Modified after Hobbs, H.C., 1988, Minnesota Geological Survey, Open-file Map 88-2.

RAINY LOBE AND RAINY-SUPERIOR SUBLOBE DEPOSITS

Noncalcareous drift composed predominantly of fragments of the Duluth Complex (troctolitic and anorthositic) and granite. Color ranges from gray (2.5Y) to brown (10 YR)

The user should note that all of the mapped units except lake sand peat are capped by a layer of slightly pebbly silt and very fine sand, ranging from 0.25 m to 0.75 m thick. The brown color (10 YR) of the loess matches the hue of the Superior lobe deposits. This eolian deposit is apparently derived from dust blown from outwash and expose glacial lake plains.

1)*	rt	Till	Unsorted rocky gravelly loamy sand. Clasts are angular to subangular, and tightly packed. Deposited by glacial ice with little or no reworking by meltwater.
2)	ra	Reworked till	Poorly sorted bouldery sandy gravel and gravelly sand. Clasts are somewhat rounded and loosely packed. Deposited by glacial ice with considerable reworking by meltwater.
3)	ri	Ice-contact deposits	Moderately to well-sorted and stratified sandy gravel and gravelly sand, containing cobbles and boulders in places. Clasts are rounded and loosely packed. Deposited by glacial meltwater under and adjacent to ice.
4)	ro	Outwash	Similar to ice-contact deposits, but carried beyond the ice front and deposited. Collapsed in places, due to subsequent melting of underlying stagnant ice.
5)	rtd	Drumlinized till	Similar to unit rt, but deposited by an earlier advance in the Toimi drumlin field.

SUPERIOR LOBE AND RAINY-SUPERIOR SUBLOBE DEPOSITS

Noncalcareous brown to reddish-brown (10 YR, 7.5 YR, and 5 YR) drift composed of subequal proportions of rock fragments from the North Shore Volcanic Group (rhyolite, basalt, and microgranite), the Duluth Complex, and granite.

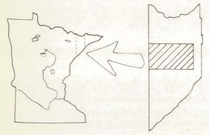
6)	st	Till	Unsorted gravelly sandy loam; contains some cobbles and boulders, but a smaller proportion than in the till of the Rainy lobe. Deposited by glacial ice with little or no reworking by meltwater.
7)	rst	Till	Similar to unit st, but deposited by the Rainy-Superior sublobe.
8)	sa	Reworked till	Poorly sorted gravelly sand, containing a few cobbles and boulders. Deposited by glacial ice with considerable reworking by meltwater.
9)	rsa	Reworked till	Similar to unit sa, but deposited by the Rainy-Superior sublobe.
10)	si	Ice-contact deposits	Moderately to well-sorted and stratified gravelly sand and sandy gravel.
11)	rsi	Ice-contact deposits	Similar to unit si but deposited by the Rainy-Superior sublobe.
13)	so	Outwash	Moderately to well-sorted and stratified gravelly sand and sandy gravel.

DEPOSITS CONTAINING MATERIAL FROM BOTH LOBES

13)	uo	Outwash	Sorted and stratified gravelly sand and sandy gravel.
14)	ul	Lag deposits	Rounded cobbles and boulders lacking fine to medium-grained material. Derived largely from underlying till in areas that were downcut by constricted meltwater streams.

*Number is used to identify glacial types on the DNR Master Sample List.

N



LOCATION MAP

REPORT 262
PLATE 3: GLACIAL GEOLOGY MAP

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERALS

GLACIAL DRIFT GEOCHEMISTRY FOR STRATEGIC MINERALS

LAKE COUNTY

SCALE 1 inch = 1 mile

LEGEND

HARD SURFACED ROADS — (State / County Highways)
GRAVEL or SECONDARY — (NFD - National Forest Development) (NFH - National Forest Highway) (SFR - State Forest Road)
BOUNDARY WATERS CANOE AREA WILDERNESS
PROJECT AREA BOUNDARY

1988

Base adapted from MnDOT General Highway Map - Lake Co., 1987