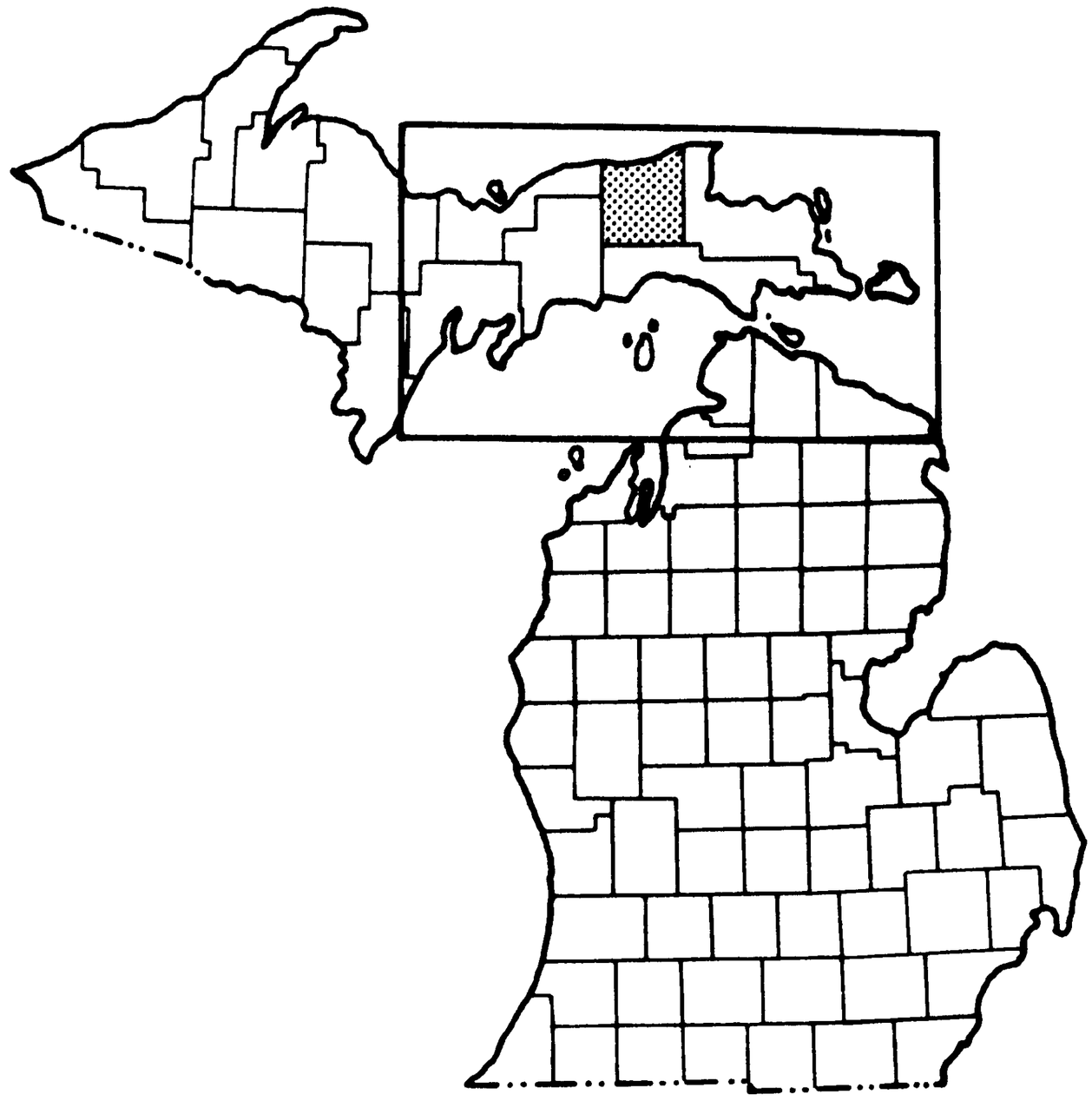
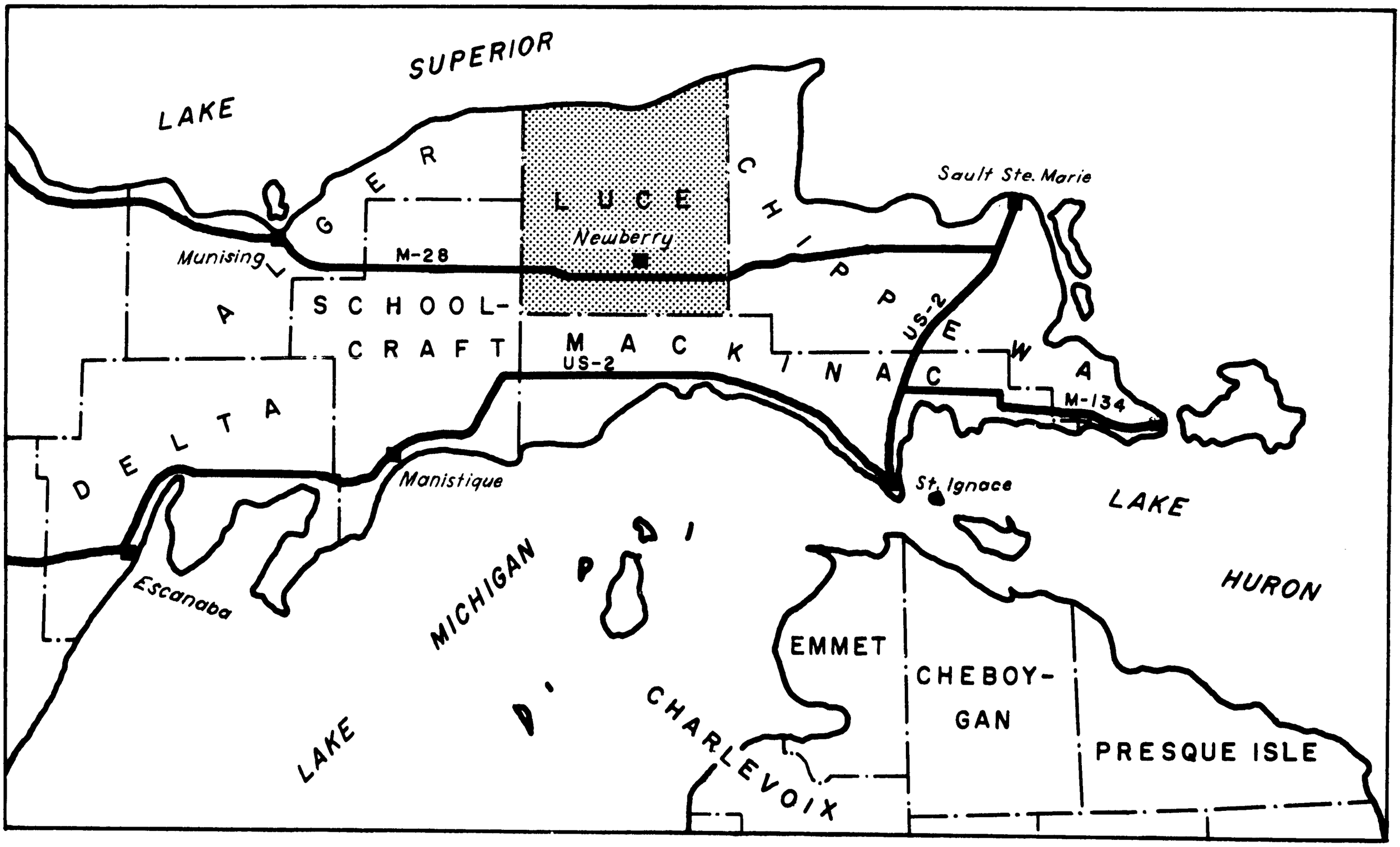
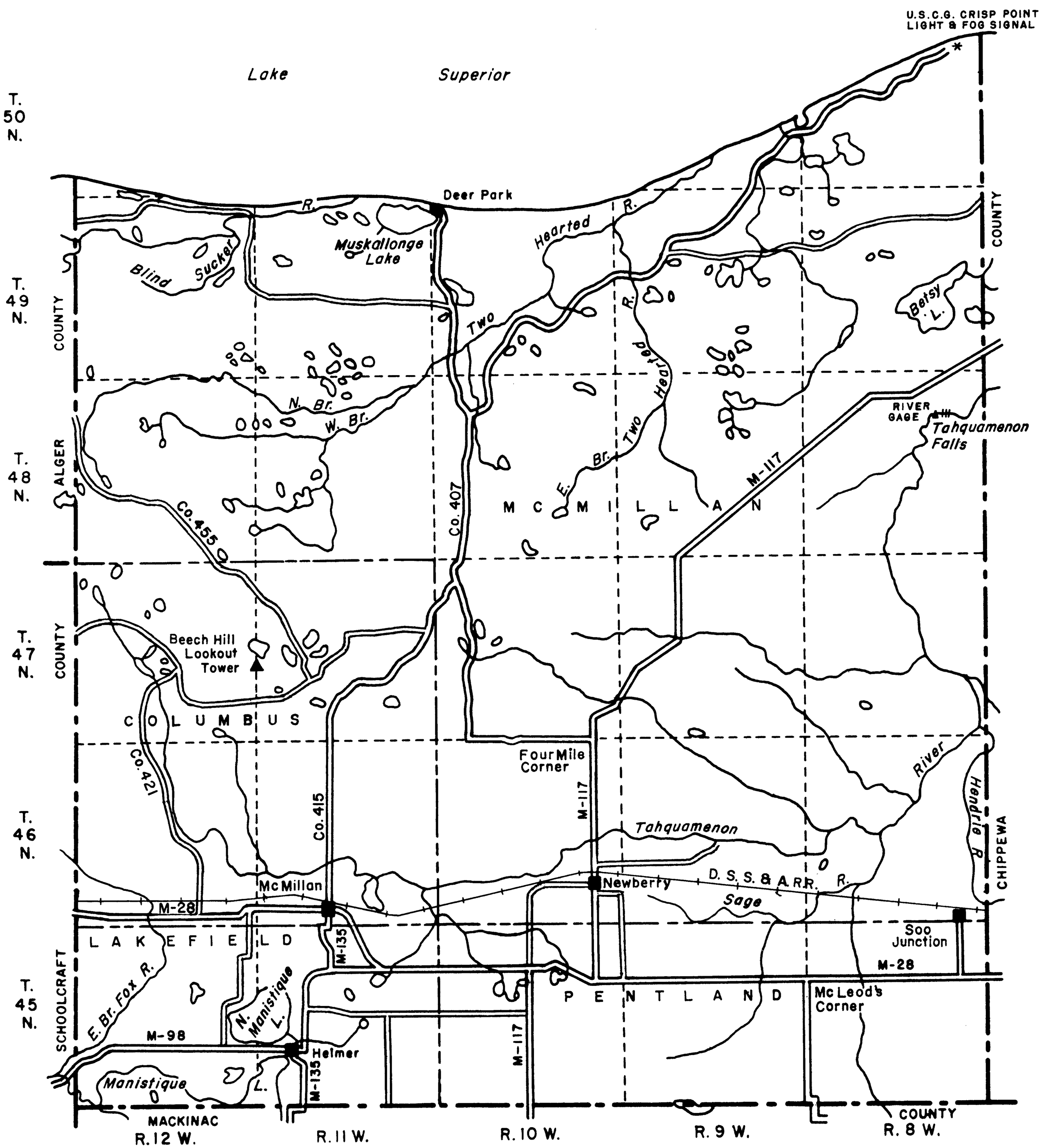


MICHIGAN



AREA OF REPORT



EXPLANATION

- Road
- Railroad
- County line
- Township line
- Civil township line

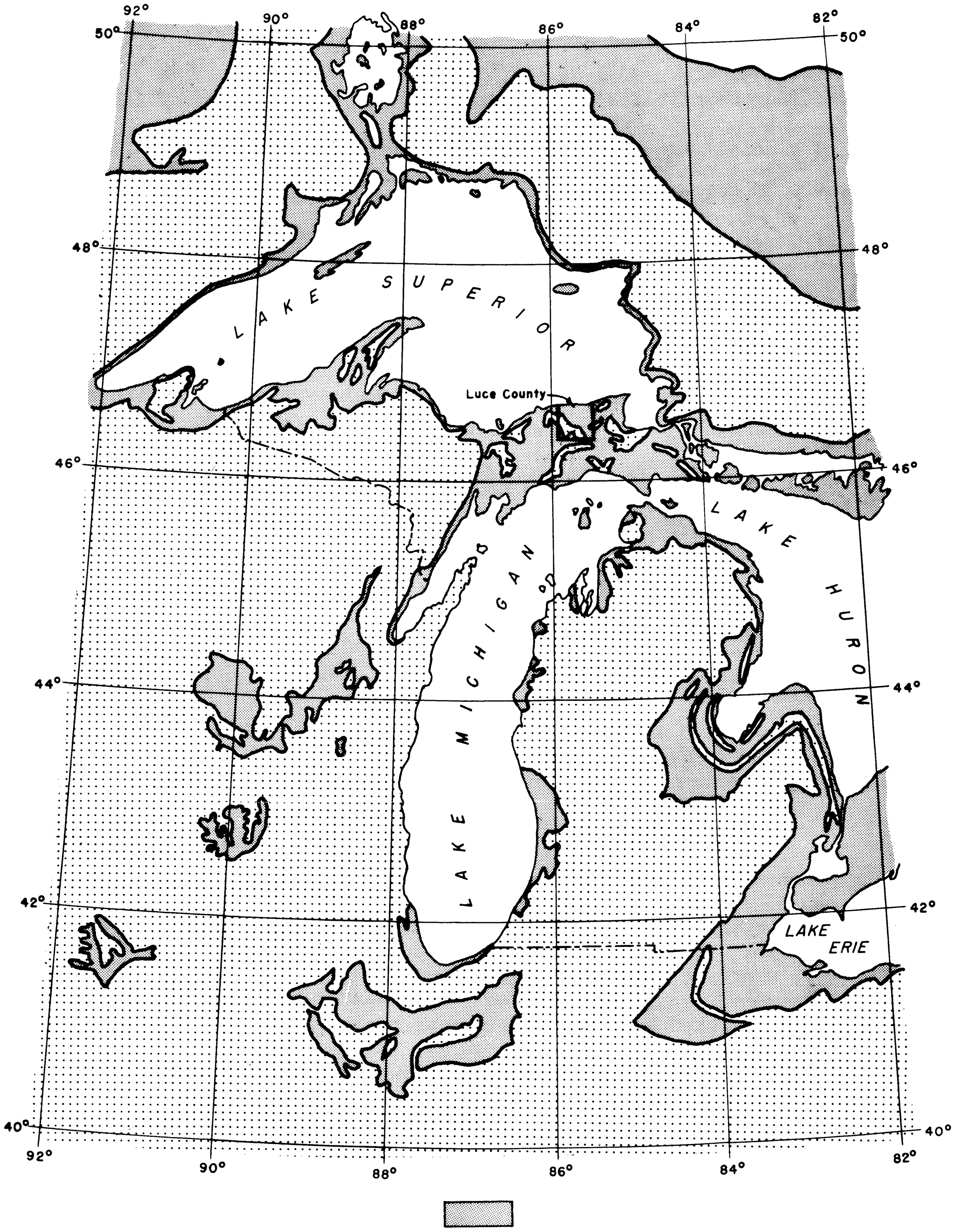
0 1 5
Scale in miles

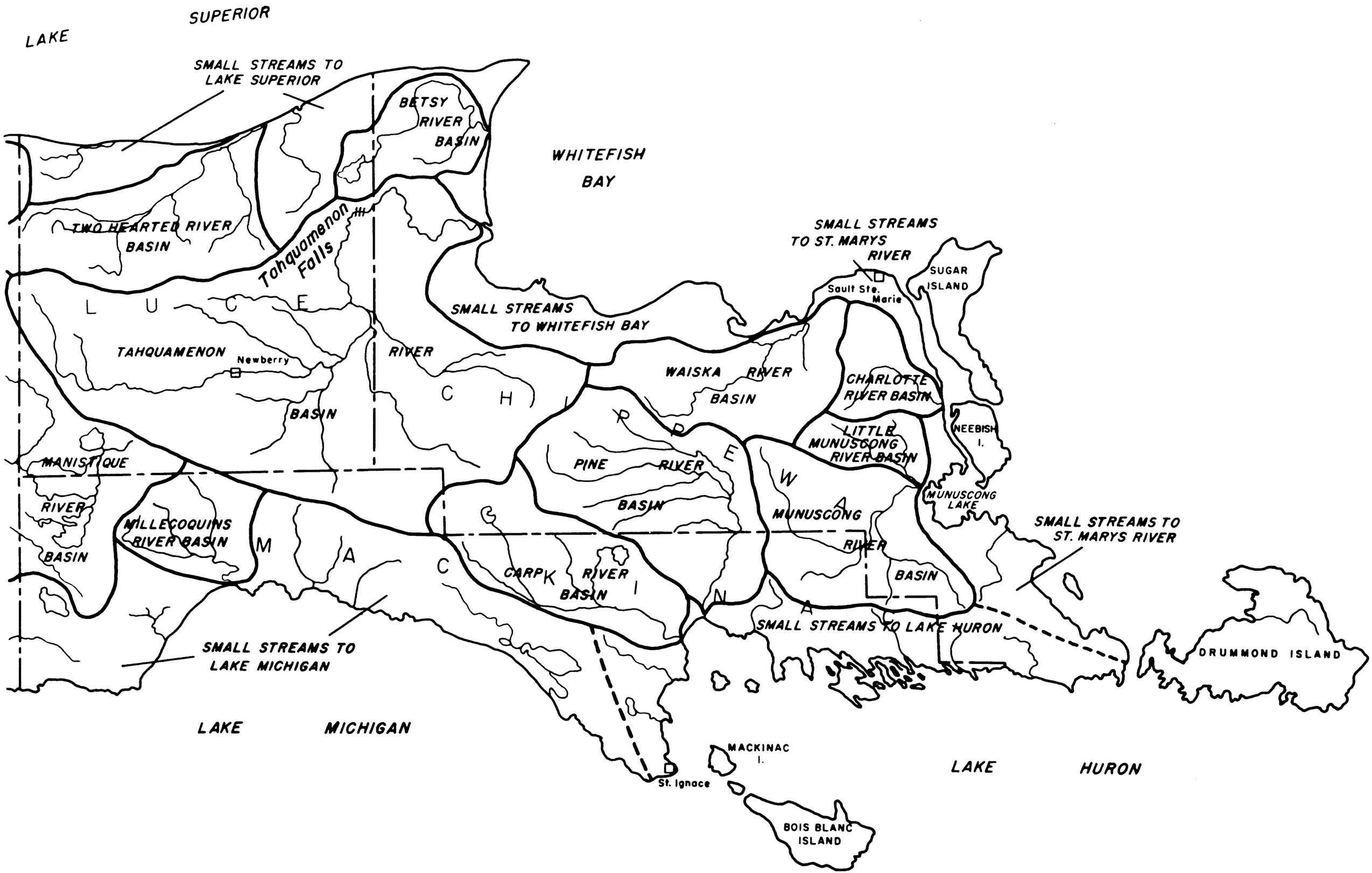
Diagram of geographical township

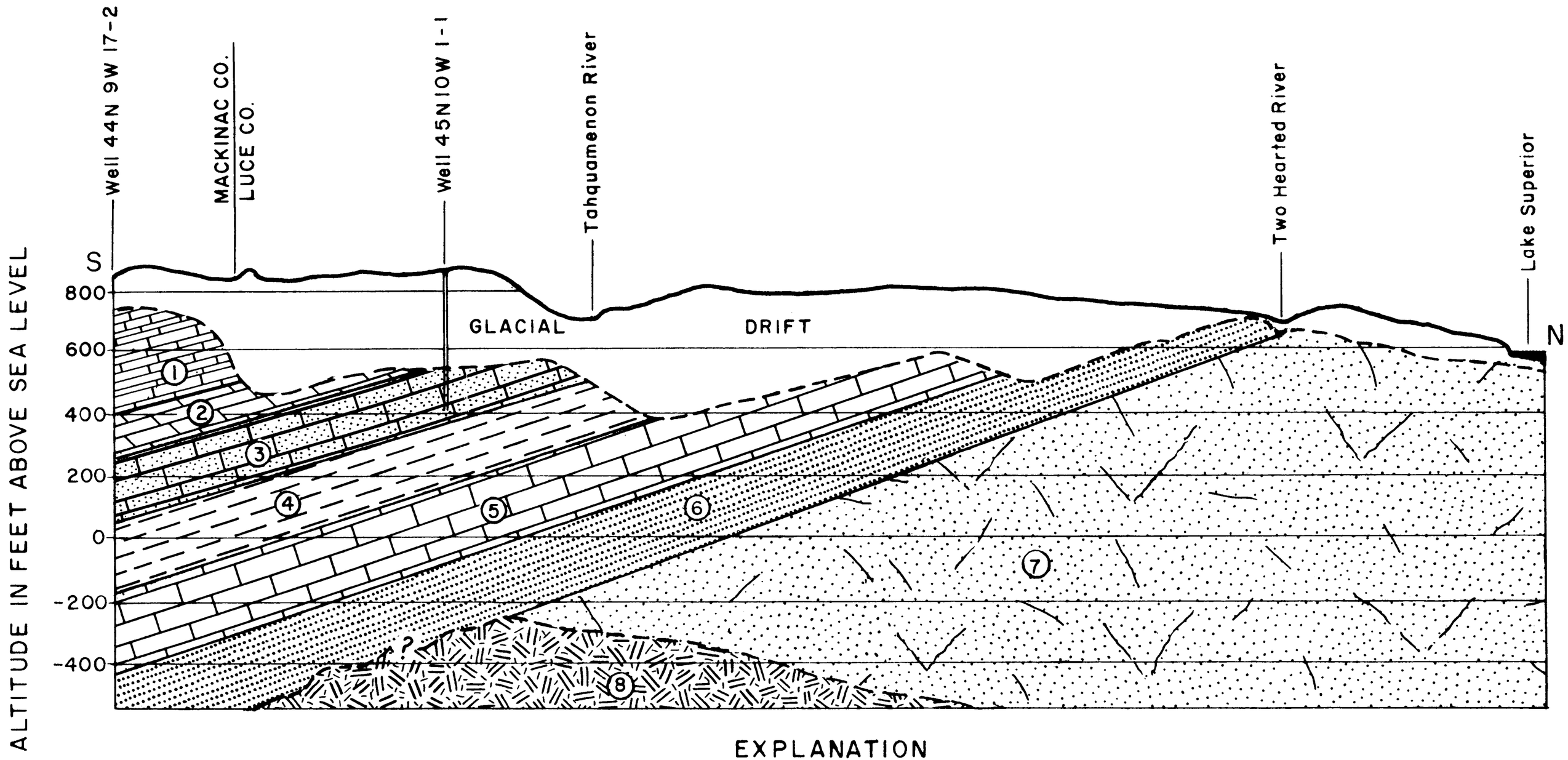
T. 47 N.

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

R.9 W.

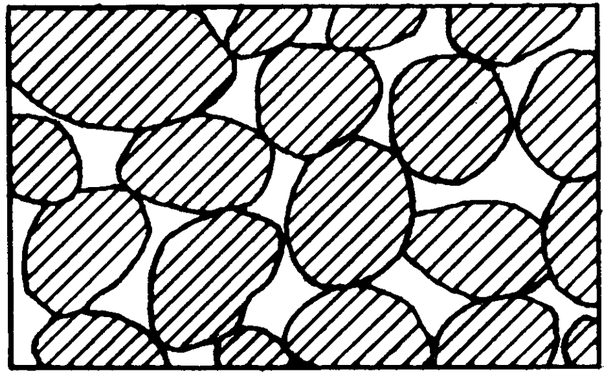

92°
90°
88°
86°
84°
82°
50°
48°
46°
44°
42°
40°
LAKE SUPERIOR
Luce County
LAKE HURON
LAKE MICHIGAN
LAKE ERIE
Area covered by lake sediments


LAKE SUPERIOR
SMALL STREAMS TO LAKE SUPERIOR
BETSY RIVER BASIN
WHITEFISH BAY
TWO HEARTED RIVER BASIN
Tahquamenon Falls
SMALL STREAMS TO ST. MARYS RIVER
SUGAR ISLAND
Sault Ste. Marie
SMALL STREAMS TO WHITEFISH BAY
L U C E
TAHQUAMENON
Newberry
RIVER
BASIN
C H I P P E W A
WAISKA RIVER BASIN
CHARLOTTE RIVER BASIN
LITTLE MUNUSCONG RIVER BASIN
NEEBISH I.
MUNUSCONG LAKE
MANISTIQUE
RIVER
BASIN
MILLECOQUINS RIVER BASIN
M A C K I N A C
PINE RIVER BASIN
CARP RIVER BASIN
MUNUSCONG RIVER BASIN
SMALL STREAMS TO ST. MARYS RIVER
SMALL STREAMS TO LAKE HURON
SMALL STREAMS TO LAKE MICHIGAN
DRUMMOND ISLAND
LAKE MICHIGAN
MACKINAC I.
St. Ignace
LAKE HURON
BOIS BLANC ISLAND

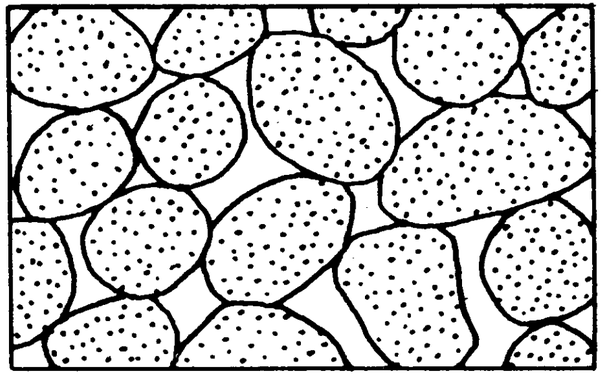


EXPLANATION

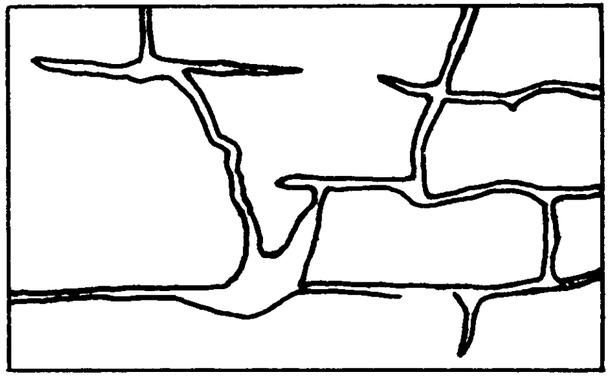
1. Burnt Bluff formation of Middle Silurian age
2. Cataract formation of Early Silurian age
3. Limestone and dolomite of the Richmond group of Late Ordovician age
4. Shale of the Richmond group and Collingswood formation of Late Ordovician age
5. Trenton and Black River formations of Middle Ordovician age
6. Hermansville formation of Middle Ordovician age and Munising sandstone of Late Cambrian age
7. Jacobsville sandstone of Middle and Early Cambrian age
8. Precambrian igneous and metamorphic rocks



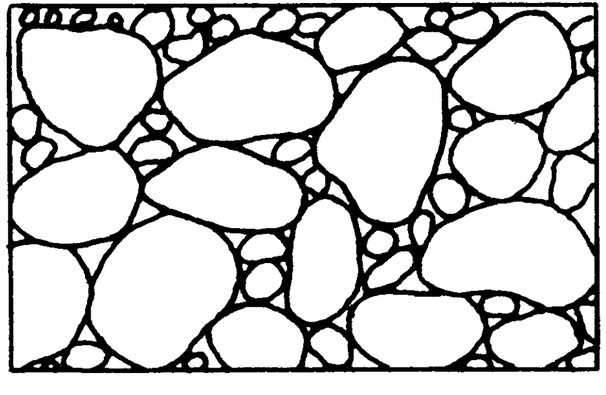
A



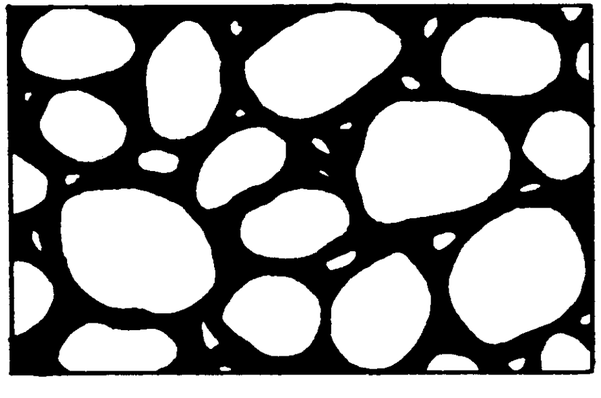
C



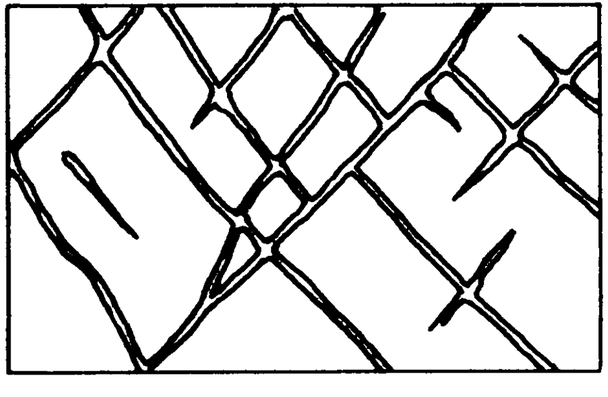
E



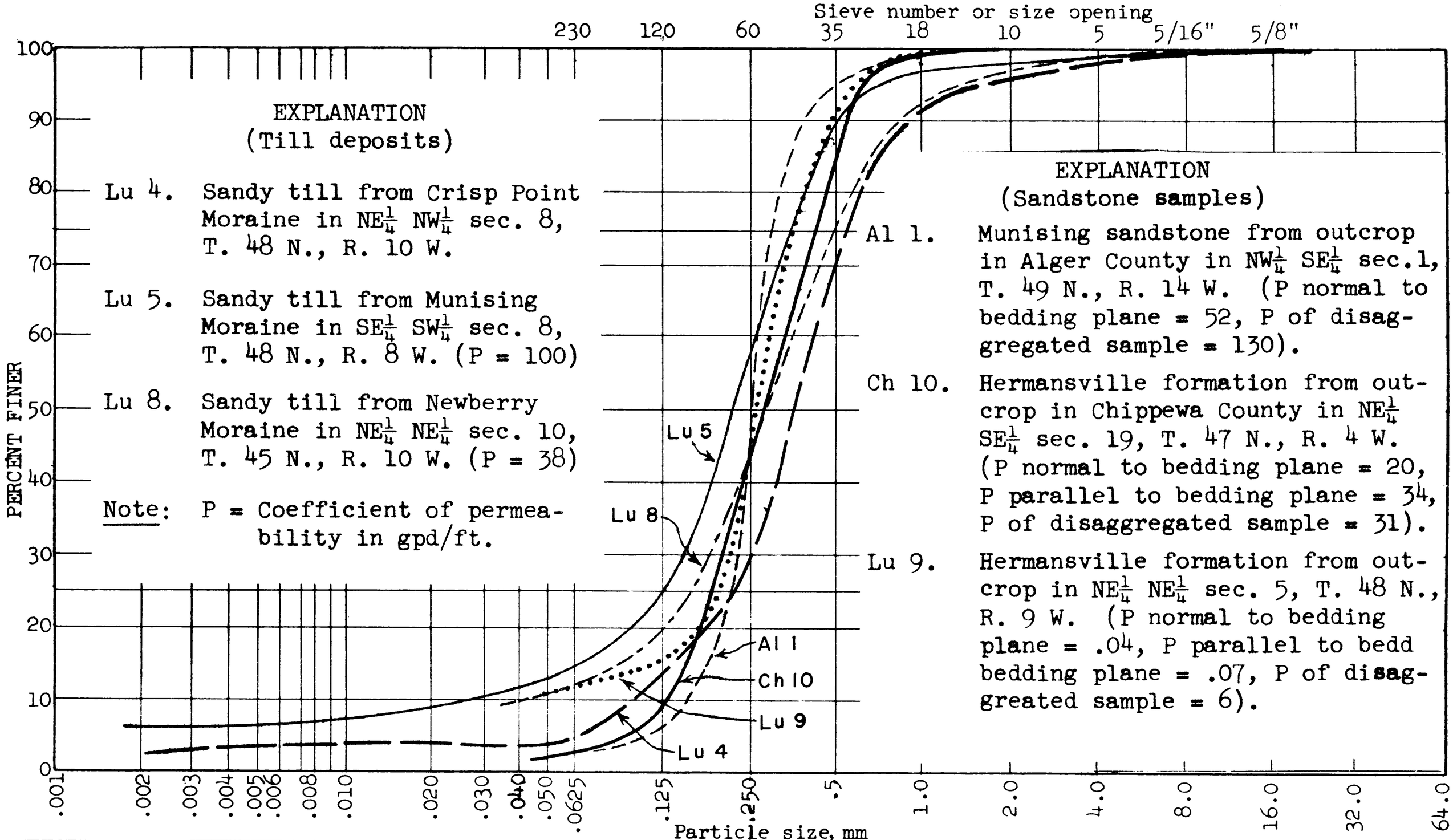
B



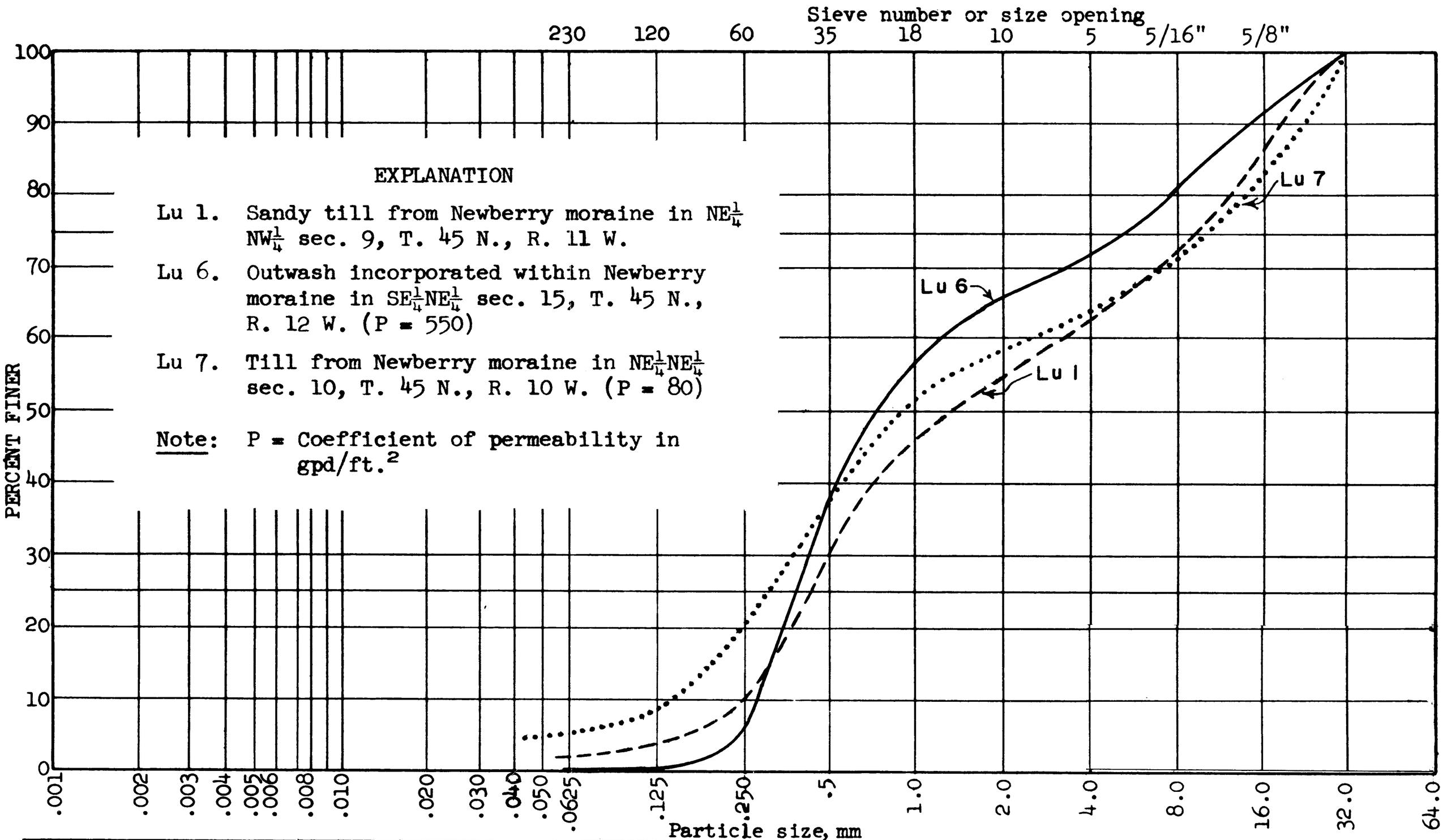
D

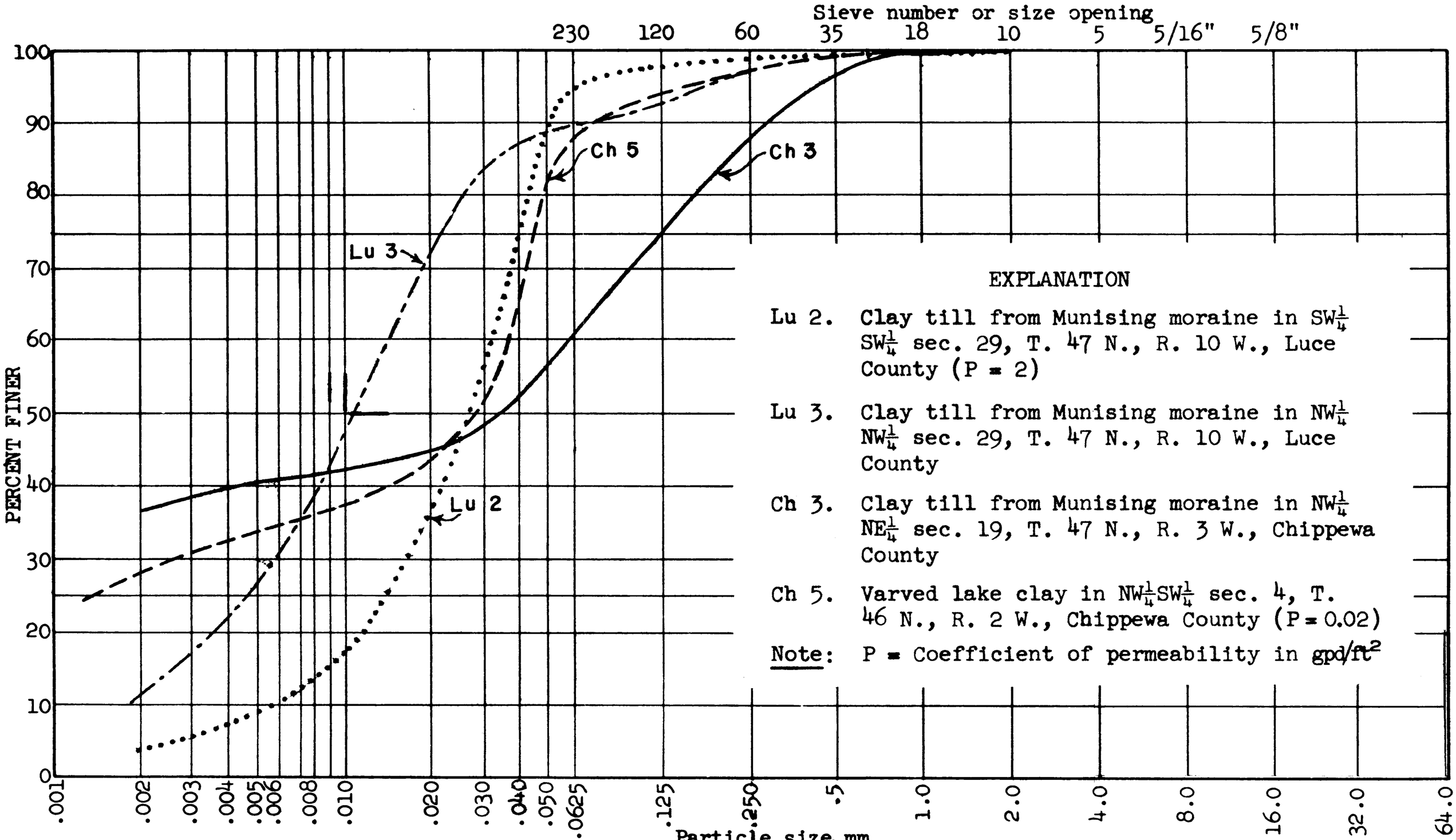


F

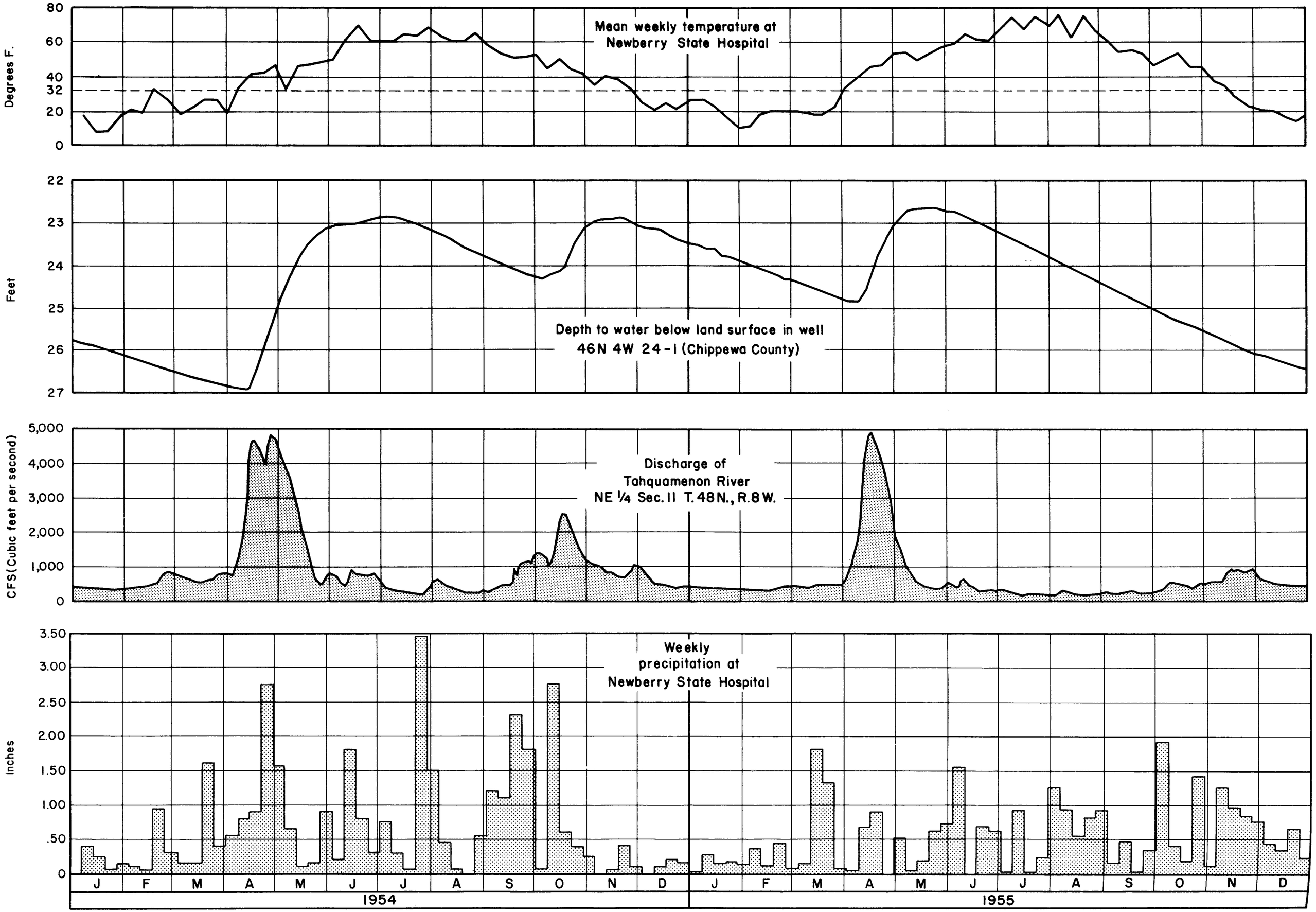


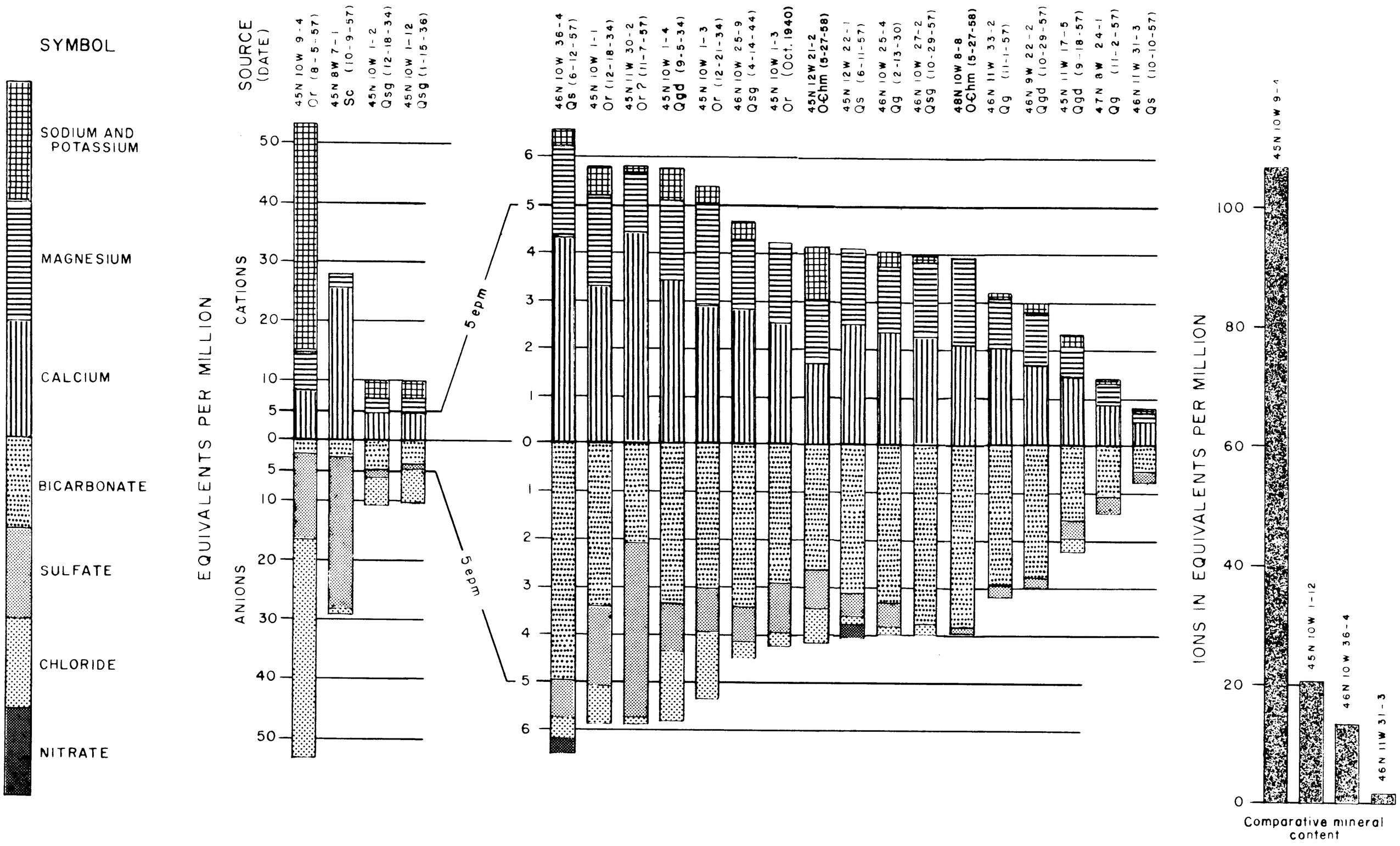
CLAY SIZES less than .004 mm	SILT SIZES .004-.0625 mm	SAND SIZES					GRAVEL SIZES				
		V. fine .0625-.125	Fine .125-.25	Medium .25-.5	Coarse .5-1.0	V.coarse 1.0-2.0	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V.coarse 32-64

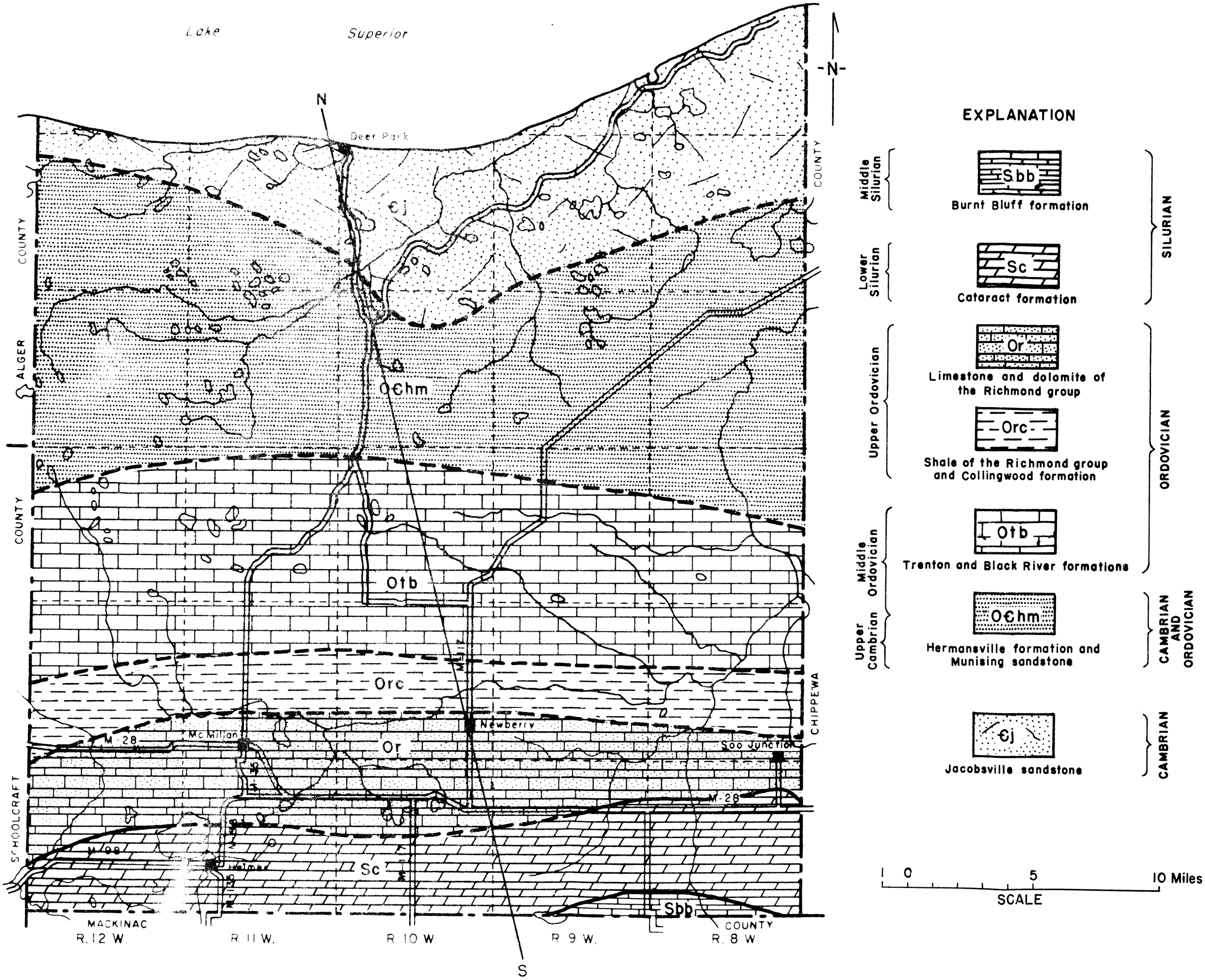

Sieve number or size opening
230
120
60
35
18
10
5
5/16"
5/8"
PERCENT FINER
100
90
80
70
60
50
40
30
20
10
0
EXPLANATION
Lu 1. Sandy till from Newberry moraine in NE¼ NW¼ sec. 9, T. 45 N., R. 11 W.
Lu 6. Outwash incorporated within Newberry moraine in SE¼NE¼ sec. 15, T. 45 N., R. 12 W. (P = 550)
Lu 7. Till from Newberry moraine in NE¼NE¼ sec. 10, T. 45 N., R. 10 W. (P = 80)
Note: P = Coefficient of permeability in gpd/ft.²
Lu 6
Lu 1
Lu 7
.001
.002
.003
.004
.005
.006
.008
.010
.020
.030
.040
.050
.0625
.125
.250
.5
1.0
2.0
4.0
8.0
16.0
32.0
64.0
Particle size, mm
CLAY SIZES less than .004 mm
SILT SIZES .004-.0625 mm
SAND SIZES
V. fine .0625-.125
Fine .125-.25
Medium .25-.5
Coarse .5-1.0
V.coarse 1.0-2.0
GRAVEL SIZES
V. fine 2-4
Fine 4-8
Medium 8-16
Coarse 16-32
V.coarse 32-64



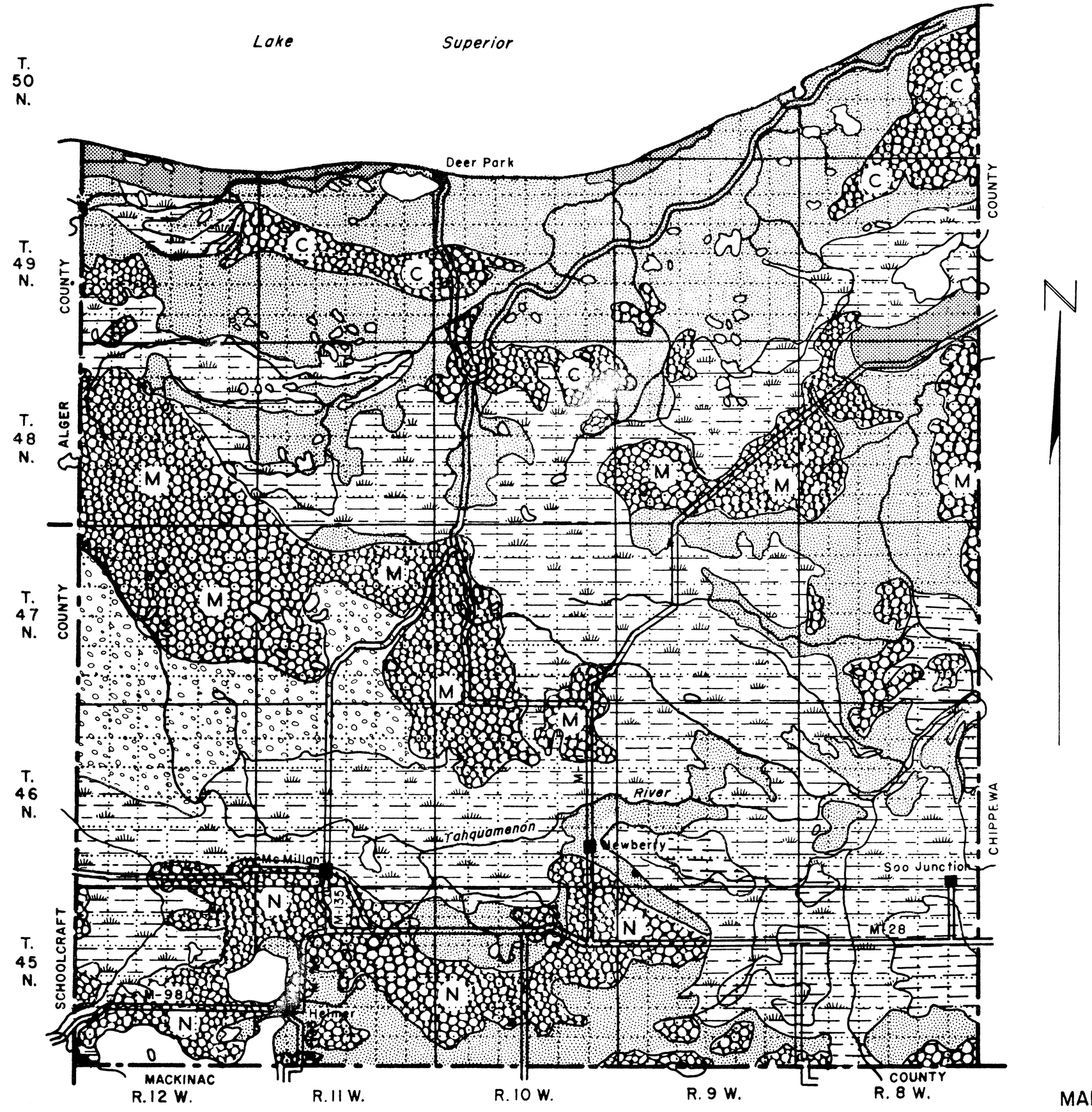
CLAY SIZES less than .004 mm	SILT SIZES .004-.0625 mm	SAND SIZES					GRAVEL SIZES				
		V. fine .0625-.125	Fine .125-.25	Medium .25-.5	Coarse .5-1.0	V.coarse 1.0-2.0	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V.coarse 32-64


Mean weekly temperature at
Newberry State Hospital
Degrees F.
80
60
40
32
20
0
Depth to water below land surface in well
46N 4W 24-1 (Chippewa County)
Feet
22
23
24
25
26
27
Discharge of
Tahquamenon River
NE 1/4 Sec. 11 T. 48N., R. 8W.
CFS (Cubic feet per second)
5,000
4,000
3,000
2,000
1,000
0
Weekly
precipitation at
Newberry State Hospital
Inches
3.50
3.00
2.50
2.00
1.50
1.00
.50
0
J F M A M J J A S O N D
1954
J F M A M J J A S O N D
1955


SYMBOL
SODIUM AND POTASSIUM
MAGNESIUM
CALCIUM
BICARBONATE
SULFATE
CHLORIDE
NITRATE
SOURCE (DATE)
45N 10W 9-4 Or (8-5-57)
45N 8W 7-1 Sc (10-9-57)
45N 10W 1-2 Qsg (12-18-34)
45N 10W 1-12 Qsg (1-15-36)
46N 10W 36-4 Qs (6-12-57)
45N 10W 1-1 Or (12-18-34)
45N 11W 30-2 Or ? (11-7-57)
45N 10W 1-4 Qgd (9-5-34)
45N 10W 1-3 Or (12-21-34)
46N 10W 25-9 Qsg (4-14-44)
45N 10W 1-3 Or (Oct. 1940)
45N 12W 21-2 O€hm (5-27-58)
45N 12W 22-1 Qs (6-11-57)
46N 10W 25-4 Qg (2-13-30)
46N 10W 27-2 Qsg (10-29-57)
48N 10W 8-8 O€hm (5-27-58)
46N 11W 33-2 Qg (11-1-57)
46N 9W 22-2 Qgd (10-29-57)
45N 11W 17-5 Qgd (9-18-57)
47N 8W 24-1 Qg (11-2-57)
46N 11W 31-3 Qs (10-10-57)
EQUIVALENTS PER MILLION
CATIONS
ANIONS
5 epm
5 epm
IONS IN EQUIVALENTS PER MILLION
45N 10W 9-4
45N 10W 1-12
46N 10W 36-4
46N 11W 31-3
Comparative mineral content



Lake Superior
T. 50 N.
T. 49 N.
T. 48 N.
T. 47 N.
T. 46 N.
T. 45 N.
N
Deer Park
Єj
OЄhm
Otb
Orc
Or
Sc
Sbb
Newberry
McMillan
Soo Junction
Helmer
M-28
M-98
ALGER COUNTY
SCHOOLCRAFT COUNTY
CHIPPEWA COUNTY
MACKINAC COUNTY
R. 12 W.
R. 11 W.
R. 10 W.
R. 9 W.
R. 8 W.
S
-N-
EXPLANATION
Middle Silurian
Sbb
Burnt Bluff formation
Lower Silurian
Sc
Cataract formation
SILURIAN
Upper Ordovician
Or
Limestone and dolomite of the Richmond group
Orc
Shale of the Richmond group and Collingwood formation
Middle Ordovician
Otb
Trenton and Black River formations
ORDOVICIAN
Upper Cambrian
OЄhm
Hermansville formation and Munising sandstone
CAMBRIAN AND ORDOVICIAN
Єj
Jacobsville sandstone
CAMBRIAN
1 0 5 10 Miles
SCALE



EXPLANATION

MORAINIC DEPOSITS

C

Deposits of the Crisp Point morainic system
Composed predominantly of sand derived from the Munising and Jacobsville formations. May include some stratified sand and gravel outwash.

M

Deposits of the Munising morainic system.
Composed of deposits similar to the Crisp Point morainic system

N

Deposits of the Newberry morainic system
Composed of sand, gravel, and clayey till. Include several extensive deposits of stratified sand and gravel outwash.

LAKE-PLAIN DEPOSITS

Underlain by lake-deposited sand and silt.

Underlain by lake-deposited clay and silt.

Wetlands (swamps, marshes) underlain by lake-deposited sand, silt, or clay.

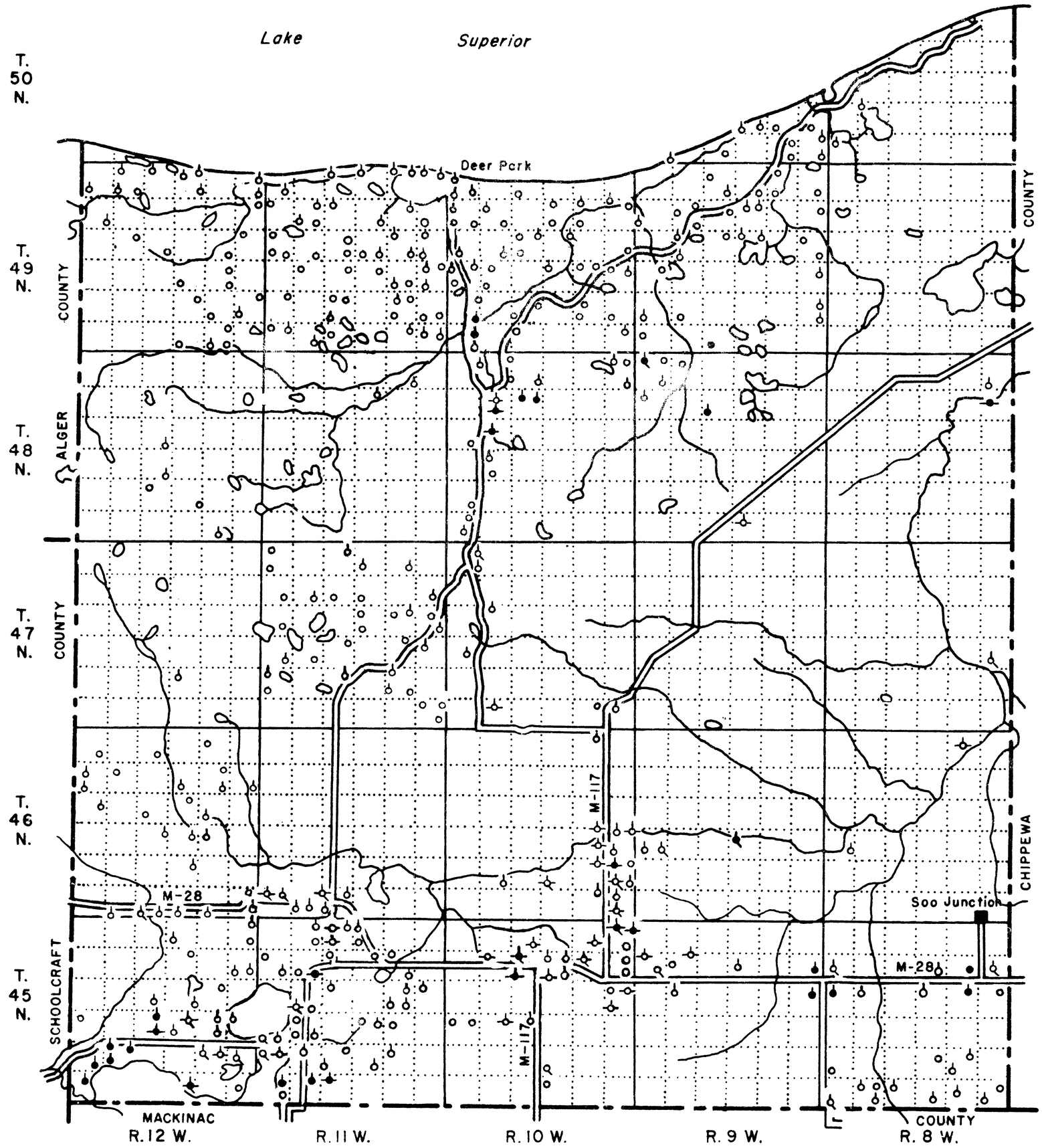
OUTWASH-PLAIN DEPOSITS

Underlain by stratified sand and gravel deposited by melt-water streams.

Well sorted windblown sand.

1 0 5 10 Miles

MAP OF THE SURFICIAL DEPOSITS IN LUCE COUNTY.



- N -

EXPLANATION

Well, test hole or spring

Record of water level or artesian pressure

Log of well

Chemical analysis of water

Bedrock elevation report or indication

Note: Each symbol or symbol combination refers to information listed in Tables 3, 4, and 5 and represents one or more wells, testholes, and borings located in the quarter section in which plotted.

Diagram of geographical township

T. 47 N.

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

R.9 W.

1 0 5 10 Miles

SCALE

MAP OF LUCE COUNTY SHOWING HYDROLOGIC, GEOLOGIC, AND QUALITY-OF-WATER DATA