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Knife and Basswood Lakes Vermillion Lake to Lake of the Woods: [specimens] 8948-8974, 10039-10115. No. 49 September and October 1885

Merriam, W. N.

[s.l.]: [s.n.], September and October 1885

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U. S. GEOLOGICAL SURVEY
FIELD SECTION BOOK

No. 49
September and October, 1885.

Knife and Basswood Lakes.
Vermillion Lake to Lake of the Woods.

W. A. Merriam

8948 - 8974, 10039 - 10115

Survey of the Pre-Cambrian Rocks of the N. W. States.

INSTRUCTIONS.

1. Ordinarily at least two pages of this book will be devoted to one section. On the left hand page place a map of as much of the section as has *actually been seen*. Denote rivers, lakes, marshes, etc., by the usual topographical signs. Denote the ledges of rock, when no structure is made out, by cross-hatching, making the cross-hatching cover as nearly as possible the areas occupied by the exposures. If the rock is a massive one, but still more or less plainly bedded, use the same sign with a dip arrow and figure attached, showing the amount and inclination of the dip. Denote slaty or other very plainly bedded rocks by lines running in the direction of the strike, with figures and a dip arrow attached as before. In all cases where there is the least doubt about the true bedding directions, indicate it by a query. To each exposure on the face of the map attach the number of the specimen representing it. In mapping the section count each of the spaces between the blue line as 100 paces, and twenty of these spaces as one mile, or 2,000 paces. Usually the southeast corner will be placed at the bottom of the page, or at the first black line above the bottom of the page, and at the right hand side. If, however, for any reason, it is desirable to show portions of an adjoining section, the southeast corner may be shifted up, or the map may be turned around and the north placed at the left hand side of the page.

2. On the right hand page place the notes descriptive of the exposures. Begin in each case with the number of the specimen, placing the number on the left hand side of the red line, after which give in order on the right of the same red line the position of the ledges as reckoned in paces from the southeast corner of the section, and the dip and strike when observable, for instance: 4025 | 250 N., 300 W., *Strike, N. 6° E., Dip, 50° E.* Then follow with as full a description of the ledge as possible.

3. The ruling of the left hand page is also arranged so that a smaller scale can be used. Each one of the black lines may represent a section line and the red lines quarter sections and "forties." The scale of the maps may thus be reduced, if desirable, to two inches to the mile (the ordinary town plat scale.)

4. Collect a specimen from each separate ledge of rock, or wherever there is a change of rock on any one ledge. In case of trips made on foot or in canoes, for long distances, neighboring ledges, unquestionably of one kind of rock, need not be sampled, the position and extent of the ledge being marked on the map, with a note that it is of a rock identical with specimen so-and-so. Under the same conditions small sized samples, trimmed to a uniform size of $2 \times 2 \frac{1}{2} \times \frac{3}{4}$ inches will be allowed, but in all other cases *large sized specimens*, trimmed to a size of $3 \times 4 \times 1$ inches, must be selected, in accordance with § 3, chapter IV, p. 44, Regulations of the U. S. Geological Survey. In all cases collect chips for slicing. All specimens are to have numbers painted on them, in white on a black background, in the field.

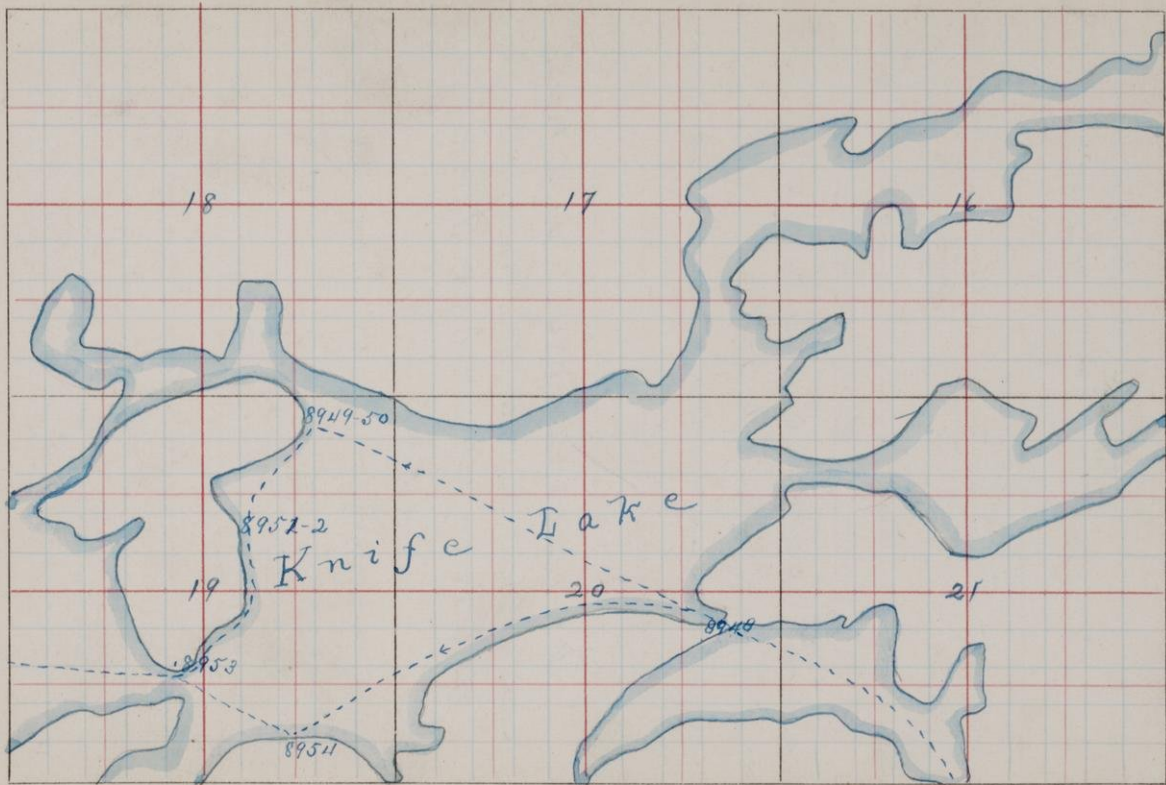
5. On the last twenty-five pages of the book give, as may seem desirable, a general account of the examination of the region mapped in the previous pages, correlation of observations, sketches, cross sections, etc., etc.

6. Forward this note book, as soon as filled, as registered mail matter, to R. D. IRVING, U. S. Geologist, Madison, Wis.

P. 6

Knife and
Basswood Lakes
p.p. 1-7

Vermillion Lake
to
Lake of the Woods
pp. 9-53



T. 65

R. 6

8948 A coarse quartzite near the north end of portage into Knife Lake N. E. $\frac{1}{4}$ of the S. E. $\frac{1}{4}$ of Sec. 20-65-6

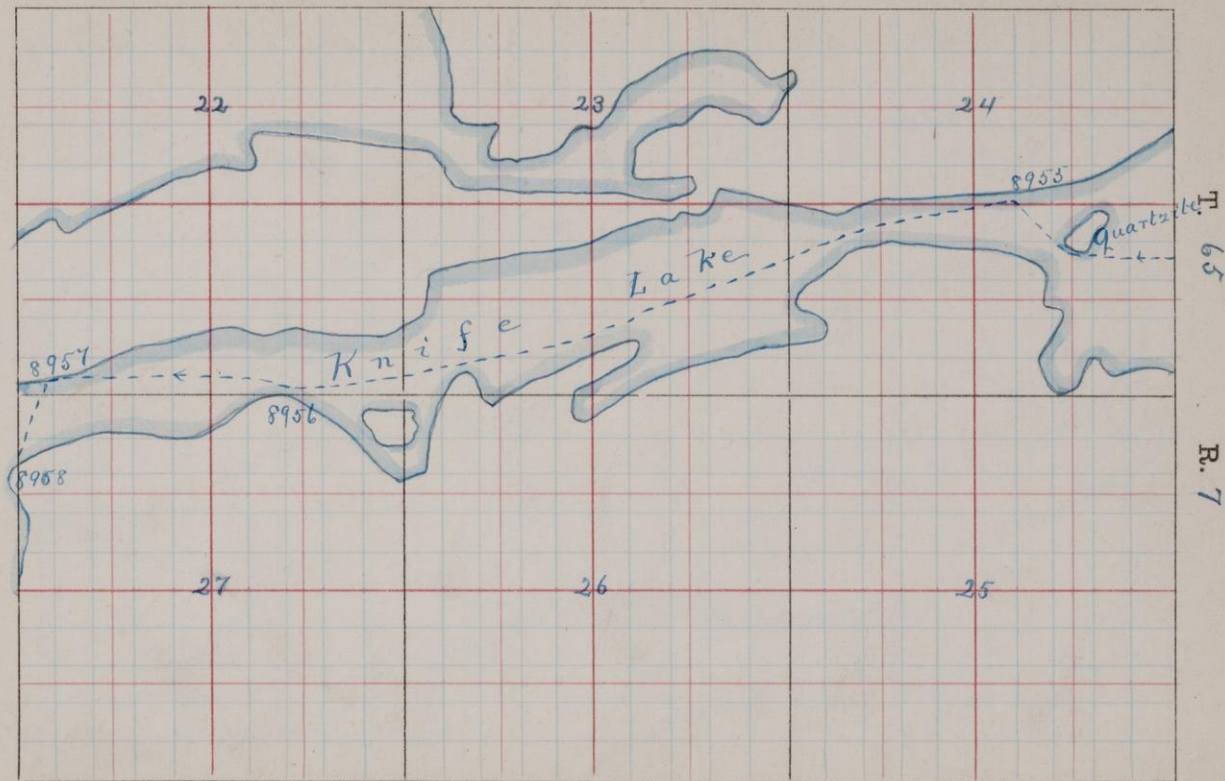
8949 A quartzite from the N. E. corner of large island in Sec. 19-65-6
Strike nearly north and south

8950 Dike about 20 paces wide in 8949; it weathers to a reddish color and stands up very prominently from the other rocks

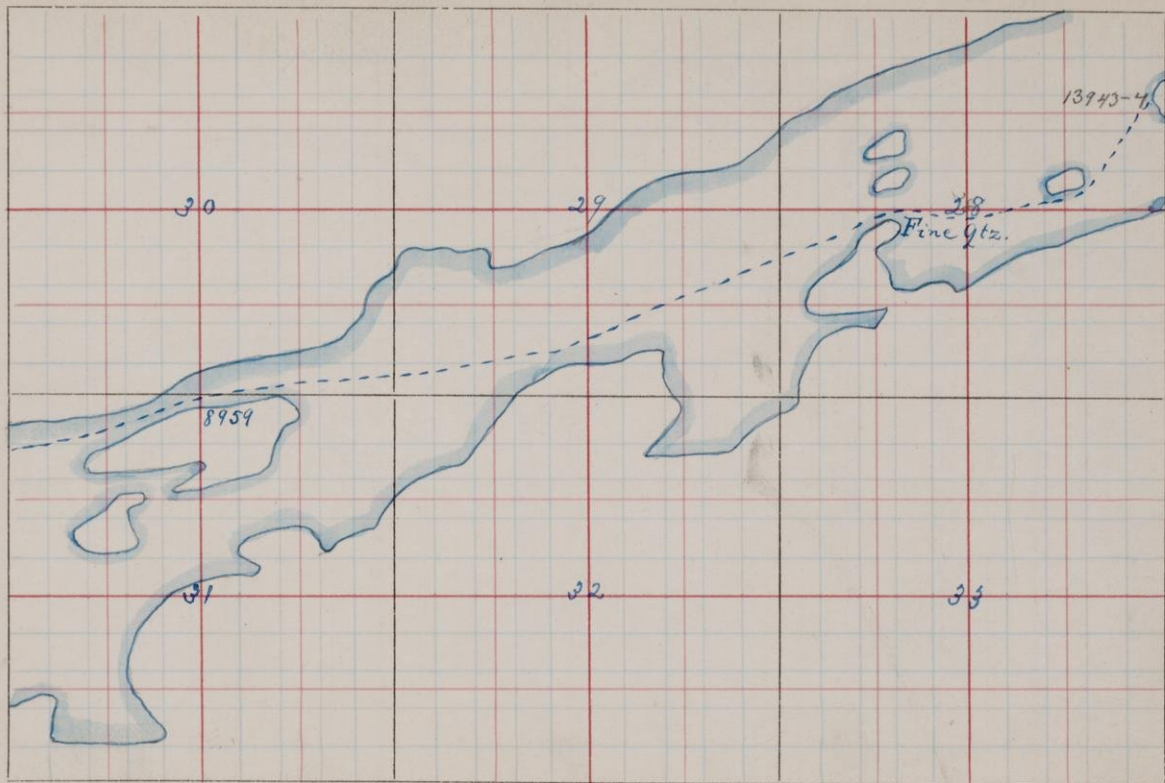
8951 A coarse quartzite from near the center of the east side of above island

8952 One of the finer bands of this rock same place as 8951 Strike a few degrees east of north

8953 A grey very fine quartzite from the south end of above island. There are coarse and fine bands interstratified at this point



- 8954 A fine banded quartzite from
the south side of Knife Lake
S. $7\frac{1}{2}$ of the S. E. $\frac{1}{4}$ of Sec. 19-65-6
Strike nearly North and South Mag.
- 8955 Near the center of Sec. 24-65-7
- 8956 A black quartzite from the N. E. $\frac{1}{4}$
of Sec 27-65-7 W.
- 8957 From near the S. W. corner of
Sec 22-65-7
- 8958 A very fine black quartzite near
the end of point in the N. W. $\frac{1}{4}$
of Sec 27-65-7 W



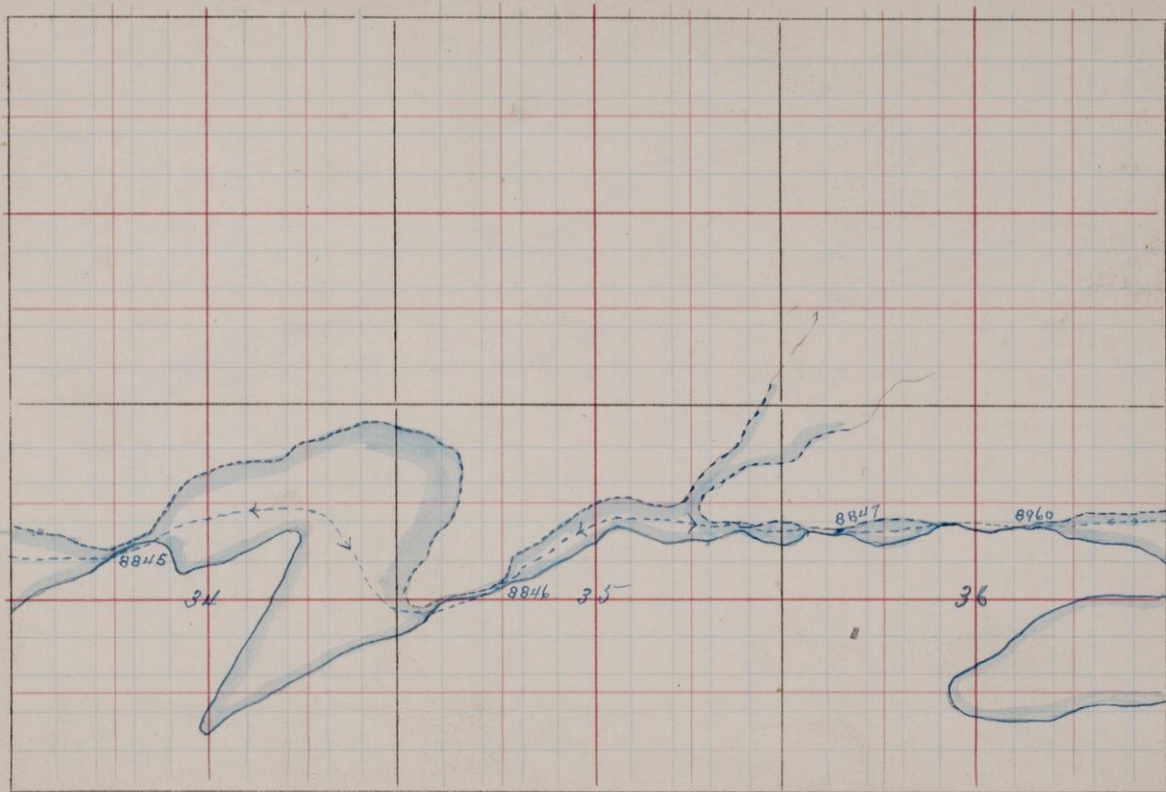
T. 65

R. 77

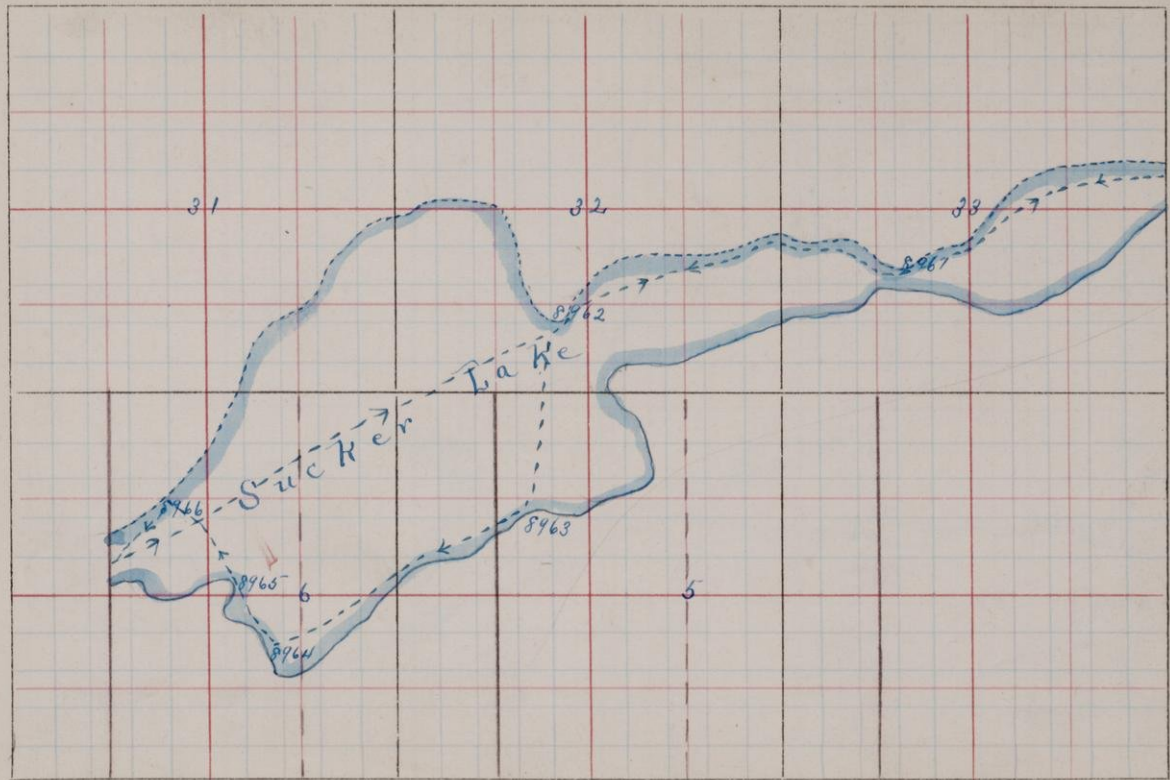
8959 From the north side of the large
island in the N. $\frac{1}{2}$ of Sec 31-65-7

T. 6 S

R. 8



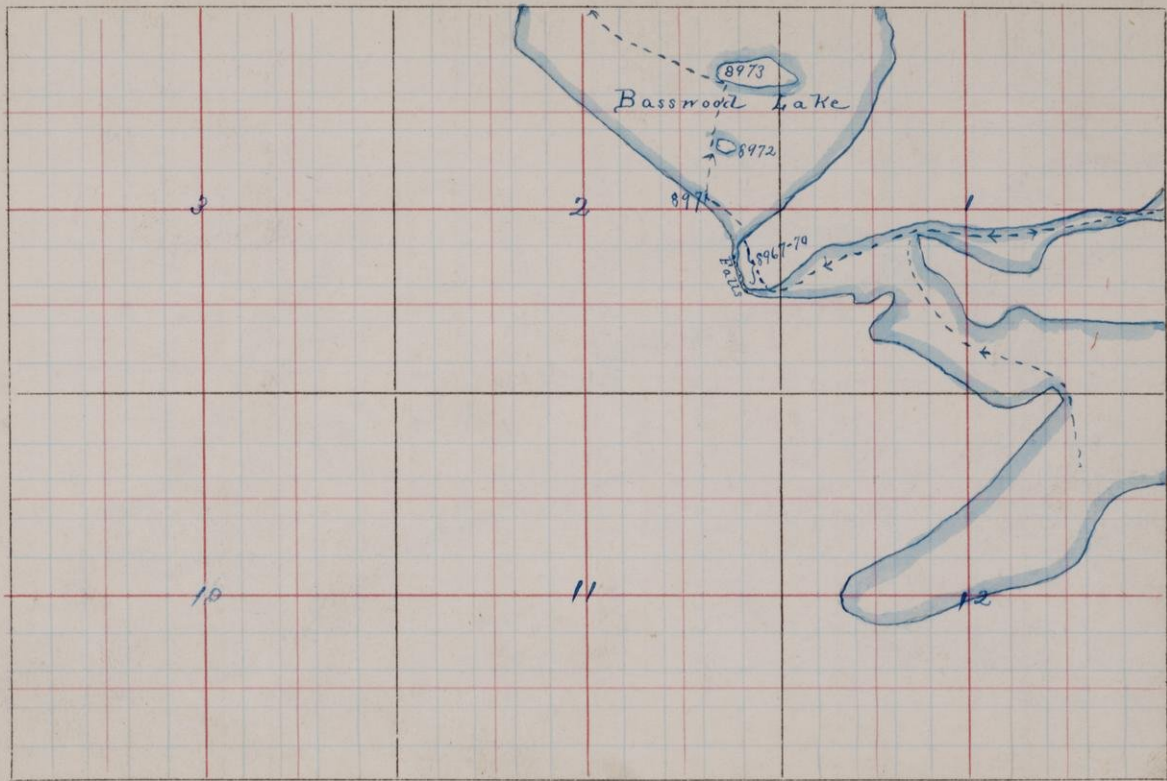
8960 From the east end of first portage
west from Knife Lake N.E. $\frac{1}{4}$ Sec
36-65-8



T 8 64 and 65

R. 8

- 8961 A grey schist near the center of Sec
33-65-8 W
- 8962 Very similar to 8961 from the S.E. $\frac{1}{4}$
of the S. N. $\frac{1}{2}$ of Sec. 32-65-8
- 8963 A light-colored schistose rock from
the N. N. $\frac{1}{2}$ of Sec 6-64-8 Compare
with that from the north end
of porage Sec. 12-64-9 (8842)
Strike about N.E
- 8964 Near the center of Sec. 6-64-8
- 8965 End of small point a short distance
north of 8964; near center of the
west $\frac{1}{2}$ of Sec. 6-64-8
- 8966 A greenish schist from the
Canadian side about north
of 8965



T. 64

R. 9

8967 A green schist from the upper end of Falls between Sucker and Basswood Lakes

I think this is the place where Chauvaud makes the Knife Lake slates run into the granite

The schist does appear to run into the granitic material the two running into each other in wedge shaped forms the granite being in greater quantity here

The schist is not seen coming to a point but diminishes in width as far as could be traced (only a few feet) The granitic material probably runs into the schist in veins but not into the Knife Lake slates as they are not exposed here

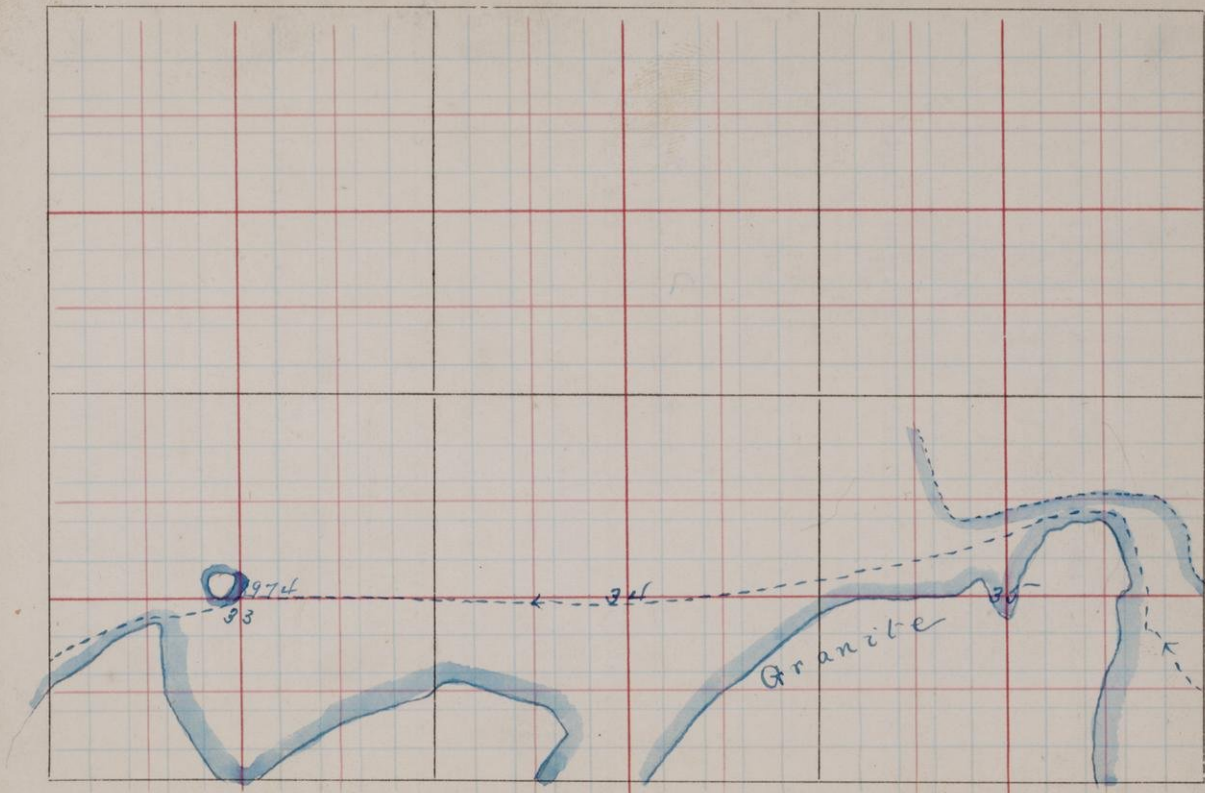
8968 Granitic material at head of the falls

8969 Taken, in order, from 8968 to the foot of the rapids, no granite being noted along here

The next granitic outcrop is exposed

T. 65

R. 9



on the west side of the lake near
the mouth of the river

8971 From the S. E. $\frac{1}{4}$ of the N. E. $\frac{1}{4}$ of Sec
2-64-9

8972 Gneiss from the small island in
the S. E. $\frac{1}{4}$ of the N. E. $\frac{1}{4}$ of Sec 2-64-9

8973 Gneiss from the large island in
the N. E. $\frac{1}{4}$ of Sec. 2-64-9

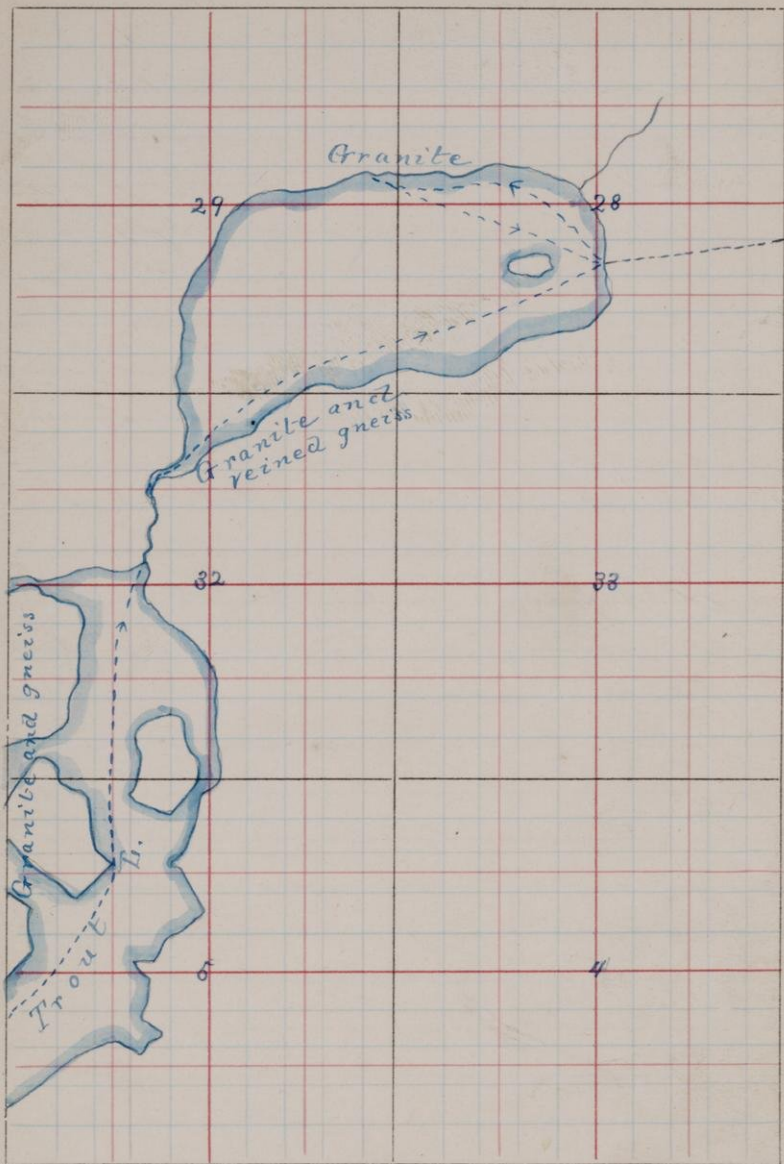
8974 Granite from a small island
in Basswood Lake near the
center of Sec 23-65-9

From this last point our route
lay through Basswood, Falls, Long,
Burnside, Mud, and Vermillion
Lakes to Tower For notes on this
route see Dr. Swings note-book
Aug. 1885

Vermillion Lake
to
Lake of the Woods

T.

R.



From Trout Lake to Lac la Croix 9

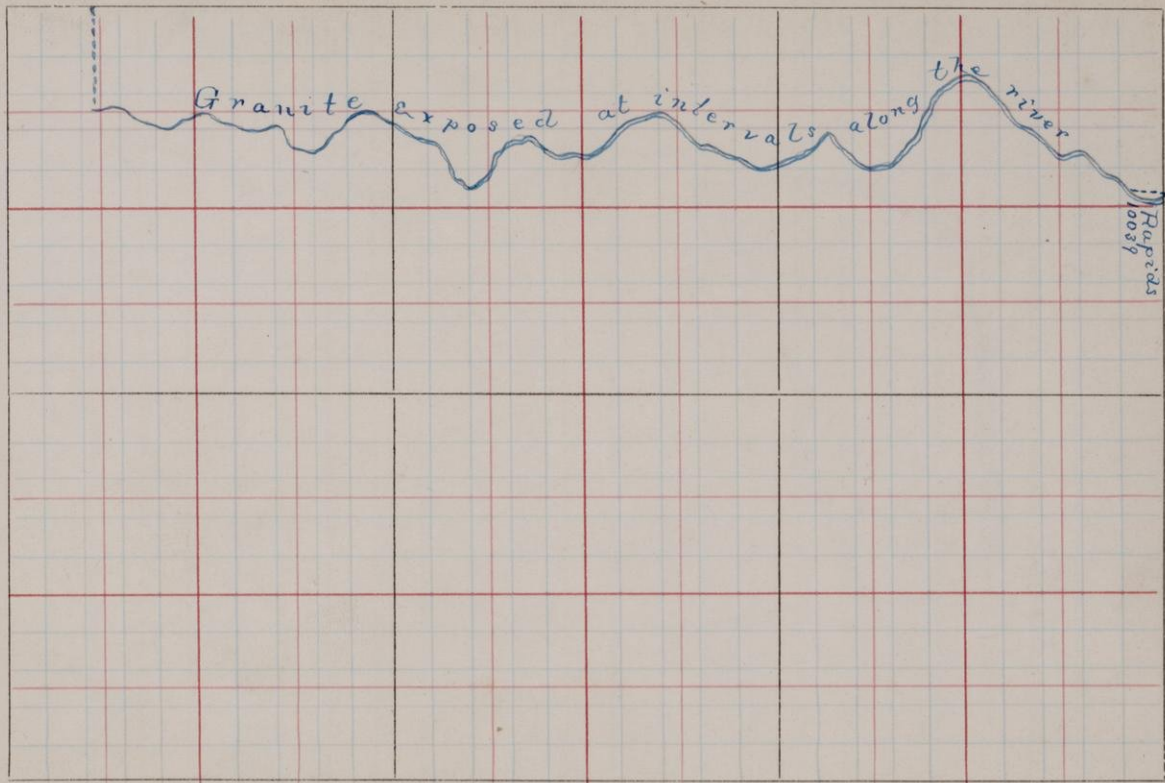
The trail leaves Trout Lake at the northeast corner passing through a small stream $\frac{1}{4}$ of a mile long into a lake about 1 mile in length east and west. Crossing to the east side of this lake a portage is made (1945 p.) east into a river running north into Loon Lake on the boundary.

The general course of the river is quite straight but its course in the river valley is very winding.

Granite and schist are exposed on the south side of the first lake north of Trout Lake; on the north side granite alone shows. No more schist is noted along this route until on Lac la Croix.

Along the river the granite is exposed at intervals increasing in quantity as Loon Lake is neared.

There is no space along the river where a formation of any thickness could come in nor were any signs of such a formation noted.



T.

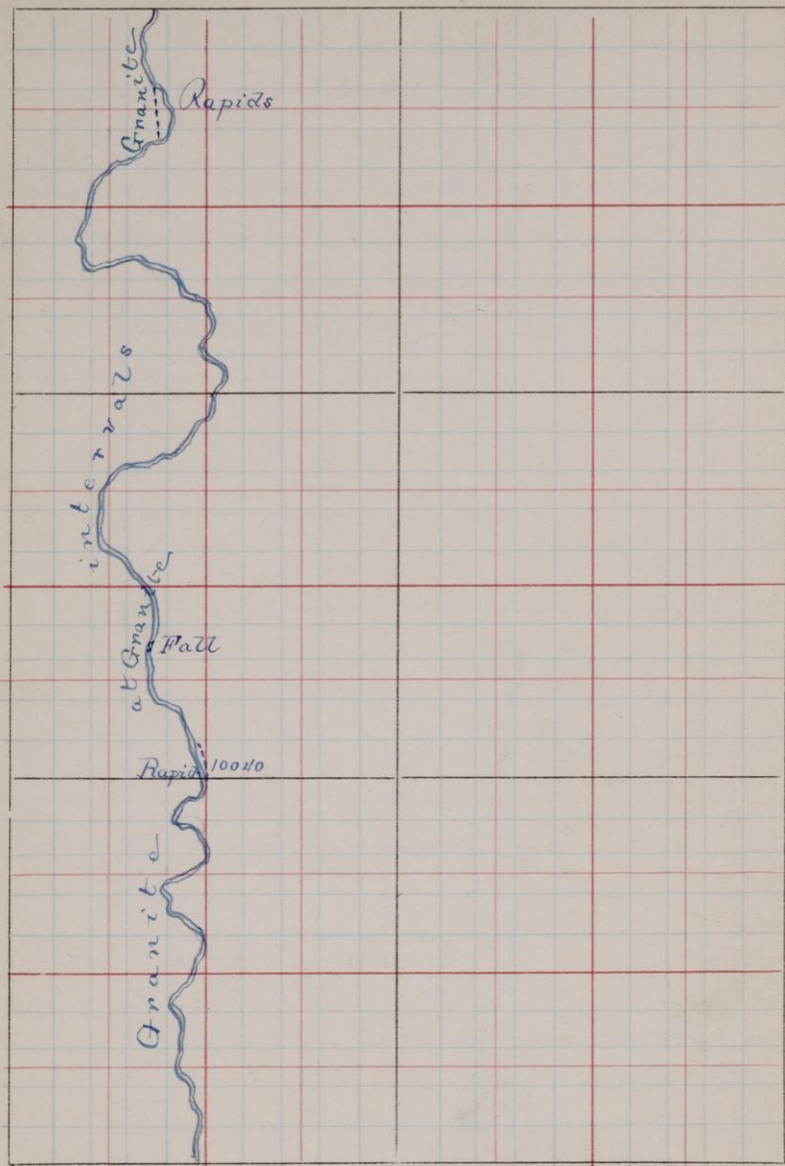
R.

As Loon Lake is approached the¹⁰
exposures rise in high ridges for the
last one or two miles

70039 About 5 miles below the end of
Bio. Granite portage; at the first rapids on the
river

T.

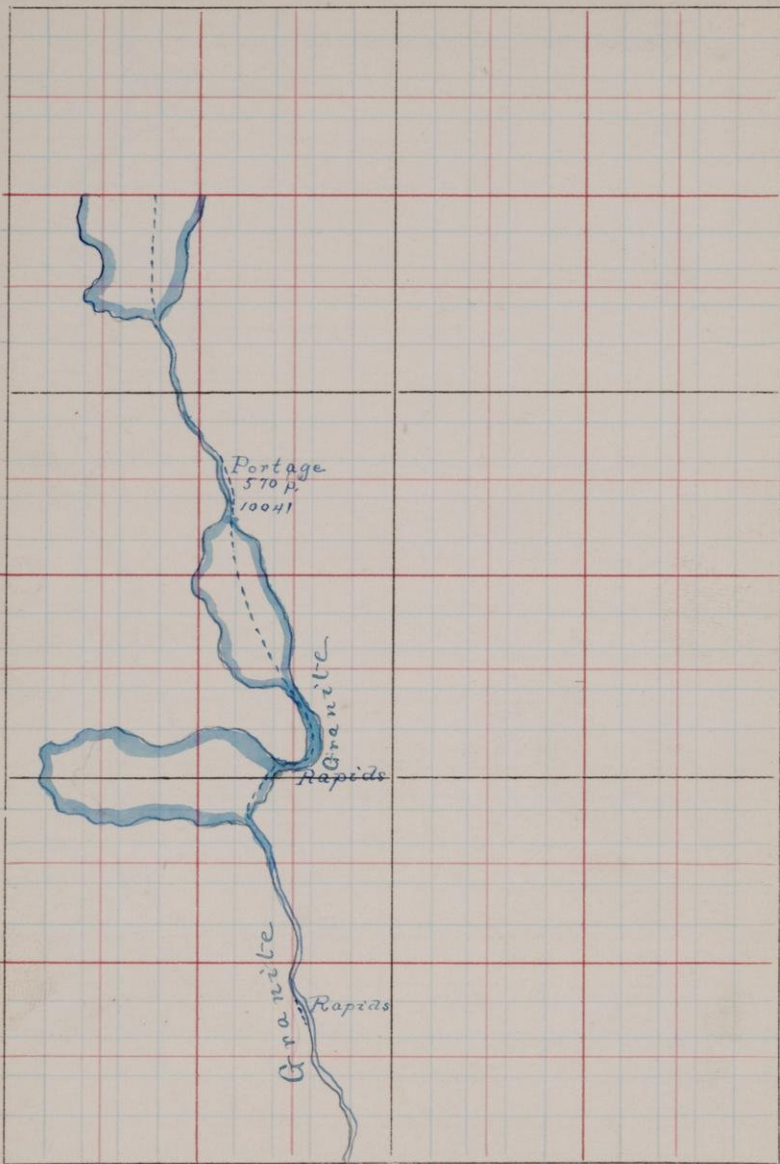
R.



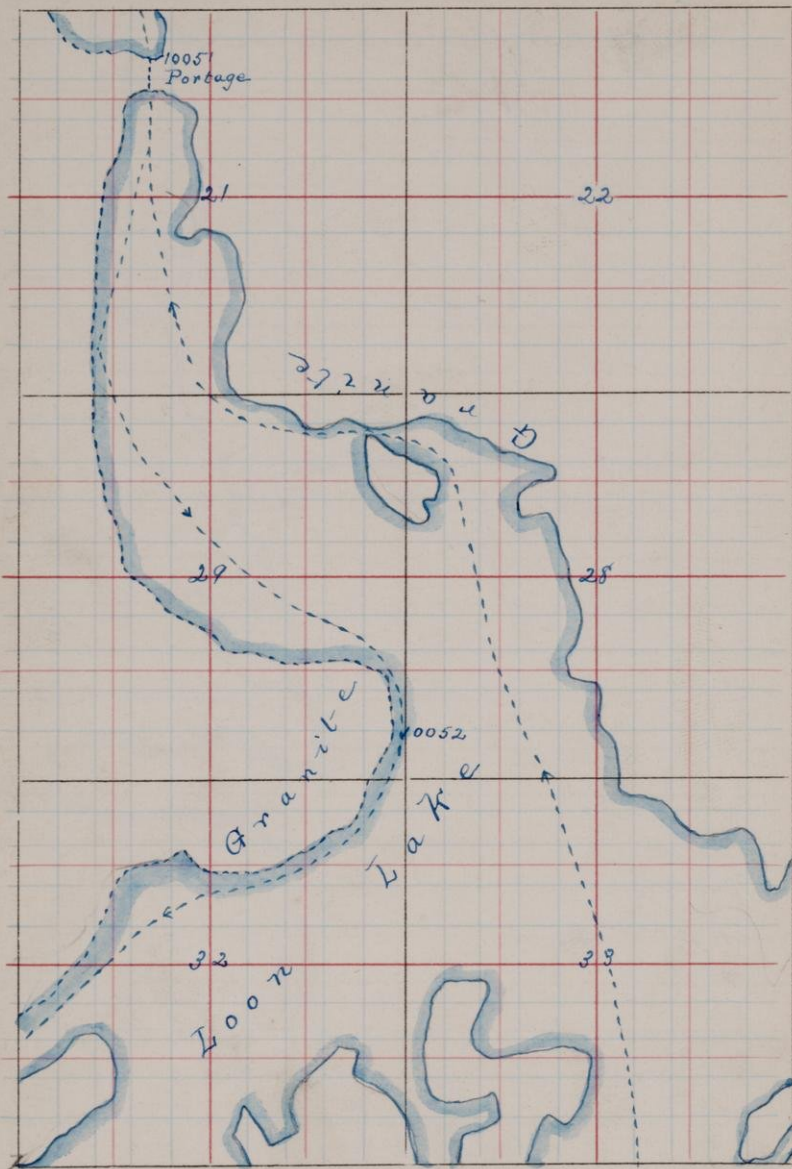
11
10040 At the 2d rapids on the river; about
2 miles below 10039

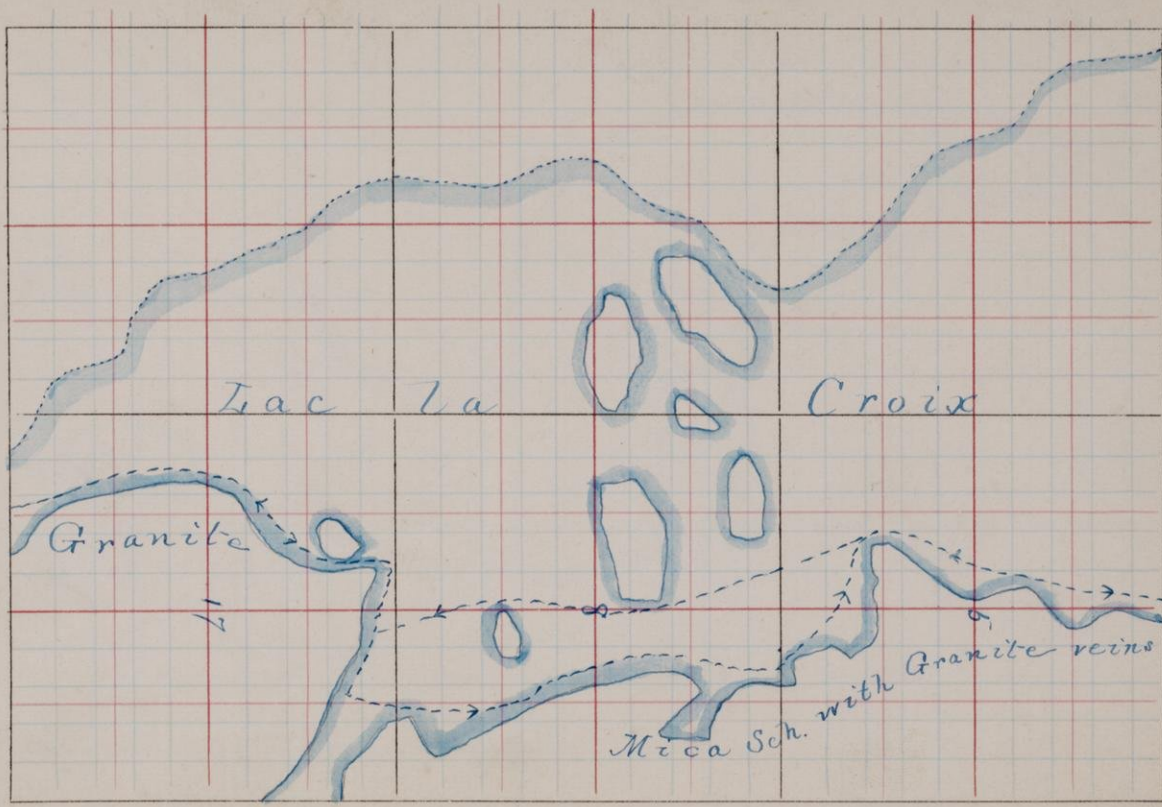
T.

R.



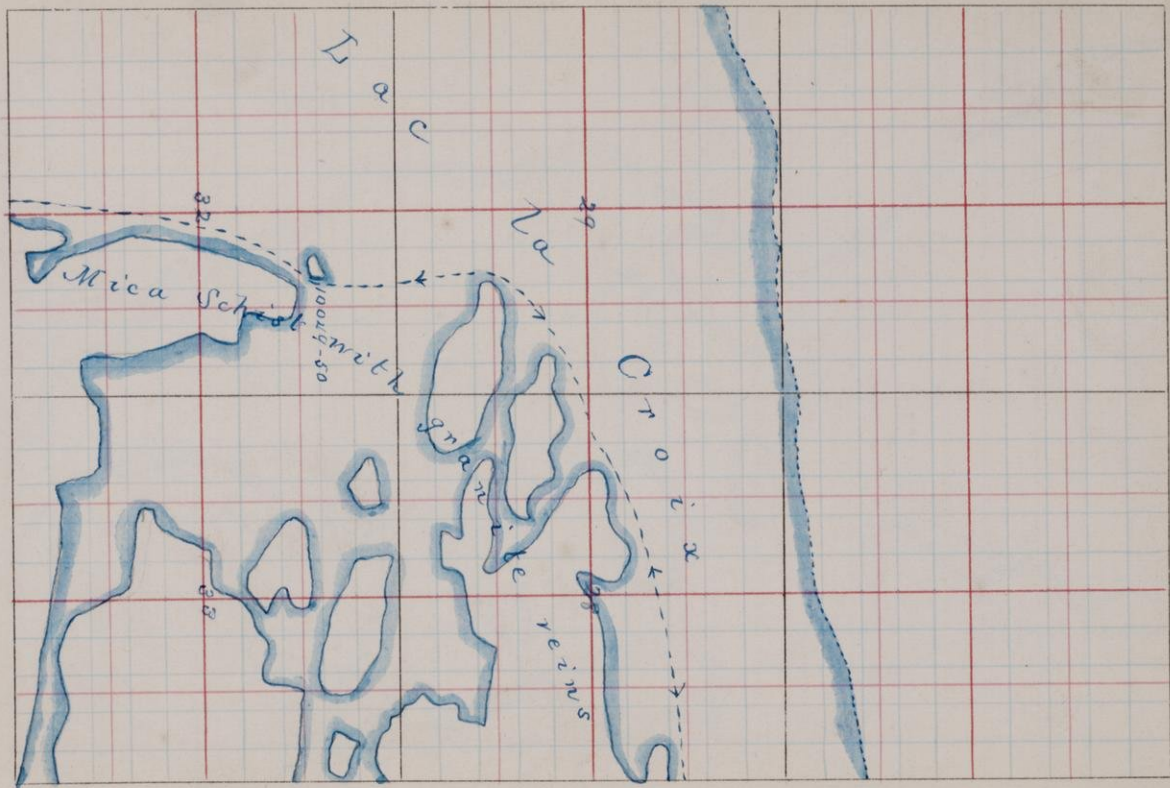
✓ 10041 Granite from a podage about $1\frac{1}{2}$
Granite miles south Snow Lake

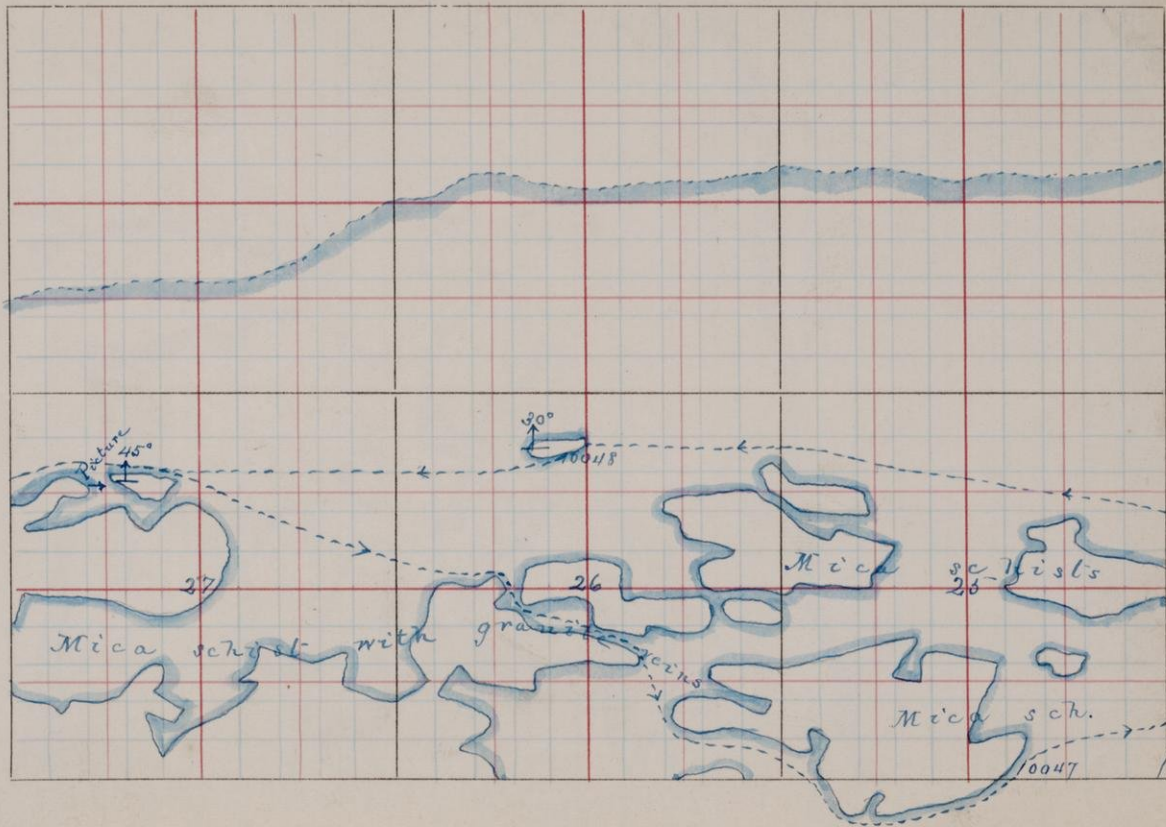


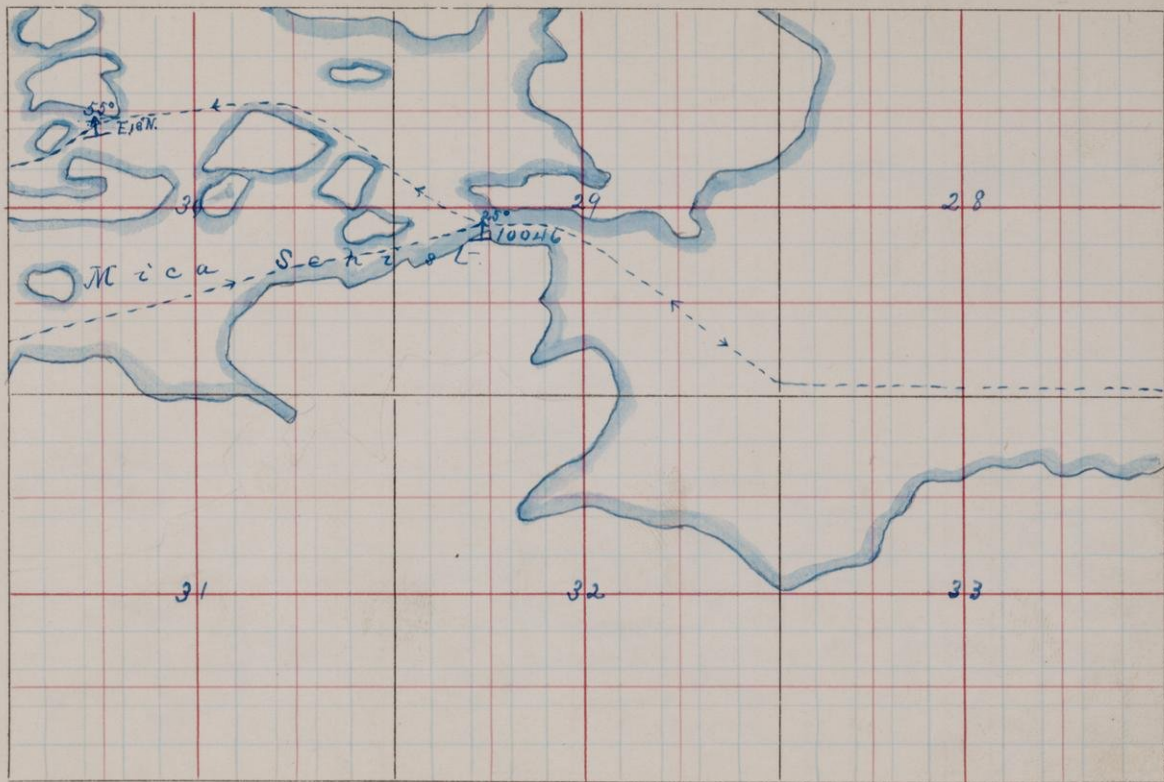


T. 67

E. 15

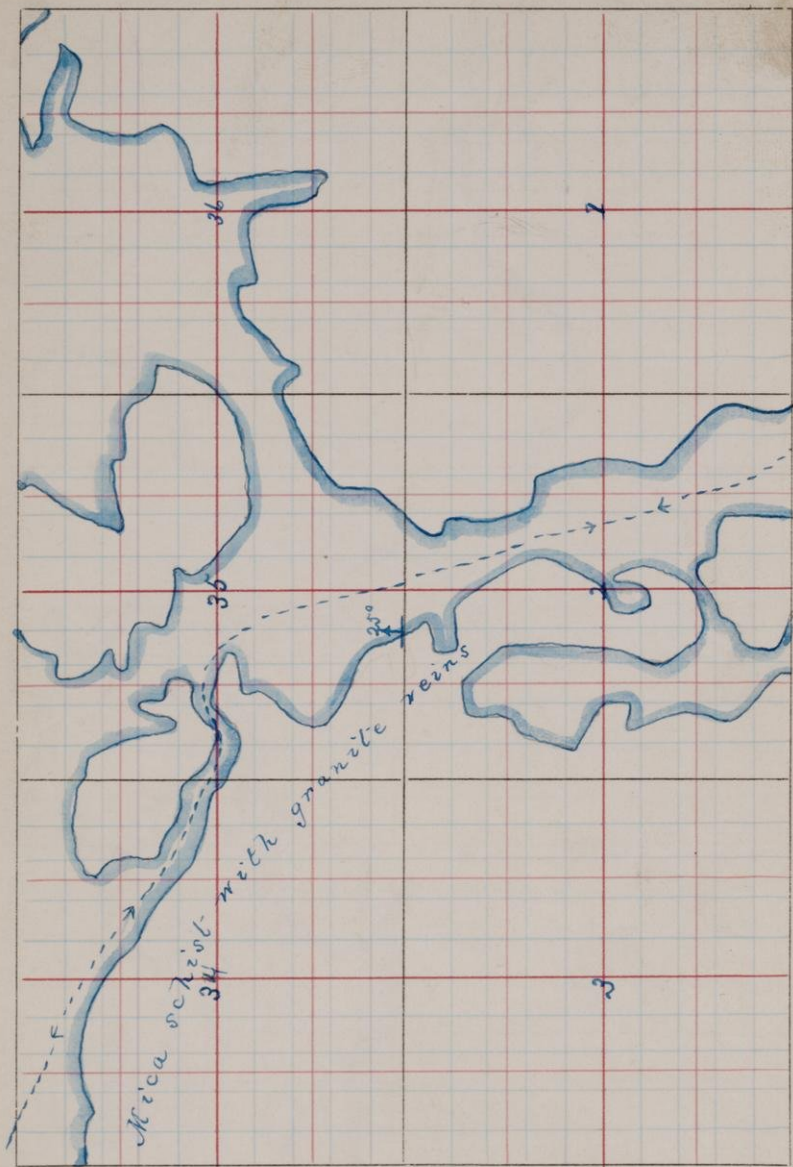


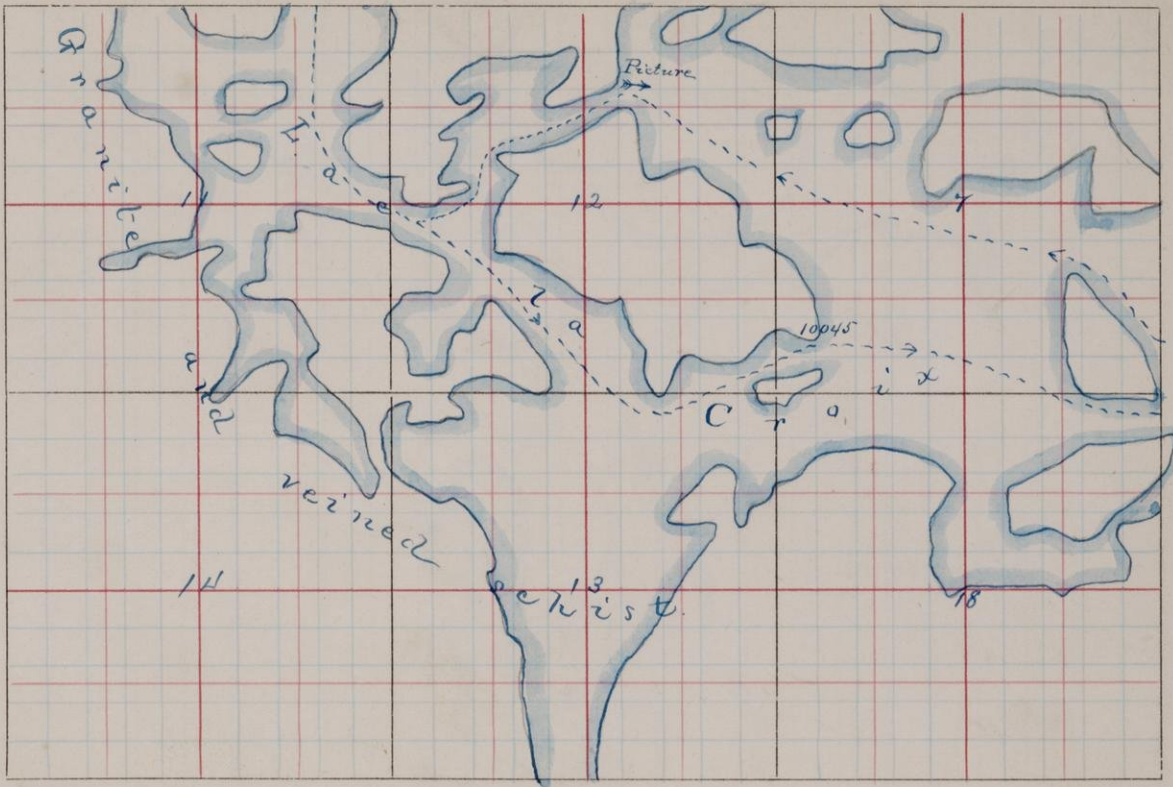




T. 68

R. 14





T. 67

E. 14 and 13

T. 67

R. 13

100274

Picture

17

16

Approximate limit
of the schists

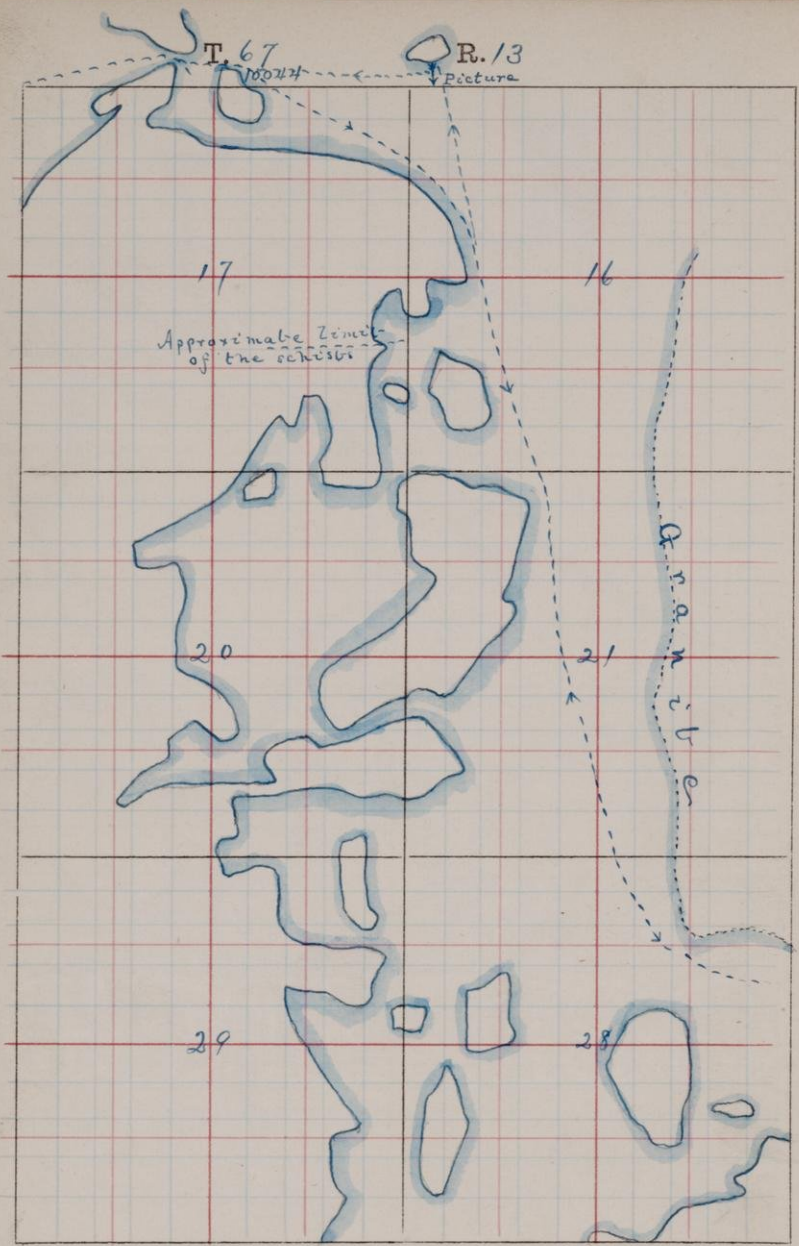
20

21

Granites

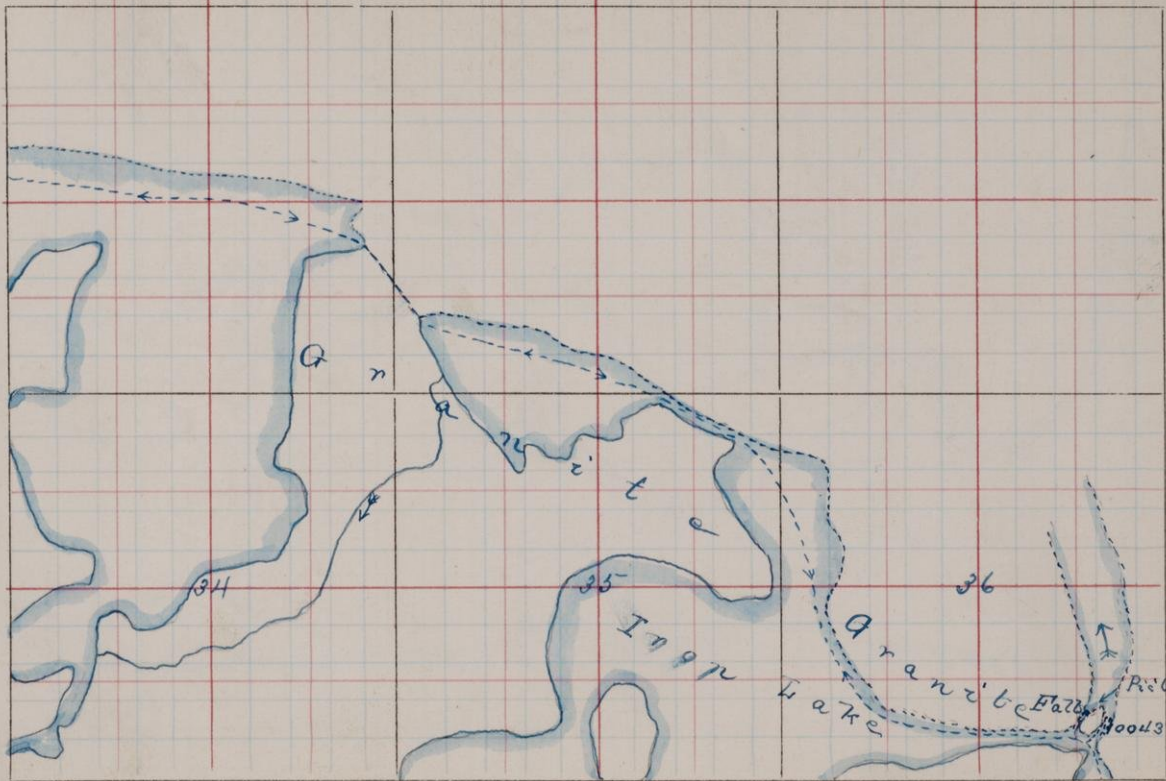
29

28



T. 67

R. 13

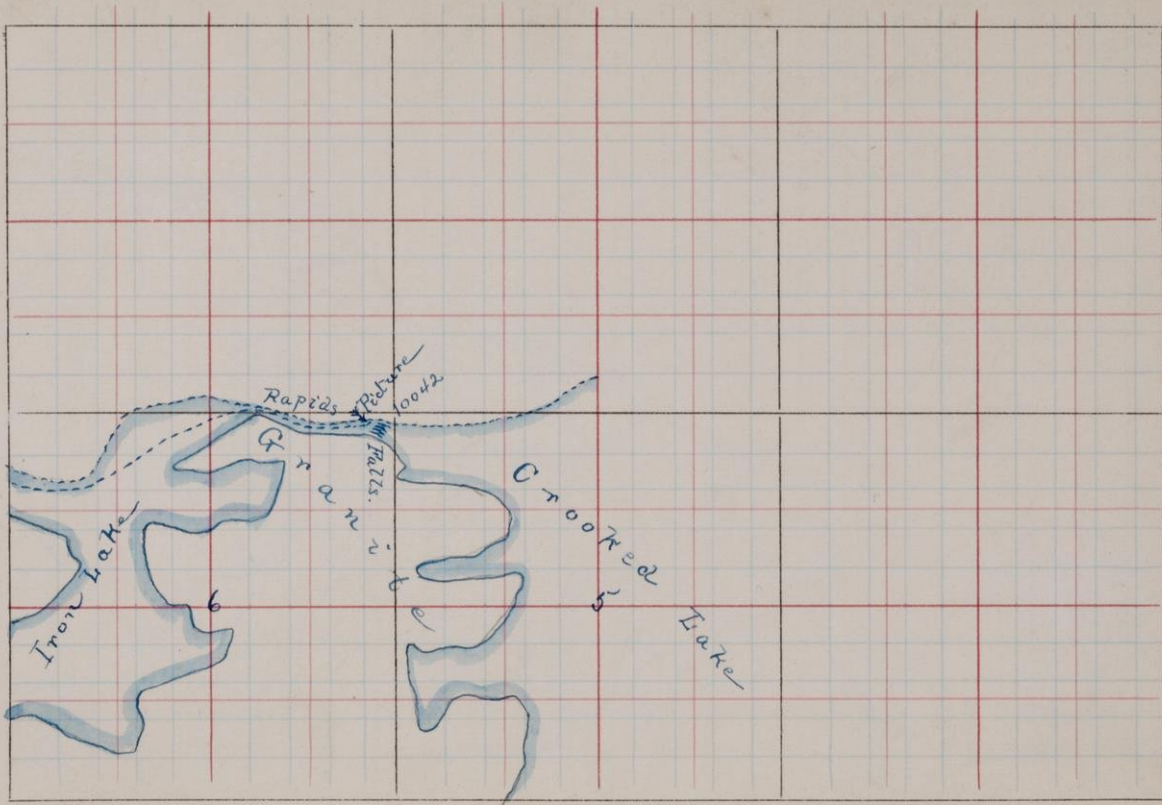


36

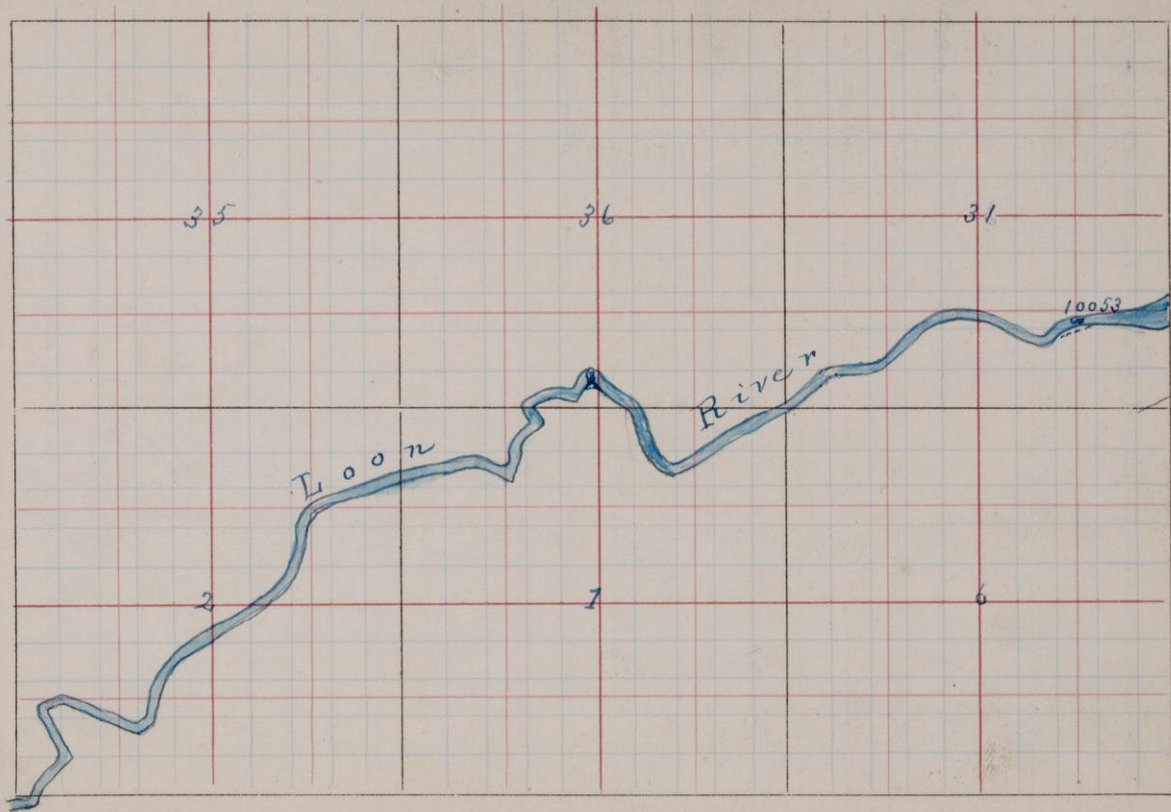
35

34

- ✓ 10042 *Bio. Granite* Granite from the falls at the outlet of Crooked Lake near the N.E. corner of Sec. 6-66-12 (See map next page)
- 10043 Granite from the falls at the outlet of Iron Lake S.E. $\frac{1}{4}$ of Sec. 36-67-13
- 10044 Granite from a small island near the north $\frac{1}{2}$ part of Sec 17-67-13 (See map opp. p. 20)
- ✓ 10045 *Hb. Mz. Sch.* Veined schist from the S.E. corner of large island in Sec. 12-67-14 (See map opp. p. 19)
- ✓ 10046 *Par. Mi. Sch.* Mica schist from the N.E. $\frac{1}{4}$ of the S. $\frac{1}{2}$ of Sec. 29-68-14. Carries great many garnets. (See map opp. p. 17)
- 10047 Mica schist from the S. $\frac{1}{2}$ of the S.E. $\frac{1}{4}$ of Sec. 25-68-15 (See map opp. p. 16)
- 10048 Mica sch. from an island in the N.E. $\frac{1}{2}$ of the N. $\frac{1}{2}$ of Sec. 26-68-15 (See map opp. p. 16)



- 10049 } Showing schist and veining from
 10050 } a small island in the N.W. $\frac{1}{4}$ of the
 N.E. $\frac{1}{4}$ of Sec. 32-68-15 Lac la Croix
 (See map opp. p. 15)
- 10051 Granite from the portage between
 Granite Lac la Croix and Loon lake N.E. $\frac{1}{2}$
 of Sec. 21-67-15 (See map opp. p. 13)
- 10052 Granite from the west side of Loon
 Lake near the west line of Sec.
 28-67-15

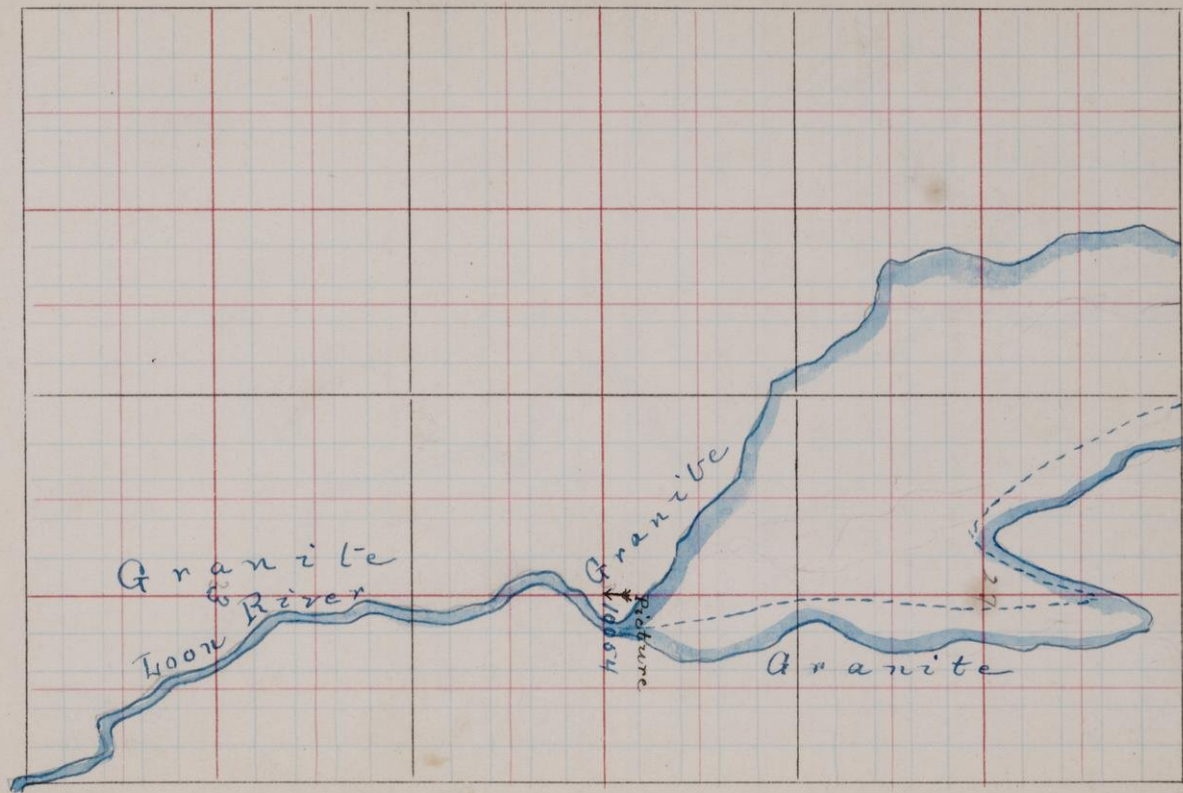


T^s 6 and 67

R^s 15 and 16

10053 Granite from the first rapids on
Loon river in the S.E. $\frac{1}{4}$ of Sec.
31-67-15

From Lac la Croix west the trail
passes through Loon Lake, 3 or 4 miles
long, then down Loon river to an
arm of Namakan Lake. After
passing the second rapids on the
river, about a mile from Loon Lake,
no exposures are seen for several
miles or until a couple of miles from
its mouth where the granite shows
in large exposures on the bluffs on
each side of the river.



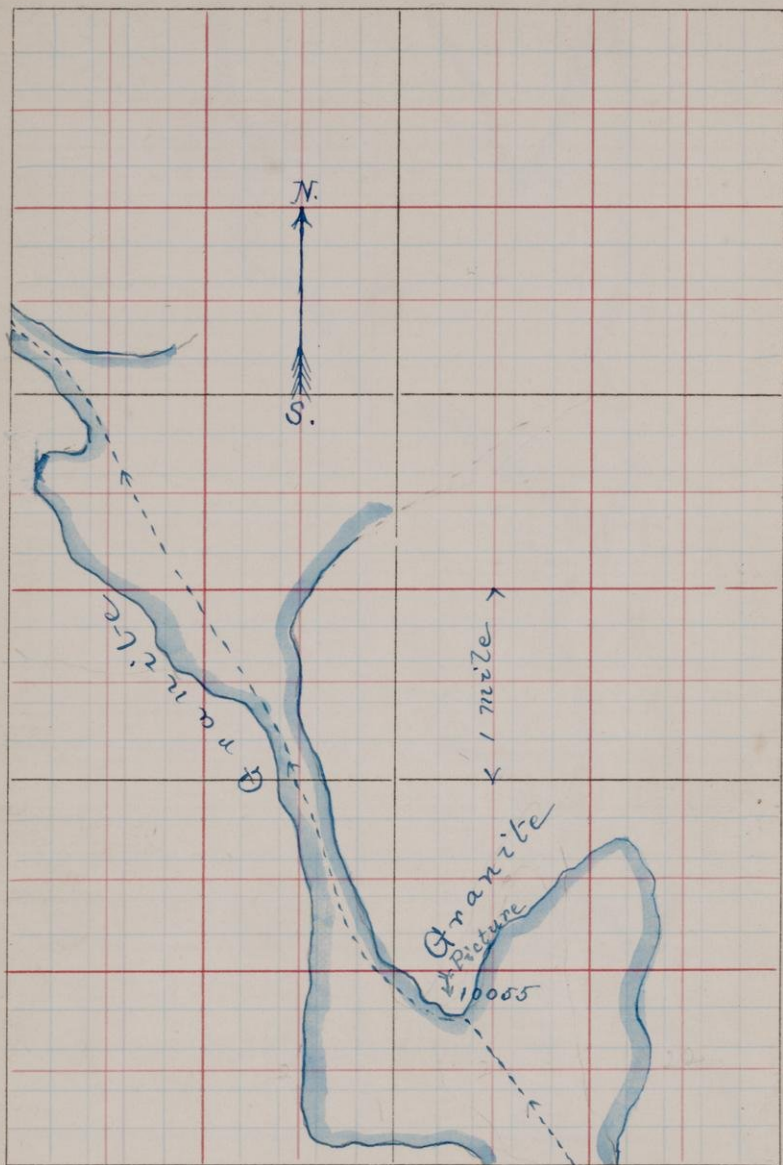
T. S. G. and G. T.

R. 16

✓ 10054 Granite from near the mouth
Bi-Granite of Loon River

T. 67

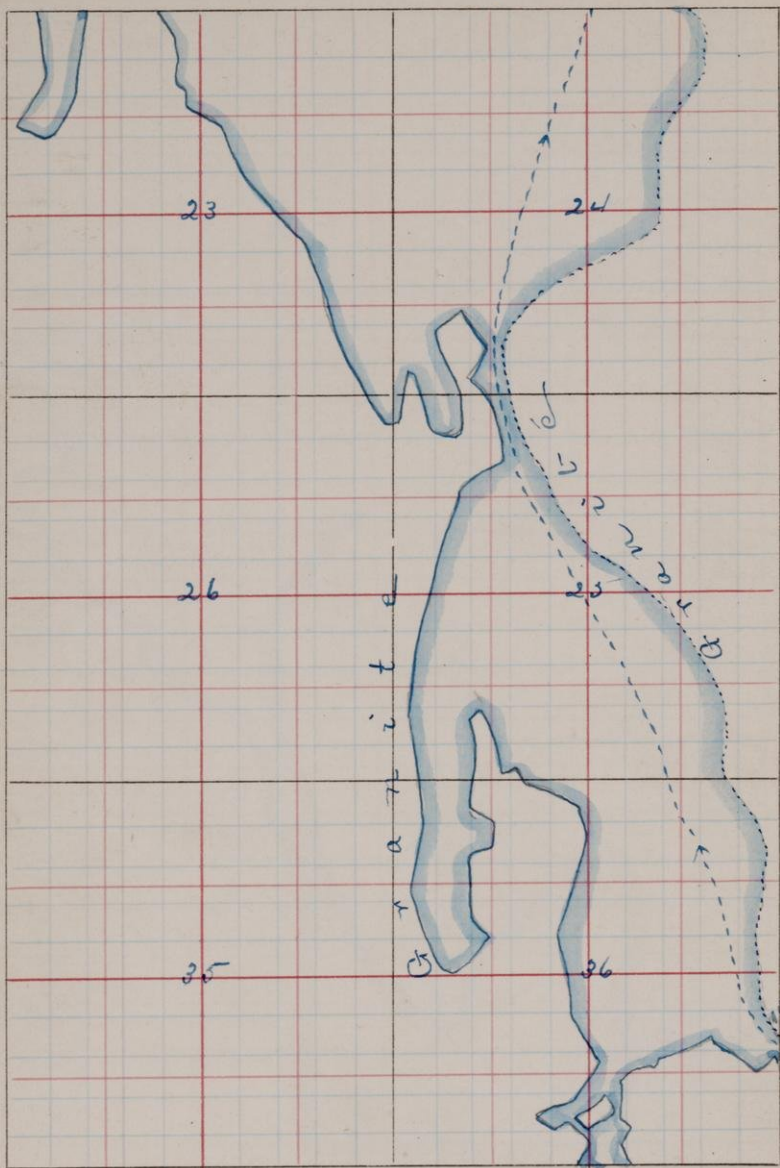
R. 16



10055 About 2 miles north of the mouth
of Lion River

T. 68

R. 17



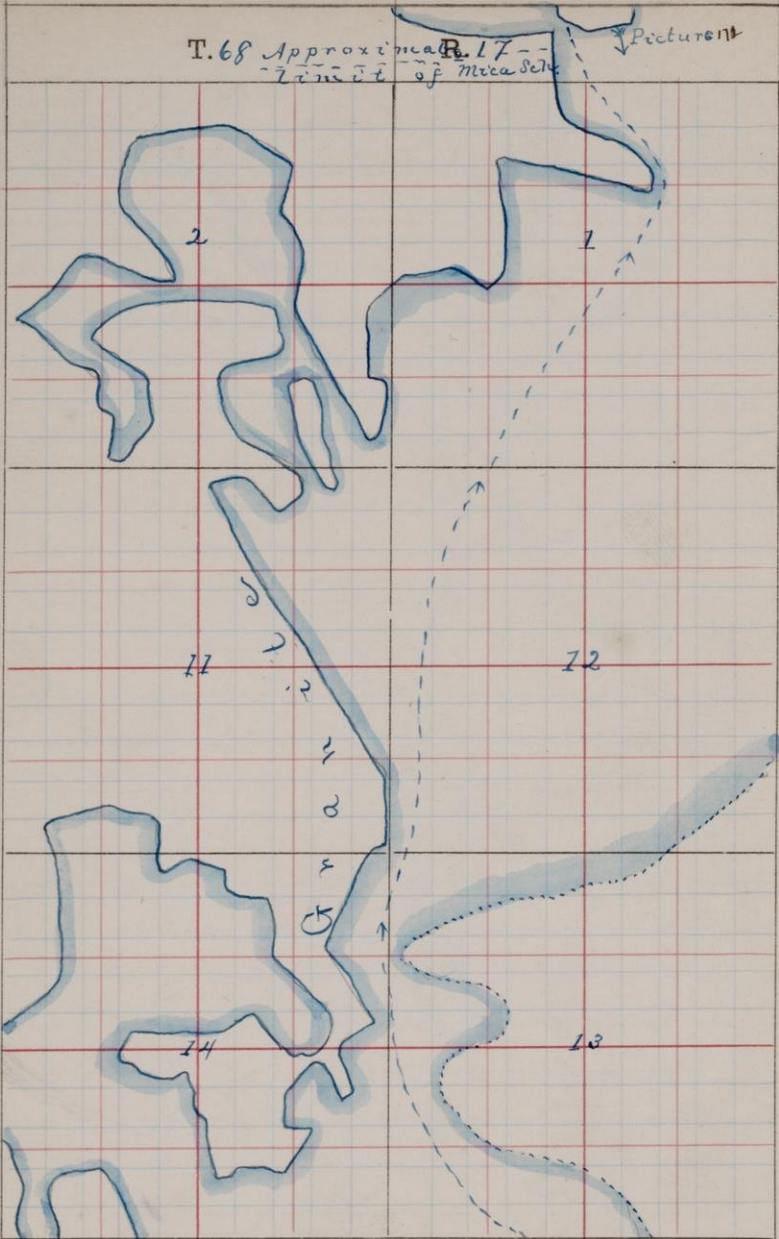
40056 A short distance east of the mouth
of Vermillion River on the Cana-
dian side. (Sec. 36-68-17)

Hb-Bi.
Granite

The exposures are nearly all granite
in this vicinity very little of the
mica schist being noted; to the
north, also, for 5 or 6 miles the rock
is all a granite

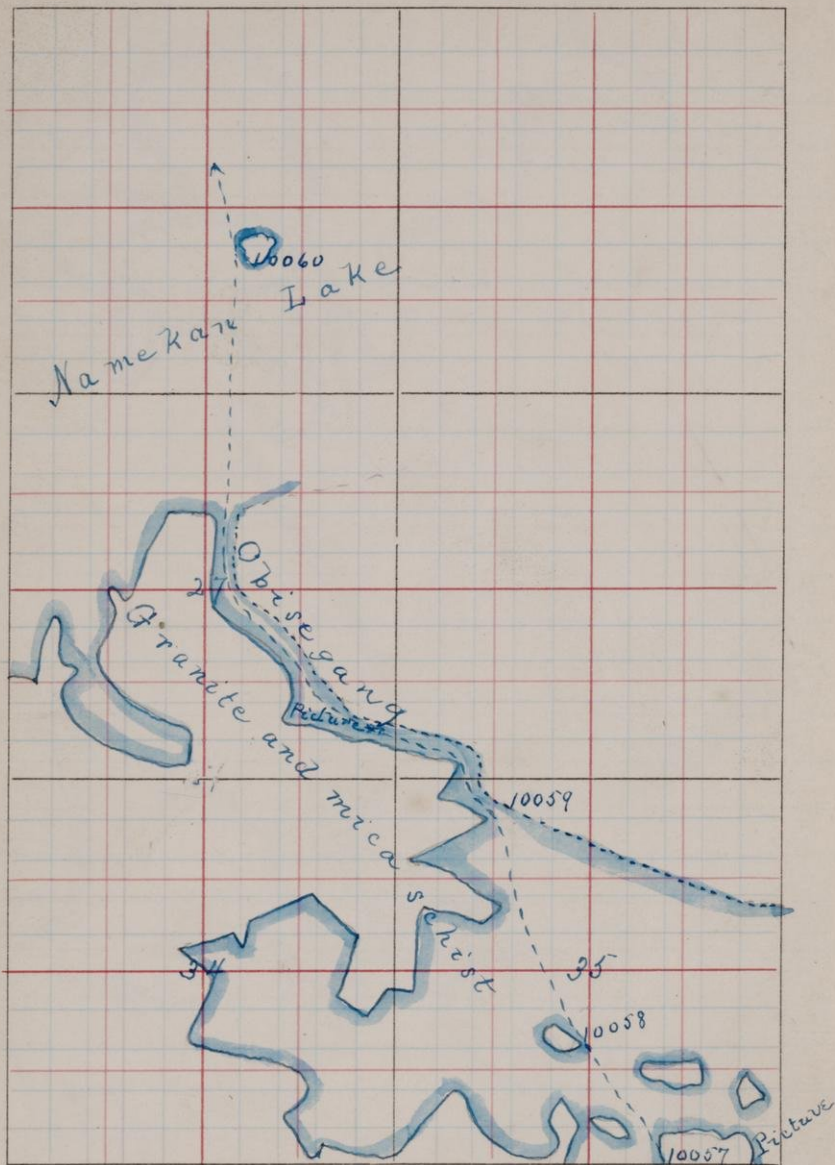
T. 68 Approximate R. 17
 - - - - -
 Transit of Mica Salt

Picturent



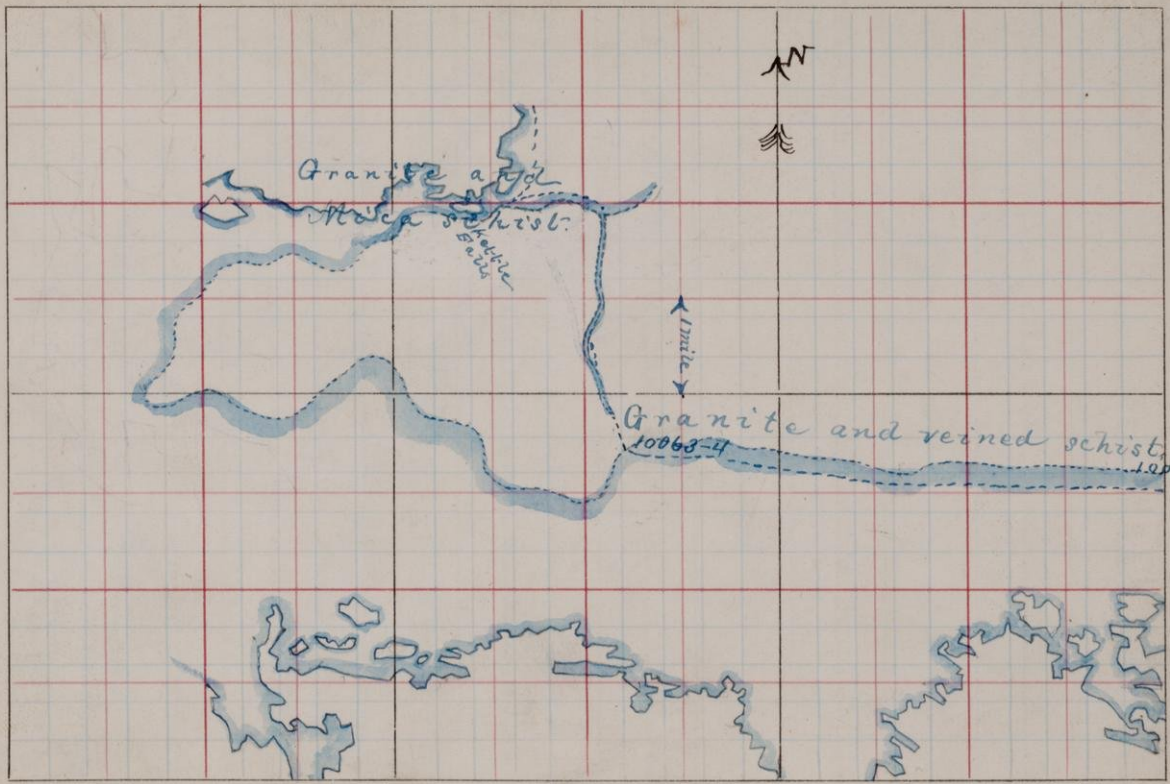
T.69

R.17



- 10057 Mica schist near the south line
of Sec. 35-69-17
- 10058 Mica schist about $\frac{1}{2}$ of a mile north
of 10057. In the N. E. $\frac{1}{4}$ of the
S. W. $\frac{1}{4}$ of Sec. 35-69-17
- 10059 Mica schist from the Obisigang
North side of Sec. 35-69-17 Dip
high to the north
- 10060 Mica schist with portion of a
granite vein, from an island
near the center of Namekan
Lake north of the Obisigang

We crossed to the north side of
Namekan Lake and following
west for several miles, by two
short portages north made an
arm of Rainy Lake running
south from a point about one
mile east of Kettle falls on the
national boundary



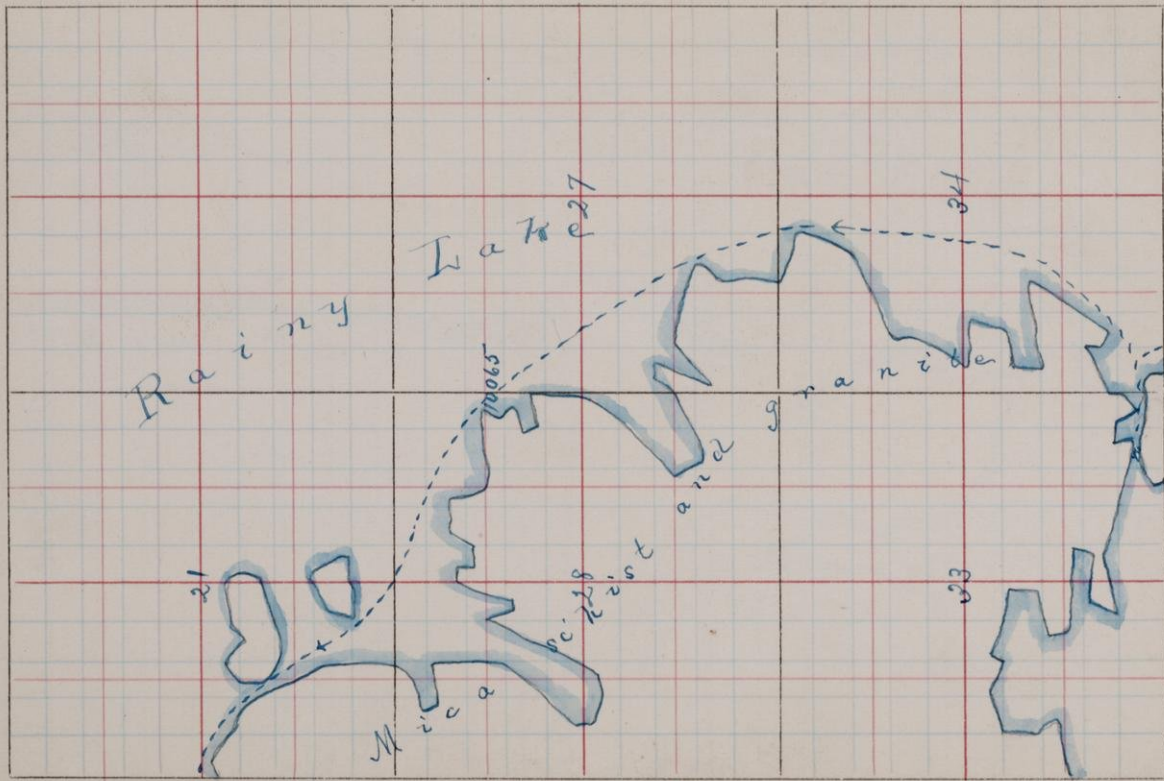
T.

R. 1907-2

- 10061 North side of Namekan Lake
about opposite sec. 28-69-17 There
are large granitic veins in the
schist
- ✓ 10062 From a dike in 10061, 18" wide and
running transverse to the
schistose structure Two or three
smaller branches from this dike
were noted
- ✓ 10063 Mica schist from the south end
Mica Sch. of portage from Namekan to Rainy
Lake
- ✓ 10064 From granitic vein 8 to 10" wide in
Bi-Granite 10063

T. 70

R. 18

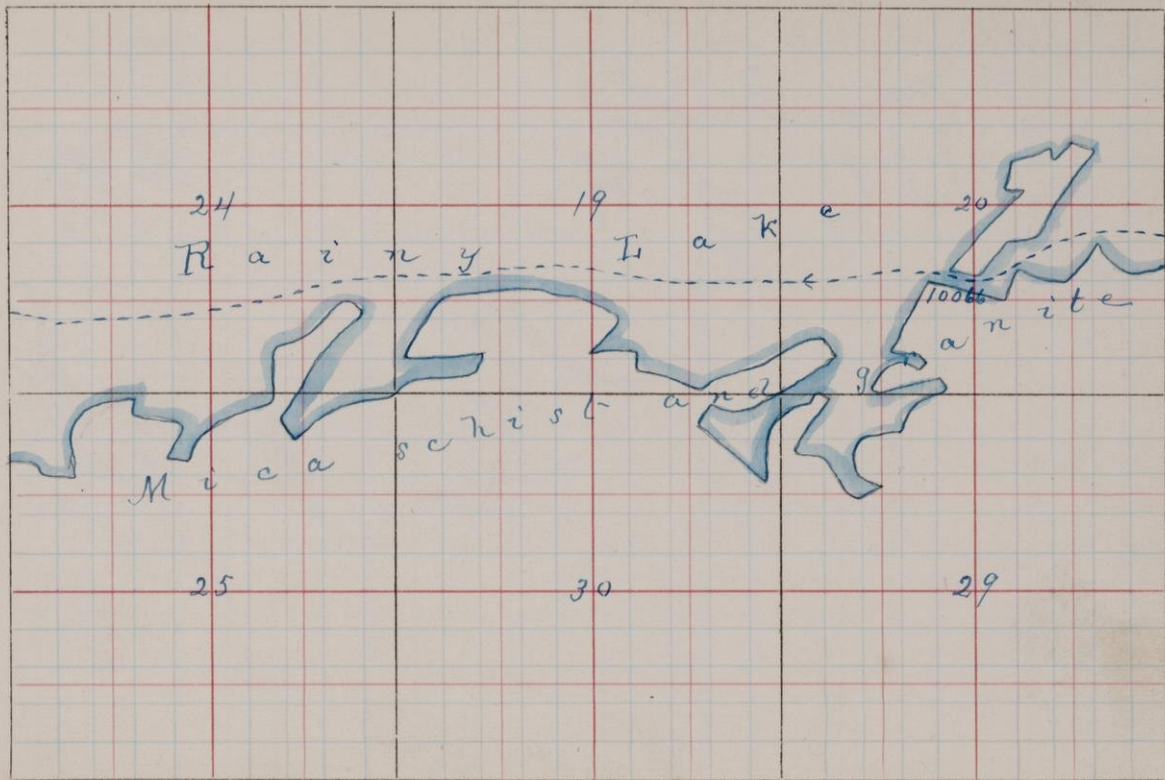


40065

South side of Rainy Lake

Hb. Sch.

Sec. 28-70-18 Strike about east
and west Mag. Dip nearly vertical
Small granite veins were noted

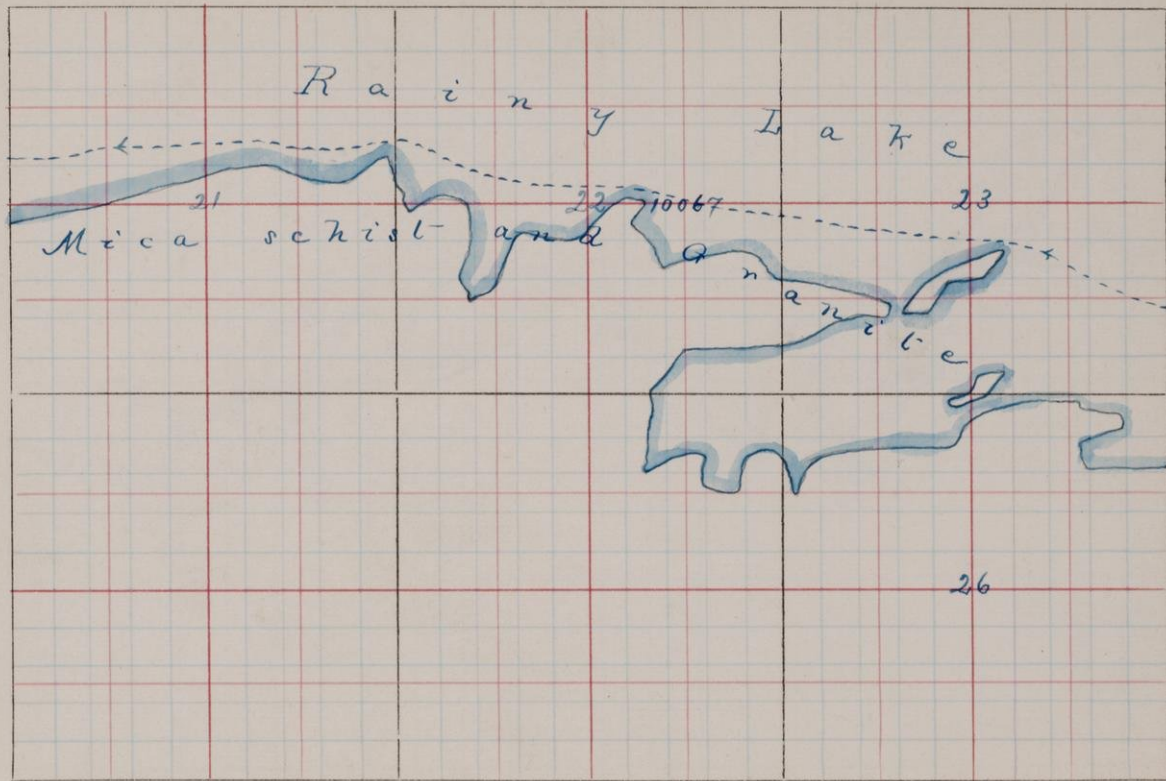


T. 70

Bas 18 and 19

✓ 10866 Mica schist from the N.E. $\frac{1}{4}$ of
Bi. Sch. the S.W. $\frac{1}{4}$ of Sec. 20-70-18
with Mus.
Granite: 0210

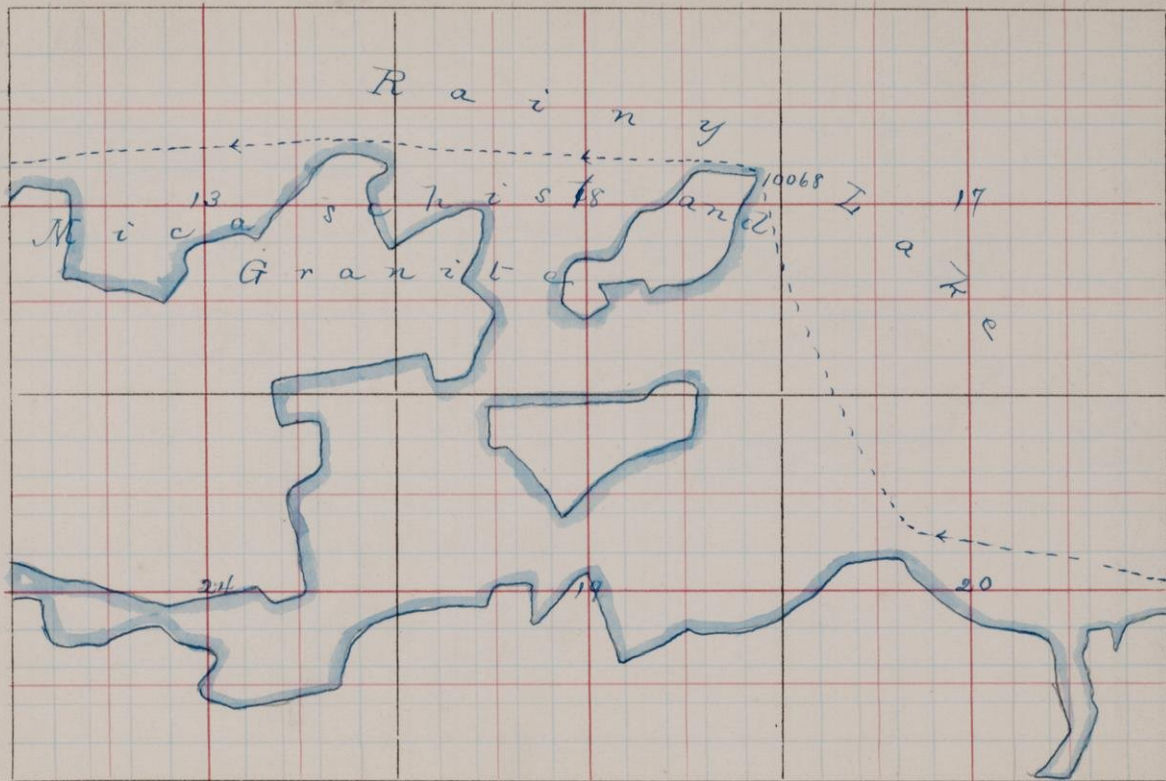
Rainy Lake



T. 70

R. 19

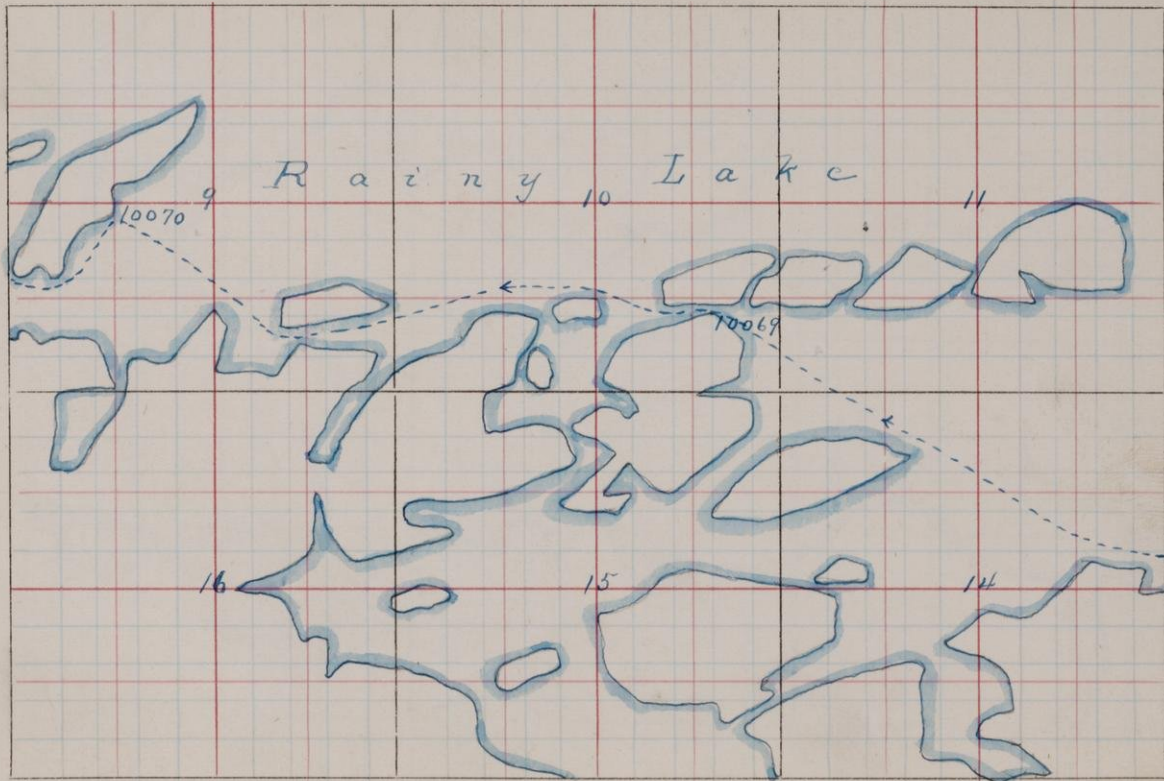
10067 From a large mass of granite
near the center of Sec. 22-70-19



T. 70

R.S. 19 and 20

10068 Mica schist from a large island
in the S. $\frac{1}{2}$ of Sec. 18-70-1971



T. 70

R. 20

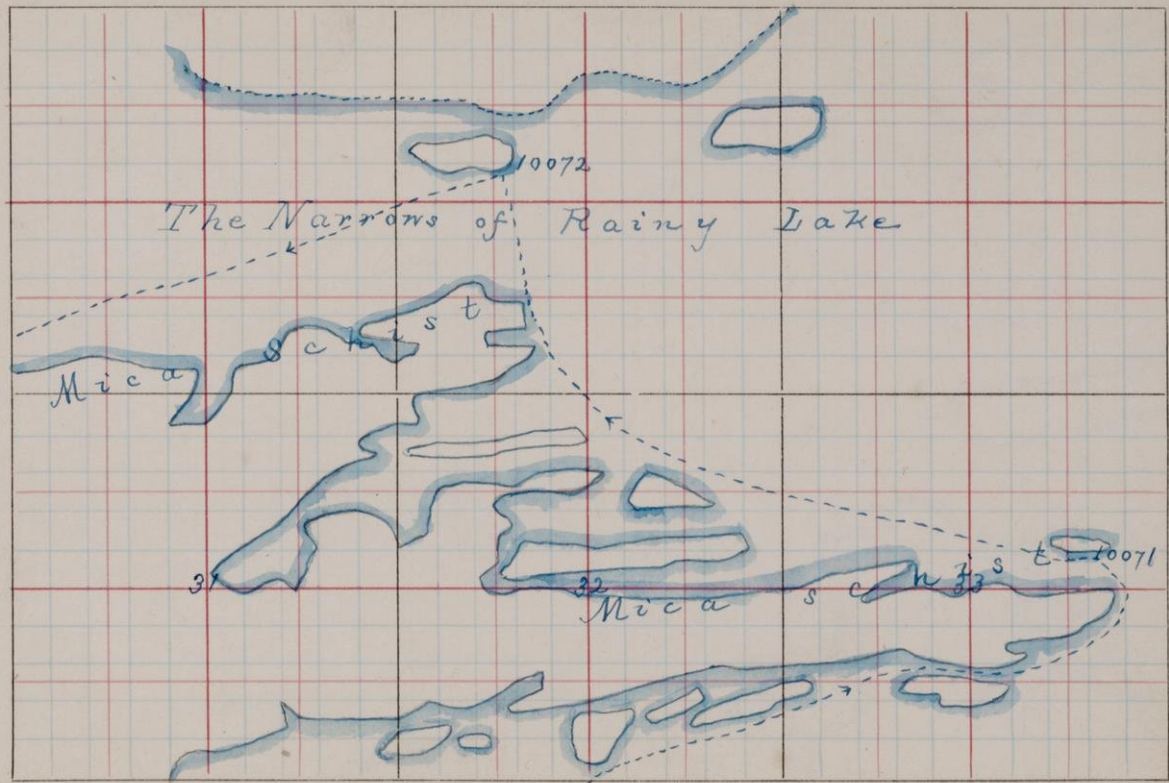
10069 From the S. E. $\frac{1}{4}$ of Sec. 10-70-20
Mica sch. Large granitic veins were noted
at this point

10070 From an island in the west-
half of Sec. 9-70-20



T. 70

R. 20



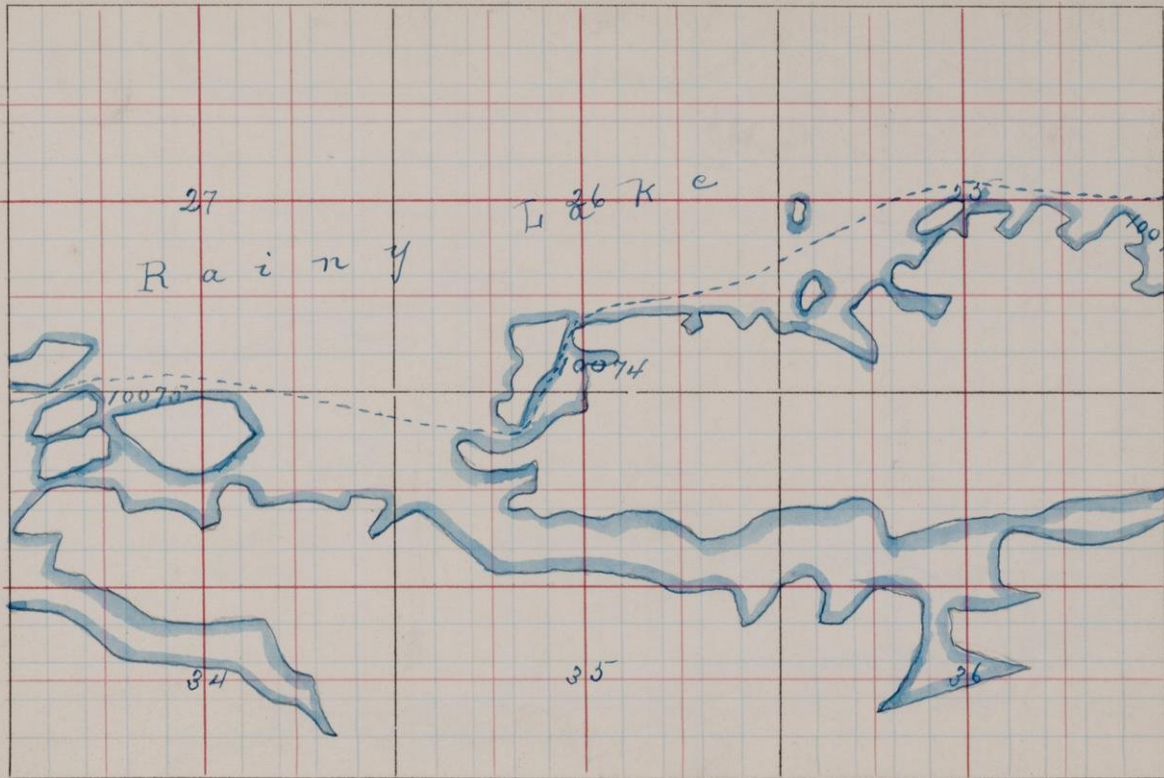
T. 71

R. 20

10071 Near the narrows of Rainy lake
 Mica sch. Sec. 33-71-20 Mica schist.

No granitic veins are seen at this point but were noted both to the north and south in this vicinity. Strike about east and west - Dip high to the north.

10072 From the narrows in Rainy Lake. Mica Schist N. 1/2 of Sec. 29-71-20 Dip nearly vertical. Strike 10° N. of E. Mag.



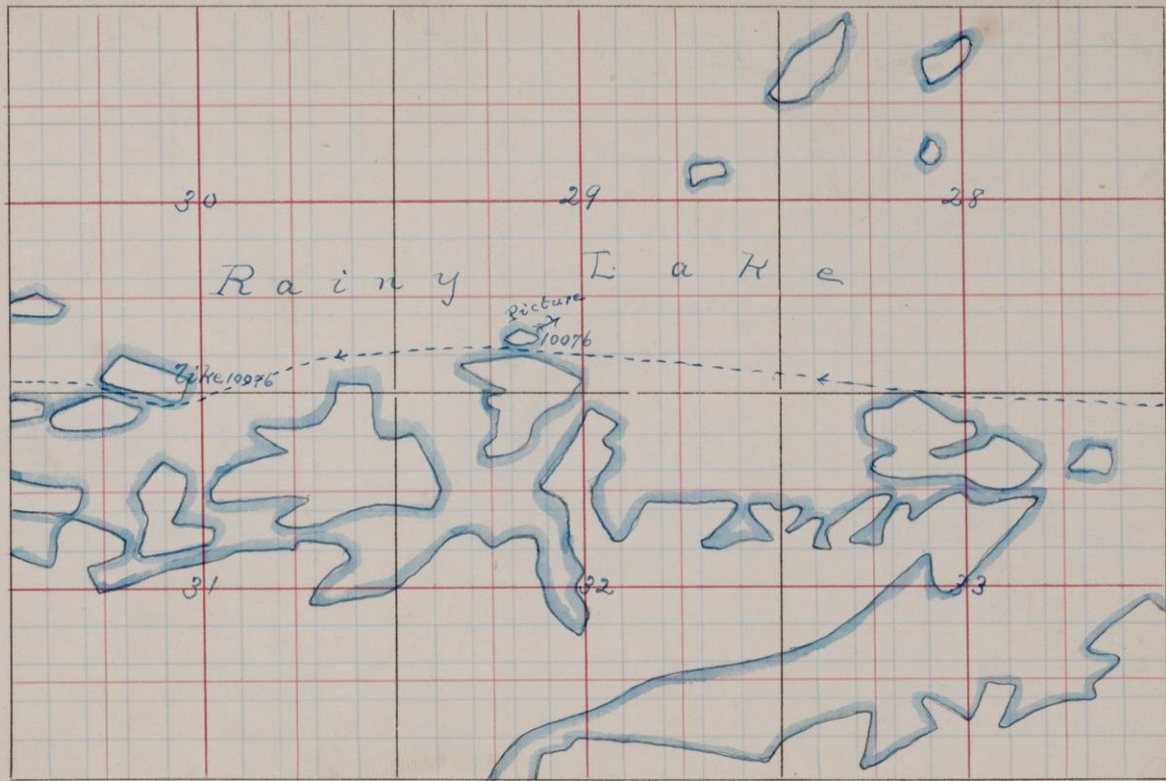
T. 1/13

R. 2/1

10073 Mica schist from the N.E. $\frac{1}{4}$ of the
S.E. $\frac{1}{4}$ of Sec. 25-71-21. Dip vertical
Strike 15° N of E. No granitic veins
were noted

10074 From the S.E. $\frac{1}{4}$ of the S. $\frac{1}{4}$ of Sec 26-
71-21 Dip vertical Strike 10° N of E.

10075 From the N. $\frac{1}{4}$ of Sec 34-71-21
Strike N. 70° E. Dip nearly vertical



T. 71

R. 21

10076

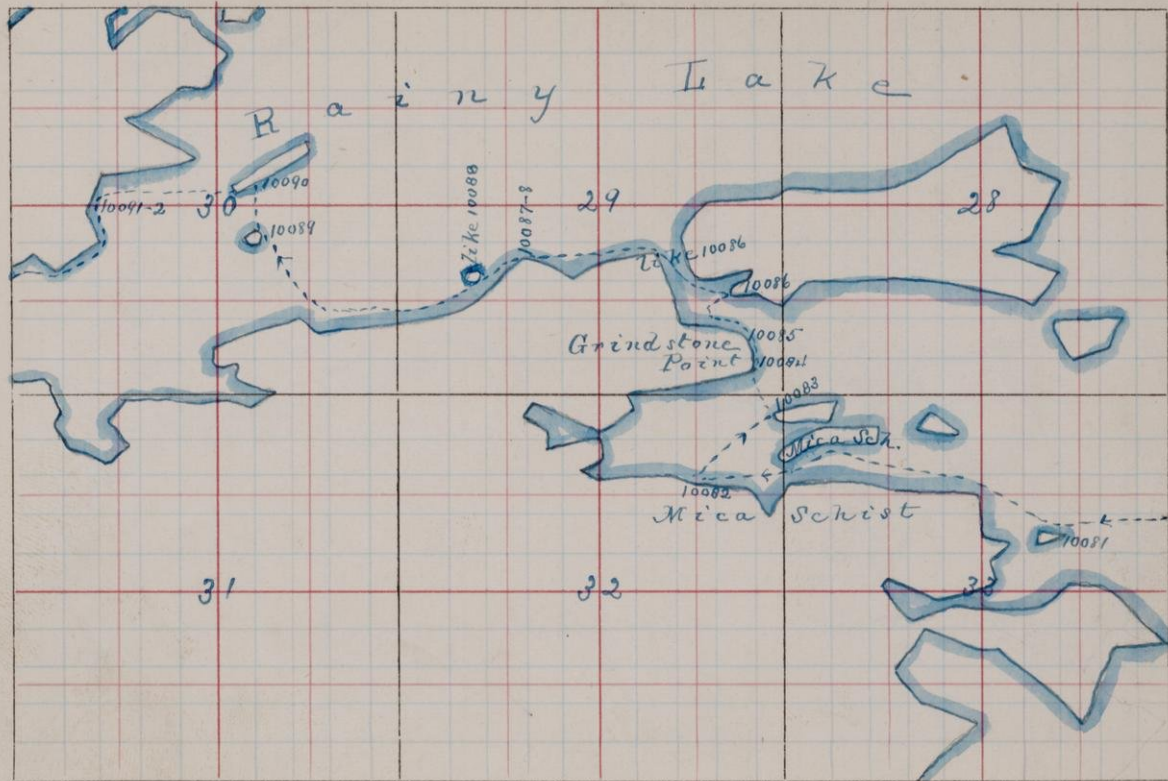
From the N. N. 1/4 of Sec. 29-71-21



T. 71

R. 22

- 10077 From the S.E. $\frac{1}{4}$ of the S.E. $\frac{1}{4}$ of Sec
25-71-22
- 10078 Mica schist from a small island
in the S.W. $\frac{1}{4}$ of Sec. 25-71-22.
- 10079 Green schist from the S.E. $\frac{1}{4}$ of the
S.E. $\frac{1}{4}$ of Sec. 26-71-22
Dip vertical Strike about E. and N.
- 10080 Near the S.E. corner of Sec. 27-71-22
- ✓ 10081 Mica Sch from a small island in
Mica Sch. the S.W. $\frac{1}{4}$ of the N.E. $\frac{1}{4}$ of Sec. 33-71-
22 (See map next p.)
- 10082 Mica schist from the N.E. $\frac{1}{4}$ of Sec
32-71-22 Granitic veins noted
at this exposure (See map next p.)
- ✓ 10083 Green schist from a small island
near the N.E. corner of Sec 32-71-
22 (See map next p.)



T. 71

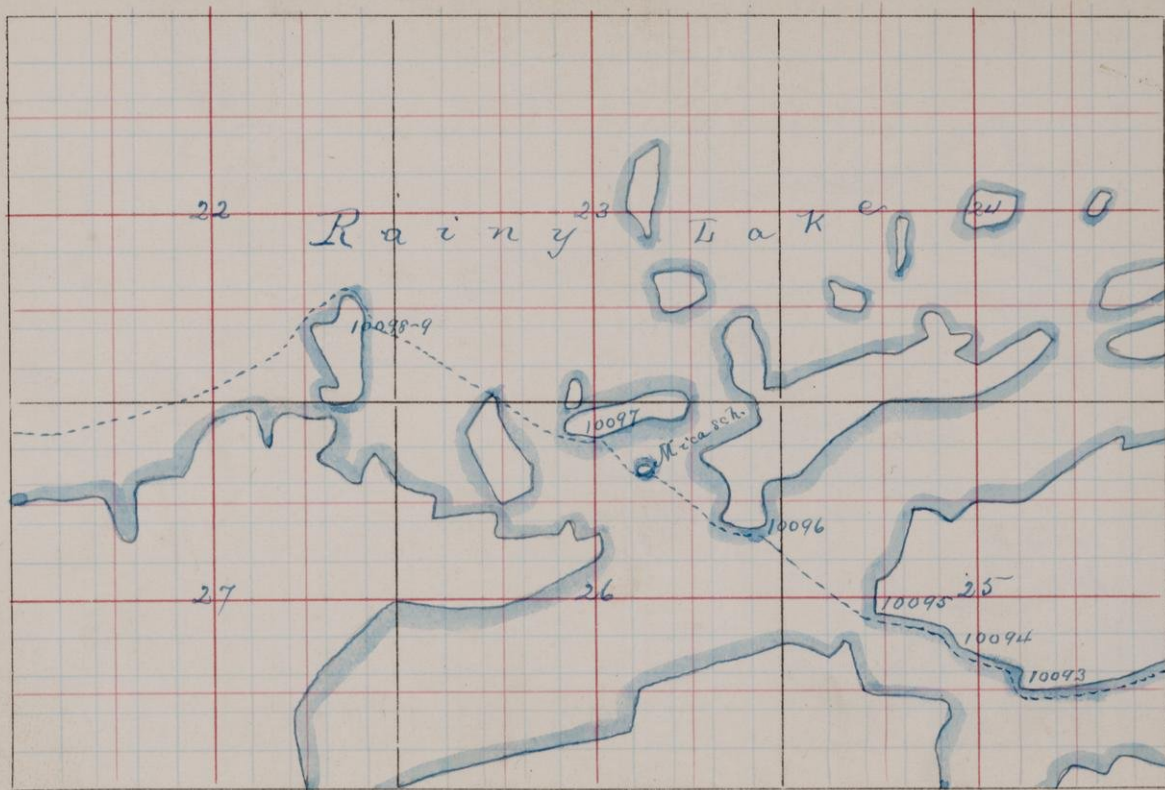
R. 22

✓10084 a sandstone(?) from the end of
 Grindstone Pt. in the S.E. $\frac{1}{4}$ of Sec.
 Sericitic
 Qu. Sch.
 (Fragmental) 29-71-22 The whole point is
 made up of this rock.

10085 From the same point about 100
 paces north of 10084 Breaks in
 large irregular masses showing
 that the rock is much firmer
 than the surrounding schists

✓10086 West end of large island in the
 S.E. $\frac{1}{4}$ of Sec. 29-71-22 More
 schistose than the specimens
 10084-85 Strike 5° to 10° N. of E.
 Dip 85° to the north

✓10087 A conglomerate from the N. $\frac{1}{4}$ of
 the S.E. $\frac{1}{4}$ of Sec. 29-71-22
 (Conglomerate) This conglomerate shows for only
 4 or 5 feet when a coarse sandstone
 shows; on a small island to the
 west however the conglomerate
 again shows. The pebbles are
 small and mostly of a granitic
 material



T. 71

R. 23

Strike of pebble bands N. 65 to 70 E
Mag. Dip about vertical

✓10088 A few feet west of 10087 A coarse
like 10087 sandstone.

✓10089 A shale or schist from a small
Micaceous island in the S.E. $\frac{1}{4}$ of Sec. 30-71
Gm. Sch 22

✓10090 A very shaly rock from the long
Horn^(?) narrow island north of 10089
The rock breaks down in large
slabs several feet square, and very
thin being at times not over $\frac{1}{2}$
of an inch
Strikes in the direction of the
island Dip 80° to the N.

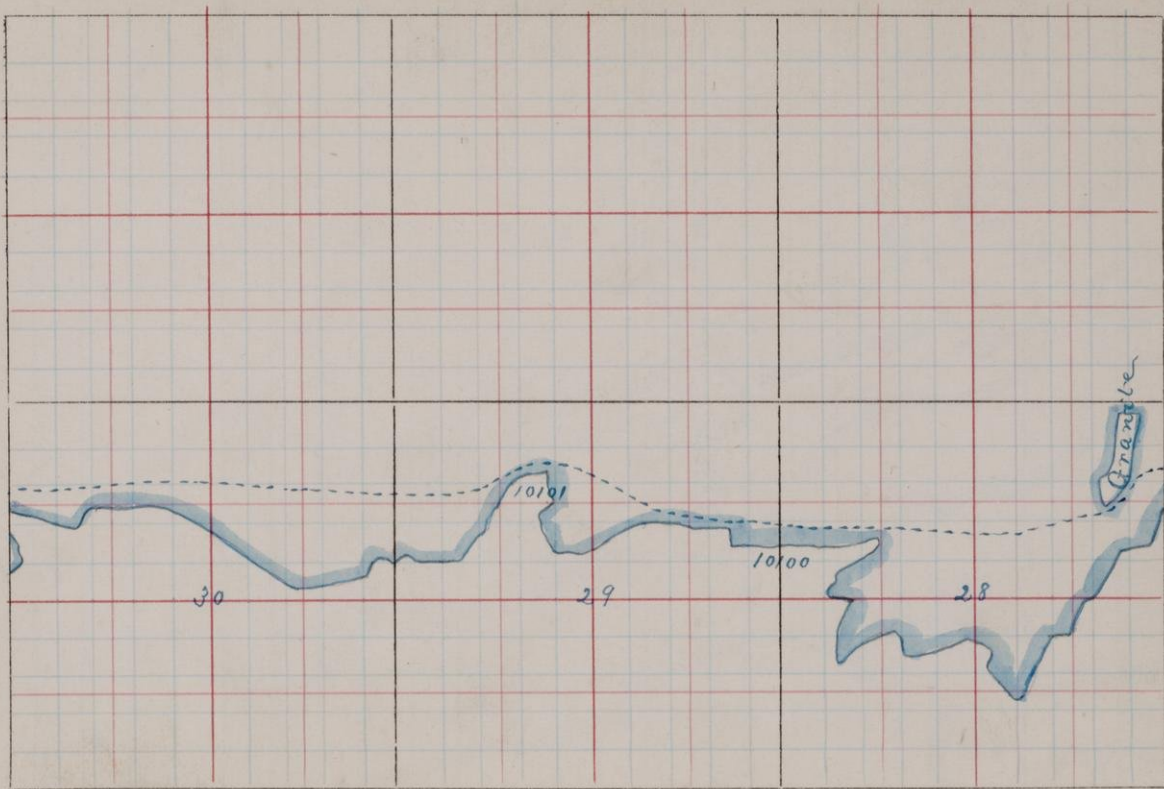
10091 Green schist from an island
near the west side of Sec. 30-71-22

10092 Dike several feet wide in 10091

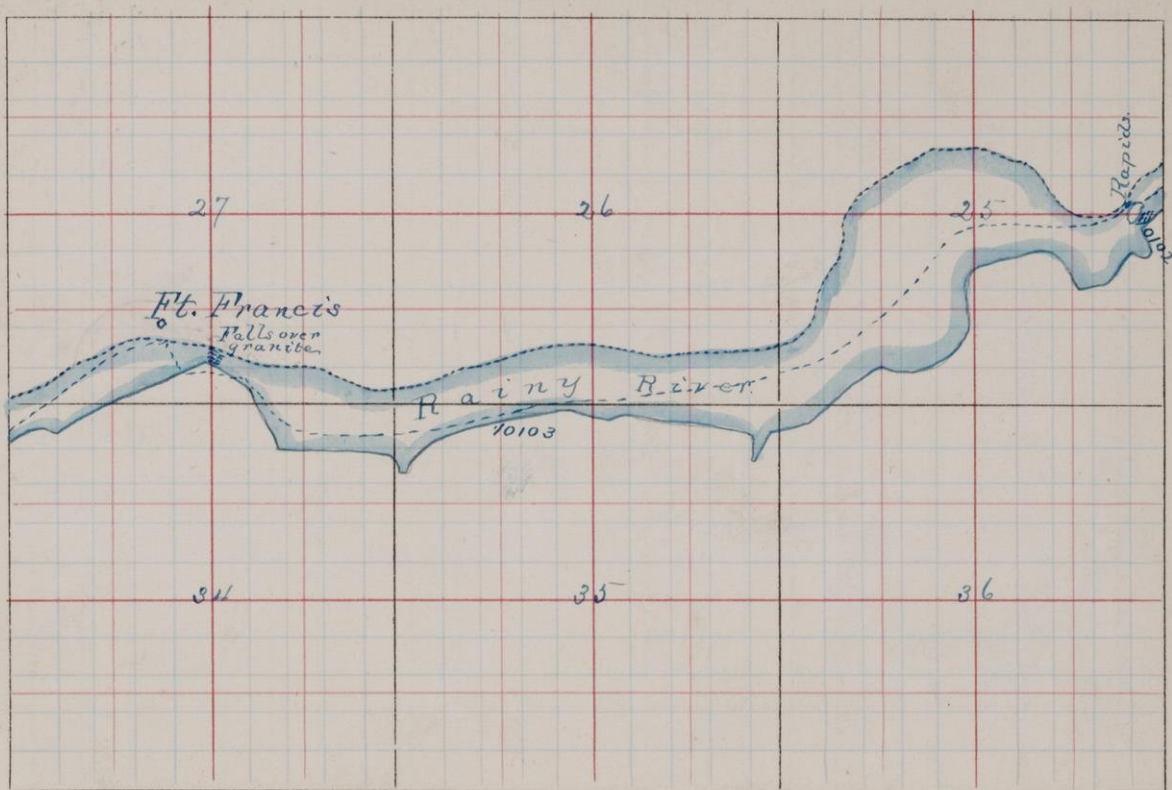
10093 Greenstone(?) from end of point in
the N.W. $\frac{1}{4}$ of the S.E. $\frac{1}{4}$ of Sec. 25-71-23

T. 71

R. 23



- 10094 About $\frac{1}{4}$ mile west of 10093, from same island Sec 25-71-23
- ✓10095 $\frac{1}{4}$ mile west of 10094, from same Mica Schist island. Sec 25-71-23 A Granitic rock
- 10096 Mica schist from S.W. point of island in the N.E. $\frac{1}{4}$ of Sec. 26-71-23
- 10097 Mica schist from the west end of island near the north side of Sec. 26-71-23
- 10098 Granite showing a portion of west from island in the S.E. $\frac{1}{4}$ of Sec. 22-71-23
- ✓10099 Granite from above island
Bi. H. Granite
- ✓10100 Mica schist from the N.E. $\frac{1}{4}$ of Sec. 29-71-23
H. Sch.
- 10101 Mica schist from end of the point in the N.W. $\frac{1}{4}$ of Sec. 29-71-23
Small granitic veins were noted



Ft. Francis
Falls over
granite

Rainy River

10103

Rapids

T. 71

R. 24

27

26

25

21

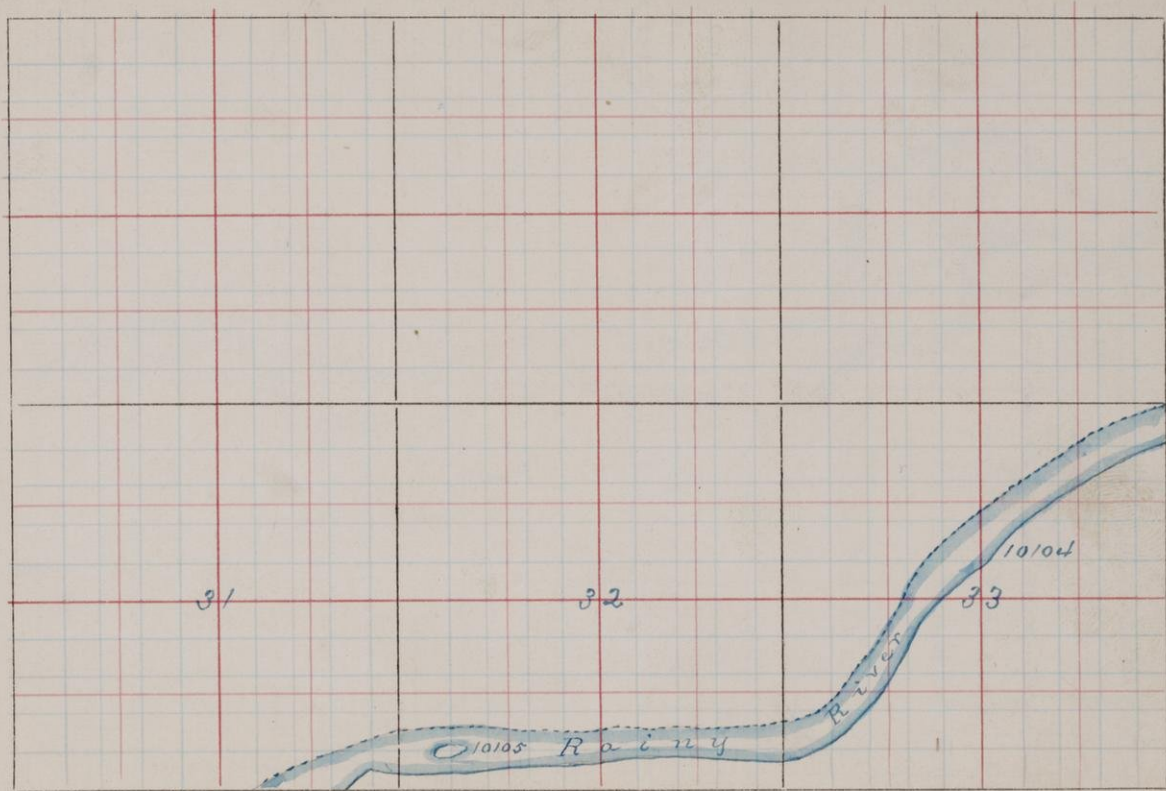
25

26

10102 Mica schist from small island
at outlet of Rainy lake E. side
Sec 25-71-24

✓ 10103 Greenstone from south side of
Diabase Rainy River Sec. 35-71-24

The rock at the falls is a light-
colored granite similar to 10099



T. 71

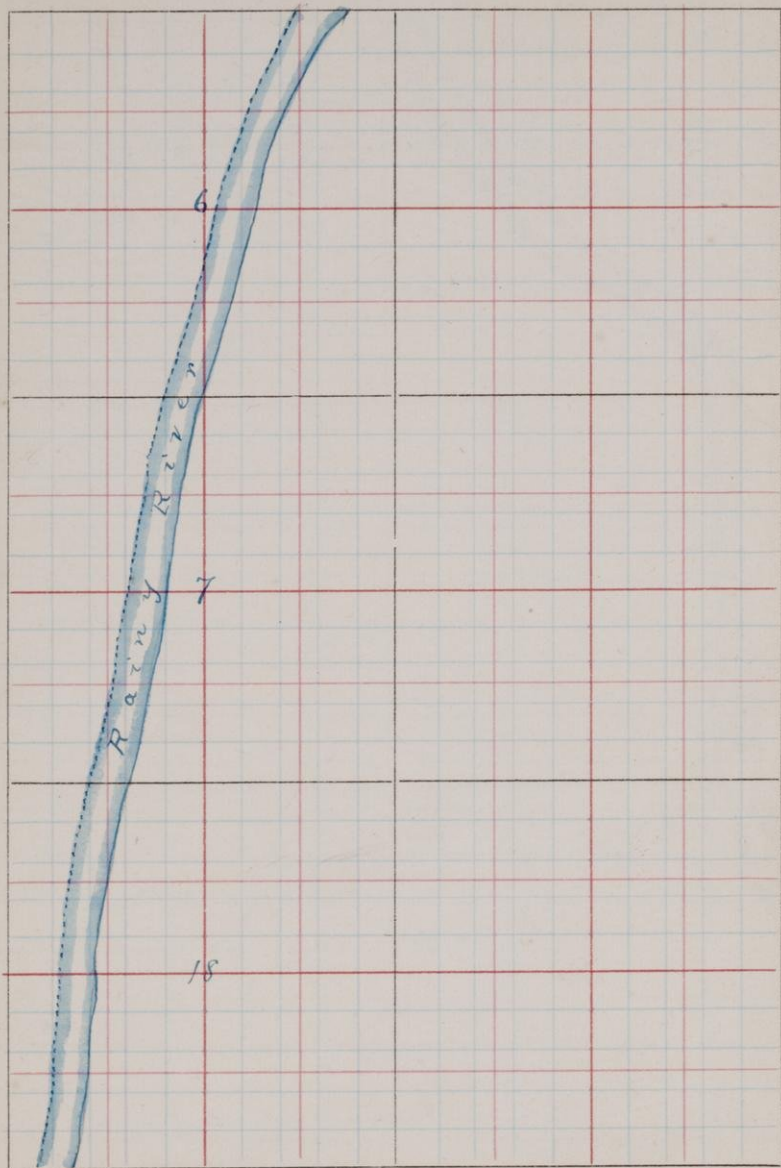
R. 24

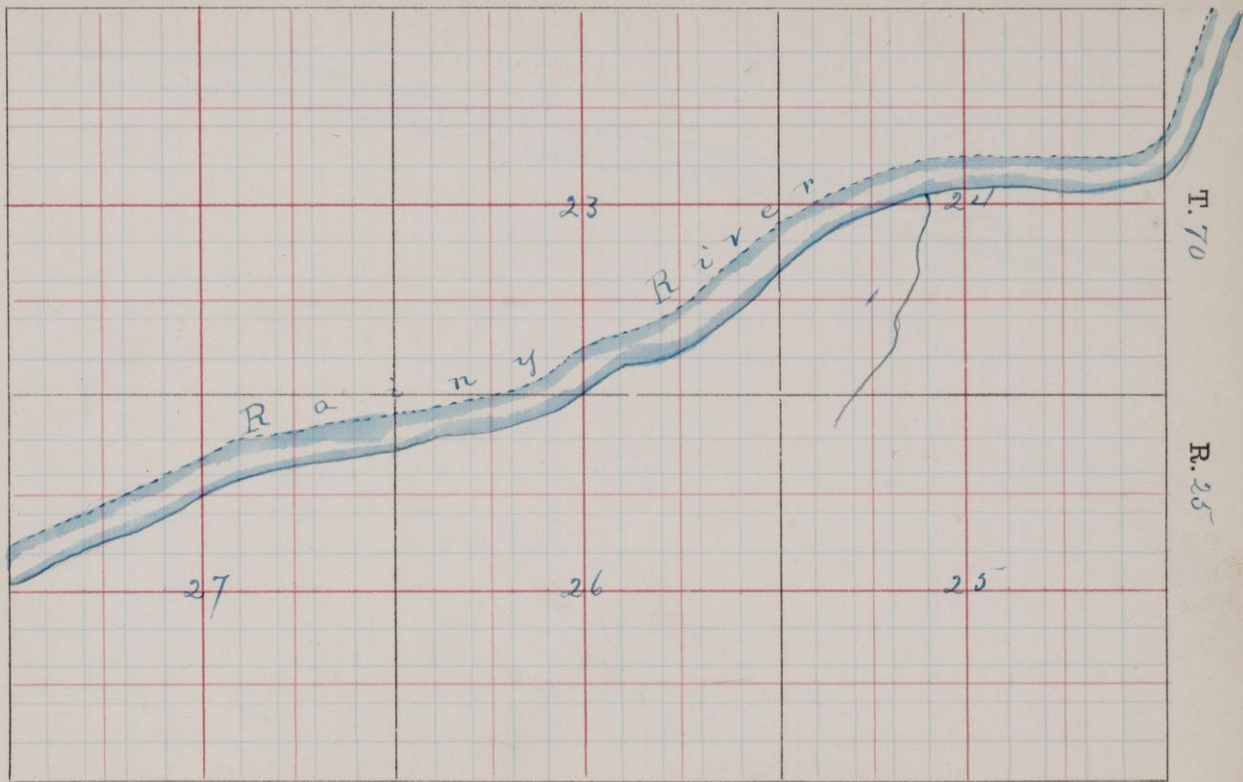
✓ 10104 From the south side of Rainy River
Mica sh. N. E. $\frac{1}{4}$ of Sec. 33-71-24

10105 From small island in Rainy River
Sec. 32-71-24

T. 70

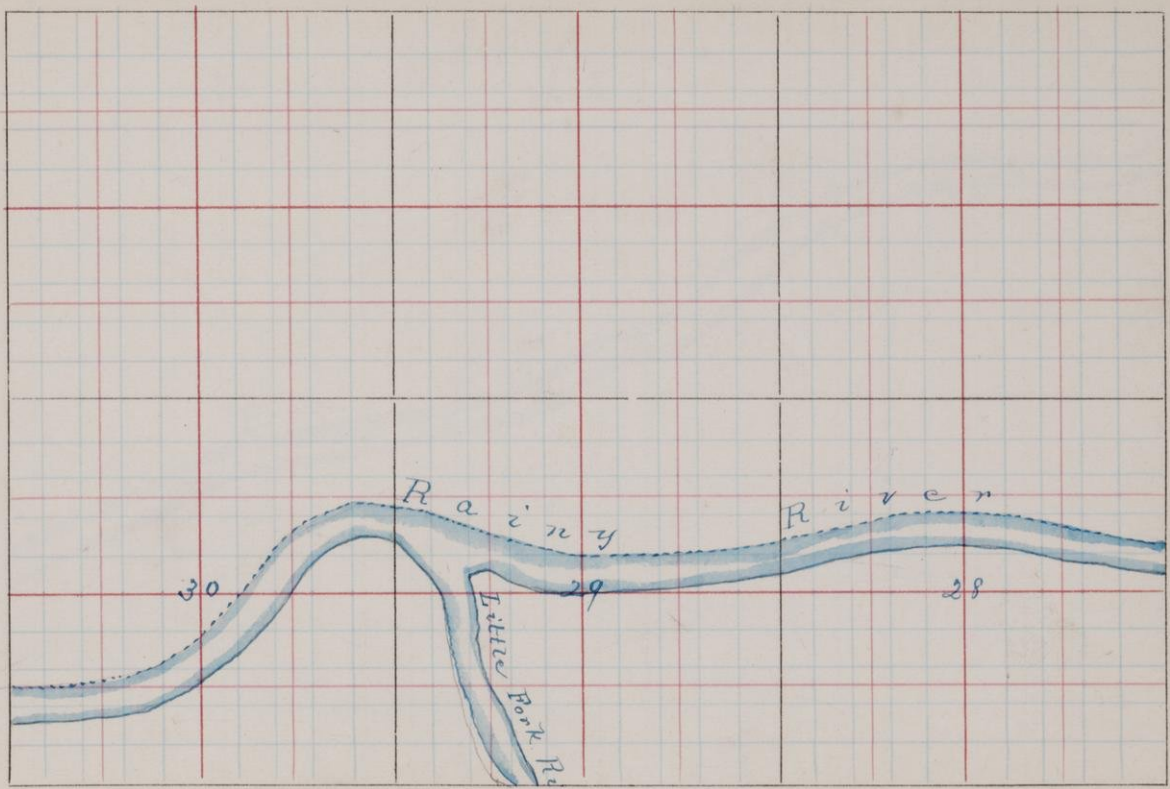
R. 24

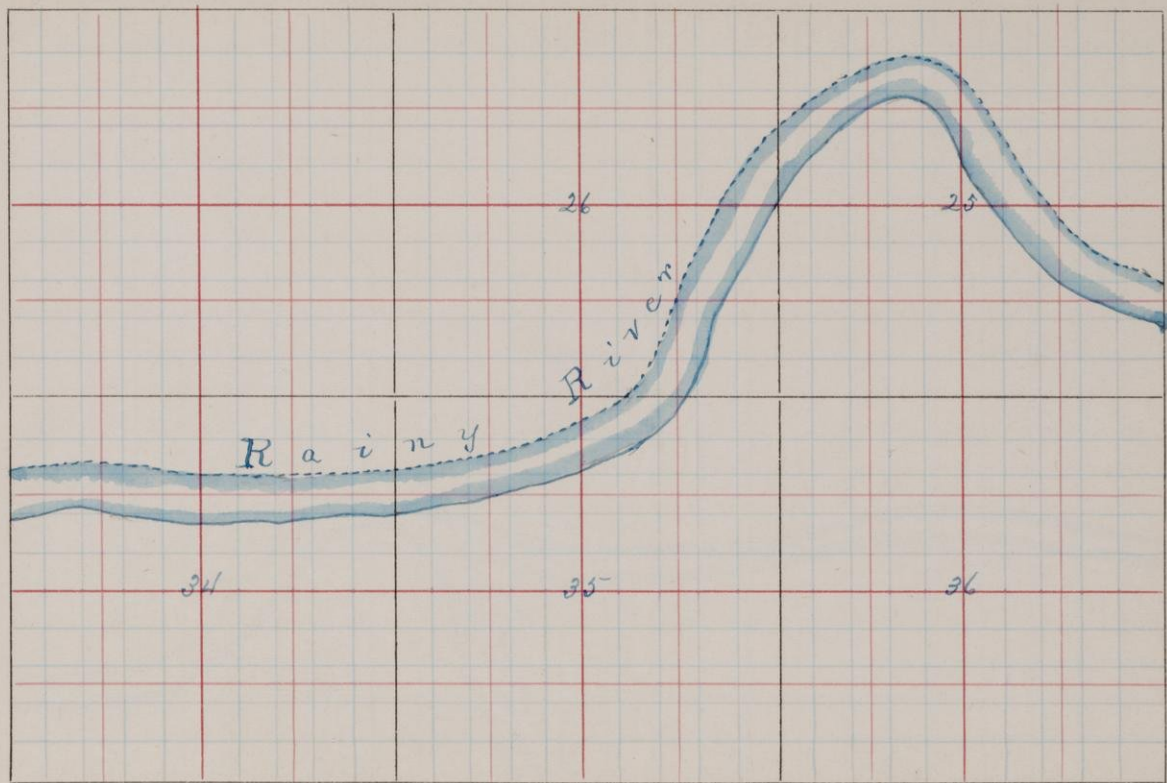




T. 70

R. 25



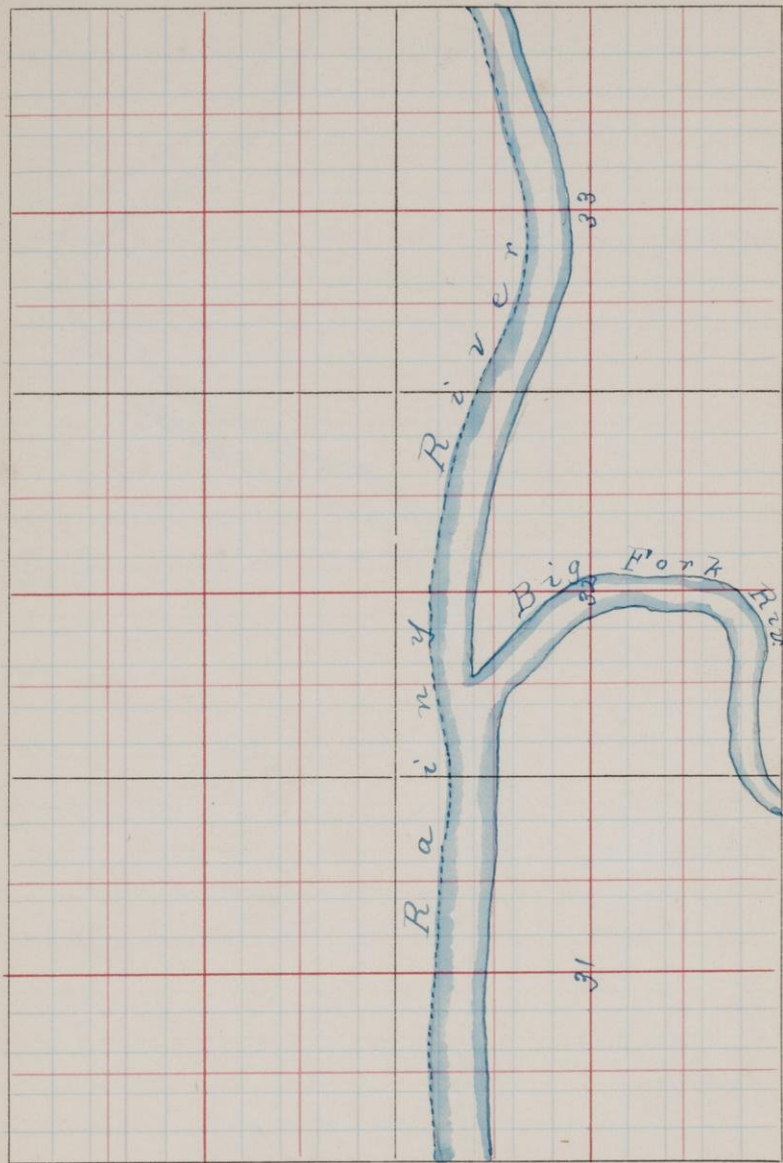


T. 70

R. 26

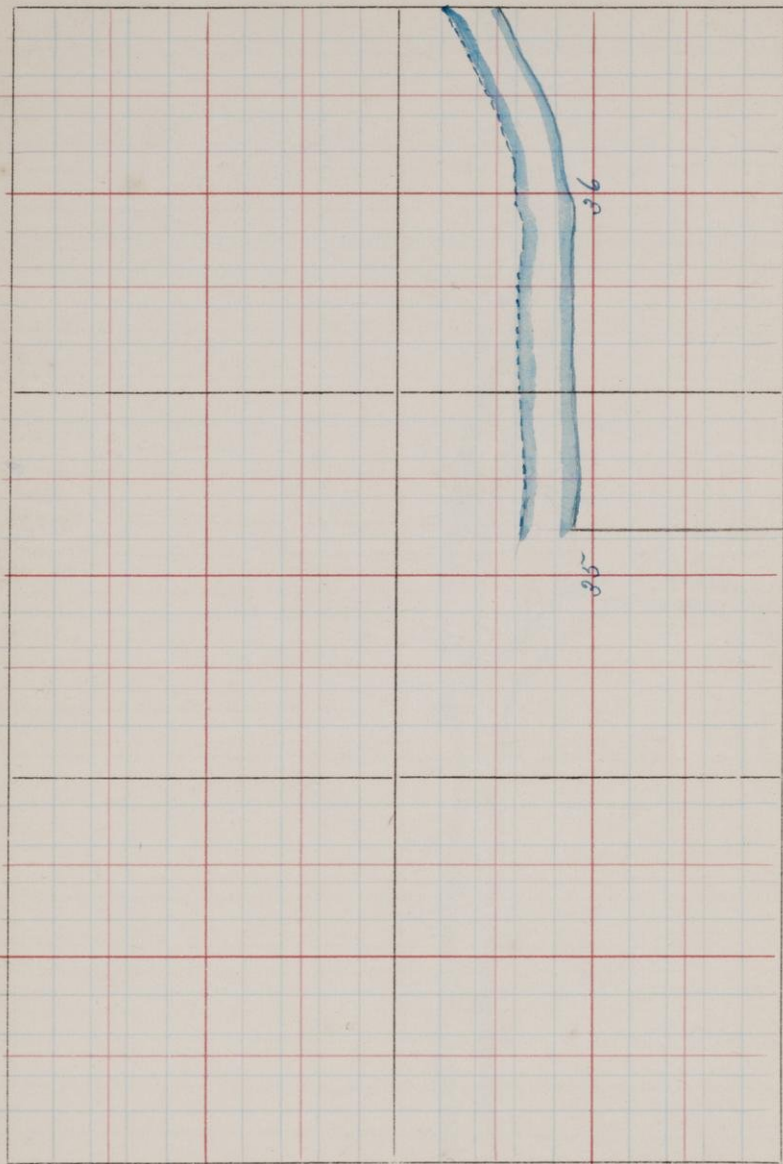
T.

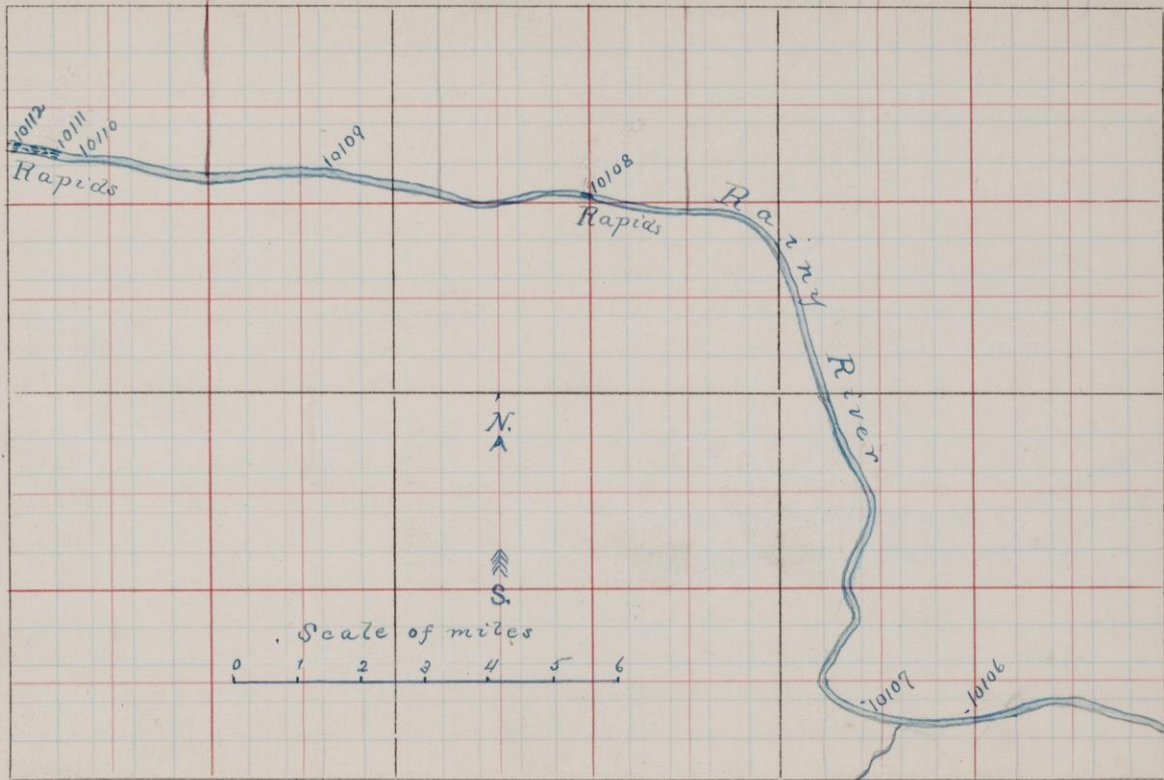
R.



T. 70

R. 27





T.
R.

✓10106 Granite from the north side of
 Hb. Granite Rainy River about 24 miles below
 Ft. Francis

10107 Mica schist from small island
 about 2 miles below 10106

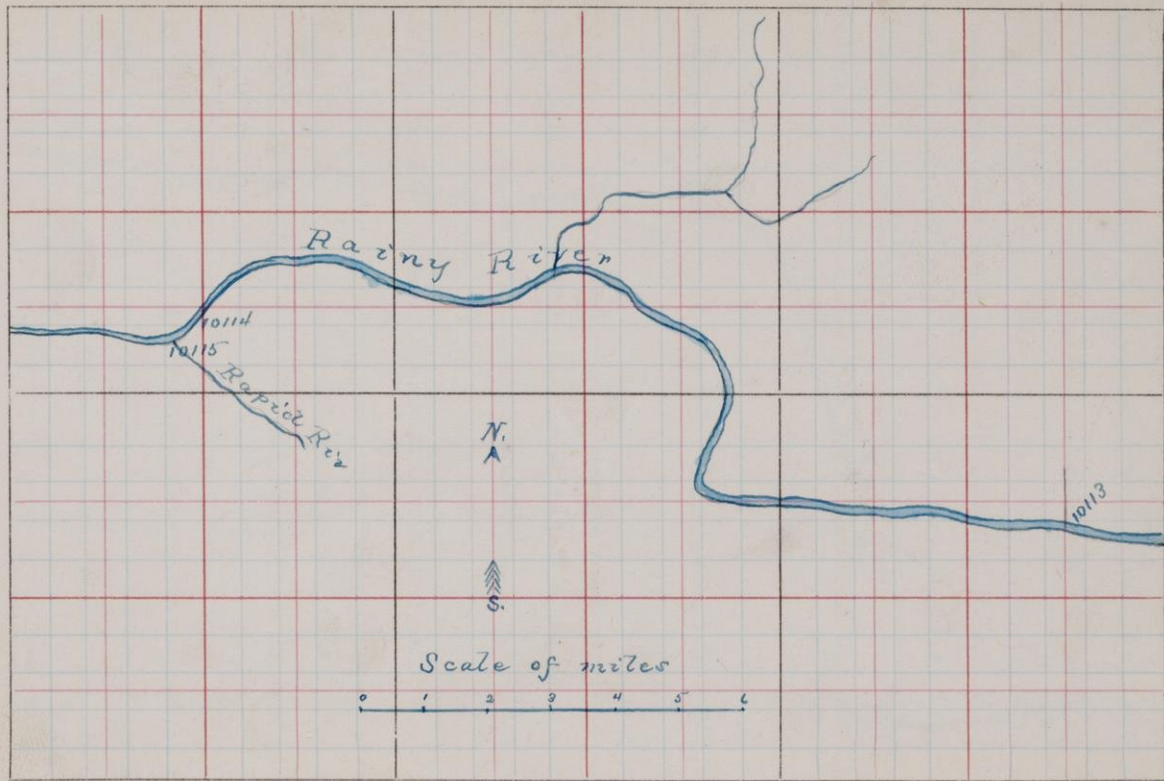
10108 Greenstone from the 1st rapids
 below Ft. Francis

10109 Mica schist about four miles
 below 10108

✓10110 $\frac{1}{2}$ mile above the Long Rapids on
 Hb. Sch. or
 Alt. Hb. Gnst. Rainy River

10111 From the Lead of the Long Rapids

✓10112 From the foot of Long Rapids $\frac{3}{4}$
 Granite mile below 10111 Granite



✓ 10113 About 2 miles below 10112

Bi. Granite?

10114 Greenstone about $\frac{1}{2}$ a mile above
the mouth of Rapid River

✓ 10115 Banded quartzite from the mouth
(2 spec.) of Rapid River

Black mica
corn and
chlorite
wacke very
dense (fragments)

Strike N. 20° E. Dip 85° to the west-
The exposure is quite large; the
banding shows very plainly
This was the last exposure seen
Rainy River

T.

D.

