

File 63-1857



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REPORT ON GEOPHYSICAL SURVEYS
CHUB LAKE GROUP II CLAYS
PENHORWOOD TOWNSHIP
SUDBURY MINING DIVISION
PROVINCE OF ONTARIO.

by

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

January 17th, 1966.
Matheson, Ontario.



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**REPORT ON GEOPHYSICAL SURVEYS
CHUB LAKE GROUP II CLAIMS
PENHORWOOD TOWNSHIP
SUDBURY MINING DIVISION
PROVINCE OF ONTARIO.**

Introduction:

The following report describes the geophysical surveys completed during December of 1965 on Canadian Johns-Manville Company Limited claims located in Penhorwood Township, Sudbury Mining Division, Province of Ontario.

Cutting and chaining of picket lines were contracted to J. Alix Company Limited of Val d'Or, Quebec. Picket lines were cut at right angles to an east-west trending base line and were established at 300 foot intervals. Pickets were fixed every 50 feet along these offset lines by chaining.

Magnetometer surveying was conducted by I. Walker, fieldman and instrument operator with Canadian Johns-Manville Company Limited, using a Sharpe's A-2 type unit. T. McChristie assisted during the course of this program.

Electromagnetic surveying was carried out by W. Scott, fieldman and geophysical operator with this Company, using a Ronka Mark IV horizontal loop type unit. T. Cox and J. Andrews assisted during the course of this work.

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

Property:

The claims surveyed are situated in the northeast part of Penhorwood Township immediately south of the Reeves Township Boundary and are numbered as follows: -

8 - 120761 - 70 inclusive.

These ten claims comprise approximately 400 acres.

Location and Accessibility:

The Canadian Johns-Manville claims are located in the northeast part of Penhorwood Township, Sudbury Mining Division, Province of Ontario. The north boundary of the group is situated along the Reeves Township line with the east and

Location and Accessibility (cont'd)

west limits being approximately one to two and one-half miles west of the Sewell Township boundary.

These claims are readily accessible to Highway #101 by truck or four-wheeled drive vehicle along a bush road bulldozed on the top of a northerly trending esker. The Chub Lake Group is situated approximately three miles south of Highway #101. The junction of the esker road and the highway is approximately 4.9 miles southwest of Timmins.

Topography

The claims group is situated along the east side of a prominent, northerly trending esker ridge. In general, the terrain is relatively flat and dry with the exception of small, local patches of cedar swamp. Bedrock exposures are relatively plentiful and the claims are timbered with mixed bush comprised of poplar, birch and spruce.

Drainage is to the west through a low section of the esker in the west part of the claims and to the east and north in the east part. Small streams and beaver ponds form these waterways which are shown on the accompanying plans.

Previous Work

Mapping of the general area was carried out by E. W. Todd for the Ontario Department of Mines in 1923 and the results of this work are shown on Map No. 33g, entitled "Groundhog River Area" on a scale of 1 inch equals 1½ miles. Further regional mapping was carried out by V. K. Priest (Geology of Keith-Muskego Area) and W. D. Harding (Geology of Horwood Lake Area) in 1949 and 1936 respectively for the Ontario Department of Mines. More recently, 1965, the "Foleyet Sheet" of the Ontario Department of Mines Geological Compilation Series was compiled by H. D. Carlson, resident geologist at Timmins. This plan covers Penherwood Township.

Previous Work: (cont'd)

Detailed geophysical and geological surveys followed by limited diamond drilling programs were carried out during 1956 - 57 on Canadian Johns-Manville claims situated to both the northeast and southwest of the Chub Lake Group. However, as far as the writer could ascertain, no previous work has been completed on the claims discussed in this report.

Due to renewed interest in the ultrabasic intrusives of the Reeves - Penhorwood Townships area the Chub Lake Group of claims was staked, recorded and transferred to Canadian Johns-Manville Company Limited during January of 1964. These claims were grouped with a block to the north in Reeves Township on which surveying and diamond drilling were in progress. Consequently, in late 1964 diamond drilling completed on the Reeves Township claims was filed on the Chub Lake block for assessment purposes.

Geological mapping utilizing the picket line grid out in July was completed on the Group during the field season of 1965 by Company geologists. Further exploration work, as described in this report, was carried out during December of 1965.

Line Cutting and Chaining:

A base line was established along the Reeves - Penhorwood Townships boundary to cover the length of the Chub Lake Group and was tied into claims previously surveyed to the north and west in both Townships. Right angled offset lines were established at 300 foot intervals along this base line and were out to the south to the boundary of the claims. Pickets with numbered locations were established at 50 foot intervals along the offset lines by chainage. The offset lines were tied in along the south boundary of the group by chainage to increase the accuracy of the plans.

Line cutting and chaining were contracted to J. Alix Company Limited of Val d'Or, Quebec and were carried out during the early summer of 1965. A total

Line Cutting and Chaining: (cont'd)

of 12.3 miles of picket, base and tie lines was out and chained during the course of this work.

General Geology:

The geology of Penherwood Township and immediately adjacent areas was mapped by E. W. Todd for the Ontario Department of Mines in 1923. The results of this work are shown on Map No. 33g on a scale of 1 inch equals $1\frac{1}{2}$ miles entitled "Groundhog River Area" which accompanies Ontario Department of Mines Report, Vol. XXXIII, Part 6, dated 1924. To the west and south the areas were mapped by V. K. Priest and W. D. Harding as mentioned under the heading "Previous Work". More recently, (1965), the "Foleyet Sheet" of the Ontario Department of Mines geological compilation series compiled by H. D. Carlson, which covers Penherwood Township, was published. The following "Table of Formations" has been taken from the legend portion of this map.

Precambrian

Proterozoic

Keveewawan

Alkaline syenite - carbonatite complex

Keveewawan and Matachewan

Diabase

Archean

Acid igneous rocks - granitoid rocks, magnetites and hybrid granitoid rocks.

Basic and ultrabasic intrusive rocks - gabbro, diorite, peridotite and pyroxenite.

Sedimentary and metasedimentary rocks - conglomerate, greywacke, slate, etc, gneisses, granulites and amphibolites.

Iron Formation

Basic and Intermediate volcanic rocks - andesite, basalt, etc.

Iron Formation

Acid volcanic rocks - rhyolite, dacite, etc.

Iron Formation

General Geology: (cont'd)

Geological mapping of the Chub Lake Group II claims by F. W. Chandler and R. F. Kaltwasser during the late summer of 1965, shows the block to be underlain by highly altered intermediate to basic volcanic rocks intruded by sill-like bodies of diorite. These formations have a general east-west strike and dip vertical to steeply north. Highly schistose sediments containing narrow graphitic bands were mapped in the extreme northeast corner of the claims. This geological data has been used extensively in the interpretation of the geophysical results.

Magnetometer Survey:

A magnetometer survey was conducted over the Chub Lake Group II claims by I. Walker, fieldman and instrument operator with Canadian Johns-Manville Company Limited. T. McChristie assisted during the course of this work.

The survey was carried out using a Sharpe's A-2 type instrument (C. J. N. #166) having a sensitivity or scale constant of 20.00 gammas per division. This magnetometer had been previously checked on Base Control Station No. 2 at Munro Mine near Matheson. Consequently on the Chub Lake Group of claims a relative gamma value of 1220 corresponds closely with an absolute value of $57,599 \pm 15$ gammas. This ties magnetic values on the Chub Lake claims in with those on adjoining blocks.

One base control station was established on the base line (Reeves - Penhorwood Townships boundary) immediately east of the No. 4 post of claim S-120761 at the junction of line 33°00 East (Reeves Fringe Group). This station has a fixed value of 1810 gammas. Readings were recorded on the base station four times per day as a check on the working condition of the instrument and to determine the daily diurnal variation. The location of the base control station is shown on the accompanying Geo-Magnetic Contour Plan for Sheet P.2.

Magnetometer Survey: (cont'd)

Stations were spaced at 50 foot intervals along the offset lines and a total of 1,048 stations was recorded during the course of the survey.

Electromagnetic Survey:

An electromagnetic survey was conducted over the claims group by W. Scott, geophysical operator and fieldman with this Company. T. Cox and J. Andrews assisted during the course of this work. Three men were used throughout this survey in an attempt to cut down lost time due to cable breaks.

Readings were recorded using a Ranka Mark IV horizontal loop type unit with coil spacing fixed at 200 feet. This unit had been seroed, previous to this survey, over the ultrabasic sill at the Beatty Mine of Canadian Johns-Manville Company Limited in Beatty Township.

A total of 524 stations, spaced at 100 foot intervals, was recorded during the course of this survey.

Test surveys have been completed with this unit over a graphitic zone, a massive sulphide zone and a disseminated sulphide zone as aids in interpreting the results obtained on unexplored claims groups. The following results were obtained during these tests: -

1. Massive sulphide zone -- a strong positive rise on the in phase followed by an intense negative with a resumption to zero or near zero when the station was off the conductor. The out of phase component remained within ± 5 of zero.
2. Disseminated sulphide zone -- similar to No. 1 but with lower in phase peaks.
3. Graphitic zone -- both the in phase and out of phase components paralleled one another and followed the pattern of No. 1.

It should also be noted that coil spacing (should be exactly 200 feet) and the angle of the coils to the horizontal (each coil should be horizontal) play a large part in this work. Errors in one or both of the above may cause

Electromagnetic Survey (cont'd)

anomalies of sufficient magnitude to indicate the presence of a disseminated sulphide zone. Consequently topography is an important factor in this type of survey.

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

Interpretation of Magnetometer Survey

The results of the magnetometer survey are depicted on the accompanying "Geo-Magnetic Contour Plans" on a scale of one inch equals 200 feet. Contour lines of equal magnetic intensity have been drawn at 500 gamma intervals from 1500 to 3500. Interpretation has been based upon a study of the contoured magnetometer plans, detailed geological maps of the group, regional geological and geophysical data and aerial photographs.

The major portion of the surveyed area is underlain by intermediate volcanic rocks ranging from massive, pillowed flows to highly altered chloritic schists. Magnetic readings over these formations range in intensity from 1300 to 3400 gammas. However, in general, the values vary between 1600 and 1800 gammas. The extreme magnetic "high" (3466 gammas) in the northeast corner of the claims group occurs over a sizeable outcrop of massive andesite. The anomaly is no doubt due to an unusual concentration of secondary magnetite in this flow. These formations strike in a general east-west direction across the map area and dip steeply to the north.

A band of highly altered schistose sediments have been mapped in the extreme northeast corner of the claims group. Magnetic readings over these sediments range in value from 160 to 2200 gammas. Without the results of the geological survey it would be impossible to differentiate on a magnetic basis between the volcanics and sediments.

Interpretation of Magnetometer Survey (cont'd)

Several bands of basic intrusive rocks have been delineated by both the magnetometer survey and the geological mapping program. Throughout most of the surveyed area these intrusives, which are mainly diorite, are defined by magnetic readings ranging in value from 2900 to 3900 gammas. These intrusives occur as narrow sill-like bodies or small pods striking in an east-west to slightly south of east direction across the claims group. However, in the northwest and north-central parts of the property diorite has been mapped in areas where the magnetic values are indistinguishable from those obtained over the intermediate volcanics. The cause of this marked difference in the magnetic properties of the diorites on the group may be due to pronounced concentrations of magnetite in some phases of the intrusive. (similar to the volcanics in the northeast part of the group) However, it should be pointed out that the broad, northerly band of diorite may be a coarse flow while the narrow southerly band may be an intrusive. Further geological work is planned for this area during the field season of 1966.

Structurally, a series of north-south trending cross faults offset the formations on the claims group. In general these faults have been indicated by the magnetic results and show moderate horizontal displacement of the dioritic intrusives. However, the cross structure shown on claims 8-120762 and 120769 has been delineated by the geological survey and shows the volcanics to be offset approximately 400 feet.

The results of the magnetometer survey are not indicative of the occurrence of ultrabasic intrusive rocks on the Chub Lake Group II claims.

Interpretation of Electromagnetic Survey:

The interpretation has been based upon a study of the electromagnetic profile plans and detailed geological data. Results of the survey are shown on the accompanying "Electromagnetic Profile Plans" on a scale of one inch equals 200 feet.

Interpretation of Electromagnetic Survey (cont'd)

Electromagnetic surveying was conducted over this claims group to check for conducting zones associated with magnetic anomalies.

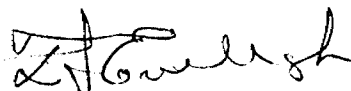
Three extremely weak conducting zones have been delineated by the horizontal loop type survey. In the southwest corner of the group a narrow conductor having a low "in phase" peak with parallel "out of phase" component occurs over weakly sheared volcanics containing minor pyrite mineralization. A similar conductor has been outlined in the north part of claim 8-120763 and occurs over a relatively high, overburden-covered poplar ridge. The third conductor occurs in the extreme northeast part of the surveyed area and has been delineated over a length of 700 to 800 feet. On two of the picket lines this conductor is shown by a low "in phase" peak with parallel "out of phase" component, however, on the third line a weak "cross over" occurs. Detailed geological mapping showed old trenching in the area with minor pyrite occurring in chloritic schists. This weak mineralization in a shear zone appears to be the cause of the conducting zone.

In the north-central part of the claims group hills and/or scarps cause several moderate to strong "in phase" peaks and "crossovers". Improper cell spacing is the cause of these conducting zones and this was carefully noted by the operator during the course of the survey.

The results of the electromagnetic survey failed to reveal any conducting zones of interest on the Chub Lake Group II claims.

Recommendations:

No further work is proposed for this claims group. However, results should be reviewed prior to dropping the claims on the due date in 1967.


F. J. Eveleigh,
Regional Geologist.

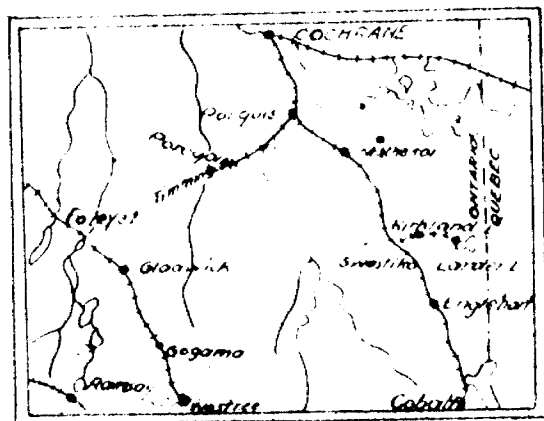
January 17th, 1966.

CANADIAN JOHNS-MANVILLE CO. LTD.

MATHESON MUNRO MINE ONTARIO

LEGEND SHEET
REEVES - PENHORWOOD
TOWNSHIP

BOULE	DATE JAN. 1966	
DRIVER R.F.K.	CHUB LAKE GROUP II	
TRACER		
APPROVER F.J.E.		



LOCATION SKETCH

Scale 1" = 50 Miles

GEOL. LEGEND

- 6 QUARTZ DIABASE, DIABASE.
- 5 QUARTZ DIORITE (5b); FELDSPAR PORPHYRY (5c); FELSITE (5E); LAMPROPHYRE (5f);
- DIORITE (4a); DIABASE, GABBRO (4b); PERIDOTITE and DUNITE (Serpentinized), (4c); (Asb. ASBESTOS recognized); PYROXENITE (4d);
- 3 VOLCANICS.
- 3 RHYOLITE: RHYOLITE AGGLOMERATE and Tuff (3a).
- ANDESITE, BASALT: PILLOW LAVA (2a); DIABASIC LAVA (2b); SPHERULITIC LAVA (2c); FRAGMENTAL LAVA (flow breccia) (2d); TALC-CHLORITE SCHIST, CARBONATE-CHLORITE SCHIST (2f); ACTINOLITIZED and CHLORITIZED LAVA (2g). SEDIMENTS - GREYWACKE, QUARTZITE.

TOPO-SYMBOLS

- Contour
- High ground
- Scarp
- Mussey or Swamp
- Creek
- Drill Hole
- Bush Rock
- Direction in which lava flows face, indicated by shape of pillows.

GEO-MAG SYMBOLS

- Contact
- Magnetic Base Contact
- Geological Contact
- Fault Zone {
 - O Geologic
 - M Magnetic
 - T Topographic

ELECTRO-MAG SYMBOLS

- 1st phase curve
- 2nd phase curve
- conducting zone {
 - AS sheet
 - AS modified
 - N Wood

Scale 40 Units = 1 inch

East is positive

West is negative

N.P.C.S. - Not proper coil spacing

Magnetometer Survey - I. WALKER

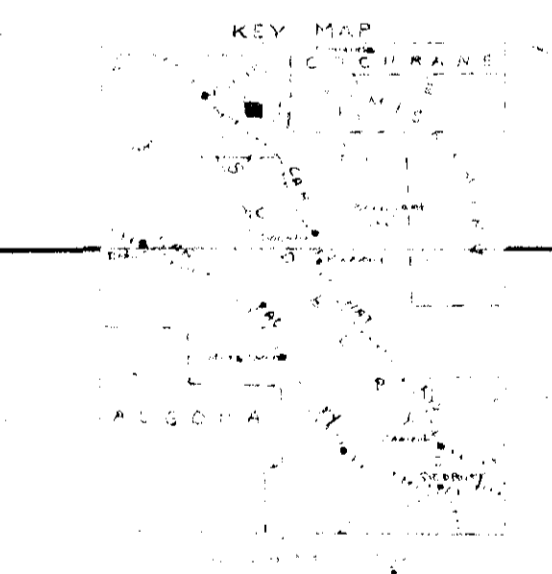
E.M. SURVEY - W. SCOTT

C.J.M.

I. Walker

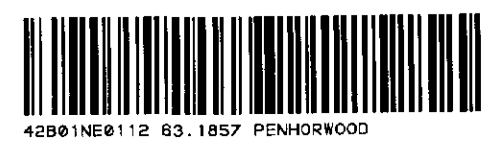


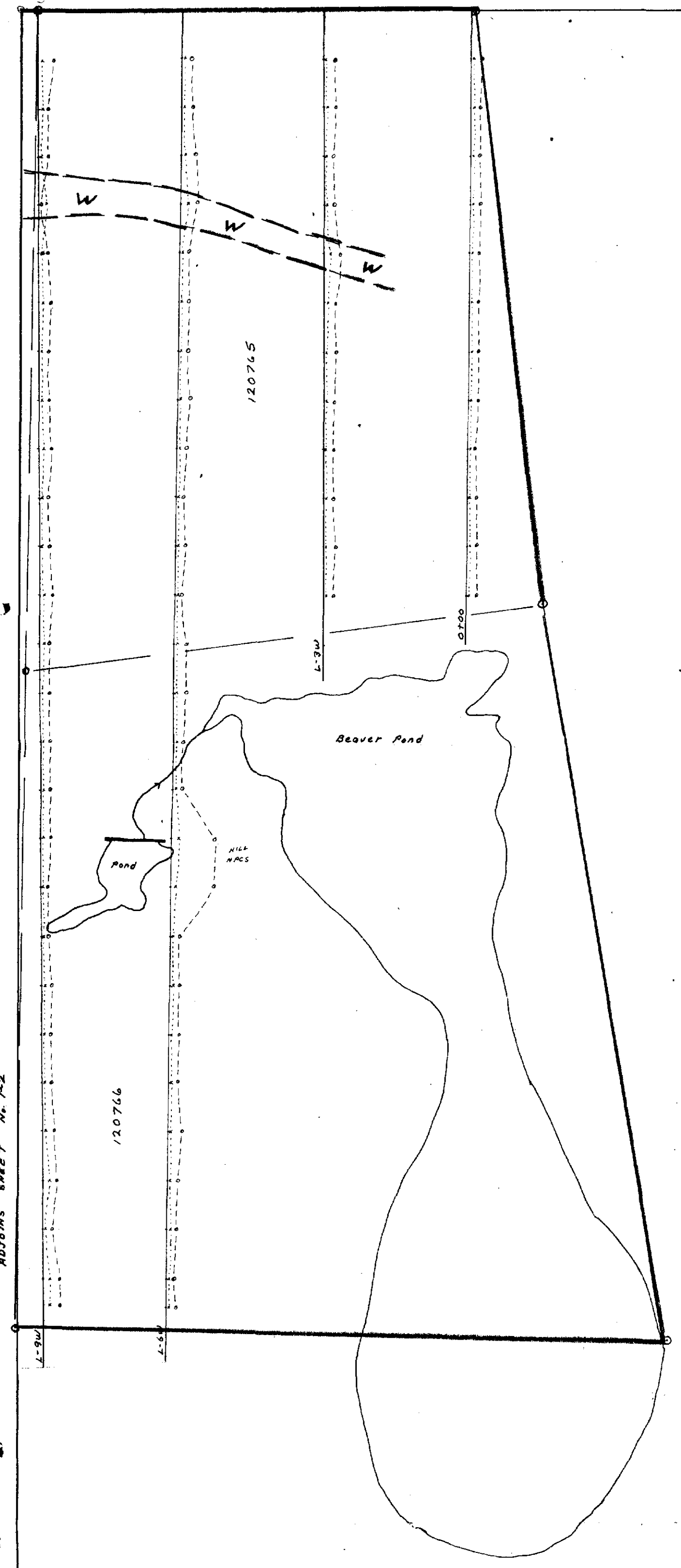
REEVES TOWNSHIP
SENECA COUNTY



CANADIAN SURVEYING CO. LTD.
 MATHeson SURVEYING CO. LTD.
 KEY
 MAP LOCATION SHEET
 REEVES - PENHORWOOD TWPS.
 1" = 1320' JAN. 1966
 DRAWN R.F.K.
 TRACED
 APPROVED P.V.G.

Handwritten signature





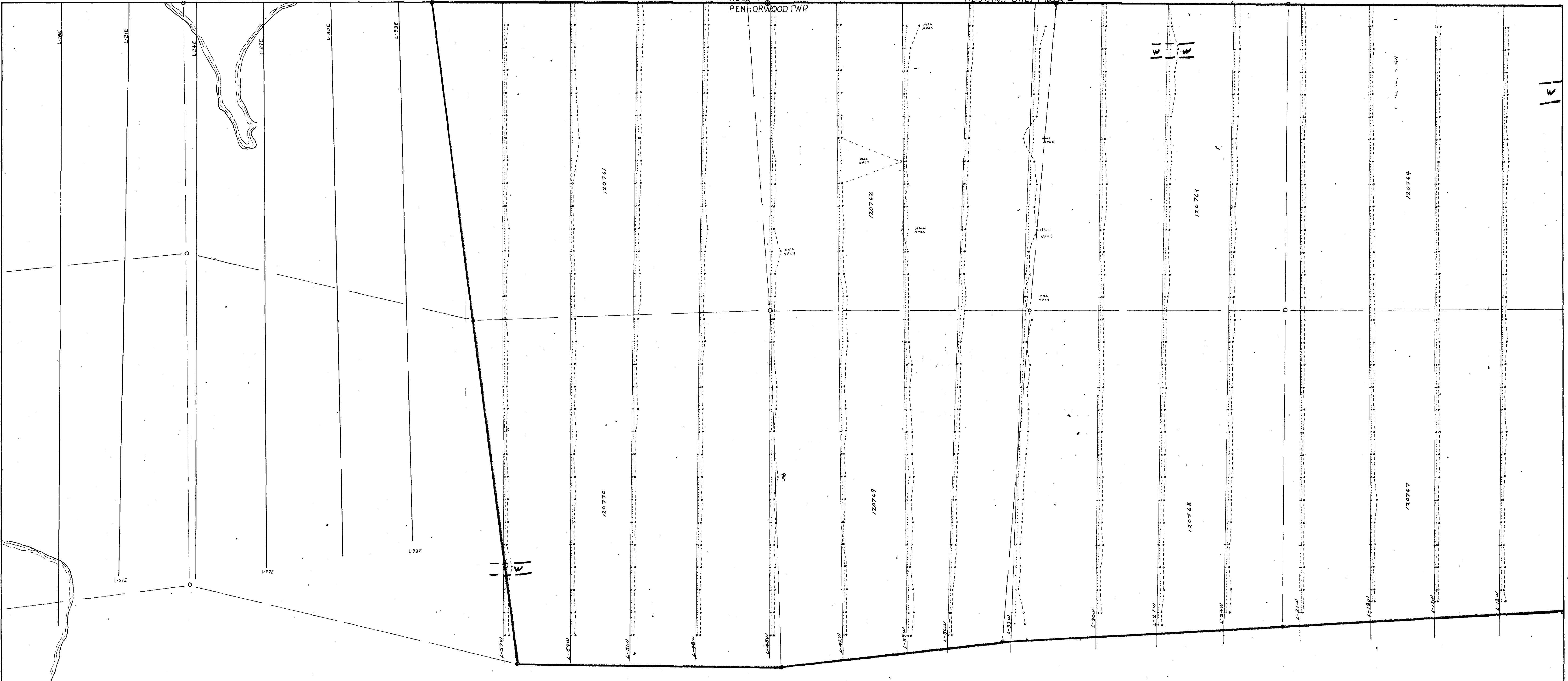
ADJOINS SHEET No. P-2



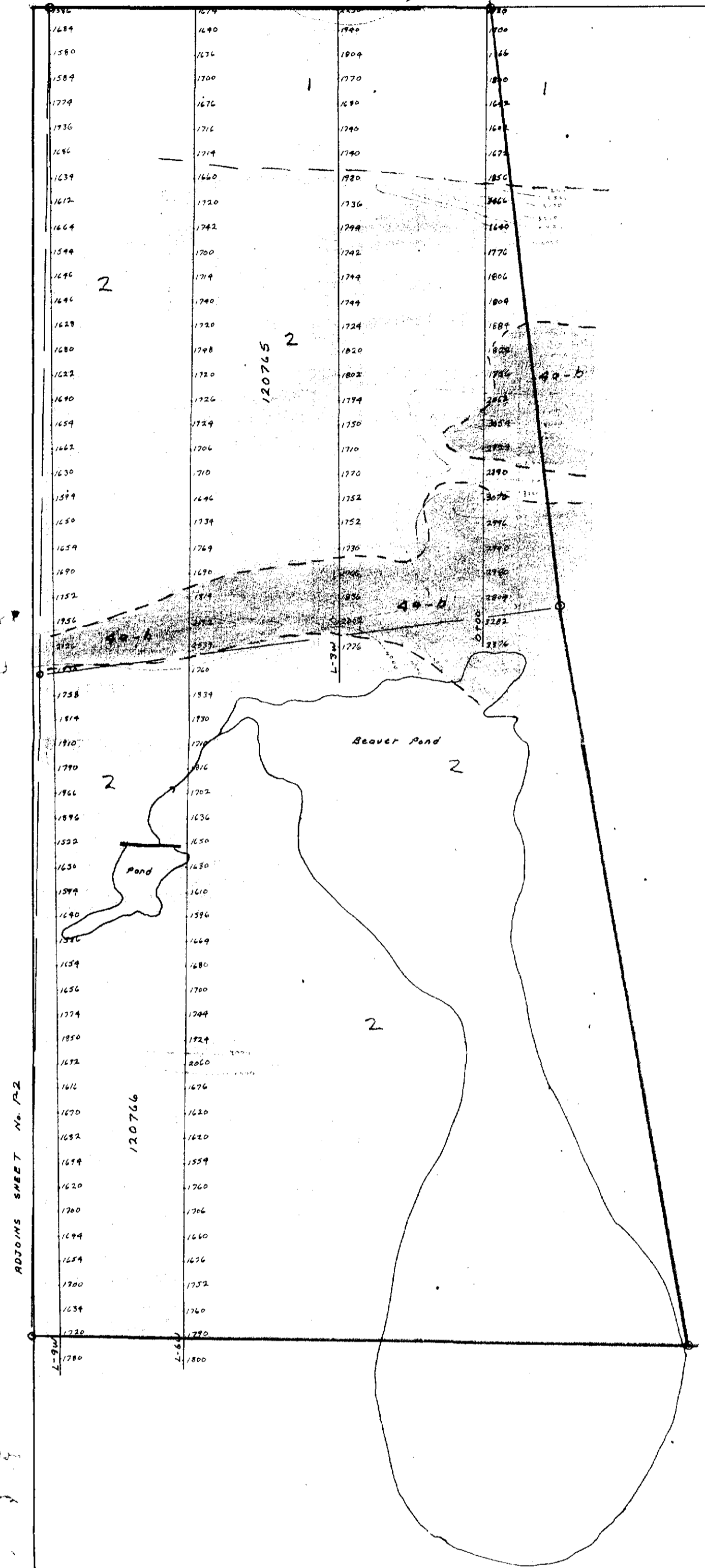
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ADJOINS SHEET No. P-3

ADJOINS SHEET No. P-1



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ADJOINS SHEET No. P-3

ADJOINS SHEET NO. P-2

PENHORWOOD TWP

