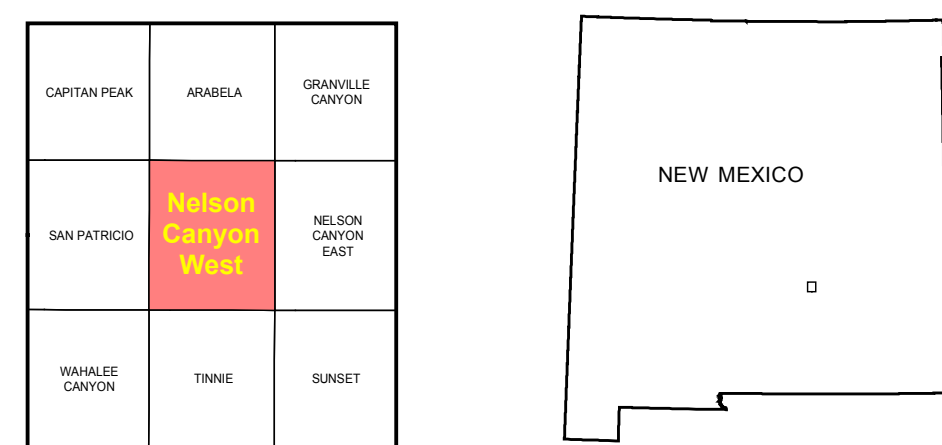


Base map from U.S. Geological Survey 1986 from photographs taken 1959, field checked in 1985, edited in 1986.
1987 North American datum, UTM projection - zone 12N
1000-meter Universal Transverse Mercator grid, zone 12, shown in red

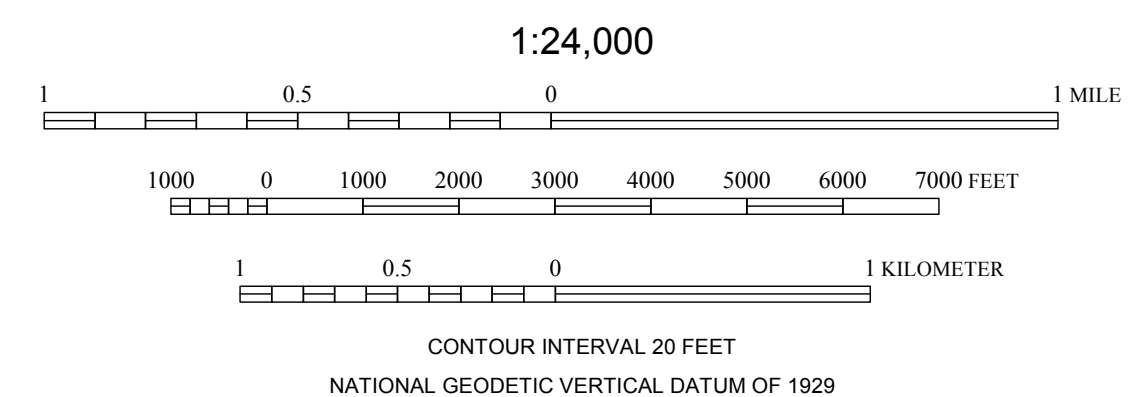
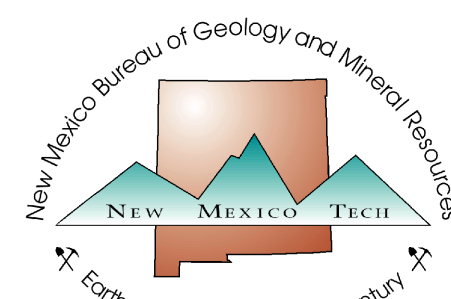


QUADRANGLE LOCATION

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 (OFGMS), 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



New Mexico Bureau of Geology and Mineral Resources
Open-file Map Series
OFGM 197

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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>

Geologic map of the Nelson Canyon West quadrangle, Lincoln County, New Mexico

June 2010

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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 (driftless) 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.

Quaternary Deposits

QHa Holocene alluvial deposits. These deposits are composed of weakly consolidated interbedded gravel, silt, and clay. They commonly form relatively flat deposits at the bottom of the wider drainages. They characteristically contain abundant dark, organic- and clay-rich soils at the surface. The deposits are commonly incised up to about 2-3 meters by the modern drainages.

Qal alluvial deposits. Interbedded silt, fine sand, and gravel. Exposed in some road and stream-cuts not far from the confluence of Rio Ruidoso and Rio Bonito. These deposits contain interbedded silt and locally derived gravel, but are less cemented than older yet unmapped Quaternary deposits and typically contain weakly developed pedogenic carbonate horizons. These deposits form relatively flat constructional surfaces that reside about 20 feet above the Holocene deposits (QHa).

Qc Colluvium. Rockfall, debris-flow, and poorly sorted alluvial deposits at the bases of cliffs, particularly along Timmie Canyon. Texture and clast lithology variable. Thickness is generally <10 m thick but locally may be thicker. Colluvial deposits grade into local deposits of Qal.

Paleozoic Rocks

Ps San Andres Formation (Permian). Light to dark gray and bluish gray limestone and dolomite. Limestones and dolomites range from thin to very thick bedded, and are carbonate mudstones, wackestones, and grainstones. Freshly broken surfaces are darker gray than weathered surfaces and often fetid. Silty and sandy beds are common. Subdivision of the San Andres into the lower dominantly thick-bedded Rio Bonito Member (Psr) and upper dominantly medium- to thin-bedded Bonney Canyon member (Psb, Kelley, 1971) was based on aerial photograph interpretation. The members can be distinguished based on average bed thickness and continuity, and color, with the Bonney Canyon member being darker on average. Color and vegetation patterns give the Bonney Canyon member a distinctly striped appearance. A prominent sequence of ledge-forming, thick, white beds is present near the top of the Rio Bonito member and locally serves as a marker horizon on aerial photographs and in the field. The Hondo Sandstone (Psh) is a prominent marker bed within the Rio Bonito Member and provides a critical datum to map the complexly folded rocks in the western part of the quadrangle. The sandstone is dominantly medium bedded quartz arenite, well rounded, and well sorted. The sandstone is approximately 10-18 m thick with the first 2 m being gold in color and the remainder is white to gray-white in color. Very low angle trough crossbeds and planar tabular beds are common and concretions occur locally. Down Talley Canyon, Hondo is ~16.5 m thick but may be up to 18 m thick.

Py Yeso Formation (Permian). Yellow to tan siltstone and fine sandstone, red to pink muddy siltstone and fine sandstone, gray to tan silty limestone and dolomite, and white to gray gypsum. Siltstone and sandstones are thin to medium bedded and friable. Muddy siltstones and sandstones are laminated to very thin bedded. Limestones are very thin to thin bedded, rarely medium to thick bedded. In general, they are thinner bedded than overlying basal San Andres beds. Meter scale interbedding of carbonate, siltstone, and sandstone is common. Bedding dips are chaotic due to dissolution of gypsum and (and carbonates?) and individual beds are generally not traceable laterally for more than a few 10s of meters. Natural exposures are poor except in stream cuts and very steep slopes and the upper contact is usually mantled by colluvium and/or landslides from the overlying San Andres Formation. Base not exposed; approximately 510 meters in the State "N" #001 oil test well in the proximal Loco Canyon quadrangle to the south.

Pu - Permian to Proterozoic rocks - Paleozoic sedimentary rocks and Proterozoic igneous and metamorphic rocks, undivided (cross section only). Thickness of Sub-Yeso Paleozoic rocks approximately 645 meters in the State "N" #001 oil test well located in the proximal Loco Canyon quadrangle to the south.



Typical outcrop exposures of the Rio Bonito Member of the San Andres Limestone. Carbonate beds are typically less than a meter in thickness and are irregularly bedded over the map area due to local dissolution and small scale karst development.

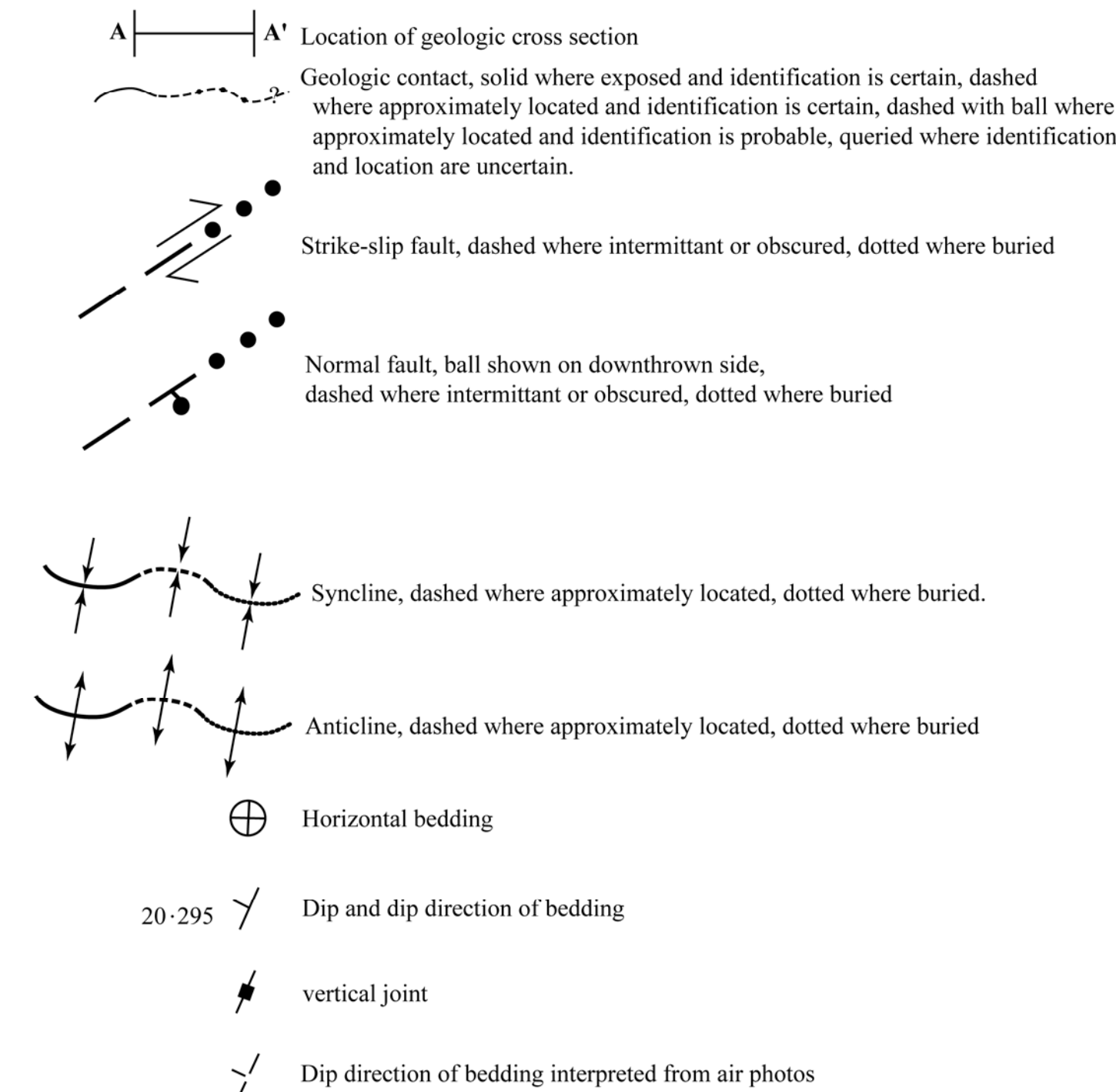


Field photo of bedforms in the Hondo sandstone unit in the Rio Bonito Member of the San Andres Formation. This sandstone is a well rounded, well sorted quartz arenite that measures approximately 10-18 m thick with first 2 m being typically gold in color. Very low angle trough crossbeds and planar tabular beds common and occasional small concretions are observed.



View to the north of the Capitan Mountains. In the foreground, low hills define mappable folds in the San Andres Limestone. Seen here is an anticline that trends north-northwest and plunges moderately to the north.

MAP AND CROSS SECTION SYMBOLS



Nelson Canyon West 7.5 minute quadrangle correlation diagram

