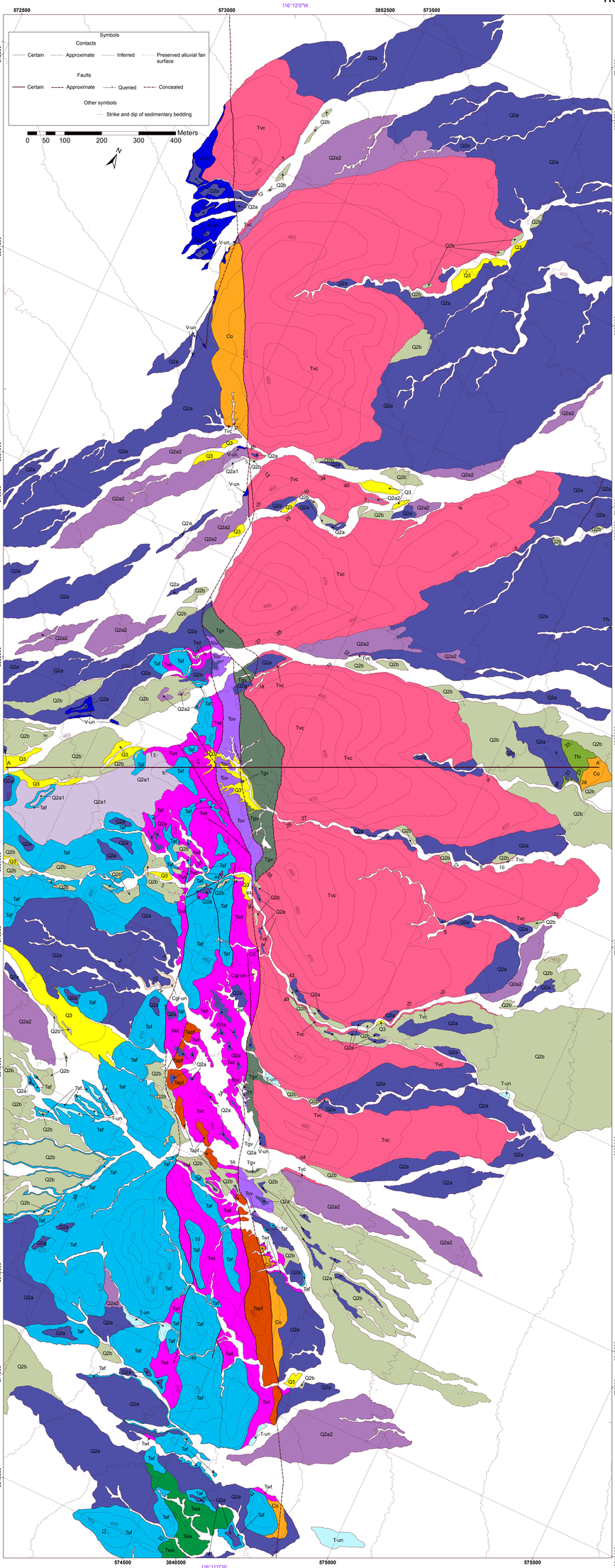
Geological map of part of the northern Ludlow fault, Mojave Desert, California

Eitan Shelef, 2007



Quaternary

Qal — Non-lithified alluvium that floors active channels. This unit lacks any desert varnish or pavement and has a distinct bar and swale microtopography. Clasts are mostly andesitic.

Q3 — The unit is the most recently abandoned unit and usually appears ~0.5 m above the active channel. It is characterized by prominent bar and swale topography similar to that of unit Qal. The fan surfaces are composed of loose clasts, mostly andesitic, ranging from pebbles to boulder in size with very moderate to no desert varnish or rubification. Q3 often has a thin Av horizon, approximately 5cm thick.

Q2b — The unit usually appears 1-3 m above the active channel. It is characterized by subdued bar and swale topography and moderate to well developed desert pavement. It is composed of loose clasts, mostly andesitic, ranging from gravel to boulder in size covered with moderate to well developed desert varnish. The pavemnts are underlain by Av horizon of 10-15 cm thick. Bar and swale topography is more distinctive in Q2b2 subunit.

Q2a — **Q2a2**, **Q2a1** — The unit usually appears 2-6 m above the active channel. It is distinguished by lack of bar and swale topography, and dark, well developed desert varnish. Clasts range from gravel to boulder size and surfaces are covered with 5-20% of large boulders (20-40 cm). Surfaces are often covered with well packed pavement underlain by an Av horizon 10-20 cm thick. Q2a1 has darker varnish then Q2a2 and is covered with a greater fraction of large boulders.

Tertiary

Tfv — Tfv - Fine volcaniclastic rocks. Light colored volcanic sand stone and ash unit. Made of alteration of well-layered air-fall ash, and water laid sand and pyroclastics.

Tvc — Tvc - Volcanic conglomerate. Coarse, lithified, conglomerate. Made of mostly volcanic clasts, dominantly andesite. In areas of moderate to flat topography the unit creates darkly varnished surface with desert pavement.

Tgv — Gray volcanic rocks. The unit is made of several sub-units, and is dominantly gray porphyric andesite with 1-5 mm phenocrysts.

Tov — Orange volcanic rocks. The unit is made of several sub-units, and is mostly yellowish to reddish porphyric vesicular andesite.

Tag — Tag - group of associated andesite flows and volcanoclastic rocks. Contacts type and units stratigraphy vary spatially and in some cases are poorly defined.

Tapf — Tapf - Andesite pyroclastic flow. Lithified pyroclastic flow made of angular to sub-angular clasts ranging between 1-50 cm in diameter. The unit is matrix-supported and is composed mostly of porphyric andesite.

Taf — Taf - Andesite flow - porphyric gray reddish andesite. Composed of 20-25% white plagioclase phenocrysts 0.5-5 mm, ~4% amphiboles within grayish aphanitic matrix. The unit often appears brecciated.

Twa — Twa - White andesite flow. White, gray and yellow andesite, 15-20% of the volume is made of plagioclase phenocrysts, 1-2 mm long.

Twt — Twt - White tuff. White, unwelded, pumiceous tuff, includes rare andesite bombs up to 150 cm.

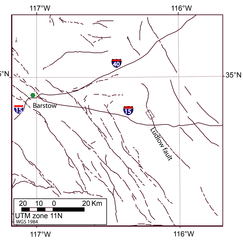
V-un — Volcanic rocks - undivided

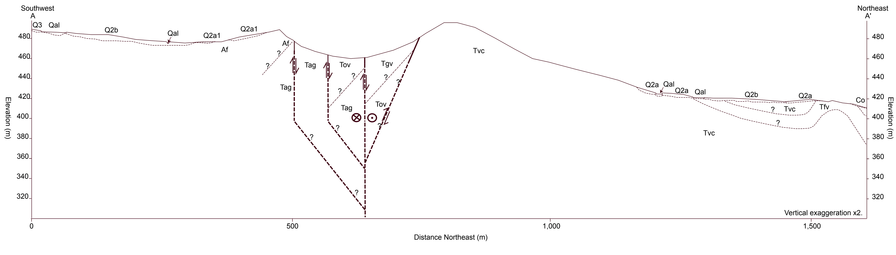
T-un — Undivided fan surfaces or strath

Cgl-un — Conglomerate - undivided

Co — Colluvium

Mapping completed from 2005-2007. Author affiliation: University of North Carolina at Chapel hill. Assisted by Mariana Vale, Mike Strane, Neta Bar, Dolev Shelef, and Tomer Ben David.
10 meter contour interval topographic data derived from smoothed 1 m per pixel LiDAR data. Universal transverse mercator projection, zone 11N, central meridian 117, datum - WGS 1984.





Cross section A-A'
Faults and contacts marked as inferred are plotted for illustration purposes while their exact dip is uncertain.
Thickness of Quaternary units is out of scale with a significant vertical exaggeration.