2Bg
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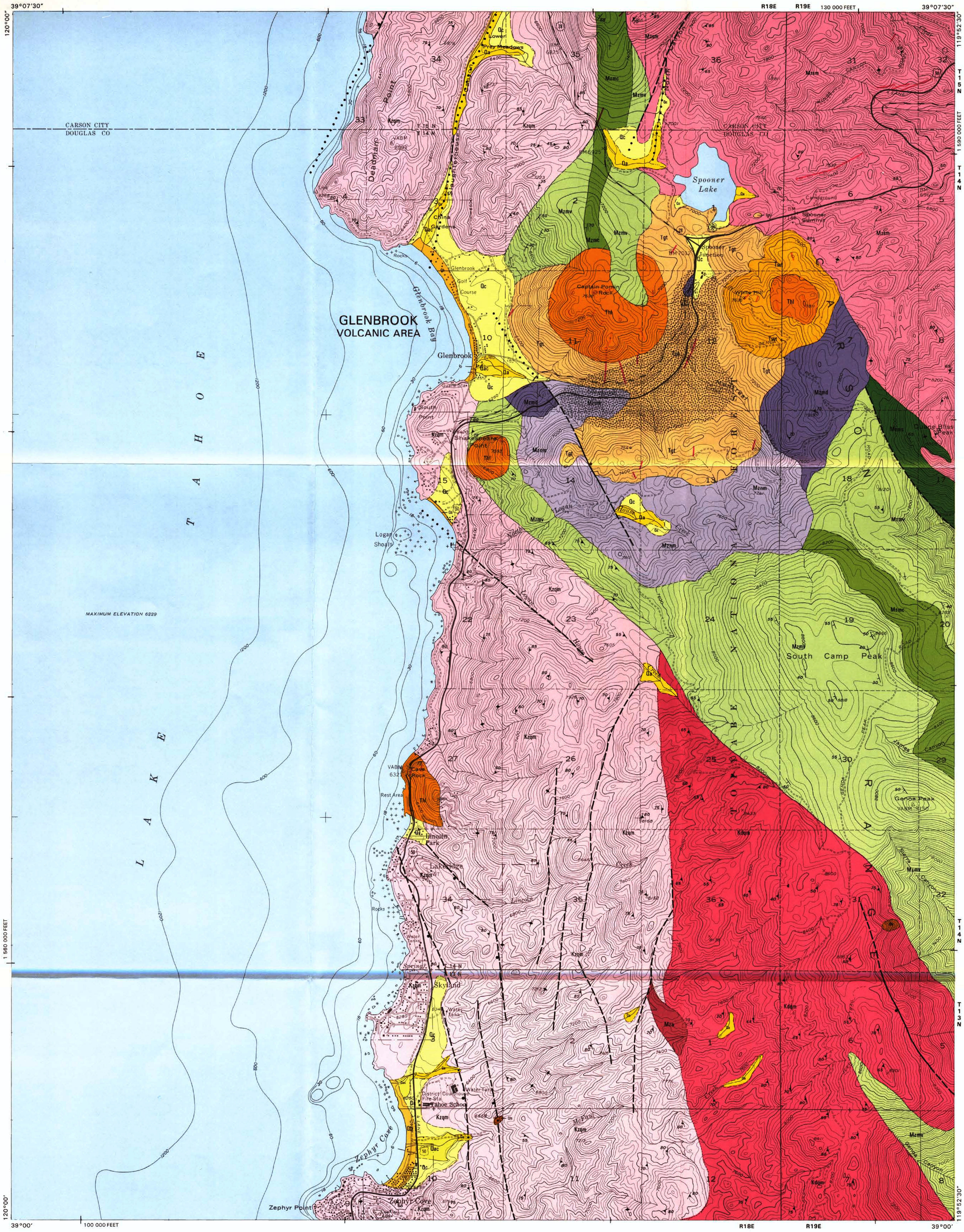
GLENBROOK QUAD



GEOLOGY

Qa	Qc	Qb	Qac
Qls			
Thld	Thl	Twt	Tgt
Mza	Kzqm	Kdqm	Mzsm
Mznm	Mzmd	Mzmv	Mzmc
Mzms			

QUATERNARY — Holocene, Pleistocene
TERTIARY — Miocene(?)
CRETACEOUS
JURASSIC
TRIASSIC

Qa **Sand and gravel alluvium** Arkosic transported debris from weathered granite. Occurs locally along low-gradient stretches of streams and in back-beach areas. Estimated thickness < 10 m.

Qc **Sand and boulder colluvium** Arkosic, derived mostly from in-situ weathering of granitic rocks. Estimated thickness < 25 m.

Qb **Beach sand** Arkosic, fine to very coarse grained. Estimated thickness < 25 m.

Qac **Carbonaceous alluvium** Clayey to sandy, dark gray to black, variously organic. Occurs in marshy back-beach alluvial tracts.

Qls **Landslide debris** Granitic, unsorted, coarse. Two small masses associated with Late Quaternary(?) faults.

Thld **Porphyritic hornblende-sanidine latite dike** Same as Thl, but with phenocrysts 3–8 mm long, 30–60% by volume. Dikes and elliptical plugs range from 3–15 m wide and 10–1000 m long. They commonly occur within and marginal to intrusive masses. (Detailed mapping would reveal more than indicated herein.)

Thl **Porphyritic hornblende-sanidine latite** Medium gray, finely to coarsely porphyritic with ubiquitous euhedral sanidine and hornblende phenocrysts 1–8 mm long, 10–40% by volume, and few biotite phenocrysts in a cryptocrystalline to microcrystalline matrix. Comprises 3 circular and 1 elliptical erosionally resistant intrusive masses.

Twt **Vitric-crystal tuff of White Hill** Light gray, coarse grained with quartz, feldspar, and biotite crystals. Massive, unwelded. Occurs concentric to a latite intrusion.

Tgt **Hornblende trachyte** Medium to dark gray, finely to microporphyritic with phenocrysts (40% by volume) of sanidine, oligoclase-andesine, hornblende, and minor biotite set in a cryptocrystalline to microcrystalline matrix. Occurs as flows and compound vent filling near Glenbrook.

Mza **Alaskite** Light gray and reddish tan, finely crystalline, quartz rich, massive. May be altered granitic rocks.

Mzsm **Biotite-hornblende monzogranite of Spooner Summit** White to light gray, medium grained, idiomorphic, slightly porphyritic with hornblende laths locally 10 mm long. Massive-structureless to weakly foliated. Rare dioritic inclusions usually 1–20 cm long.

Kzqm **Hornblende-biotite quartz monzodiorite and granodiorite of Zephyr Cove** Light to medium gray, medium grained, hypidiomorphic. Massive-structureless to moderately foliated, most commonly weakly foliated on hornblende, biotite, and inclusions. Ubiquitous dioritic inclusions 2–50 cm long, 1% by volume. Generally equivalent to granodiorite of East Peak, Late Cretaceous, of Armin and others (1983).

Kdqm **Hornblende quartz monzonite and monzogranite** White to light gray, medium grained, hypidiomorphic, equigranular to porphyritic with euhedral-subhedral hornblende phenocrysts locally 12 mm long. Weakly to strongly foliated on hornblende, biotite, inclusions, and rare schlieren. Ubiquitous dioritic inclusions 2–100 cm long, 1% by volume. Equivalent to granodiorite of Daggett Pass, Cretaceous, 83–90 m.y. (K-Ar), of Armin and others (1983).

Mznm **Biotite monzogranite of North Logan House Creek** Tan to pink gray, fine to medium grained, allotriomorphic, seriate, slightly porphyritic locally with euhedral hornblende phenocrysts < 8 mm long. Massive-structureless. Intrudes metavolcanic rocks and hornblende diorite.

Mzmd **Hornblende diorite of Montréal Canyon** Dark gray, fine to medium grained, hypidiomorphic, protoclastic, and locally saussuritized. Massive-structureless. Intruded and locally migmatized by Mznm and Mzsm.

Mzmv **Metamorphosed tuff and flows** Medium to dark gray, locally greenish, very fine grained to aphanitic. Massive to thick bedded and locally weakly foliated. Protolith of silicic crystal-vitric tuff and intermediate flows metamorphosed to biotite-sericite hornfels and semischist.

Mzmc **Metaconglomerate and metasandstone** Light-gray to dark-gray, medium-grained sandstone to fine conglomerate, rounded to angular, quartzose and volcanic. Massive to poorly bedded.

Mzms **Metasandstone** Dark gray to black, fine to very fine grained, angular grains. Massive to weakly foliated. Protolith of graywacke metamorphosed to biotite-quartz hornfels and schist.

Contact Long dashes where approximately located; short dashes where gradational and diffuse

Fault Dashed where inferred or approximately located; dotted where concealed. Ball on downthrown side

Foliation Inclined and vertical

Bedding strike and dip Inclined and vertical

Shear zone strike and dip

Area of alteration and oxidation Mainly argillization and propylitization

REFERENCE
Armin, R. A., and John, D. A. (1983) Geologic map of the Freel Peak 15-minute quadrangle, California and Nevada, *with* Quaternary geology by J. C. Dohrenwend. U.S. Geological Survey Miscellaneous Investigations Series Map I-1424, scale 1:62,500.

T. L. T. Grose, 1985

Scale 1:24,000
CONTOUR INTERVAL 40 FEET

0 0.5 1 kilometer
0 0.5 1 mile
0 1000 2000 3000 4000 5000 feet

Base map: U.S. Geological Survey Glenbrook 7½' quadrangle, 1969
First edition, first printing, 1985; 1000 copies
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