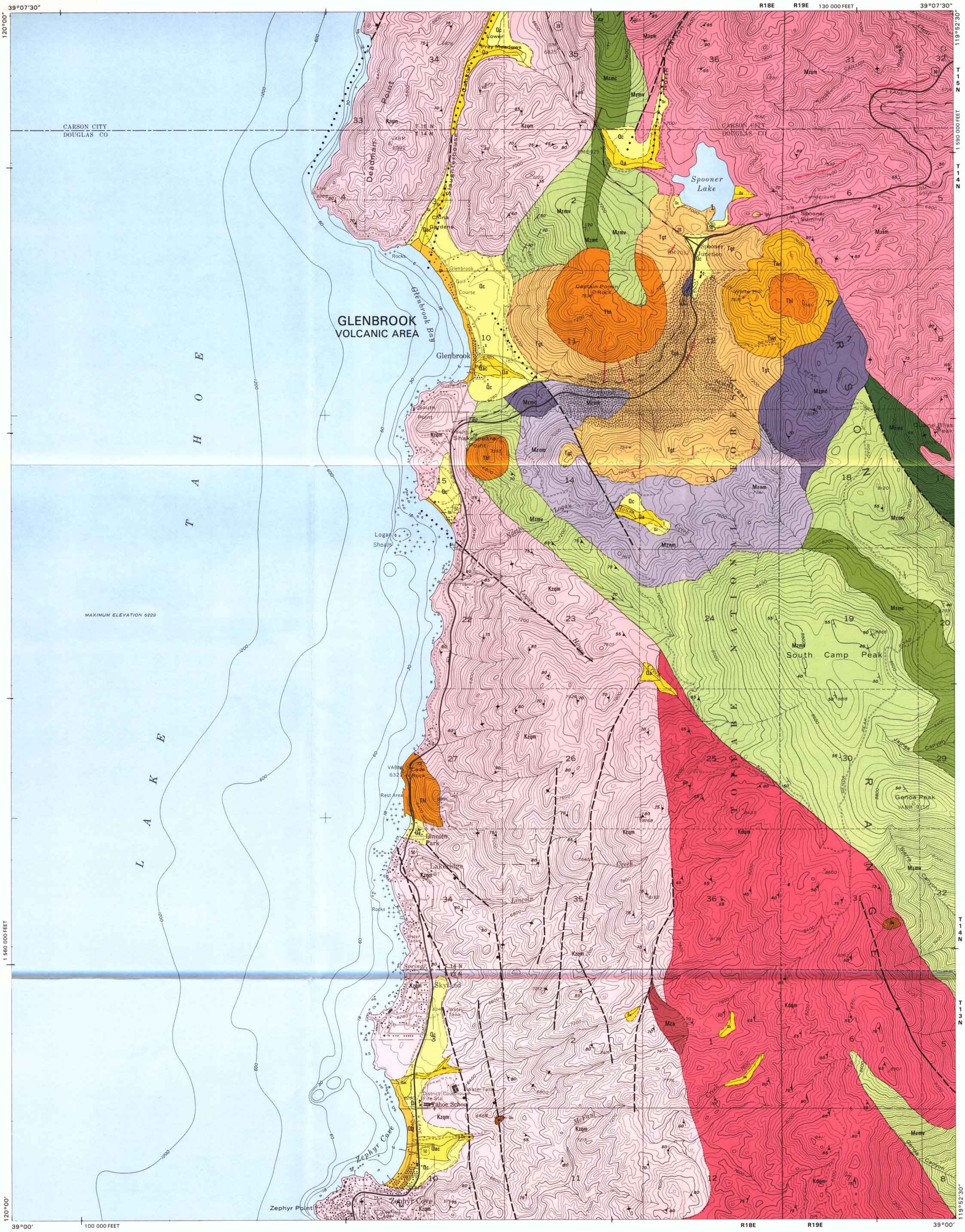
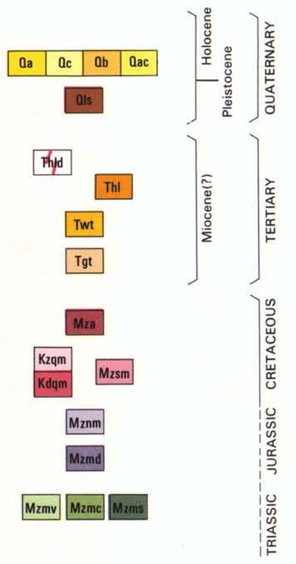
GLENBROOK QUAD

GEOLOGY





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

75 **Foliation** Inclined and vertical

50 **Bedding strike and dip** Inclined and vertical

70 **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
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