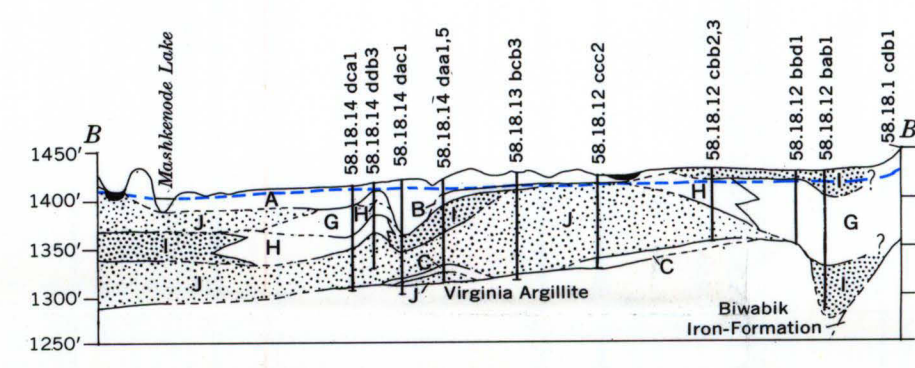
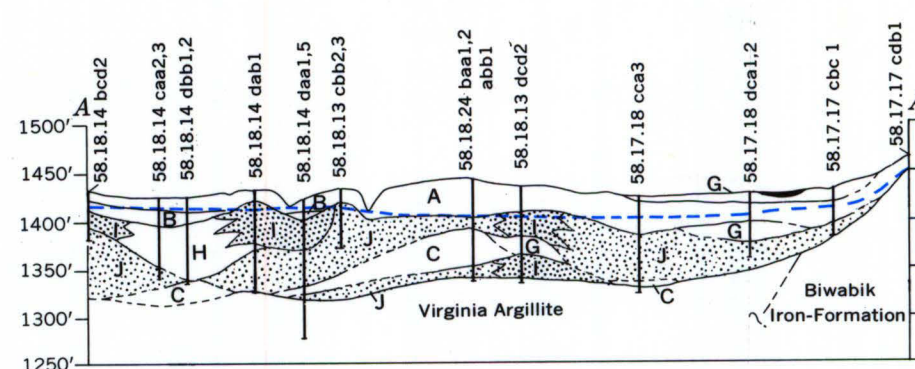
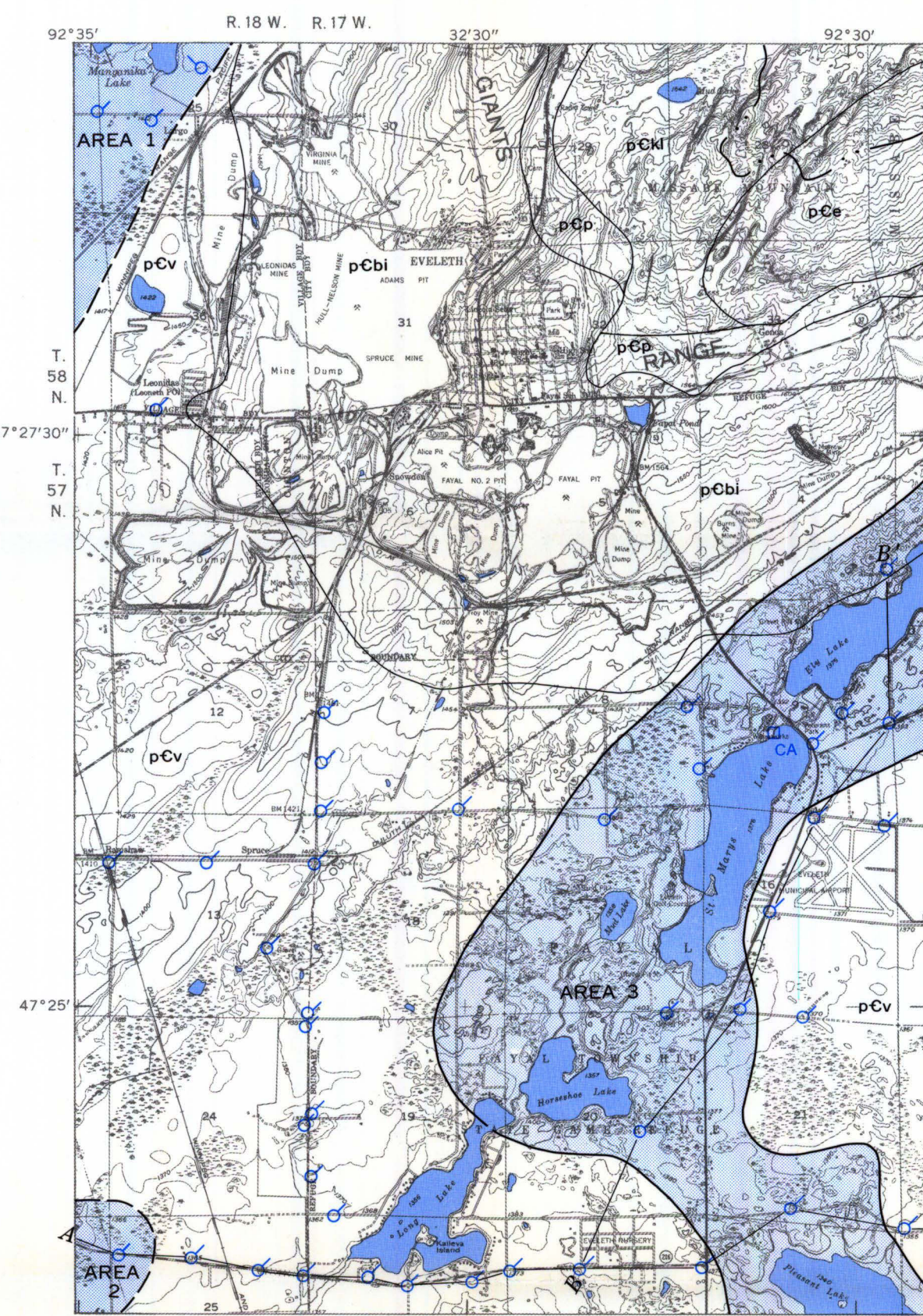


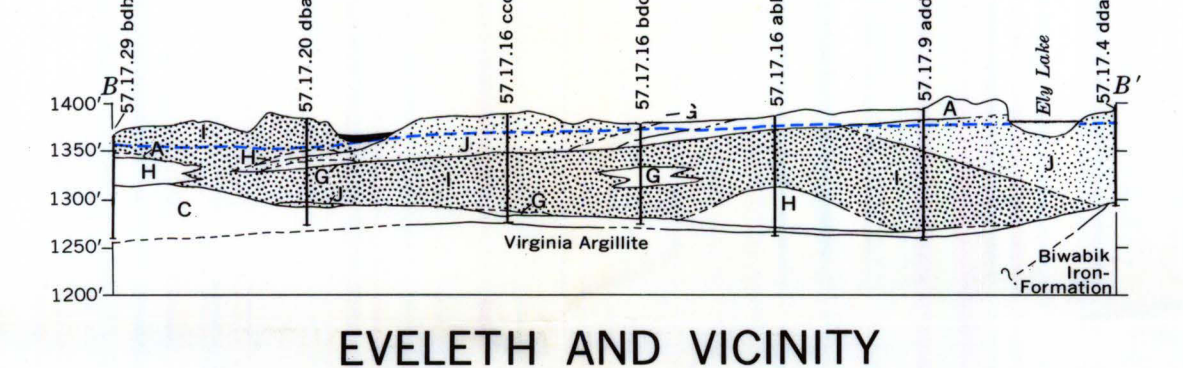
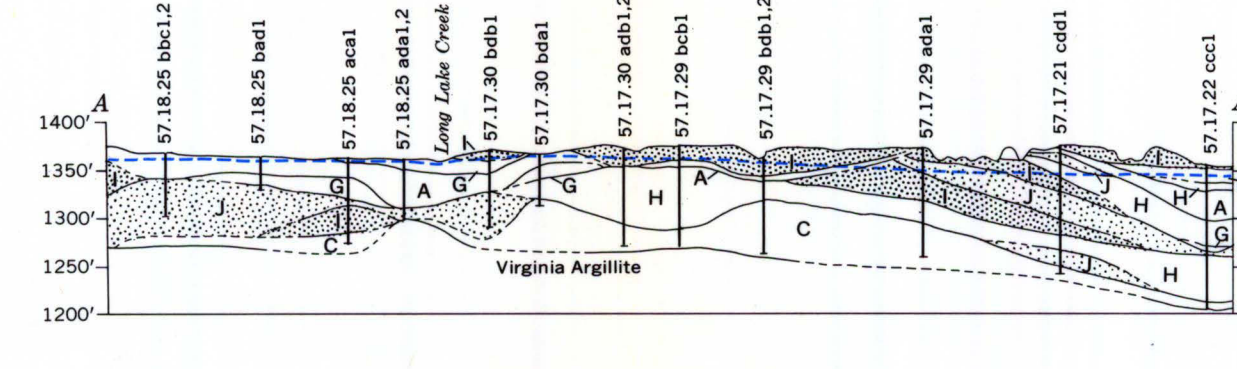
Base from U.S. Geological Survey topographic quadrangles: Eveleth, 1951, and Virginia, 1951. Bedrock contacts from Schwartz (1956, pl. 4), and unpublished Oliver Iron Mining Division maps. Geologic nomenclature from Goldich and others (1961, table 2).



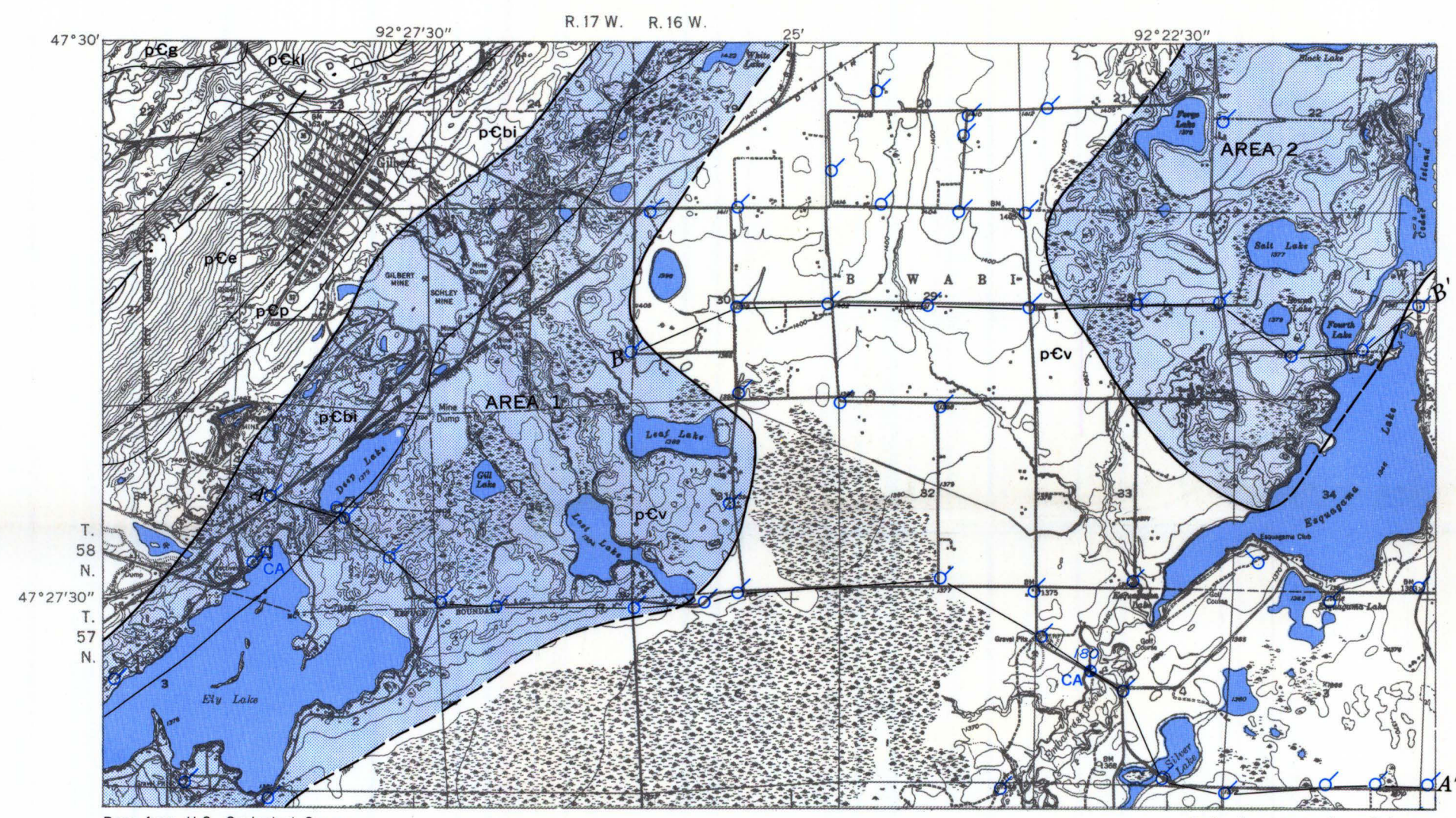
VIRGINIA AND VICINITY



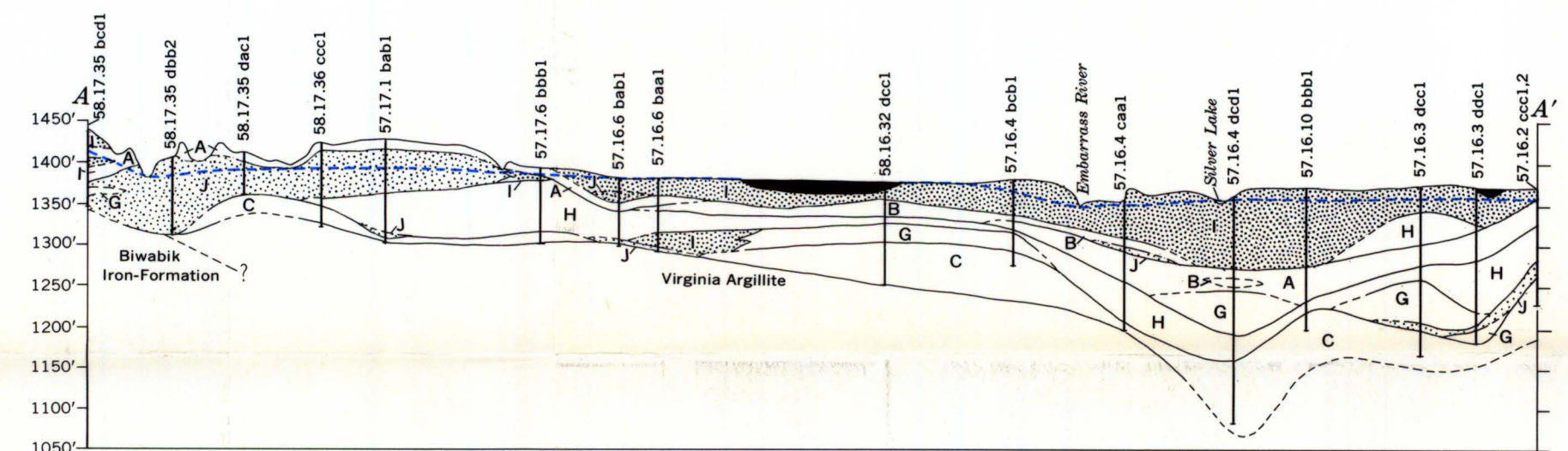
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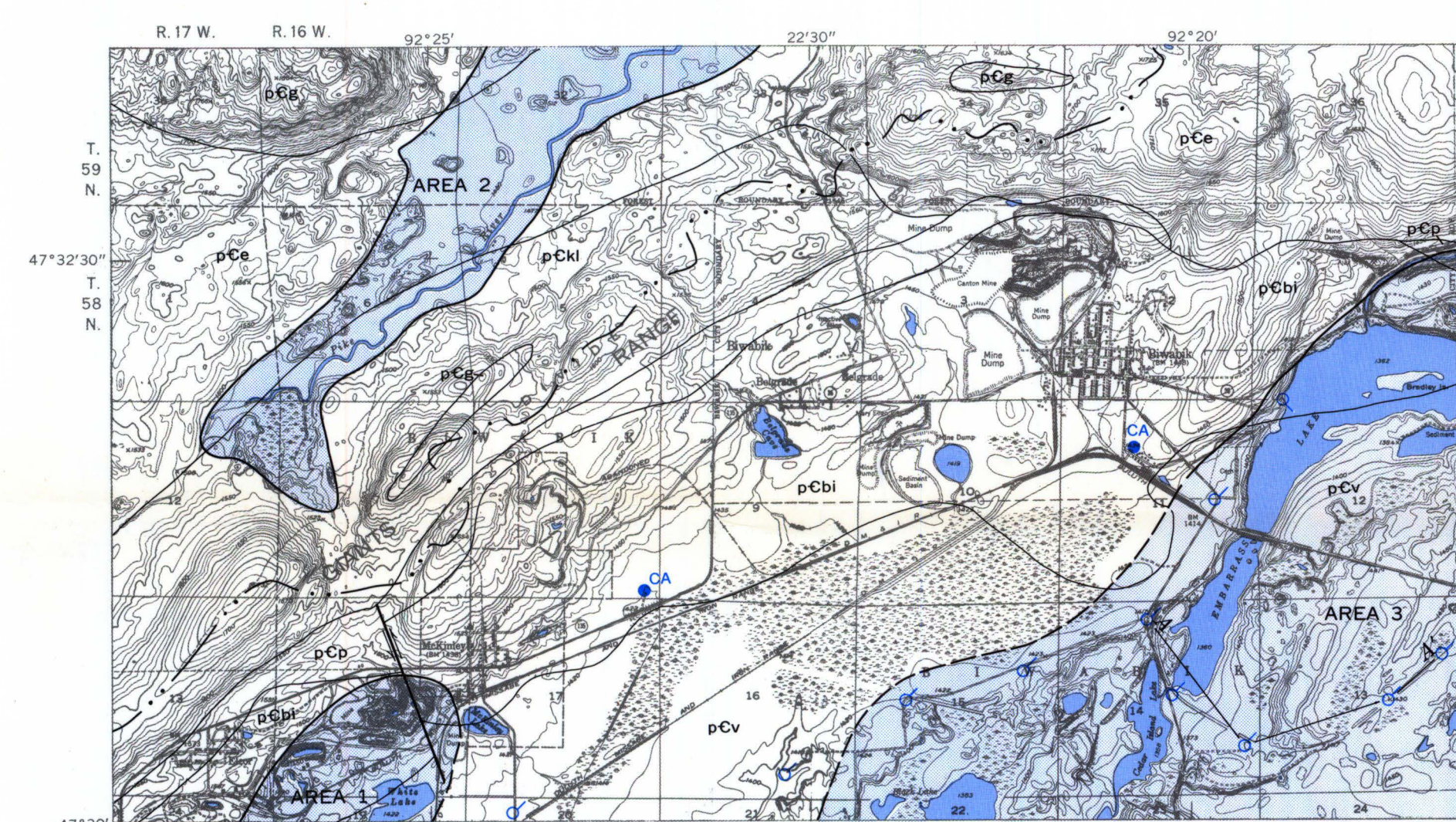
EVELETH AND VICINITY



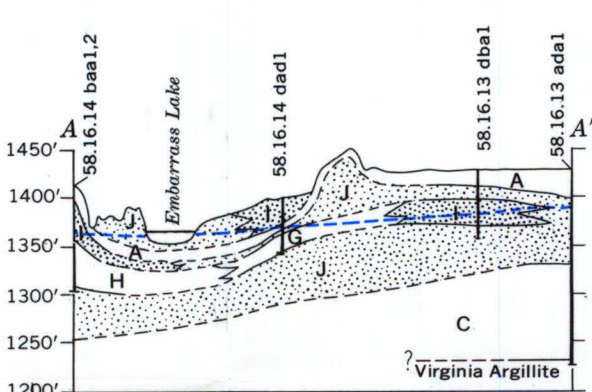
Base from U.S. Geological Survey topographic quadrangles: Gilbert, 1951, and Palo, 1951. Bedrock contacts from Schwartz (1956, pls. 3 and 4), and unpublished Oliver Iron Mining Division maps. Geologic nomenclature from Goldich and others (1961, table 2).



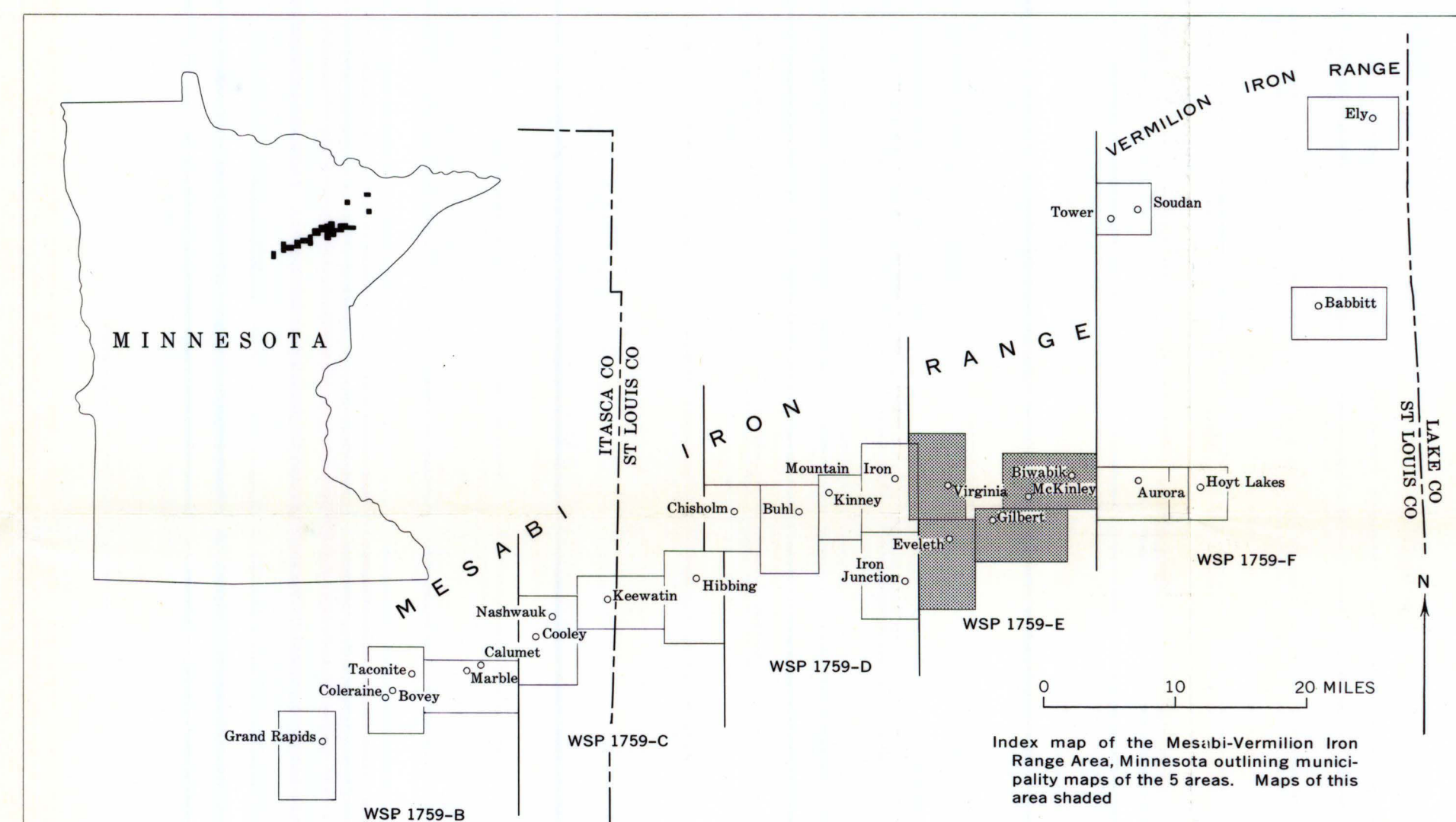
GILBERT AND VICINITY



Base from U.S. Geological Survey topographic quadrangles: Biwabik, 1950, and McKinley, 1950. Bedrock contacts from Schwartz (1956, pl. 3), and unpublished Oliver Iron Mining Division maps. Geologic nomenclature from Goldich and others (1961, table 2).



BIWABIK, MC KINLEY, AND VICINITY



Index map of the Mesabi-Vermilion Iron Range Area, Minnesota outlining municipality maps of the 5 areas. Maps of this area shaded.

- EXPLANATION**
BEDROCK GEOLOGY
- pCv — Virginia Argillite
 - pCb1 — Biwabik Iron-Formation
 - pCp — Pokegama Quartzite
 - pCg — Giants Range Granite
 - pCk1 — Knife Lake Group undivided
 - pCe — Ely Greenstone
- Contact
- Fault, showing relative movement
- A — A' — Laurentian Drainage Divide
- Trace of geologic section
- AREA 2**
Area of potential ground-water development from glacial drift; Boundary dashed where indefinite
- Municipal well
 - Industrial well
 - USGS observation well
 - USGS test hole
 - Municipal test hole
 - Oliver Iron Mining Division test hole
 - Stream-gaging station and identification number
 - Surface-water pumping station
 - Chemical analysis

- LITHOLOGIC SYMBOLS**
- Swamp deposits
 - Till; clayey, reddish-brown to brownish-gray
 - Till; clayey, silty, brown to gray; calcareous
 - Till; sandy, gravelly, bouldery, gray to brown
 - Clay; silty to sandy clay
 - Silt; clayey to sandy silt
 - Sand; clayey to silty sand
 - Sand and gravel; silty sand and gravel
- Piezometric surface
Widely spaced where indefinite
- Vertical exaggeration of sections × 20

HYDROGEOLOGIC MAPS OF MUNICIPALITY AREAS IN THE EAST-CENTRAL MESABI IRON RANGE
NORTHEASTERN MINNESOTA