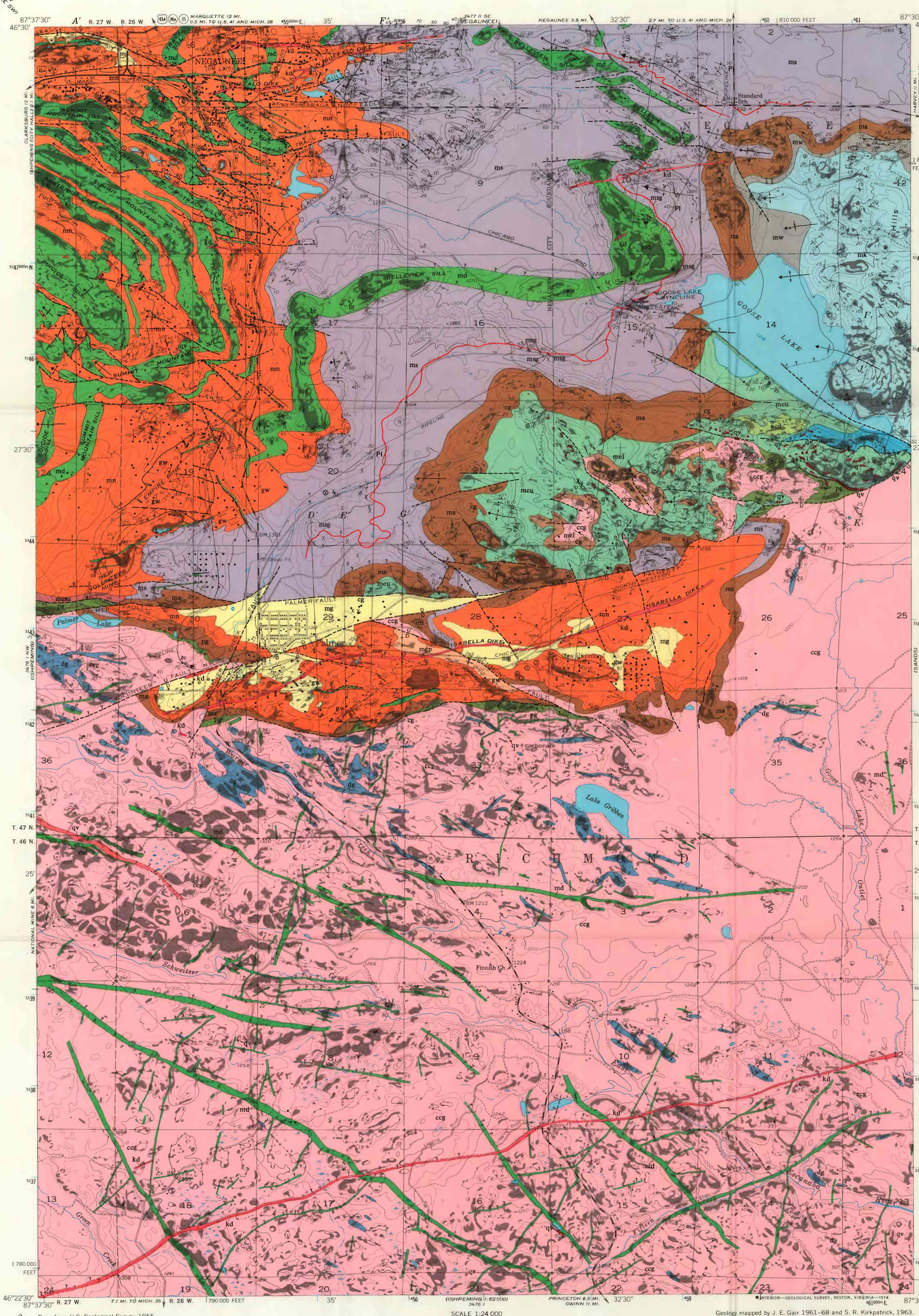
PREPARED IN COOPERATION WITH
THE GEOLOGICAL SURVEY DIVISION OF THE
MICHIGAN DEPARTMENT OF NATURAL RESOURCES



Base from U.S. Geological Survey, 1955
Roads as of 1968

SCALE 1:24 000

1 ½ 0 1 MILE

1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

UTM GRID AND 1952 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

MICHIGAN
QUADRANGLE LOCATION

Geology mapped by J. E. Gair 1961–68 and S. R. Kirkpatrick, 1963.
Part of geologic interpretation in east half of sec. 7, T. 47 N., R. 26 W. from Jones & Laughlin Steel Corp.

CORRELATION OF MAP UNITS

kd	Keweenawan	Upper Precambrian
qv		
mgn, mg	Baraga Group	Middle Precambrian
Local unconformity or disconformity		
br, md		
mn, gw, ms, msg, cg, ma	Menominee Group	Marquette Range Supergroup
masu		
Unconformity		
mw, mk, mksi, cg, mel	Chocolay Group	
cg, mcu, acd, q		
Unconformity or fault contact not mapped in Palmer quadrangle. Unconformity between Chocolay Group and Palmer Gneiss or Compeau Creek Gneiss		
pg, dg, ccg		Lower Precambrian

DESCRIPTION OF MAP UNITS

- **kd** — DIABASE
- **mg** — GOODRICH QUARTZITE – Quartzite and conglomerate
- **mgp** — Lens of mafic pyroclastic and altered vitrophyric rock contains sandy bed and fragments of iron-formation

Local unconformity or disconformity

- **mn** — NEGAUNEE IRON-FORMATION
- **gw** — Locally contains beds of graywacke
- **masu** — AJIBIK-SIAMO FORMATIONS, UNDIVIDED – Graywacke, slate, and impure quartzite. Projected from drill-hole data west of quadrangle
- **ms** — SIAMO SLATE – Slate, graywacke, and arkose in several zones (not shown on map). Locally contains thin beds of sideritic iron-formation
- **msg** — Position of Goose Lake Member represented by magnetic anomaly and a few outcrops
- **ma** — AJIBIK QUARTZITE – White-weathering vitreous quartzite and sericitic quartzite
- **cg** — Locally contains conglomerate near base

Unconformity

- **mcu** — CHOCOLAY GROUP, UNDIVIDED – Slate, schist, sericitic-chloritic quartzite, and wacke
- **q** — White-weathering vitreous quartzite
- **cg** — Conglomerate
- **acd** — Lens of andalusite-chloritoid-cordierite(?) schist in sec. 23, T. 47 N., R. 26 W
- **mw** — WEWE SLATE – Grayish sericitic and quartz-sericite slate
- **mk** — KONA DOLOMITE
- **mksi** — Silicified dolomite (locally shown only by letter symbol)
- **mel** — ENCHANTMENT LAKE FORMATION
- **cg** — Conglomerate and minor slate and quartzite

Unconformity or fault contact not mapped in Palmer quadrangle. Unconformity between Chocolay Group and Palmer Gneiss or Compeau Creek Gneiss

- **pg** — PALMER GNEISS – Sheared, comminuted, sericitized, dolomitized, chloritized, or silicified granitic and amphibolitic gneiss
- **ccg** — COMPEAU CREEK GNEISS – Granitic gneiss, amphibolite, biotite, schist, migmatite, and pegmatite
- **dg** — Zones containing abundant dark-layered gneiss, mainly amphibolite
- **md** — METADIABASE – Dikes and sills of one or more ages
- **br** — Local breccia zone
- **qv** — VEIN QUARTZ – North of Palmer basin, color shown only for outcrops. Thin veins shown by dot pattern or only by letter symbol

Outcrop or outcrop area

Contact – Queried where doubtful or hypothetical. Contacts shown in outcrop areas are accurately located. The degree of accuracy of other contacts can be inferred from distribution of outcrops

Fault – Showing dip where known. Long dashed where approximately located; short dashed where inferred; queried where position or existence uncertain. U, upthrown side; D, downthrown side

Apparent horizontal offset along small fault

Anticline – Showing trace of crestal plane and direction of plunge

Syncline – Showing trace of trough plane and direction of plunge

Inferred trend of formation

Strike and dip of bedding in metasedimentary rock and layers in gneiss
Pl indicates measurement in pipeline trench
- Horizontal
- Inclined
- Vertical
- Overturned

Approximate strike and dip of wavy beds

Strike and dip of beds; bearing and plunge of crinkles in beds

Strike and dip of foliation – Pl indicates measurement in pipeline trench
- Inclined
- Vertical

Strike and dip of joints
- Inclined
- Vertical

Strike and dip of vein
- Inclined
- Vertical

Bearing and plunge or direction of plunge of minor fold axis
- Plunging
- Horizontal

Minor fold showing plunge
- Anticline
- Syncline

Top direction shown by crossbedding

Top direction shown by ripple mark; number indicates dip of bed

Diamond-drill hole
- Map
- Section—number keyed to plate 8

Mine shaft

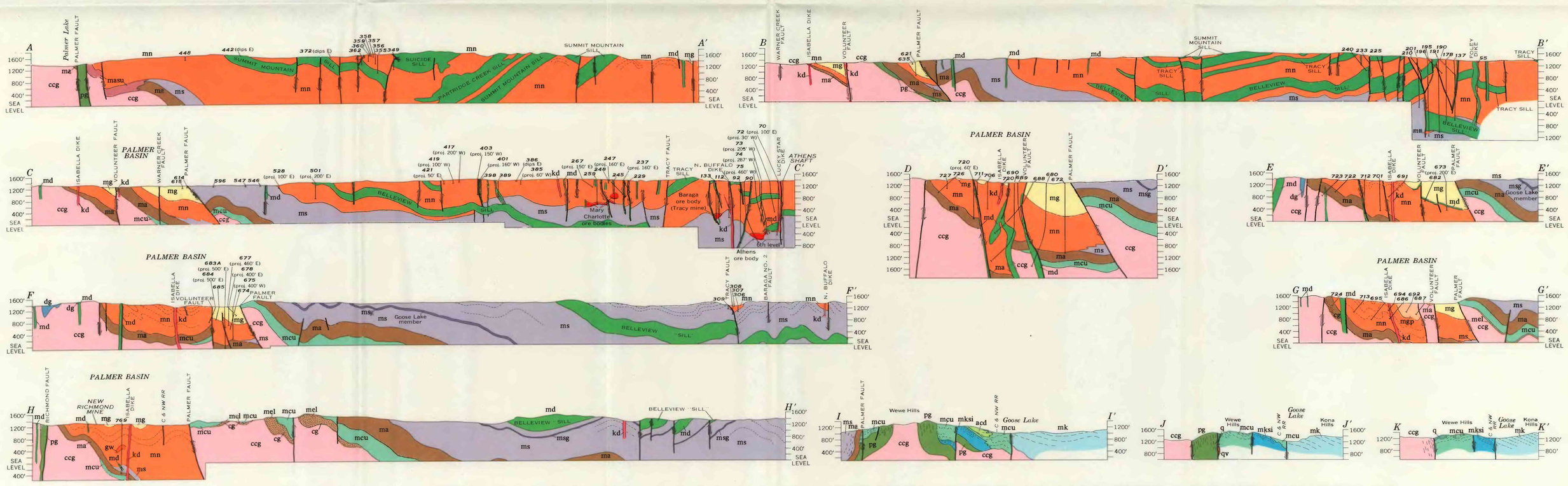
Mine shaft at diamond-drill site

Trench

Test pit

Group of test pits

Outline of pit



BEDROCK GEOLOGIC MAP AND SECTIONS OF THE PALMER QUADRANGLE, MARQUETTE COUNTY, MICHIGAN