

# GEOLOGY AND GEOMORPHOLOGY OF THE SAN BERNARDINO VALLEY, SOUTHEASTERN ARIZONA

By

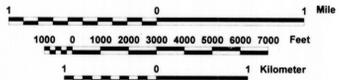
Thomas H. Biggs, Robert S. Leighty, Steven J. Skotnicki, and Philip A. Pearthree

1999

Arizona Geological Survey  
Open-File Report 99-19, sheet 3 of 3, with text

## Geologic Map Units

- Modern**
- D Areas disturbed by human activity
- Quaternary Surficial Deposits**
- Qy Alluvial deposits in active drainages
  - Qyp Playa-lake deposits
  - Qab Basalt-dominated alluvium in active channels
  - Qcb Hillslope colluvium
  - Qdb Basalt-derived hillslope colluvium
  - Qdl Limestone-derived hillslope colluvium
  - Qly Surficial deposits undifferentiated
  - Qi Alluvial fan deposits (Late Pleistocene)
  - Ql Alluvium veneer over basalt lava (Late Pleistocene)
  - Qm1 Alluvial deposits (Middle and Late Pleistocene)
  - Qm Alluvial fan deposits (undifferentiated Middle Pleistocene)
  - Qm2 Alluvium veneer over basalt lava (undifferentiated Middle Pleistocene)
  - Qm3 Alluvial fan deposits (younger Middle Pleistocene)
  - Qm4 Alluvium veneer over basalt lava (younger Middle Pleistocene)
  - Qm5 Alluvial fan deposits (older Middle Pleistocene)
  - Qm6 Alluvium veneer over basalt lava (older Middle Pleistocene)
  - Qm7 Alluvial fan deposits
- Quaternary Volcanic Rocks**
- Qbf Basalt lava flows
  - Qbp Basaltic vent deposits, undifferentiated
  - Qbpc Basaltic cinder deposits proximal to vent
  - Qbv Basaltic vent lava and agglutinate proximal to vent
  - Qbpb Basaltic agglomerate proximal to vent
  - Qbn Pyroclastic surge deposits
  - Qbt Basaltic tuff
  - Qbi Basaltic dike
- Quaternary and Late Tertiary Volcanic and Sedimentary Rocks**
- TQc Basin-fill deposits
  - Ty Older basin-fill deposits
  - TQd Basalt flows (Pliocene to Pleistocene)
  - Tb Basalt flows (Miocene)
  - Tc Conglomerate
  - Taf Older basin-fill deposits
  - Tsv Undifferentiated rhyolite volcanic rocks
  - Tl Rhyolite of Clanton Draw
  - Tt Welded tuff
  - Ti Bedded lithic tuffs
  - Tsc Tuff of Skelton Canyon
  - Tsn Tuff of Skelton Canyon, non-welded
  - Tdc Coarse-grained dacite of Outlook Mountain
  - Tdm Medium-grained dacite of Outlook Mountain
  - Tos Older conglomerate
  - Tq Quartzite
  - Tdb Dacite breccia
  - Tro Older rhyolite
  - Tax Andesite breccia
  - Tlx Mixed breccia
  - Tx Monolithic welded-tuff breccia
  - Tu Upper welded ash-flow tuff
  - Tun Non-welded ash-flow tuff
  - Tur Welded ash-flow tuff
  - Ttr Older welded ash-flow tuff
  - Ta Andesite flows
  - Td Andesite dike
  - Tf Felicit hypabyssal dikes
- Mesozoic and Paleozoic Rocks**
- MPz Undifferentiated sedimentary rocks
  - Rb Babes Group, undivided
  - Mf Lower Formation
  - Km Monte Formation
  - Kc Glance Conglomerate
  - Kcc Glance Conglomerate, cherty member
  - Kcl Glance Conglomerate, limestone pebble member
  - Pe Eplagh Dolomite
  - Pc Colina Limestone
  - PFv Earp Formation
  - PFch Earp-Horquellan Formations, undivided



## Geologic Map Symbols

- Contact: dash-dot-dot pattern used to complete contacts where mapping was not finished; "Y" = young, "O" = old, used to indicate age relationship, queried where uncertain
- High Angle Fault: dashed where location approximate, dotted where connected, ball on down-dropped side, arrow shows dip of fault surface, diamond shows trend of fault strike
- Thrust Fault: dashed where location approximate, dotted where connected
- Quarried Fault: uncertain contact type, possibly a fault, dashed where approximate, dotted where concealed
- Anticline fold hinge: dashed where approximate, dotted where concealed
- Marker horizon: separates mylonite flows and separates unconformities within bedded tuffs
- Basalt Dike
- Map Boundary
- Bedding, showing dip
- Vertical Bedding
- Horizontal Bedding
- Bedding, determined from aerial photographs
- Flow Foliation in lava, showing dip
- Elastic Foliation, with lineation, showing dip

Funded by the U.S. Forest Service,  
Rocky Mountain Research Station

Base from U.S. Geological Survey  
College Peaks, East of Douglas,  
Cinder Hill, and San Bernardino  
Ranch quadrangles, 1985, and  
Pedregosa Mountains East  
quadrangle, 1986

Digital cartography by  
Tim R. Orr

Funded by the U.S. Forest Service,  
Rocky Mountain Research Station

