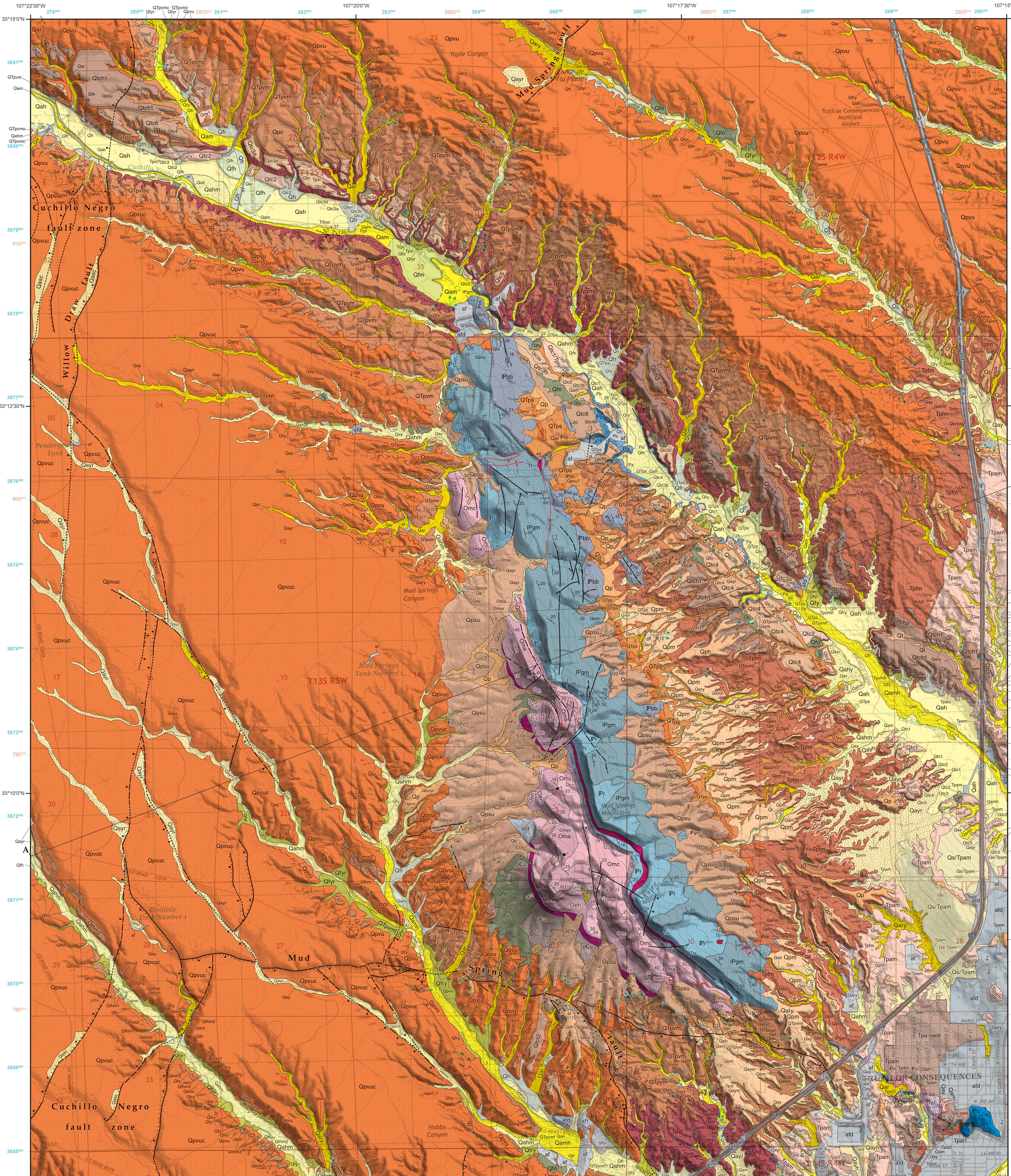


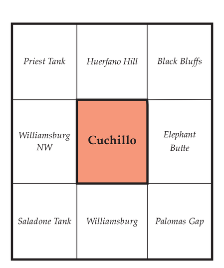
Base map from U.S. Geological Survey 2010.
North American Datum of 1983 (NAD83)

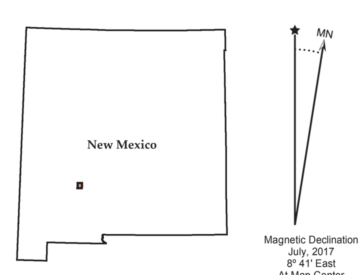
1:24,000

Contour Interval 20 Feet
North American Vertical Datum of 1988

New Mexico Bureau of Geology and Mineral Resources
Open-File Geologic Map 271

Mapping of this quadrangle was funded by a matching-funds grant from the STATEMAP program of the National Cooperative Geologic Mapping Act (Fund Number: G17AC00260), administered by the U. S. Geological Survey, and by the New Mexico Bureau of Geology and Mineral Resources, (Dr. Nelia W. Dunbar, *Director and State Geologist*, Dr. J. Michael Timmons, *Assoc. Director for Mapping Programs*).





Quadrangle Location

New Mexico Bureau of Geology and Mineral Resources
New Mexico Tech
801 Leroy Place
Socorro, New Mexico
87801-4796

[575] 835-5490

This and other STATEMAP quadrangles are available for free download in both PDF and ArcGIS formats at:

http://geoinfo.nmt.edu

Digital layout and cartography by the NMBGMR Map Production Group:
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Geologic Map of the Cuchillo 7.5-Minute Quadrangle, Sierra County, New Mexico

June, 2018

Daniel J. Koning[1], Andrew P. Jochems[1], Ron Foster[2], Bruce Cox[3], Spencer Lucas[4], Greg H. Mack[5], and Kate E. Zeigler[6]

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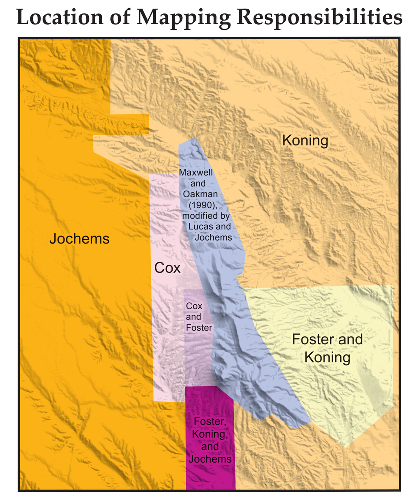
[5]Department of Geological Sciences, PO Box 30001, New Mexico State University, Las Cruses, NM 88003
6 Zeigler Geologic Consulting, Albuquerque, NM

Location of Mapping Responsibilities



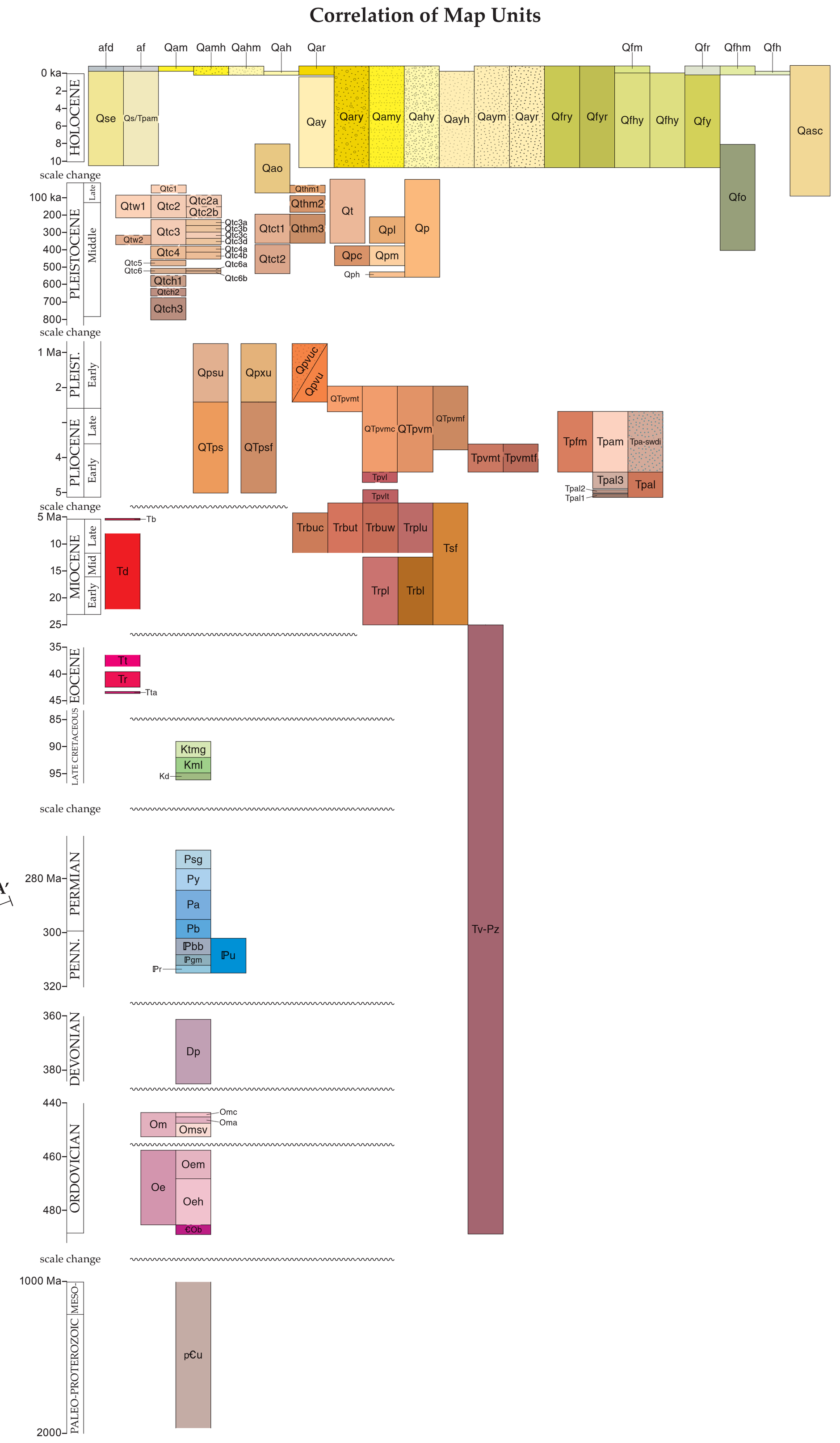
Comments to Map Users

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 may not be shown due to recent development.

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 New Mexico Bureau of Geology and Mineral Resources created the Open-file Geologic Map Series to expedite dissemination of these geologic maps and map data to the public as rapidly as possible while allowing for map revision as geologists continued to work in map areas. Each map sheet carries the original date of publication below the map as well as the latest revision date in the upper right corner. In most cases, the original date of publication coincides with the date of the map product delivered to the National Cooperative Geologic Mapping Program (NCGMP) as part of New Mexico's STATEMAP agreement. While maps are produced, maintained, and updated in an ArcGIS geodatabase, at the time of the STATEMAP deliverable, each map goes through cartographic production and internal review prior to uploading to the Internet. Even if additional updates are carried out on the ArcGIS map data files, citations to these maps should reflect this original publication date and the original authors listed. The views and conclusions contained in these map documents 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.

Correlation of Map Units



Explanation of Map

Contact—Identity and existence are certain and questionable where queried. Location is accurate where solid and approximate where dashed.

Inclined contact, dike, key bed, clay bed, coal bed, or bed of economically important commodity showing dip value and direction.

Gradational contact—Identity and existence are certain and questionable where queried. Location is accurate where solid and approximate where dashed.

Fault (generic; vertical, subvertical, or high-angle; or unknown or unspecified orientation or sense of slip)—Identity and existence are certain. Location is accurate where solid, appoximate where dashed, and concealed where dotted.

Scarp on normal fault—Identity and existence certain are certain and questionable where queried. Location is accurate where solid and approximate where dashed.

Normal fault—Identity and existence are certain and questionable where queried. Location is accurate where solid, approximate where dashed, and concealed where dotted.

Strike-slip fault, right-lateral offset—Identity and existence are certain, and location is accurate.

Oblique-slip fault, right-lateral offset—Identity and existence are certain. Location is accurate where solid, approximated where dashed, and concealed where dotted.

Thrust fault—Identity and existence are certain. Location is accurate where solid and approximate where dashed.

Dike—Identity and existence are certain. Location is accurate where solid and approximate where dashed.

Vien, veinlet, or mineralized stringer—Identity and existence are certain, and location is accurate.

Anticline—Identity and existence are certain, and location is accurate.

Syncline—Identity and existence are certain, and location is accurate.

Monocline, anticlinal bend—Identity and existence are certain, and location is accurate. Arrows show the direction of dip with the shorter arrow on the steeper limb.

Monocline, synclinal bend—Identity and existence are certain, and location is accurate. Arrows show the direction of dip with the shorter arrow on the steeper limb.

Fine White Ash Key Bed—Identity and existence are certain, and location is accurate.

Local Calcium Carbonate ($CaCO_3$) Marker Bed—Identity and existence are certain, and location is accurate.

Mud Springs Pumice Key Bed (Mack et. al., 2009)—Identity and existence are certain, and location is accurate.

Opal Key Bed—Identity and existence are certain, and location is accurate.

Thin (<10 m thick) interval of axial-fluvial deposit—Identity and existence are certain, and location is accurate.

Horizontal bedding

Inclined bedding showing dip value and direction.

Approximate orientation of inclined bedding showing approximate dip value and direction.

Vertical bedding showing strike.

Overturned bedding showing dip value and direction.

Minor vertical or near-vertical joint showing strike.

Minor inclined joint showing dip value and direction.

Minor vertical or near-vertical fault showing strike.

Minor inclined fault showing strike and dip.

Minor inclined fault showing dip value and direction.

Lineation on fault showing trend and plunge.

Inclined slickline, groove, or striation on fault surface showing trend and plunge.

Inclined vein, veinlet, or mineralized stringer showing strike and dip direction.

Vertical flow banding, lamination, layering, or foliation in igneous rock showing strike.

Inclined flow banding, lamination, layering, or foliation in igneous rock showing dip value and direction.

Fluvial transport direction

Sediment transport direction determined from crossbeds.

Sediment transport direction determined from imbrication.

Zone of mineralized or altered rock, showing low level of mineralization.

Cross section line

Description of Map Units

QUATERNARY (VARIOUS POST-SANTA FE GROUP CLASTIC DEPOSITS)

Anthropogenic Units

Sheetwash and Windblown

Valley-Floor Units

Valley-Margin Units

Deposits Adjoining Fault

Terrace and High-Level Piedmont

Terrace Deposits Along Willow Springs Draw

Lower Suite of Terrace Deposits Along Cuchillo Negro Creek

Higher Suite of Terrace Deposits Along Cuchillo Negro

Terrace Deposits Along Cañada Honda and Mud Springs Canyon

Terrace Deposits Near Cantrell Tank in Mud Springs Canyon

High-Level Piedmont Deposits

QUATERNARY-TERTIARY BASIN FILL

Palomas Formation

Rincon Valley Formation

TERTIARY IGNEOUS ROCKS

LATE CRETACEOUS SEDIMENTARY ROCKS

PALEOZOIC SEDIMENTARY ROCKS

PRECAMBRIAN CRYSTALLINE ROCKS

MISCELLANEOUS CROSS-SECTION UNITS

Geologic Cross Section A-A'