

### ABBREVIATED EXPLANATION

Approximate stratigraphic relationships only; see Geologic Map Explanation for more accurate age determinations and unit descriptions.

|      |   |
|------|---|
| Q    | Alluvium (Undifferentiated)   |
| Qw   | Wash deposits (Alluvial deposits of modern washes)  |
| Qm   | Older wash deposits (Alluvial deposits of abandoned washes)                                 |
| Qs   | Landslide deposits  |
| Qd   | Wind-blown sand   |
| Qv   | Younger fan deposits  |
| Qf   | Fan deposits  |
| Qy   | Younger alluvium  |
| Ql   | Lake deposits   |
| Qo   | Older fan deposits  |
| Qa   | Older alluvium (Undifferentiated)   |
| Qg   | Glacial till and outwash  |
| Qd1  | Well dissected alluvial fans  |
| Qh   | Harold Formation and Shoemaker Gravel (Fine- to coarse-grained sediments, nonmarine)        |
| Qo1  | Older lake deposits   |
| Q2   | Continental deposits (Undifferentiated, fluvial gravel, sand, silt, and clay)               |
| Qth  | San Timoteo Formation (Nonmarine sandstone, siltstone, conglomerate, and shale)             |
| Qj   | Juniper Hills Formation (Nonmarine sandstone, conglomerate, siltstone, and shale)           |
| Qw1  | Old Woman Sandstone (Arkosic sandstone and conglomerate, nonmarine)                         |
| Qc   | Crowder Formation (Nonmarine arkosic sandstone and conglomerate)                            |
| Qa1  | Anaverde Formation (Nonmarine sandstone and shale)  |
| Qf1  | Fernando Formation (Siltstone, sandstone, conglomerate, marine)                             |
| Qp   | Punchbowl Formation (Nonmarine cobble to pebbly sandstone)                                  |
| Qs1  | Potato Sandstone  |
| Qsa  | Santa Ana Sandstone (Nonmarine)   |
| Qm1  | Coachella Finglomerate (Boulder, cobble, and pebble fanglomerate)                           |
| Qp1  | Puente Formation (Marine siltstone, sandstone, and shale)                                   |
| Qv1  | Barstow Formation (Nonmarine sandstone, siltstone, conglomerate, and tuff)                  |
| Qv2  | Mt. volcanic rocks  |
| Qv3  | Punchbowl (?) Formation of Cajon Valley (Nonmarine arkosic conglomerate and sandstone)      |
| Qv4  | Topanga Formation (Marine sandstone and conglomerate)                                       |
| Qv5  | Tropico Group (Conglomerate, arkosic sandstone, siltstone, tuff, shale and limestone)       |
| Qv6  | Unamed Miocene continental deposits (Poorly sorted sandstone and conglomerate)              |
| Qv7  | Mel-siltstone and claystone   |
| Qv8  | Pickhandle and Jackhammer Formations (Nonmarine tuff, agglomerate, sandstone, and mudflows) |
| Qv9  | Hector Formation (Nonmarine volcanoclastic sediments)                                       |
| Qv10 | Vaqueros (?) Formation (Marine arkosic sandstone, siltstone, and conglomerate)              |
| Qv11 | Tertiary granitic rocks   |
| Qv12 | Vasquez Formation, volcanic member (Andesite, diorite, and tuff)                            |
| Qv13 | Mountain Meadows Biotite, Dacite Porphyry   |

### MESOZOIC PLUTONIC ROCKS

|     |  |
|-----|--|
| Qp1 | Cretaceous granitic rocks                    |
| Qp2 | Gabbroic and dioritic rocks                  |
| Qp3 | Jurassic or Cretaceous granite               |
| Qp4 | Jurassic quartz diorite                      |
| Qp5 | Jurassic hornblende diorite and minor gabbro |
| Qp6 | Jurassic ? monzonite                         |
| Qp7 | Mt. Lowe Granodiorite                        |
| Qp8 | Gabbro of Pleasant View Ridge                |

### PALEOZOIC

|      |  |
|------|--|
| Qp9  | Upper Paleozoic limestone and marble                                     |
| Qp10 | Waterman Gneiss  |
| Qp11 | Metasedimentary rocks of uncertain age (Quartzite, phyllite, and schist) |
| Qp12 | Is - limestone and marble  |
| Qp13 | Cambrian and uppermost Precambrian metasedimentary rocks                 |
| Qp14 | Cls - Crystalline limestone; Cq - Quartzite                              |
| Qp15 | Late Precambrian metasedimentary rocks                                   |
| Qp16 | pCs - undivided; pCq - quartzite   |
| Qp17 | Baldwin Gneiss   |

### PRECAMBRIAN

|      |   |
|------|---|
| Qp18 | Observed or approximately located, queried where gradual or inferred. |
| Qp19 | Synclinal fold  |
| Qp20 | Dashed where inferred; dotted where concealed by younger rocks.       |
| Qp21 | Overturned fold   |
| Qp22 | Dashed where inferred; dotted where concealed by younger rocks.       |
| Qp23 | Strike and dip of beds  |
| Qp24 | General strike and dip of stratified rocks.                           |
| Qp25 | Most conspicuous foliation strike and dip                             |
| Qp26 | Joints  |
| Qp27 | Selected areas of prominently jointed plutonic rocks                  |
| Qp28 | Anticlinal fold   |
| Qp29 | Dashed where inferred; dotted where concealed by younger rocks.       |
| Qp30 | Dikes   |

### MAP SYMBOLS

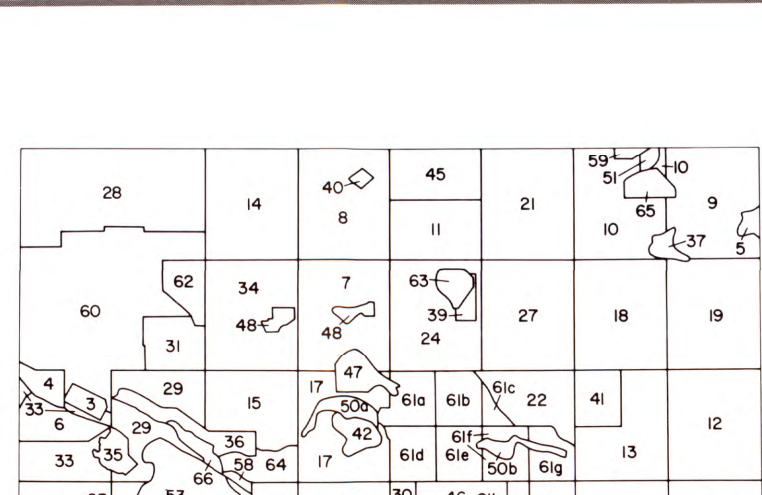
method \* mineral \*\*  
1-KA 66.6 (H)  
location no. age (m.y.) sample location

\* method  
KA = K-Ar  
B = muscovite; Pl = plagioclase;  
S = sandine; WR = whole rock;  
Z = zircon

\*\* mineral or material  
B = biotite; H = hornblende;  
M = muscovite; Pl = plagioclase;  
S = sandine; WR = whole rock;  
Z = zircon

Geology compiled 1981-83  
Base Map  
Prepared by the U.S. Army Topographic Command (KGLD), Washington, D.C. Contours in 1979 by photogrammetric methods and from United States quadrangles 1:250,000, 1:50,000, 1:25,000, 1:48,000, 1:48,000, 1:50,000, 1:62,500, and 1:75,000, 1952-55. Map been checked 1956. Revised in 1959 by the U.S. Geological Survey from aerial photographs taken 1956.  
Area covered by dashed light-blue pattern is subject to controlled re-entrance.  
Certain land grant names and boundaries are omitted to avoid congestion.  
Minor corrections and additions to culture by California Division of Mines and Geology 1983.

Scale 1:250,000  
Scale 1:250,000  
CONTOUR INTERVAL 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION  
BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 11  
1983 MAGNETIC DECLINATION FROM TRUE BEARING VARIES FROM 1950 (SEE LIST CURRENTLY IN THE CENTER OF THE WEST EDGE) TO 1970 (SEE LIST CURRENTLY IN THE CENTER OF THE EAST EDGE)



- ABBREVIATED INDEX TO GEOLOGIC SOURCE DATA  
(Complete Index on Sheet 3)
1. Allen, C.L., 1957
  2. Bachner, J.H., 1970
  3. Barrow, A.G., 1939
  4. Barrow, A.G., 1939
  5. Carey, J.L., 1981
  6. Cox, B.F. and Powell, R.E., 1963
  7. Dibble, T.W., 1960
  8. Dibble, T.W., 1960
  9. Dibble, T.W., 1960
  10. Dibble, T.W., 1960
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  100. Dibble, T.W., 1960

Graphics by Janet Appleby and Richard R. Moir

## LOCATION MAP OF ROCK SAMPLES DATED RADIOMETRICALLY SAN BERNARDINO QUADRANGLE, CALIFORNIA, 1:250,000

Compilation by E.J. Bortugno and T.E. Spittler.  
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