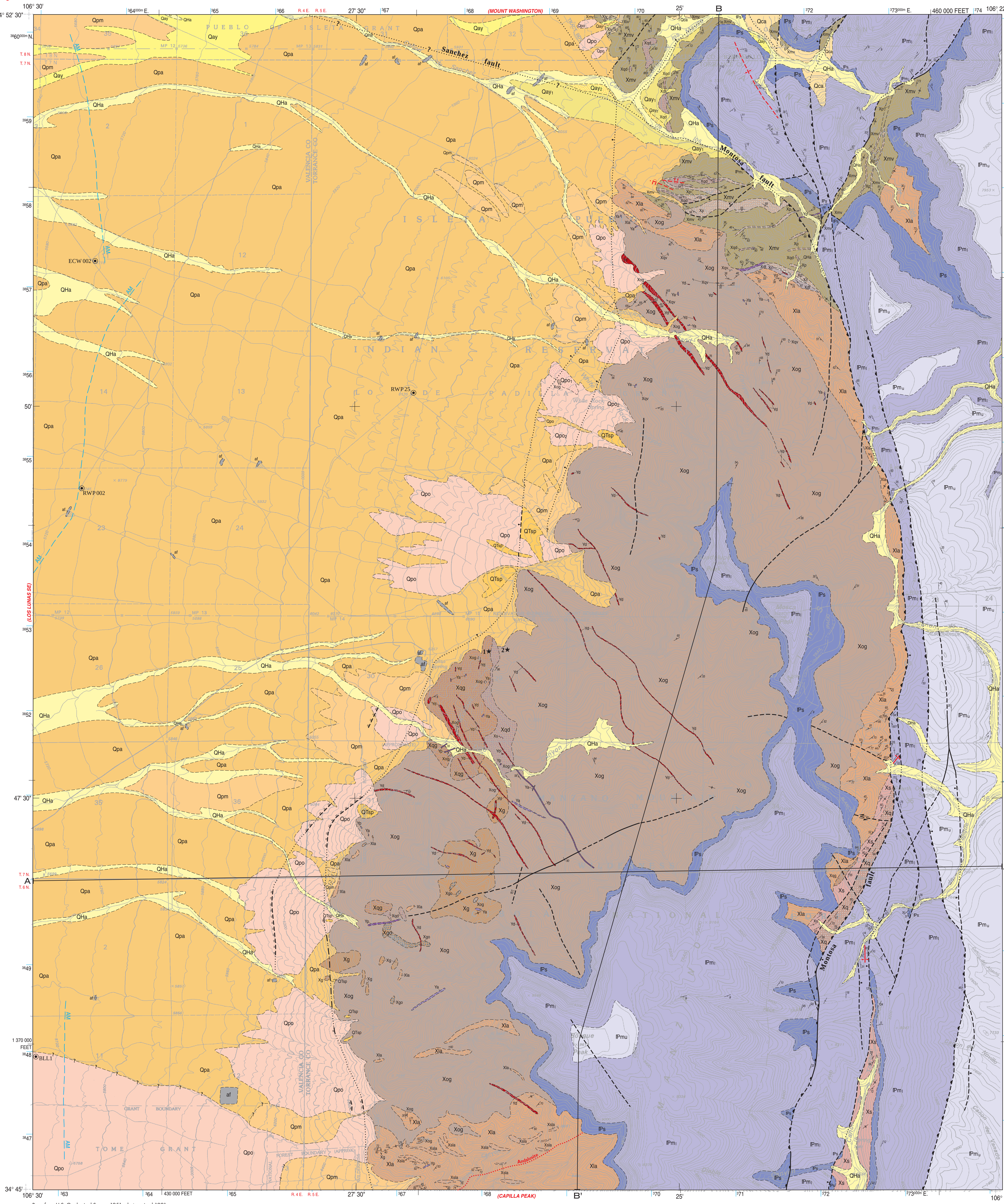
NEW MEXICO BUREAU OF GEOLOGY AND MINERAL RESOURCES
A DIVISION OF NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

NMBGMR Open File Geologic Map Series
OF–GM–24
Map last modified 28 November 2001

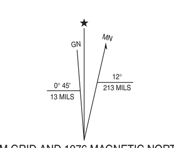
BOSQUE PEAK QUADRANGLE
NEW MEXICO



Base from U.S. Geological Survey 1951, photorevised 1991
Universal Transverse Mercator projection, 1983 North American datum, 2,500-m grid based on New Mexico coordinate system, cental zone
1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue

K. E. Karlstrom: Proterozoic mapping, Phanerozoic stratigraphy, unit descriptions, and correlations, regional structural interpretation, structural cross sections; J. Armour and J. Lewis: Paleozoic mapping; S. D. Connell and P. Jackson-Paul: Quaternary mapping and unit descriptions

D. J. McCraw and G. E. Jones: digital cartographic production



UTM GRID AND 1976 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24,000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Mapping of this quadrangle was funded by a matching-funds grant from the 1997 STATEMAP program of the National Geologic Mapping Act coordinated by the U.S. Geological Survey and the New Mexico Bureau of Geology and Mineral Resources (Dr. Peter A. Scholle, *Director and State Geologist*; Dr. Paul W. Bauer, *Geologic Mapping Program Manager*).

NEW MEXICO
QUADRANGLE LOCATION

Geology of Bosque Peak quadrangle, Valencia, Torrance, and Bernalillo Counties, New Mexico

May 1999

by Karl E. Karlstrom[1], Sean D. Connell[2], Duncan L. Edwards[1], Jake Armour[1], John Lewis[1], and Patricia Jackson-Paul[2]

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Table of Geochronologic Samples

Locality	Date	Formation	Method	Reference
1	1,659 ± 5 Ma	Xqg	U-Pb zircon	Dan Unruh, unpublished
2	1,659 ± 5 Ma	Xog	U-Pb zircon	Dan Unruh, unpublished

Explanation of Map Symbols

- A—A' Location of geologic cross section
- Geologic contact—solid where exposed, dashed where approximately located, dotted where concealed, queried where inferred
- Normal fault—showing dip, arrow shows trend and plunge of slickenlines; solid where exposed; dashed where approximately located; dotted where concealed; ball-and-bar on downthrown side
- Reverse fault—showing dip, arrow shows trend and plunge of slickensides; teeth on upthrown side of hanging wall block (combination of reverse fault teeth and bar-and-ball indicates interpretation of normal reactivation of a reverse fault); solid where exposed; dashed where approximately located; dotted where concealed
- Fault trace—inferred from degraded topographic scarp
- Fault trace—inferred from a vegetation lineament
- Anticline—trace of axial plane showing direction of plunge; dashed where approximately located, dotted where concealed, queried where inferred
- Syncline—trace of axial plane showing direction of plunge; dashed where approximately located, dotted where concealed, queried where inferred
- Overturned anticline—trace of axial plane showing direction of plunge; dashed where approximately located
- Overturned syncline—trace of axial plane showing direction of plunge; dashed where approximately located
- Andalusite — Andalusite isograd
- AM — Approximate location of selected high-resolution aeromagnetic anomaly (from USGS and Sander Geophysics, Ltd., 1998)
- Strike and dip of bedding
- Overturned bedding
- Strike and dip of S_1 foliation, arrow showing trend and plunge of minor F_1 fold axis and fold assymmetry in map view
- Strike and dip of S_2 foliation, arrow showing trend and plunge of lineation
- Strike and dip of minor dikes and veins
- Younging determined by unambiguous cross bedding; the longer line represents the truncation surface and stratigraphic top
- 1★ Location of radiometrically dated sample
- ◉ BLL 1 Water-supply well

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 are based on 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.

The map has not been reviewed according to New Mexico Bureau of Geology and Mineral Resources standards. Revision of the map is likely because of the on-going nature of work in the region. 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 and the U.S. Government.

The Bosque Peak quadrangle lies within the southeastern part of the Isleta Indian Reservation and travel within the reservation (northern half of the quadrangle) is restricted. The area is not accessible by public roads; however, several graded dirt and paved roads allow access to portions of the study area. The eastern half lies within the Manzanita and Manzano Mountains and has very limited road access.

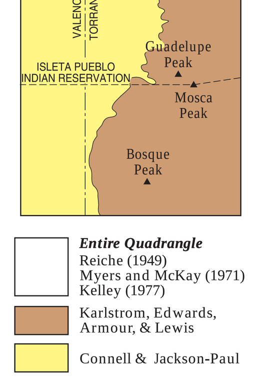
New Mexico Bureau of Geology and Mineral Resources
NEW MEXICO TECH
Earth Science for the 21st Century

Dr. Peter A. Scholle
Director* and *State Geologist

NEW MEXICO STATEMAP

Dr. Paul W. Bauer
Geologic Mapping Program Director

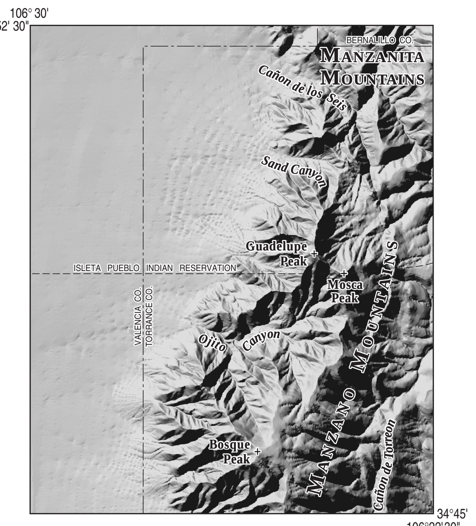
Index to Geologic Mapping



Entire Quadrangle
Reiche (1949)
Myers and McKay (1971)
Kelley (1977)

Karlstrom, Edwards, Armour, & Lewis

Connell & Jackson-Paul



Physiography of the Bosque Peak area based upon 10-m USGS DEM data.

Unit Descriptions

CENOZOIC SEDIMENTS

Anthropogenic, colluvial, and stream alluvial deposits

af — **Artificial fill (Historic)** — Dumped fill and areas affected by human disturbances.

Qca — **Alluvium and colluvium, undivided (Holocene to late Pleistocene)** — Poorly consolidated, poorly sorted and stratified, fine- to coarse-grained, clast- and matrix-supported deposits derived from a variety of mass-movement hill-slope processes, including debris flow, shallow slump and creep. Clasts are typically angular and composition generally reflects local provenance. Colluvium is common on hillslopes, but is differentiated where areally extensive. From 3 to 20 ft (<1 to 6 m) thick.

QHa — **Stream alluvium, undivided (Holocene to Historic)** — Poorly to moderately sorted, poorly consolidated pebble- to cobble conglomerate and fine-to coarse-grained sand with local accumulations of cobbles and small boulders as much as 2.5 mi (4 km) west of the mountain front. Units commonly form narrow to broad streams with elongate cobble and boulder bars and floodplains that are inset against *Qay* and *Qpa*. Bar and swale topography is well developed. Soils are very weakly developed and possess disseminated to no pedogenic carbonate. Estimated thickness is 3 to 14 ft (<1 m to 4 m).

Qay, Qay_2, Qay_1 — **Stream alluvium, undivided (upper Pleistocene to Holocene)** – Poorly to moderately sorted, poorly consolidated light-brown and light reddish-brown to gray-brown pebble and cobble conglomerate and sand with minor accumulations of boulders and silt- to clay-rich beds. Clasts are subangular to subrounded and typically not weathered nor pitted. Unit forms terraces inset against unit *Qpa*. Bar and swale topography is locally well developed. Terrace tread lies < 16 ft (<5 m) above modern streams. Estimated thickness is <14 ft (<4 m).

Piedmont-slope alluvial deposits

Qu — **Piedmont alluvium, undivided (upper Pliocene to Quaternary)** — Undivided piedmont units (*Qpa*, *Qpm*, *Qpo*, and *QTp*) shown in Cross Section A-A'.

Qpa — **Piedmont alluvium, undivided (Holocene to lower Pleistocene)** — Poorly to moderately sorted, moderately consolidated pebble and cobble conglomerate and pebbly sand. Soil development is variable typically possesses multiple (cumulic) buried soils with Bk horizons that exhibit stage II and IV calcium-carbonate morphology. The unit forms a complex of piedmont and valley-floor deposits that marks local base level for mountain front drainages. Unit contains slightly to moderately dissected valley-floor deposits and terraces inset against unit Qpo. Unit is locally mantled by *QHa* and *Qay* in narrow to broad swales. Forms constructional surface of the Llano de Manzano piedmont slope. Estimated thickness is <14 ft (<4 m).

Qpm — **Piedmont alluvium (middle Pleistocene)** — Poorly sorted, moderately consolidated pebble to cobble conglomerate and pebbly sand. Soil development is variable and typically possesses multiple (cumulic) buried soils with Bk horizons that exhibit stage II and III calcium-carbonate morphology. The unit forms slightly to moderately dissected valley-floor deposits and terraces inset against unit Qpo. Unit is locally mantled by Qay in narrow to broad swales. Base not exposed; estimated thickness is >14 ft (>4 m).

Qpo — **Piedmont alluvium, undivided (lower to middle Pleistocene)** — Poorly sorted, poorly to moderately consolidated and calcium carbonate cemented sand and subrounded to subangular cobble to pebble conglomerate inset against unit *QTp*. Unit is locally differentiated into two subunits (Qpo_1, older; Qpo_2, younger) on the basis of inset relationships. Soils are partially stripped, but locally exhibit stage III to IV carbonate morphology. Base not exposed; estimated thickness is >14 ft (>4 m).

Santa Fe Group

QTsp — **Piedmont alluvium (upper Pliocene(?) to lower Pleistocene)** — Poorly sorted, calcium-carbonate cemented, clast supported cobble to boulder conglomerate commonly found on the footwall of the range-bounding faults. Clasts are dominantly granite,

Tsp — **Piedmont alluvium (lower Pleistocene(?) to Miocene)**

NEOGENE - MESOZOIC - UPPER PALEOZOIC ROCKS

TId? — **La Jara Peak basaltic andesite (?) and Datil Group (?), undivided**

TId?-IPu — **La Jara Peak basaltic andesite (?) / Datil Group (?), Triassic, Permian and Pennsylvanian rocks, undivided**

PALEOZOIC ROCKS

Upper Pennsylvanian to lower Permian (?)

IPmu — **Madera Formation, upper arkosic unit**

Upper to middle Pennsylvanian

IPml — **Madera Formation, lower cherty fossiliferous limestone unit**

IPs — **Sandia Formation**

PROTEROZOIC ROCKS

Mesoproterozoic

Diabase dikes

Yp — **Pegmatite dikes**

Ya — **Aplite and granite dikes**

Paleoproterozoic

Xqv — **Quartz veins**

Xog — **Ojito granite**

Xqd — **Porphyritic quartz diorite**

Xqg — **Quartz gabbro**

Xgo — **Olivine gabbro**

Xg — **Gabbro and diorite undivided**

Xs — **Schist and phyllite**

Xq — **Massive to thickly-bedded, gray to milky white quartzite**

Xla, Xsla — **Lithic arenite**

Xp — **Phyllite and schist**

Xc — **Metachert and jasperoid**

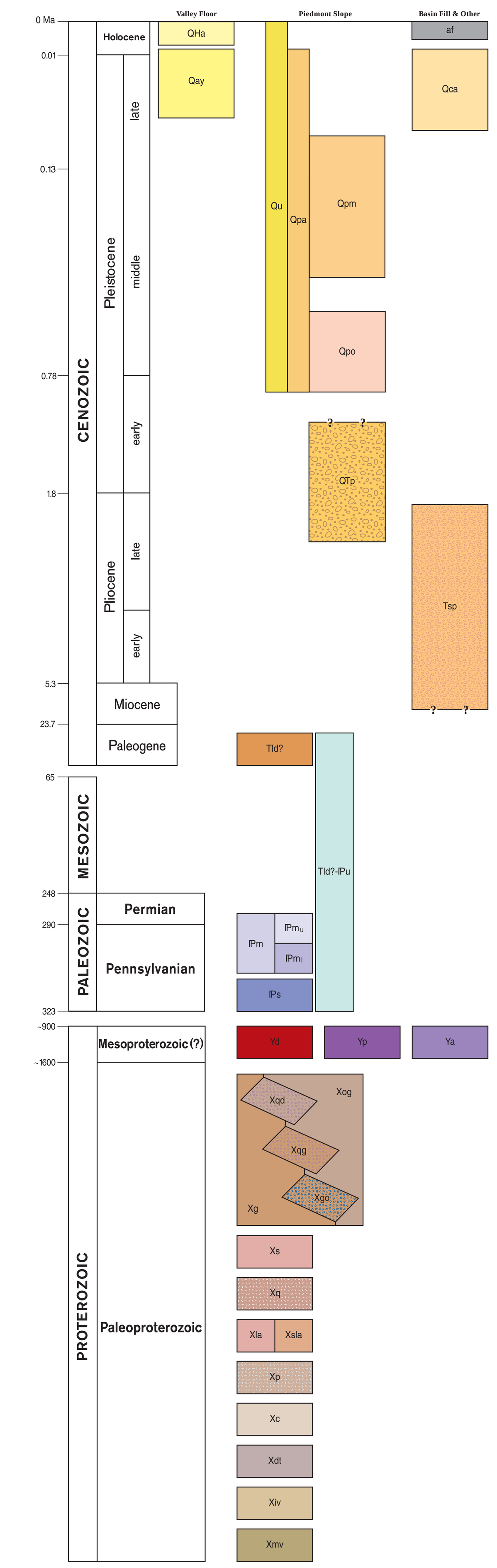
Xdt — **Dacite tuff**

Xiv — **Intermediate metavolcanic rocks**

Xmv — **Mafic metavolcanic rocks**

References

Correlation of Units



Geologic Cross Sections