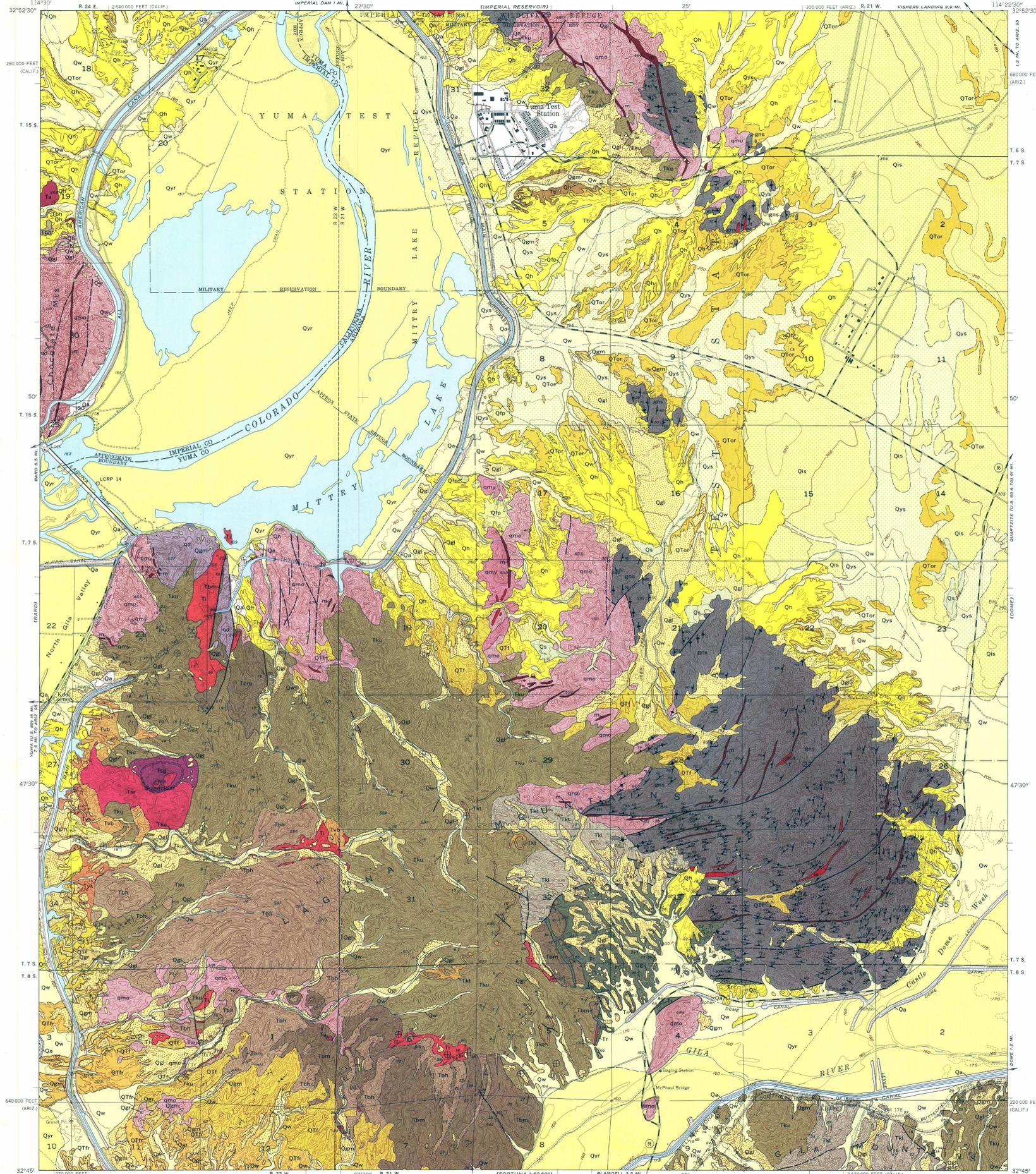


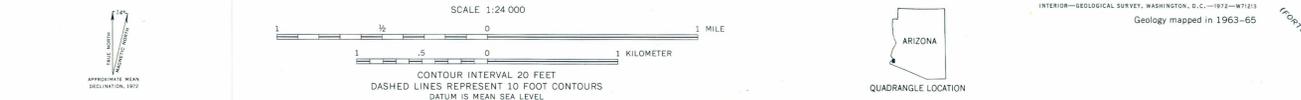
LITTLE ROCKING PEAK



EXPLANATION

- Quaternary**
 - Artificial fills and cuts** (Qa): Spoil banks and levees composed of unconsolidated sand, silt, gravel, and clay; associated cuts and leveled areas; concrete structures.
 - Wash deposits** (Qw): Loose sand, gravel, silt, and clay in present washes of intermittent streams. Deposits differ from those on adjacent stream terraces and piedmont surfaces in that surface materials are not modified by soil processes and lack desert pavement and desert varnish. Thickness 5-10 feet at most places; maximum about 30 feet.
 - Younger sheetflood deposits** (Qys): Chiefly loose sand and silt deposited by sheetfloods in broad, ill-defined areas graded to present stream channels and washes. Generally derived from adjacent and underlying sandy older river deposits. Thickness less than 10 feet at most places.
 - Windblown sand** (Qs): Loose, well-sorted sand derived from nearby sandy deposits of fluvial origin and deposited in small dunes and sheets. Thickness generally less than 20 feet.
 - Younger river deposits** (Qyr): Youngest fill beneath flood plains of Colorado and Gila Rivers. Upper part: sand, silt, some clay; generally unconsolidated, well sorted. Lower part: gravel and coarse sand; gravel rounded, up to 6 inches in diameter, composed chiefly of hard, resistant rock types. Thickness, 30 to 100 feet.
 - Flood-plain deposits** (Qfp): Chiefly yellow and brown silt, fine sand, and clay deposited on old flood plains of Colorado River now above base level and being dissected. Maximum thickness about 40 feet.
 - Heterogeneous deposits** (Qh): Sand, silt, gravel, and clay of local and mixed local and river origin beneath stream terraces and piedmont surfaces. Largely equivalent in age to gravel deposits, but generally thicker and more heterogeneous; may include deposits belonging to older fill. Thickness exceeds 50 feet in places.
 - Older river deposits** (QTr): Moderately to well-sorted sand, silt, gravel, and clay deposited in channels and flood plains of ancestral Colorado and possibly Gila Rivers. Fine- to medium-grained gray sand, locally cross-bedded and showing silty clay wood predominant. Maximum subsurface thickness at least 200 feet.
 - Fanglomerate and older river deposits** (QTrf): Interbedded sand, silt, gravel, and clay of river origin and fanglomerate of local origin. In places, may include correlative of heterogeneous deposits. Maximum exposed thickness, about 150 feet.
 - Gravel deposits** (Qgl, Qgm, Qgr): Gravel, sand, and silt underlying stream terraces and piedmont surfaces above present washes and flood plains. Desert pavement characterizes flat terraces and broad surfaces but is absent in more dissected, hilly exposures. At many places, difficult to distinguish from underlying fanglomerate of older fill. Thickness generally less than 20 feet but locally as much as 50 feet. Classified according to predominant origin as follows: Qgl, chiefly angular to subangular igneous and metamorphic detritus of local origin; Qgm, detritus of mixed local and river origin; Qgr, chiefly rounded, resistant detritus of river origin.
 - Fanglomerate** (QTI): Gravel, ill-sorted, slightly to moderately cemented by calcium carbonate and iron oxides, and containing significant amounts of sand, silt, and clay. Composed chiefly of subrounded to angular clasts of metamorphic and plutonic rocks, and subordinate volcanic detritus. Exposures deeply dissected and commonly blanketed by colluvial rubble. Maximum exposed thickness about 150 feet.
- Tertiary and Quaternary**
 - Bouse Formation** (Tb): Greenish- to bluish-gray silt and clay; subordinate pink clay, fine gray sand, and hard, calcareous claystone. In subsurface at test well LCRP 11 (near Laguna Dam) contains foraminifera, ostracods, and small gastropods and pelecypods indicative of marine and brackish-water environments. Overlain gradationally by older fill; unconformably by intermediate and younger fills. Thickness 100 feet at test well LCRP 11.
 - Sediments of volcanic origin** (Tvs): Sand, silt and minor gravel composed chiefly of volcanic detritus; poorly consolidated, yellowish brown to pale pink. Maximum exposed thickness about 300 feet.
 - Volcanic breccia** (Tvb): Breccia and minor conglomerate and tuff breccia composed chiefly of volcanic rocks. Interrelated with unnamed upper member of Kinter Formation.
 - Andesite of Sugarloaf** (Tsr): Tsr, red to pink, dense, hard phase; locally brecciated and containing irregular gray streaks. Overlies gray phase near summit of Sugarloaf. Tsg, light-gray, aphanitic phase forming central plug at Sugarloaf; in places containing a few small dark-gray to reddish-gray fragments of hemi-crystalline volcanic rocks.
 - Andesite** (Ta): Dense aphanitic, gray to red andesite flows and possibly shallow intrusive bodies at several scattered localities in both Laguna and Chocolate Mountains.
 - Igneimbrite** (Tl): Vitric ash-flow tuff of dacitic to rhyolitic composition; minor beds of ash-fall origin; locally some vitrophyre near base. Flows from densely scalded, pink to red, commonly silty rock to nonwelded orange to pale-purple, locally pumiceous rock. Maximum exposed thickness about 400 feet.
 - Breccia and conglomerate** (Tbh): Chiefly coarse, ill-sorted, crudely bedded, angular to subrounded detritus of alluvial-fan, mudflow, talus, and landslide origin. Contains occasional blocks as large as 50 feet across. Exposures deeply dissected and generally blanketed by colluvial rubble. Maximum thickness probably exceeds 5,000 feet.
 - Felsic dikes and sills** (Tfm): Aplite, pegmatite, and alaskite, generally quartz monzonitic in composition; some quartz little porphyry. Only large or conspicuous bodies shown. Secum near east margin of Laguna Mountains shown diagrammatically.
 - Younger quartz monzonite** (Tqm): Fine to medium grained, equigranular, light to medium colored, generally massive; biotite is principal mafic constituent. Intrudes older quartz monzonite. Only larger bodies shown.
 - Older quartz monzonite** (Tqmo): Chiefly medium- to coarse-grained quartz monzonite, some granite and granodiorite; commonly seriate to porphyritic, with large anhedral phenocrysts or porphyroblasts of microcline, associated with anhedral quartz, plagioclase, biotite, and in places, hornblende. Massive to moderately gneissic, generally altered. Includes many small bodies of younger quartz monzonite and both mafic and felsic dikes and sills not shown separately. Highly brecciated in exposures near southeast corner of map. Dot pattern indicates mafic phase.
 - Gneiss and schist** (Tgns): Muscovite-biotite gneiss and schist; quartz monzonite augen gneiss (shown by dot pattern); veined quartz and micaite, hornblende-bearing schist and gneiss, micaceous quartzite, chloritic schist, and a variety of garnetiferous rocks; includes many small bodies of plutonic and hypogranitic rocks not mapped separately. Quartz monzonitic augen gneiss may in part represent gneissic phase of older quartz monzonite.
- Tertiary**
 - Kinter Formation** (Tku): Tku, upper member, fanglomerate, yellowish-gray, slightly to moderately indurated, composed chiefly of subrounded to angular clasts of metamorphic and plutonic rocks; some soft argillaceous sandstone and mudstone. Maximum exposed thickness, about 2,500 feet. Generally mantled with colluvial rubble.
 - Tk1**: Lower member, breccia, coarse, unsorted, and tongues of brown and gray argillaceous sandstone and gray to pink tuffaceous mudstone. Thickness 0 to 1,500 feet.
 - Tkt**: Tuff and ash, largely pumiceous and reworked by streams; occur within both upper and lower members.
- Deformed sedimentary and volcanic rocks**
 - Red beds** (Tr): Red, brown, and yellow arkose and arkosic sandstone, conglomerate, and siltstone—all of fluvial origin. Some green siltstone and claystone of lacustrine origin, in places gyttiferous. A few thin beds of white bentonitic ash. Maximum thickness more than 3,000 feet.
- Hypabyssal rocks**
 - Mafic dikes and sills** (m): Predominantly fine-grained diabase, diorite, and quartz diorite; commonly altered and containing abundant chlorite and epidote. Only large or conspicuous bodies shown.
- Plutonic rocks**
 - Quartz diorite** (qd): Medium grained, equigranular, moderately dark colored, generally altered, in places foliated; contains both biotite and hornblende, a few relics of oligoclase. Intrudes older quartz monzonite just southeast of Laguna Dam.
- Metamorphic rocks**
 - Quartz diorite** (qmo): Medium grained, equigranular, moderately dark colored, generally altered, in places foliated; contains both biotite and hornblende, a few relics of oligoclase. Intrudes older quartz monzonite just southeast of Laguna Dam.

Base by U.S. Geological Survey, 1955
10,000-foot grids based on Arizona coordinate system,
west zone and California coordinate system, zone 5
1000-meter Universal Transverse Mercator grid ticks,
zone 11



GEOLOGIC MAP OF THE LAGUNA DAM 7.5-MINUTE QUADRANGLE, ARIZONA AND CALIFORNIA

By
F. H. Olmsted
1972

Arizona (Laguna Dam quad) 1:24,000, 1972
cap. 1



M(200)
1972
101014
CJ