

Explanation of Map Symbols

- map boundary
- Contact—Identity and existence certain, location accurate
- - - Contact—Identity and existence certain, location approximate
- 01.01.04
- Contact—Identity and existence certain, location concealed
- Dike—Identity and existence certain, location accurate
- Fault—Identity and existence certain, location accurate
- Fault—Identity and existence certain, location approximate
- Fault—Identity and existence certain, location concealed
- Normal fault—Identity and existence certain, location accurate.
- - - Normal fault—Identity and existence certain, location approximate.
- Normal fault—Identity and existence certain, location concealed.
- Strike-slip fault, left-lateral offset—Identity and existence certain, location concealed. Arrows show relative motion

Symbol

- 05.05.07
- 05.05.03
- 05.01.07
- 05.01.03
- 05.01.01
- 05.09.19
- 05.09.23
- 05.09.17
- 05.05.01
- <all other values>
- 06.03
- 06.01
- 06.41
- 06.02
- <all other values>
- 19.03.34
- Cross section line and label
- Leader

Quaternary

**Qp** Playa deposits—Closed depressions contain mostly dark tan to brown silt and clay. Top surfaces are commonly disturbed by cows.

**Qyc** Modern channel deposits—Dominated by unconsolidated limestone gravel and interbedded tan silt. The scratched surfaces, roughened by bedload abrasion during recent flow events, imparts a lighter gray color to these deposits that shows up prominently from a distance and on aerial photos.

**Qy** Alluvial deposits, undivided (Holocene)—This unit consists of map units Qy3, Qy2, Qy1, and Qyc.

**Qy3** Alluvial deposits, younger deposits

**Qy2** Alluvial deposits, middle deposits

**Qy1** Alluvial deposits, older deposits

**Qo** Older alluvial deposits—Most surfaces are mantles with thin dark brown soil. Where exposed, these deposits consist of interbedded limestone conglomerate and interbedded tan silt. Stage III and IV caliche is visible in the uppermost 1-2 meters exposed locally. As mapped, some areas contain broad swales that are likely floored by younger Holocene deposits, but were not mapped separately.

**Qs** Alluvial deposits, undivided—As mapped, this unit may include Quaternary sedimentary deposits of any age.

Quaternary/Tertiary

**QTc** Quaternary and/or Late Tertiary sedimentary deposits—This unit was mapped in only one place near the central part of the map, east of Dunken. It is expressed by a relatively flat, apparently constructional surface that has not been eroded. Poking through the thin dark brown soil is abundant thick laminar caliche. A small quarry exposes more than 2 meters of laminar caliche overlying reddish brown silt.

Tertiary

**Tcc** Channelized Tertiary Sedimentary Deposits (Late Miocene and/or Pliocene?)—Dominated by conglomerate containing subrounded to rounded, poorly sorted pebbles to boulders derived from the San Andres Formation. The matrix is mostly strongly cemented silt and carbonate, with minor carbonate sand. Exposures are rare. No bedding or grading is visible. These deposits fill deep paleochannels locally exhibiting vertical walls, and are strongly cemented.

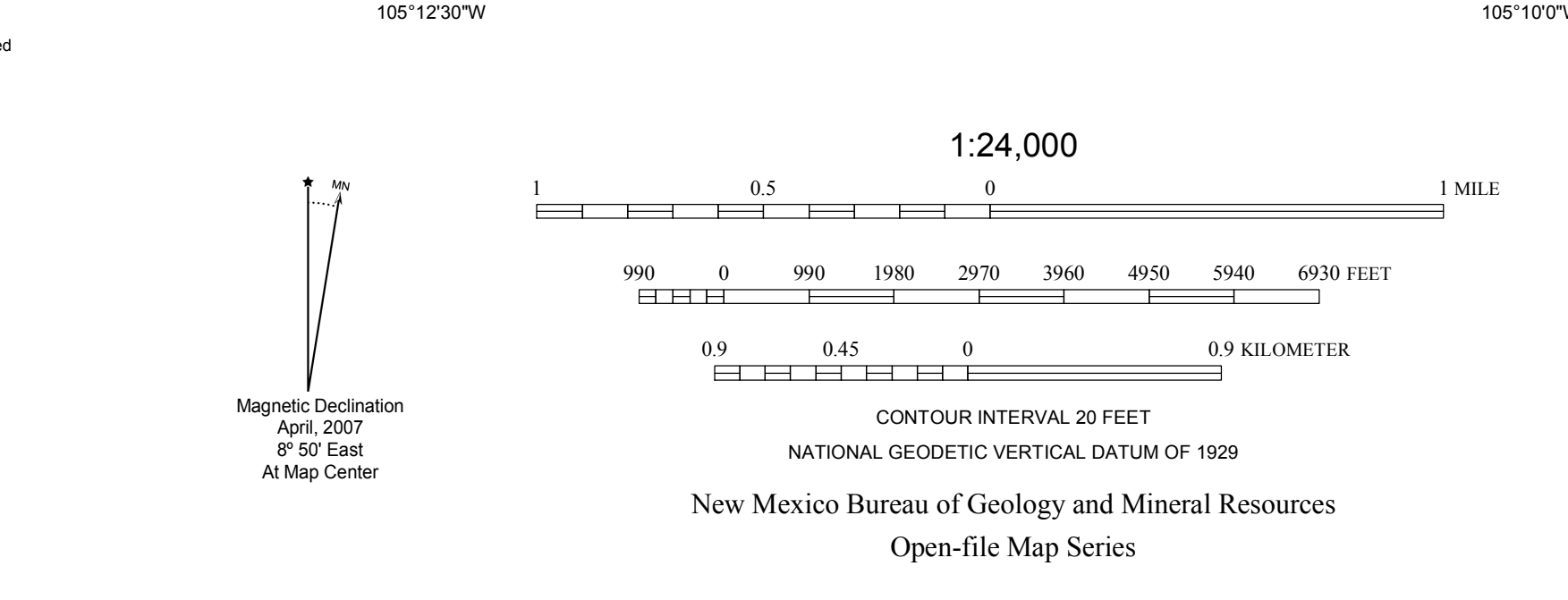
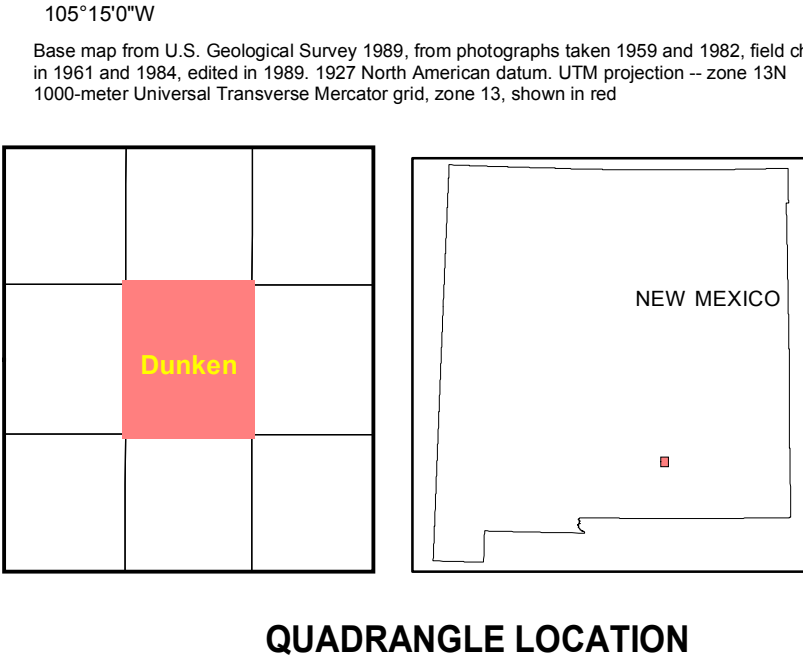
**Tc** Mesa-capping Tertiary Sedimentary Deposits (Late Miocene and/or Pliocene?)—These deposits are nearly identical to those of Tcc. They are dominated by conglomerate containing subrounded to well rounded pebbles to boulders locally over 1 meter across, composed almost entirely of limestone, dolomite, and minor chert derived from the San Andres Formation. Where rarely exposed, matrix is lighter gray fine-grained carbonate. Conglomerates can be best distinguished from neighboring San Andres Formation by the presence of light- and dark-gray-colored clasts, and rounded clasts. Top surfaces have been altered by pedogenesis and clasts here are commonly broken and angular. Exposures are rare. No bedding or grading was seen. These deposits cap the tops of flat mesas along the central and eastern parts of the map. These exposures probably formed a continuous sheet before dissection, and may be correlative to the Ogallala Formation.

Paleozoic

**Psc** Breccia (post-depositional)—Poorly sorted, angular fragments of limestone and dolomite are surrounded by a fine-grained matrix of carbonate either the same color as the clasts or slightly lighter. Bedding within individual clasts is oriented randomly, indicating that the clasts have been rotated with respect to one another.

**Psl** San Andres Formation, undivided (Permian)—Interbedded medium- to thick-bedded light to dark gray dolomite and limestone. Darker gray beds are commonly more fossiliferous than the lighter gray dolomite beds, which are commonly laminated and show no signs of bioturbation. Dissolution features include small to large vugs millimeters to several centimeters or more across, and small irregularly shaped chaotic zones filled with light yellowish gray carbonate. Dissolution features commonly form discrete zones parallel to bedding. No clay partings were seen between beds. Fossils include productid brachiopods, coiled gastropods, crinoids, and large fusulinids (Triticites?) up to 2 cm long. Less common fossils include turrilella-like gastropods, ammonites, nautiloids(?), and branching corals.

Cross Section Only



Geologic Map of the Dunken 7.5- Minute Quadrangle, Chaves County, New Mexico.

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COMMENTS TO MAP USERS

A geologic map displays information on the distribution, nature, orientation, and age relationships of rock and deposits and the occurrence of structural features. Geologic and fault contacts are irregular surfaces that form boundaries between different types or ages of units. Data depicted on this geologic quadrangle map may be based on any of the following: reconnaissance field geologic mapping, compilation of published and unpublished work, and photogeologic interpretation. Locations of contacts are not surveyed, but are plotted by interpretation of the position of a given contact onto a topographic base map; therefore, the accuracy of contact locations depends on the scale of mapping and the interpretation of the geologist(s). Any enlargement of this map could cause misunderstanding in the detail of mapping and may result in erroneous interpretations. Site-specific conditions should be verified by detailed surface mapping or subsurface exploration. Topographic and cultural changes associated with recent development may not be shown.

Cross sections are constructed based upon the interpretations of the author made from geologic mapping, and available geophysical, and subsurface (drillhole) data. Cross-sections should be used as an aid to understanding the general geologic framework of the map area, and not be the sole source of information for use in locating or designing wells, buildings, roads, or other man-made structures.

The map has not been reviewed according to New Mexico Bureau of Geology and Mineral Resources standards. The contents of the report and map should not be considered final and complete until reviewed and published by the New Mexico Bureau of Geology and Mineral Resources. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the State of New Mexico, or the U.S. Government.

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This and other STATEMAP quadrangles are (or soon will be) available for free download in both PDF and ArcGIS formats at:  
<http://geoinfo.nmt.edu/publications/maps/geologic/ofgm/home.html>

This draft geologic map is preliminary and will undergo revision. It was produced from either scans of hand-drafted originals or from digitally drafted original maps and figures using a wide variety of software, and is currently in cartographic production. It is being distributed in this draft form as part of the bureau's Open-file map series (OFGM) due to high demand for current geologic map data in these areas where STATEMAP quadrangles are located, and it is the bureau's policy to disseminate geologic data to the public as soon as possible.

After this map has undergone scientific peer review, editing, and final cartographic production adhering to bureau map standards, it will be released in our Geologic Map (GM) series. This final version will receive a new GM number and will supersede this preliminary open-file geologic map.

**DRAFT**

