Geology compiled 1984-1988

BASE MAP

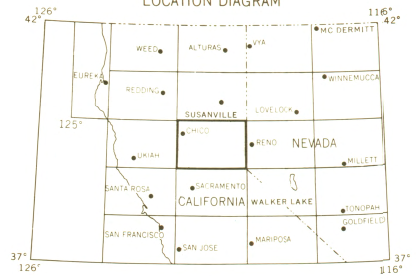
Prepared by the U.S. Army Topographic Command (KCSX), Washington, D.C. Compiled in 1957 from United States quadrangles, 1:24,000, 1:25,000, 1:48,000, 1:50,000, and 1:62,500, 1937-57. Planimetry revised in part from aerial photographs taken 1952 and 1957. Map field checked 1958. Revised in 1970 by the U.S. Geological Survey from aerial photographs taken 1967-69.

Area covered by dashed light-blue pattern is subject to controlled inundation.

Minor corrections and additions to culture by California Division of Mines and Geology 1989.

Depth contours in Lake Tahoe in feet - compiled from soundings shown on U.S. Coast and Geodetic Survey Chart 5001.

LOCATION DIAGRAM



Scale 1:250,000

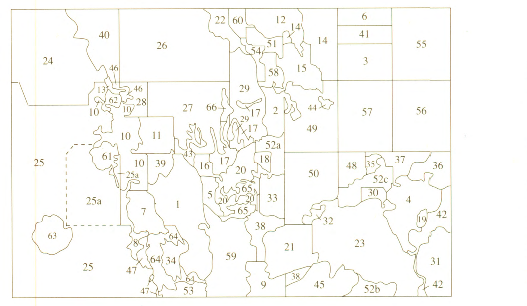
5 0 5 10 15 20 Statute Miles
5 0 5 10 15 20 25 30 Kilometers
5 0 5 10 15 Nautical Miles

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FEET

TRANSVERSE MERCATOR PROJECTION

BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 10

1970 MAGNETIC DECLINATION FROM TRUE NORTH VARIES FROM 18° (320 MILS) EASTERLY FOR THE CENTER OF THE WEST EDGE TO 17 1/2° (310 MILS) EASTERLY FOR THE CENTER OF THE EAST EDGE



ABBREVIATED INDEX TO GEOLOGIC SOURCE DATA
(Complete Index on Sheet 3)

1. Beard, J.S., 1985
2. Bergquist, J.R., 1986
3. Berry, D.T., 1979
4. Birkeland, P.W., 1961
Birkeland, P.W., 1963
Kirk, J., 1974
Latham, T.S., Jr., 1985
5. Bobbitt, J.B., 1982
6. Brizzolara, D.W., 1979
7. Buer, K.Y., 1979
8. Busacca, A.J., 1982
9. Chandra, D.K., 1961
10. Cole, K.A., and McJunkin, R.D., 1978
11. Compton, R.R., 1955
12. D'Allura, J.A., 1977
13. Dilek, Y., 1985
14. Durrell, C., 1976
15. Durrell, C., 1976
16. Eddy, C.A., 1985
17. Edelman, S.H., 1986
18. Ferguson, H.G., and Gannett, R.W., 1932
19. Franks, A.L., 1980
20. Hacker, B.R., 1984
21. Harwood, D.S., 1980
22. Harwood, D.S., 1990
23. Harwood, D.S., and Fisher, G.R., 1988
24. Harwood, D.S., Helley, E.J., and Doukas, M.P., 1981
Burnett, J.L., Ford, R.S., and Scott, R.G., 1969
25. Helley, E.J., and Harwood, D.S., 1985
25a. Busacca, A.J., 1982
26. Hietanen, A., 1973
27. Hietanen, A., 1976
28. Hietanen, A., 1977
29. Hietanen, A., 1981
30. Hudson, F.S., 1951
31. Hyne, N.J., Chelminski, P., Court, J.E., Gorsline, D.S., and Goldman, C.R., 1972
32. James, O.B., 1971
33. Kato, T.T., 1982
34. Kilbreath, S.P., Lide, C.S., and Hyde, C.C., 1984
35. Kimball, R.D., 1967
36. Latham, T.S., Jr., 1985
37. Lindgren, W., 1897
38. Lindgren, W., 1900
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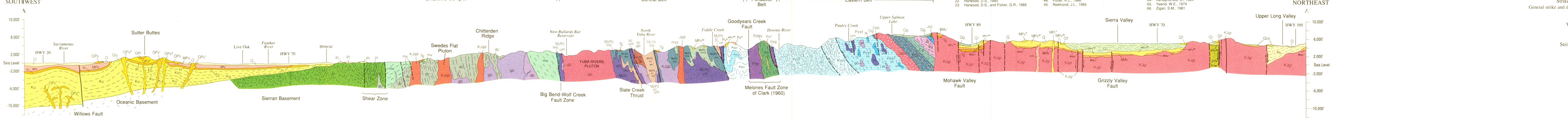
40. Lydon, P.A., 1982
41. Matsutsuyu, B.A., 1979
42. Matthews, R.A., 1968
Burnett, J.L., 1968
43. Murphy, T.P., 1985
44. Potter, K.L., 1986
45. Redmond, J.L., 1966
46. Ricci, M.P., 1983
47. Saucedo, G.J., and Wagner, D.L., 1985
48. Schweickert, R.A., 1984
49. Schweickert, R.A., and Hanson, R.E., 1984
50. Schweickert, R.A., Harwood, D.S., Girty, G.H., and Hanson, R.E., 1984
51. Sheeks, D.I., 1977
52a. Southern Pacific Company, 1959
52b. Southern Pacific Company, 1959
52c. Southern Pacific Company, 1959
53. Springer, R.K., 1981
54. Standlee, L.A., 1978
55. Stinson, M.C., 1961
California Department of Water Resource, 1963
Mergner, M., 1978
Deino, A.L., 1985
56. Stinson, M.C., 1961
57. Stinson, M.C., 1961
58. Strand, R.L., 1972
59. Tuminas, A., 1983
60. Turner, H.W., 1897
61. Unruh, J.R., 1989
62. Vaitl, J.D., 1980
63. Williams, H., and Curtis, G.H., 1977
64. Xenophontos, C., 1984
65. Yeend, W.E., 1974
66. Zigan, S.M., 1981

CROSS SECTION ACROSS THE CHICO QUADRANGLE

Vertical Exaggeration = Approximately 2X Horizontal



ABBREVIATED EXPLANATION

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

CENOZOIC

QUATERNARY — Holocene

- af — Artificial fill
- t — Dredge or mine tailings
- Q — Alluvium
- Qa — Natural levee and channel deposits
- Qb — Basin deposits *(Alluvium)*
- Qls — Landslide deposits
- Ql — Lake deposits
- Qf — Fan deposits
- Qt — Terrace deposits
- Qg — Glacial deposits

QUATERNARY — Pleistocene

- Qm — Modesto Formation *(Alluvium)*
- Qr — Riverbank Formation *(Alluvium)*
- Qos — Pleistocene nonmarine sedimentary rocks *(Fluvial and lacustrine gravel, sand, silt, and clay)*
- Qrb — Red Bluff Formation *(Coarse red gravel, sand, and silt)*
- QPs / QPl — Volcanic sediments of Sutter Buttes *(Volcaniclastic sediments and lahars)* QPl-Volcanic lake beds
- Qv — Pleistocene volcanic rocks *(b-basalt; bp-scoria and tuff)*
- QPv — Volcanic rocks of Sutter Buttes *(QPv^a-andesite; QPv^r-rhyolite)*

TERTIARY — Pliocene

- QPto / Pnt — Tuffs of Oroville *(Volcaniclastic sediments and tuff)* Pnt-Nomlaki Tuff
- Ptu / Pnt — Tuscan Formation *(Lahars, volcaniclastic sediments, and tuff)* Pnt-Nomlaki Tuff
- Pl — Laguna Formation *(Alluvial gravel, sand, and silt)*
- Ps — Pliocene nonmarine sedimentary rocks *(Fluvial and lacustrine shale, sandstone, and ash)*
- Pi — Pliocene intrusive rocks *(a-andesite; b-basalt)*
- Pv — Pliocene volcanic rocks *(a-andesite; b-basalt)*
- Cinder cone or volcano; major Pelean domes at Sutter Buttes

TERTIARY — Miocene

- MPc — Miocene-Pliocene channel deposits *(Fluvial conglomerates and sandstone)*
- MPs — Sutter Formation *(Volcaniclastic sediments; nonmarine)*
- MPi — Miocene-Pliocene intrusive rocks *(a-andesite; b-basalt)*
- MPv — Miocene-Pliocene volcanic rocks *(b-basalt; a-andesite; af-andesite flows; ap-andesite pyroclastic rocks; r-dacitic tuff-breccia)*
- Mlb — Lovejoy Basalt

TERTIARY — Oligocene

- ΦMv — Oligocene-Miocene volcanic rocks *(r-rhyolite tuff and sedimentary rocks)*

TERTIARY — Eocene

- Ec — Capay Formation *(Sandstone and shale; marine)*
- Ei — Ione Formation *(Quartzose sandstone, claystone, and conglomerate; mostly nonmarine)*
- Tg — "Auriferous" Gravels

MESOZOIC

CRETACEOUS

- Ku — Upper Cretaceous rocks *(Shale and sandstone; marine)*
- Kc — Chico Formation *(Sandstone, conglomerate, and siltstone; marine)*

MESOZOIC PLUTONIC ROCKS

- KJgr — Granite, granodiorite
- KJqd — Quartz diorite, tonalite, trondhjemite, quartz monzonite
- KJdi — Diorite
- KJgb — Gabbro
- Jgr — Granite, granodiorite
- Jqd — Quartz diorite, trondhjemite
- Jdi — Diorite
- Jgb — Gabbro
- Jum — Ultramafic rocks

JURASSIC

SMARTVILLE COMPLEX

- Jmo — Monte de Oro Formation *(Sandstone and slate; marine)*
- Jv — Jurassic volcanic rocks *(Pyroclastic rocks and flows)*
- mv — Volcanic rocks
- qd — Quartz diorite and tonalite
- dc — Dike complex
- gb — Gabbroic rocks
- db — Massive diabase
- um — Ultramafic rocks

CENTRAL BELT

- Jm — Mariposa Formation *(Slate and sandstone; marine)*
- Jlr — Logtown Ridge Formation *(Flows and pyroclastic rocks)*

EASTERN BELT (Northern Sierra terrane)

- Jms / Jmvs / Jmv — Jurassic (?) metamorphic rocks
  - Jms-Metasedimentary rocks
  - Jmv-Metavolcanic rocks
  - Jmvs-Undivided metasedimentary and metavolcanic rocks
- Jsc / Jls — Sailor Canyon Formation *(Graywacke and slate; marine)* Jls-Limestone and marble

TRIASSIC

- Ŧms / Ŧls — Triassic metasedimentary rocks *(Phyllite, and conglomerate; marine)* Ŧls-Limestone
- PŦs / ls — Permian and Triassic rocks *(Slate, conglomerate, and greenstone; marine)* ls-limestone

PALEOZOIC AND MESOZOIC ROCKS

- MzPz — Undifferentiated
  - lc - Lake Combie complex
  - sc - Slate Creek complex
- ms - metasedimentary rocks
- mv - metavolcanic rocks
- mvs - volcaniclastic sediments
- ch - chert and chert breccia
- ls - limestone and marble
- db - massive diabase
- qd - metadiorite
- gb - gabbro
- um - ultramafic rocks

FEATHER RIVER PERIDOTITE BELT

- PzMz / mv — Metamorphic rocks of unknown age *(Quartz, mica, and hornblende schists)* mv-blueschist bearing metavolcanic rocks
- Pza — Paleozoic amphibolite
- Pzp / Pzgb — Peridotite of Melones fault zone *(Partially to completely serpentinized)* Pzgb-Gabbro

PALEOZOIC (PERMIAN, CARBONIFEROUS, DEVONIAN, ORDOVICIAN-SILURIAN)

- Pzcc / Pzcv / ls — Calaveras Complex *(Chert and argillite)* Pzcv - Metavolcanic rocks ls - limestone
- Pr — Reeve Formation *(Andesitic breccia, flows, and tuff)*
- Pg — Goodhue Formation *(Andesitic and basaltic breccia, pillow lavas, and tuff)*
- Cp — Peale Formation *(Bedded chert, shale, pillow lavas and tuff)*
- CDt — Taylor Formation *(Andesitic breccia, tuff, and slate)*
- Dsb — Sierra Buttes Formation *(Rhyolitic to andesitic flows, breccia, tuffs, and chert)*
- Dg — Grizzly Formation *(Conglomerate, sandstone, and chert; marine)*
- Pzsf — Shoo Fly Complex
  - ss - sandstone, siltstone, and slate
  - v - greenstone
  - ch - chert and chert breccia
  - ls - limestone and marble
  - gb - gabbro and diabase
  - um - serpentinized ultramafic rocks
  - m - undifferentiated melange
- Dbt / Dbg — Bowman Lake Batholith
  - Dbt - Trondhjemite, tonalite
  - Dbg - Granite, granodiorite
- Pzu — Paleozoic rocks of uncertain age and correlation *(Quartzite, pelite, and conglomerate; marine)*

MAP SYMBOLS

Contact — Observed or approximately located; queried where gradational or inferred.

Fault — Solid where well located; dashed where approximately located or inferred; dotted where concealed by younger rocks or water; queried where continuation or existence is uncertain. U, upthrown side; D, downthrown side (relative or apparent).

Thrust fault—barbs on the upper plate. Generally dips less than 45°, but locally may have been subsequently steepened. Dashed where approximately located or inferred; dotted where concealed by younger rocks or water; queried where continuation or existence is uncertain.

Anticlinal fold — Showing direction of plunge; dashed where inferred; dotted where concealed by younger rocks.

Synclinal fold — Dashed where inferred; dotted where concealed by younger rocks.

Monoclinal fold

Strike and dip of beds — General strike and dip of stratified rocks.

Vertical beds

Strike and dip of overturned beds

Strike and dip of foliation — General strike and dip of foliation in metamorphic rocks.

Vertical foliation

Strike and dip of dikes

Graphics by Ross Martin

GEOLOGIC MAP OF THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

Compilation by
G. J. Saucedo and D. L. Wagner
1992