of schistosity
- Swamp and muskeg
- Sample taken for assay



See Map No. 1 for geological and topographic detail



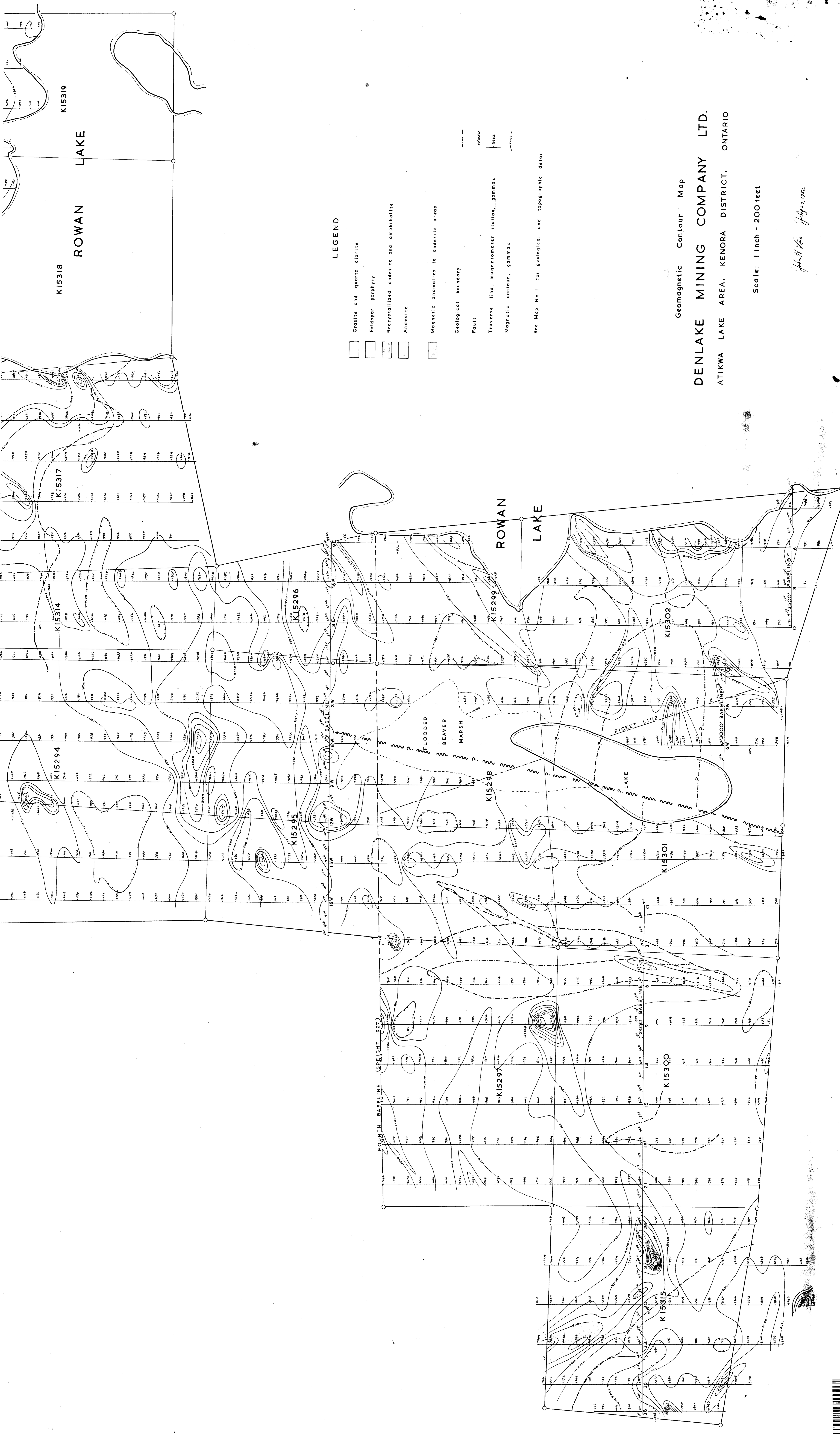
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Geological Outcrop Map  
**DENLAKE MINING COMPANY LTD.**  
 ATKWA LAKE AREA, KENORA DISTRICT, ONTARIO

Scale: 1 inch = 200 feet

*John H. ...*



LEGEND

- Granite and quartz diorite
- Feldspar porphyry
- Recrystallized andesite and amphibolite
- Andesite
- Magnetic anomalies in andesite areas
- Geological boundary
- Fault
- Traverse line, magnetometer station, gammas
- Magnetic contour, gammas

See Map No. 1 for geological and topographic detail

Geomagnetic Contour Map

**DENLAKE MINING COMPANY LTD.**

ATIKWA LAKE AREA, KENORA DISTRICT, ONTARIO

Scale: 1 inch = 200 feet

*John H. Lane July 23, 1952*