

EXPLANATION

QUATERNARY

Recent
Alluvium
Unconsolidated gravel, sand, and silt of valley fills; wind-blown sand; plays clay

Pleistocene

Older alluvium and fanglomerate
Weakly consolidated gravel and sand; fanglomerate composed of subrounded clasts as large as 2 feet in diameter of granitic and some volcanic rocks in matrix of gray coarse-grained arkosic sandstone; little or no bedding; locally tilted and dissected

Tertiary group

Upper part
Sedimentary rocks of fluvialite and lacustrine origin. Maximum thickness 1000 feet or more. Ttu, mainly gray arkosic sandstone and gray to variegated siltstone and clay shale, thin layers of limestone or chert at places. Shale contains bedded borate deposits. Ttuq, granitic fanglomerate; Ttub, granitic breccia; Ttb, basalt flows

Saddleback basalt
One or more flows of fine- to medium-grained olivine-augite basalt; maximum thickness 600 feet

Red Buttes quartz basalt
One or more flows of fine- to medium-grained basalt with small quartz and plagioclase phenocrysts; maximum thickness 370 feet

Lower part
Sedimentary rocks of fluvialite and lacustrine origin. Maximum thickness 2000 feet. Ttl, gray arkosic sandstone, gray siltstone, clay shale, tuffaceous shale, limestone, dolomite, and chert; Ttlg, granitic conglomerate; Ttt, pyroclastic rocks composed of white tuff, tuff-breccia, and bentonite; Ttob, flows of olivine basalt; Ttd, bodies of dacite

MESozoic (?)

Crystalline rocks
Mainly quartz monzonite; includes granite, pegmatite, apatite, hornblende schist, meta-andesite, and quartz latite

Contact

Fault
Dashed where approximately located; short dashed where inferred. U, upthrown side; D, downthrown side

Strike and dip of beds

Mine entrance or shaft

Test hole drilled for U. S. Geological Survey

Other test hole

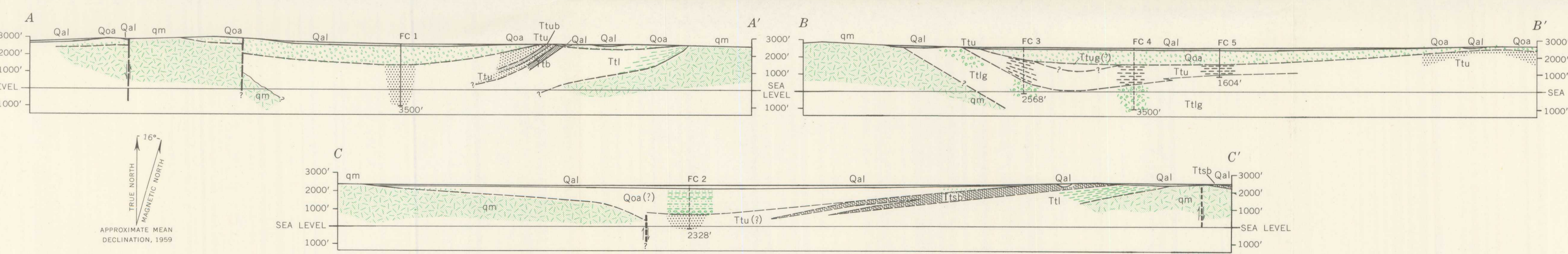
Gravimetric station showing complete Bouguer anomaly value plus 1000 milligals

900

Lines of equal Bouguer anomaly
Contour interval 1 milligal

Subsurface extent of Kramer borate body, after Gale (1946); horizontal pattern, calcium and calcium-sodium borates; vertical pattern, sodium borates

Planimetric base from U. S. Geological Survey quadrangles
INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C., MR 2010
Geology by T. W. Dibblee, Jr., 1952-54.
Gravity survey by D. R. Mabey, 1953



GEOLOGIC MAP AND SECTIONS OF KRAMER-FOUR CORNERS AREA, CALIFORNIA, SHOWING GRAVIMETRIC DATA

SCALE 1:62 500
0 1 2 3 MILES

16°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1959