U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
GEOLOGICAL SURVEY OF CANADA
ONTARIO GEOLOGICAL SURVEY
UNIVERSITY OF VERMONT, DEPARTMENT OF GEOLOGY, AND
SLIPPERY ROCK STATE COLLEGE, DEPARTMENT OF GEOLOGY, PENNSYLVANIA

QUATERNARY GEOLOGIC ATLAS OF THE UNITED STATES
OTTAWA 4° × 6° QUADRANGLE
MISCELLANEOUS INVESTIGATIONS SERIES
MAP I–1420 (NL–18)

LIST OF MAP UNITS

HOLOCENE

- be — BEACH AND DUNE SAND
- lm — LAKE CLAY AND SILT (under Lake Ontario)
- ls — LAKE SAND AND GRAVEL (under Lake Ontario)

HOLOCENE AND LATE WISCONSIN

SANDY TILL
- ts — Ground moraine
- ts — End moraine
- tsr — Discontinuous sandy till

- ke — KAME MORAINE GRAVEL, SAND, AND SILT
- kg — ICE-CONTACT GRAVEL, SAND, AND SILT
- gg — OUTWASH SAND AND GRAVEL
- al — ALLUVIUM
- asq — ALLUVIAL SAND
- aln — ALLUVIAL SILT
- mc — MARINE CLAY AND SILT
- mcr — DISCONTINUOUS MARINE CLAY AND SILT
- msg — MARINE SAND AND GRAVEL
- msr — DISCONTINUOUS MARINE SAND AND GRAVEL
- md — MARINE DELTA SAND AND GRAVEL
- mu — MARINE DEPOSITS, UNDIVIDED
- ed — DUNE SAND
- lc — LAKE SILT AND CLAY (under Lake Ontario)
- lca — LAKE SILT AND CLAY
- hp — PEAT
- hs — SWAMP DEPOSIT

LATE WISCONSIN

LOAMY TILL
- tka — Ground moraine
- tka — Ground moraine under Lake Ontario

LOAMY TILL
- tl — Ground moraine
- tl — End moraine

- teb — SANDY LOAMY TILL

LOAMY TILL
- tlg — Ground moraine
- tlg — Ground moraine under Lake Ontario

LOAMY TILL
- tlc — Ground moraine
- tlc — End moraine
- tlr — Discontinuous loamy till

SANDY LOAMY TILL
- tdh — Ground moraine
- tdh — End moraine
- tdr — Discontinuous sandy loamy till

SANDY LOAMY TILL
- tda — Ground moraine
- tdr — Discontinuous sandy loamy till

- tsa — SANDY TILL
- kd — KAME DELTA SAND AND GRAVEL
- gkl — OUTWASH SAND AND GRAVEL
- lcr — DISCONTINUOUS LAKE SILT AND CLAY
- lsa — LAKE SAND AND GRAVEL
- lsr — DISCONTINUOUS LAKE SAND AND GRAVEL
- lds — LAKE DELTA SAND AND GRAVEL

CONTACT

DUNE FIELD—Mapped only where areas of dunes are too small to be shown as dune sand (**ed**)

CIRQUE

ESKER—Direction of transport indicated by chevrons

ERRATIC TRAIN—Source at apex

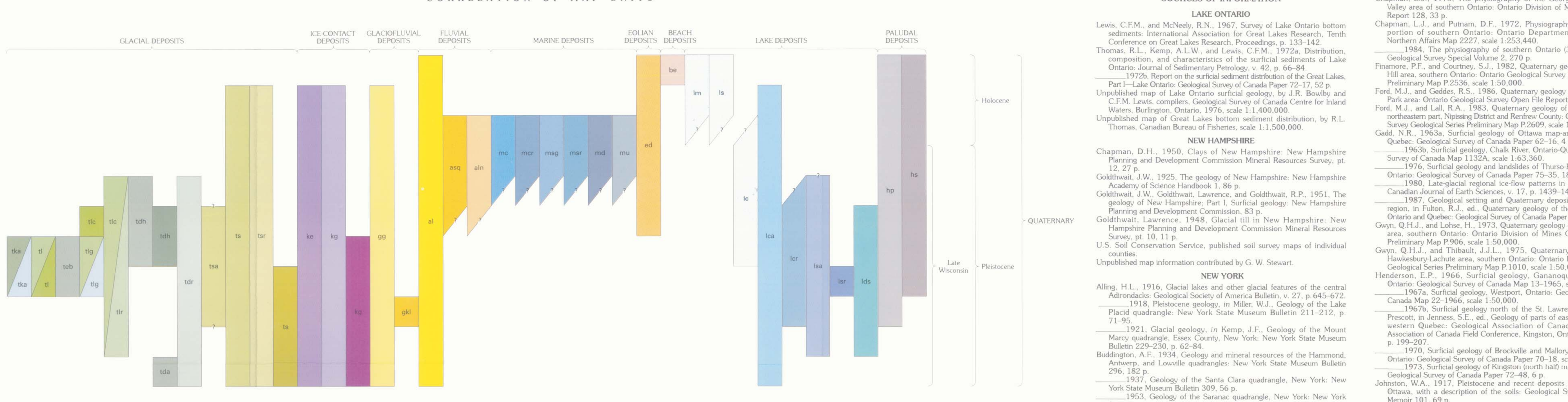
DIRECTION OF ICE MOVEMENT INDICATED BY STRIATED OR GROOVED BEDROCK

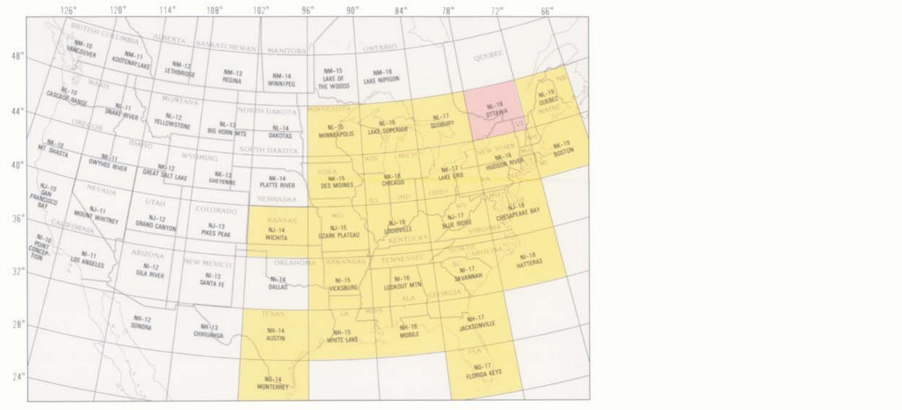
ICE-MOLDED LANDFORM—Drumlin, rock drumlin, flute, or groove

LIMIT OF GLACIAL ADVANCE OR MAJOR STILLSTAND OF ICE MARGIN—Dashed where inferred; ticks on side of advance

MELTWATER CHANNEL OR GLACIAL SPILLWAY

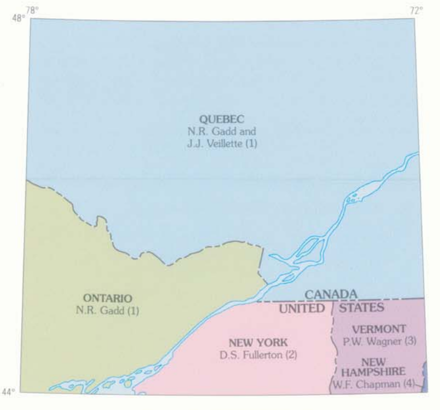
CORRELATION OF MAP UNITS





INDEX TO INTERNATIONAL MAP OF THE WORLD
1:1,000,000 TOPOGRAPHIC SERIES

Showing location of the Quaternary Geologic Map of the Ottawa 4° × 6° quadrangle in red [U.S. Geological Survey, Miscellaneous Investigations Series Map I–1420 (NL–18)] and other published maps in the Quaternary Geologic Atlas of the United States in yellow



AREAS OF RESPONSIBILITY

(1) Geological Survey of Canada
(2) U.S. Geological Survey
(3) University of Vermont, Department of Geology
(4) Slippery Rock State College, Department of Geology

QUATERNARY GEOLOGIC MAP OF THE OTTAWA 4° × 6° QUADRANGLE, UNITED STATES AND CANADA

State and Provincial compilations by
Nelson R. Gadd, J.J. Veillette, David S. Fullerton,
Phillip W. Wagner, and William F. Chapman

Edited and integrated by
David S. Fullerton

1993

QUATERNARY GEOLOGIC ATLAS OF THE UNITED STATES

DESCRIPTION OF MAP UNITS

SOURCES OF INFORMATION