STRATIGRAPHIC SECTION MEASURED FROM SPANISH CANYON NORTHWEST ACROSS SEC. 30, T. 12 N., R. 4 E.

AGE	FORMATION, MEMBER AND THICKNESS, IN FEET		THICKNESS, IN FEET	LITHOLOGIC DESCRIPTION
PLIOCENE (?)	Granitic fanglomerate 400+		300+	Fanglomerate, bouldery, light yellowish-gray. Boulders are almost all light gray porphyritic quartz monzonite like that exposed in "Noble Dome", 9 miles northwest, and in northern part of Lane Mountain quadrangle to the west.
			100±	Sandstone interbedded with coarse, pebbly, arkosic, cobble-boulder conglomerate. Boulders consist of dark-gray hornblende diorite and pale-orange quartz monzonite. Light-gray porphyritic quartz monzonite increases toward top of unit.
				Gradational contact
MIOCENE	Barstow formation, 1250±	Upper member 513	80	Conglomerate lenses more abundant than in underlying units; volcanic pebbles are less abundant and are lacking in uppermost part.
				Boulder of dark-gray hornblende diorite.
			270	Sandstone, grayish-orange, silty, arkosic. Subordinate conglomerate lenses, which contain grayish red-purple and light-gray porphyritic andeste-latite, banded siliceous argillite, pale-orange quartz monzonite, schist, and rare olivine basalt.
			50	Sandstone and coarse, "knobby" sandstone; yellowish-gray, silty. Local conglomerate lenses.
			18	Silt, tuffaceous, with thin calcareous sandy tuffs above and below.
			70	Sandstone and siltstone, yellowish gray, "knobby", calcareous, with scattered white pumiceous tuff fragments and rare bone fragments.
			25	
		Tuffaceous member, 26	26	Tuff, white, punky, pumiceous, and silt interbeds. Fossil locality D319; *Brachycrus buwaldi* (middle Miocene).
		Lower member 714	65	Sandstone, yellowish-gray, fine, silty, friable.
			11	Conglomerate, volcanic, with grayish red-purple and light-gray andesite latite pebbles; 6-inch tuff at base.
			78	Sandstone, pale yellowish-brown, with abundant white pumiceous tuff fragments that contain sparse biotite, 0.5 mm. Prominent, white ashy tuff, 2 feet thick, just above middle of unit.
			495	Sandstone and conglomerate, interbedded; yellowish gray to grayish-orange, coarse, arkosic, pebbly; unit is sandy and contains sparse white pumice fragments in upper 50 feet. White lenticular tuff, 6 inches thick, occurs 120 feet below top of unit. Pebbles are largely subrectangular fragments of banded siliceous argillite, which are believed to have come from the area of the Paradise Mountains, 15 miles to the northwest.
			65	Sandstone, yellowish-gray, fine to coarse, arkosic, with a few conglomerate lenses.
	Spanish Canyon formation 294		50±	Olivine basalt flow with siliceous amygdules.
			35	Sandstone, yellowish-gray, very coarse, arkosic, with scattered quartz monzonitic boulders.
			33	Olivine basalt flow with siliceous amygdules.
			92	Sandstone, yellowish-gray, very coarse, arkosic, with lenses of granitic fanglomerate. Contains distinctive grayish orange-pink tuff bed. Boulders are pale-orange quartz monzonite, gray biotite quartz monzonite, and pink aplite.
			84	Sandstone, yellowish-gray, silty, with fine white blocky siliceous tuff beds in lower middle of unit.
	Alvord Peak basalt, 50±		50±	Basalt, dark-gray, aphyric; pale reddish brown on exposed surface.
	Clews fanglomerate 660±		78	Sandstone and siltstone, yellowish-gray, tuffaceous, with white tuff bed in middle of unit.
			120	Sandstone, light yellowish-gray to very pale orange, very coarse, pebbly. Pebbles are schist, quartz monzonite porphyry, and banded argillite from source northwest of Alvords.
			77	Pebble conglomerate, moderate reddish-brown, bouldery. Mottled light yellowish gray in upper 30 feet.
			80	Fanglomerate, moderate reddish-brown, similar to fanglomerate below.
			5	Sandstone, yellowish-gray, bentonitic, silty.
			180	Fanglomerate, moderate reddish-brown to moderate-brown, arkosic. Fragments, angular to subangular, composed of finely granular biotite aplite, pink granite pegmatite, and biotite quartz monzonite up to 5 feet in diameter. Rare fragments of milky quartz.
			120	Interval covered by alluvium in Spanish Canyon; probably consists of finer grained sedimentary rocks than exposed interval above.
				UNCONFORMITY
PRE-TERTIARY	Plutonic rocks			Biotite quartz monzonite and hornblende diorite cut by pink granite pegmatite and aplite dikes and milky quartz veins.

STRATIGRAPHIC SECTION MEASURED APPROXIMATELY EASTWARD ALONG TOWNSHIP LINE BETWEEN SECS. 33 AND 34, T. 12 N., R. 4 E., AND SECS. 3 AND 4, T. 11 N., R. 4 E.

LITHOLOGIC DESCRIPTION	THICKNESS, IN FEET	THICKNESS OF FORMATION OR MEMBER, IN FEET
Covered		
Sandstone and conglomerate, interbedded, yellowish-gray to grayish orange. Pebbles are granitic, rhyolitic, and chloritic siliceous volcanic rocks (Mesozoic?), offset to gully 500 feet north.	100+	140
Sandstone, conglomeratic, abundant andesite-latite, grayish-red rhyolite and other volcanic cobbles.	40±	
Silt with abundant large punky tuff fragments.	23	23
Sandstone, conglomeratic; abundant rounded cobbles of grayish red-purple andesite-latite.	45	
Sandstone, yellowish-gray to pale-olive, silty, sparse tuff fragments; small faults.	55±	
Sandstone, yellowish-gray, silty, with conglomeratic lenses containing grayish red-purple andesite cobbles; moderate red-brown on weathered surface.	56	
Sandstone, tuffaceous, pebbly, calcareous in lower 10 feet.	38	
Tuff, white, sandy.	1	
Sandstone, yellowish-gray, coarse and pebbly in lower part. Pebbles largely volcanic.	51	
Tuff, white, sandy.	3	
Sandstone, yellowish-gray; consists of alternating beds of fine silty sandstone and coarse pebbly sandstone, which forms resistant outcrops. White tuff fragments and volcanic pebbles are common in upper 25 feet. Volcanic pebbles are largely grayish red-purple porphyritic andesite and latite.	265	900
Fossil locality D321: *Merychippus tehachapiensis* (middle Miocene).		
Sandstone and conglomerate like unit below, volcanic pebbles sparse.	125	
Sandstone and conglomerate, variegated yellowish-gray to grayish orange-pink, pebbly. Fragments, subangular, are dark gneissoid quartz monzonite, granite pegmatite, dark schist, and white pegmatitic quartz. This interval, poorly exposed, may be faulted so that it is greater than shown. Sparse grayish red-purple andesite pebbles in uppermost 50 feet.	225±	
Limestone, with abundant gray opaline chert.	1	
Sandstone, conglomeratic toward top, a few pebbles of banded siliceous argillite.	39	
Olivine basalt, grayish-black; dark reddish brown on weathered surface.	47	
Fanglomerate, sandy in upper part.	70	
Olivine basalt, black, wedges out to north.	20	168
Fanglomerate, yellowish-gray; blocks up to 2 feet across. Dark quartz monzonite gneiss fragments of local derivation.		
Sandstone, light-gray, coarse, tuffaceous.	21	
Tuff beds, fine, white, siliceous.	10	
Sandstone, pebbly, variegated yellowish-gray and reddish-brown, tuffaceous in upper 10 feet.	40	
Tuff bed, sandy, bentonitic, pale-olive to white.		
Fanglomerate, moderate reddish-brown; angular to subangular blocks up to 10 feet in maximum diameter. Blocks consist of gneissoid coarse-grained quartz monzonite, identical in appearance to basement rock nearby. Also fragments of dark-gray augen gneiss and pink granite pegmatite.	250±	560±
Tuff beds, light-gray, sandy, bentonitic.	10	
Fanglomerate, moderate reddish-brown; subangular blocks up to 5 feet across. Gneissoid coarse quartz monzonite from local source.	85±	
Interval covered by alluvium; may consist of fine-grained sediments; possibly faulted; may be larger than shown.	100±	
Fanglomerate; grayish-red angular blocks.	30+	
Silt, variegated pale-red and yellow-gray, bentonitic (lower part covered).	40±	
UNCONFORMITY		
Quartz monzonite, gneissoid, very coarse grained.		

Feet: 2700, 2600, 2500, 2400, 2300, 2200, 2100, 2000, 1900, 1800, 1700, 1600, 1500, 1400, 1300, 1200, 1100, 1000, 900, 800, 700, 600, 500, 400, 300, 200, 100, 0

MEASURED SECTIONS OF TERTIARY BEDS, ALVORD MOUNTAIN SAN BERNARDINO COUNTY, CALIFORNIA

539398 O - 60 (In pocket)