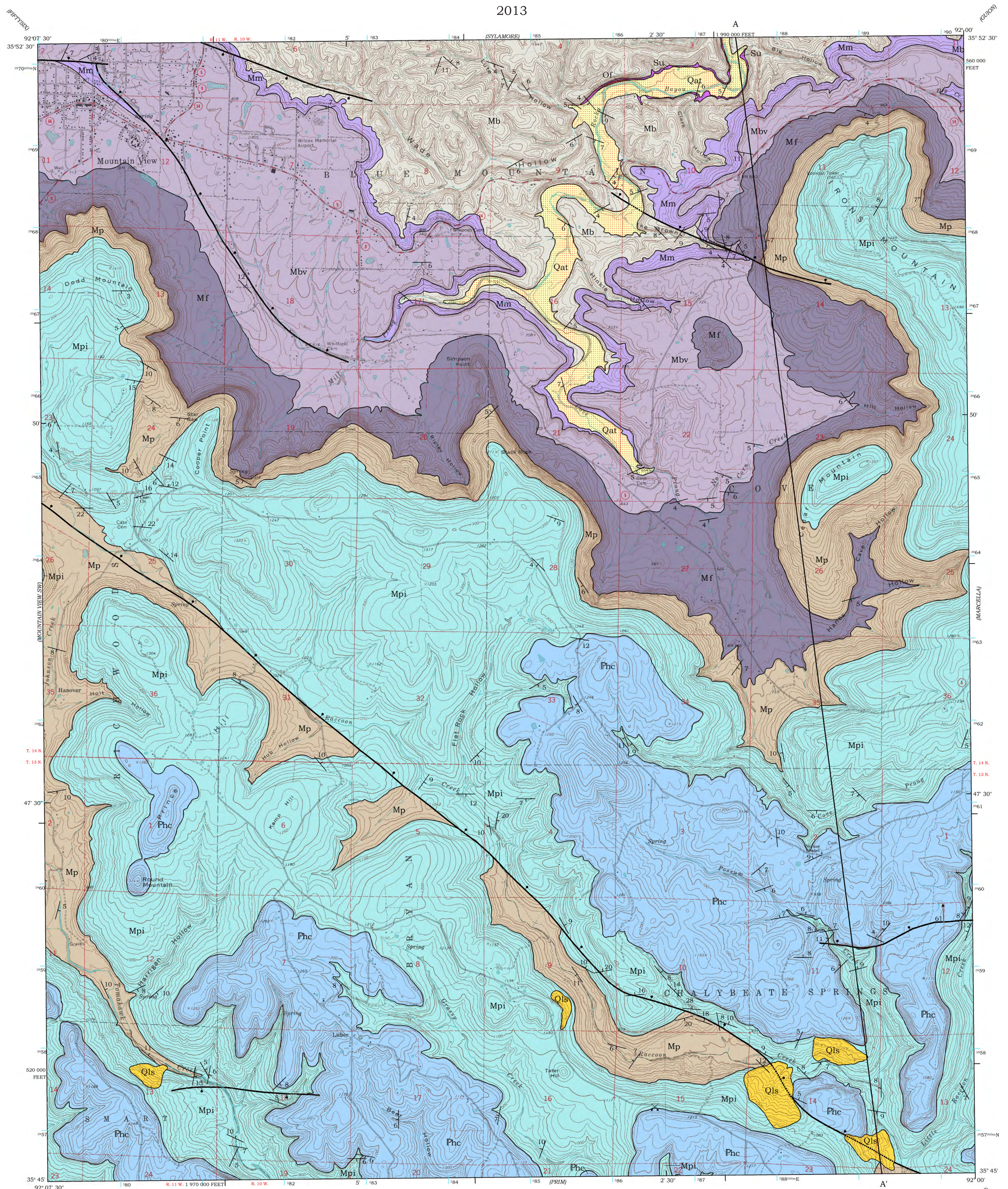
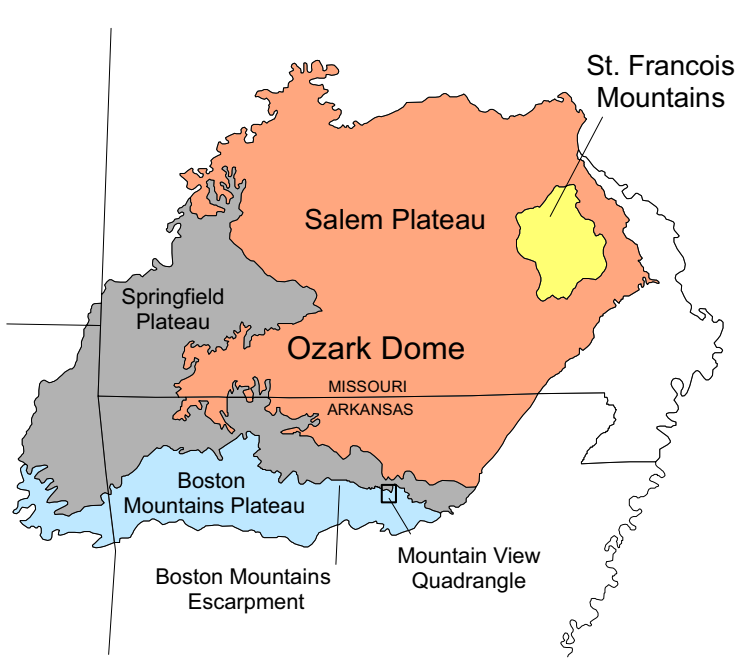
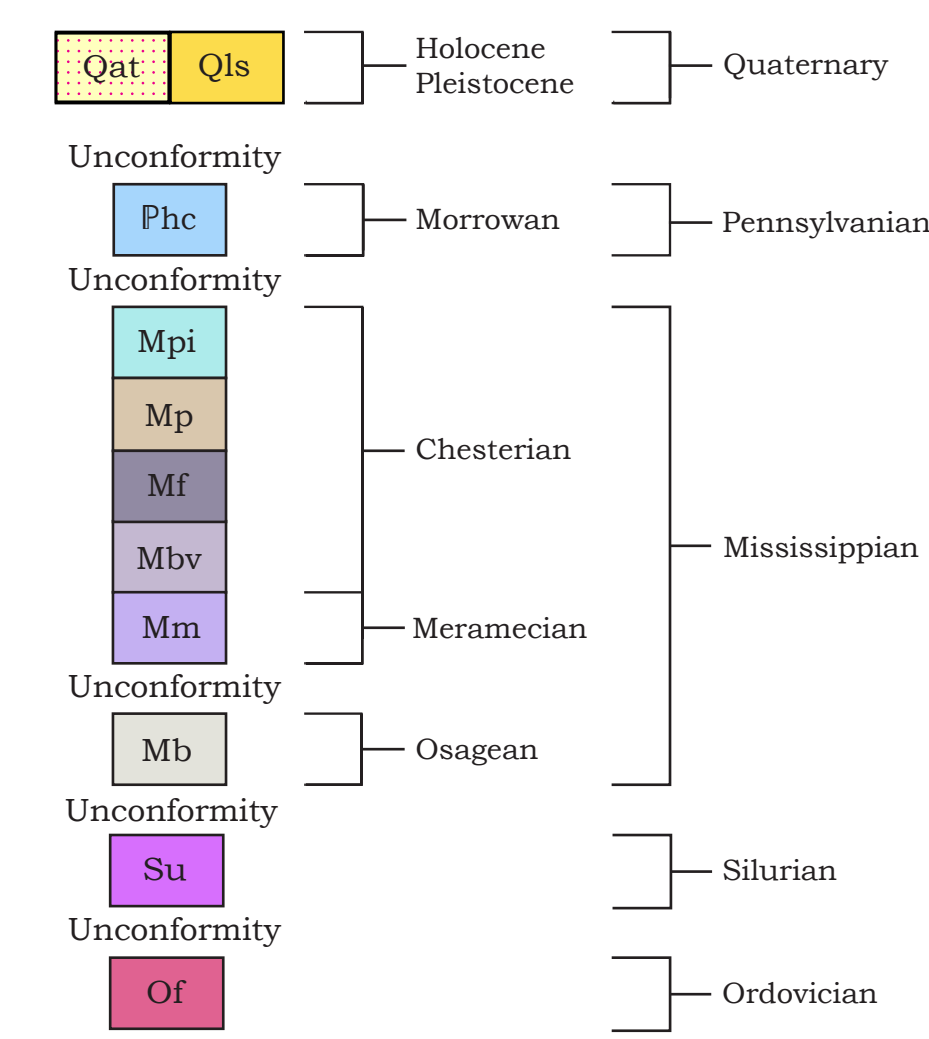


# Geologic Map of the Mountain View Quadrangle, Stone County, Arkansas

Richard S. Hutto and Daniel S. Rains  
2013



### Correlation of Map Units



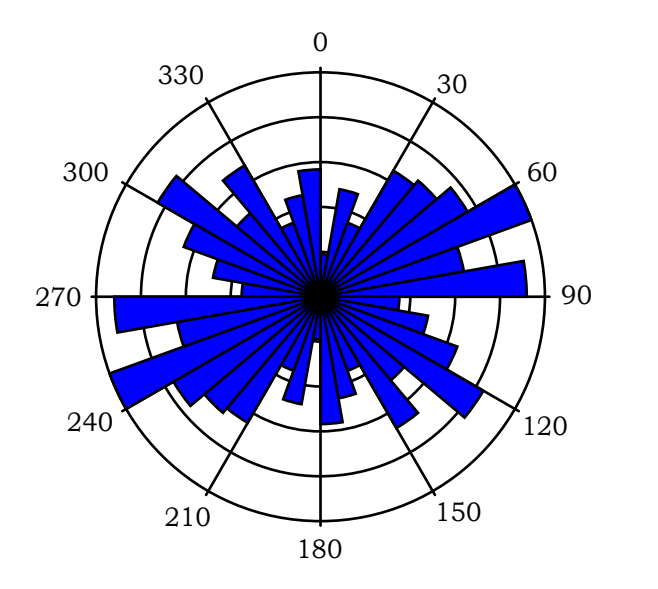
Modified from Shepard et al., 2011

### Introduction

This map depicts the bedrock and surficial geology of the Mountain View 7.5-minute quadrangle. In this area approximately 1400 feet (427 meters) of Late Ordovician through Pennsylvanian (Morrowan) clastic and carbonate sedimentary rocks are near the surface. The bedrock is overlain by a veneer of Quaternary-age relict. Regional geology of the area is controlled by an uplift centered in the St. Francis Mountains of southeast Missouri known as the Ozark Dome. Progressively younger rocks form a series of imbricate plateau surfaces from the core of the uplift southward into Arkansas. This map straddles the boundary between two of these surfaces: the Springfield Plateau in the northern part of the map, and the higher Boston Mountains Plateau to the south. The Springfield Plateau is capped by Mississippian-age rocks deposited in nearshore shallow marine and fluvial environments between 365 and 330 million years before present. The Boston Mountains Plateau surface is comprised primarily of Pennsylvanian-age rocks deposited in nearshore fluvial and deltaic environments between 330 and 290 million years before present. The recognized boundary between the plateaus, called the Boston Mountains Escarpment, forms a persistent and prominent cuesta with a steep north face that extends from just south of the town of Mountain View on the west side of the quadrangle, to Irons Mountain on the eastern margin.

The geology of the Mountain View quadrangle was mapped in 1973 by E. E. Glick for the 1:500,000-scale Geologic Map of Arkansas. This map builds on the previous work but uses a more detailed stratigraphic section and depicts structures in greater detail. The contacts and structural features on the map are based primarily on field observations made from July 2012 - April 2013. Locations of data collection sites were recorded with a Garmin GPSmap 76 global positioning satellite receiver. Bedrock inclined at less than 2° is shown as horizontal.

### Joint Frequency



Rose diagram of strike frequency of joints recorded within the Mountain View quadrangle

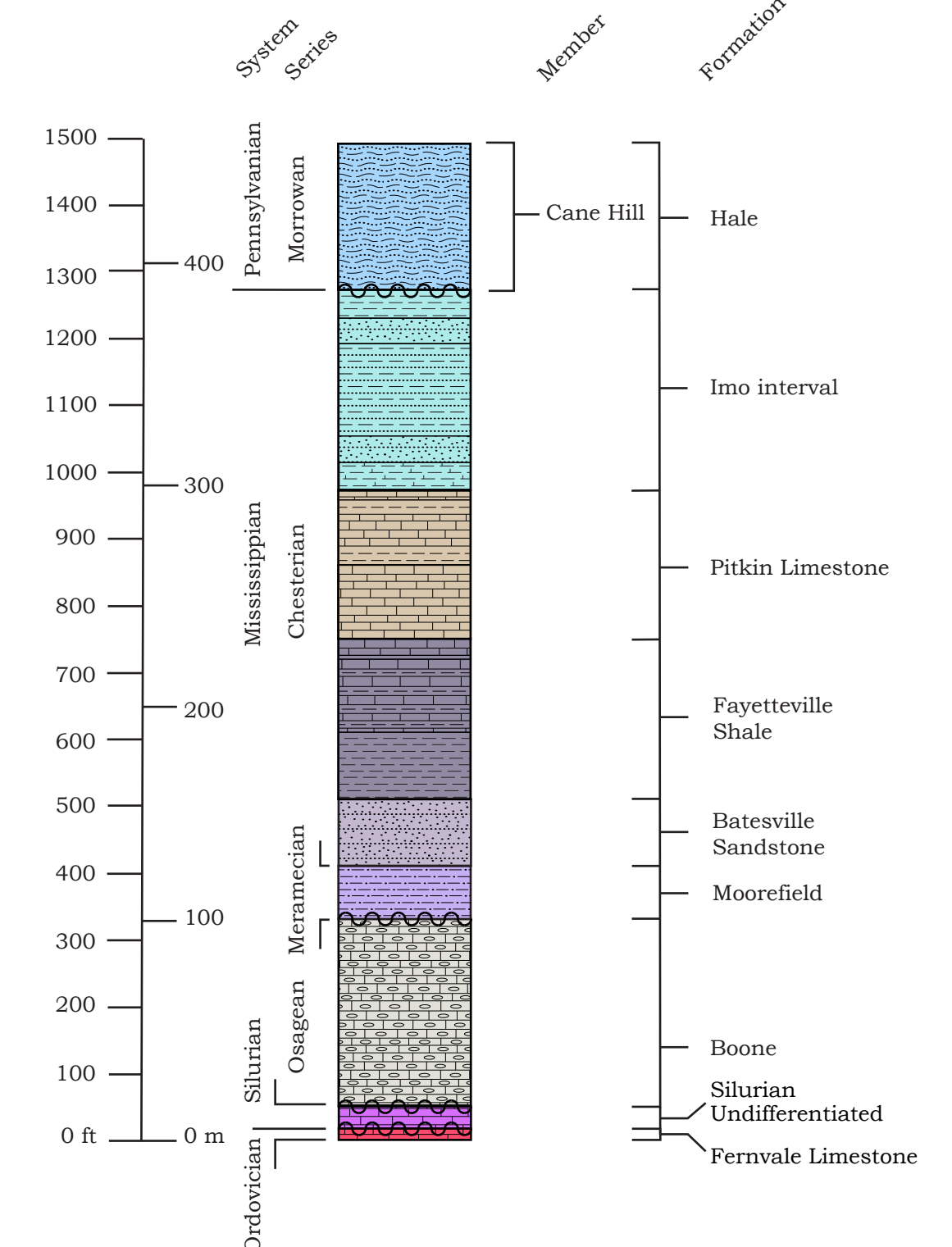
### Symbols

- Contact
- Normal fault - bar and ball on downthrown side. Dotted where concealed
- Indicates orientation of fault plane
- Inclined bedding showing direction and magnitude of dip
- Inactive gravel pit
- A — A' Cross-section line

### Description of Map Units

- Qat** **Alluvial terrace (Quaternary)** - Unconsolidated clay, silt, sand and gravel on either the modern floodplain or the modern floodplain and one or more terrace levels.
- Qls** **Landslide deposits (Quaternary)** - A mass of rock and debris that has moved downslope due to gravity. Only the largest landslide deposits are depicted.
- Phc** **Hale Formation (Pennsylvanian, Morrowan)** - Consists of two members, the Prairie Grove and the Cane Hill. Only the Cane Hill Member is present on this quadrangle. **Cane Hill Member** consists of very thin to medium-bedded, and rarely thick-bedded, very fine grained, silty sandstone with shale interbeds. The sandstone is buff to brown on freshly broken and weathered surfaces, characteristically ripple- or flat-bedded, and typically weathers to flagstone; locally thick-bedded and cross bedded; Other rare features include liseegang boxwork, bioturbation, and plant fossils. The shale is typically not exposed but may be clayey and black to dark-gray with rare liseegang boxwork. Unconformable with the underlying Imo interval. Up to 220 feet (67 meters) thick.
- Mpi** **Imo interval (Upper Mississippian, Chesterian)** - Typically consists of thin- to thick-bedded sandstone intervals interbedded with shale. Sandstone is mostly very fine grained, buff to tan on fresh surfaces, and weathers to brown or grayish-brown; displays well-developed, abundant stylolitic surfaces, and well-preserved plant fossils including *Calamites*, *Lepidodendron*, and *Stigmaria*; contains coal traces; cross bedded sections are common throughout; homogeneous structure is a common development, and liseegang banding and soft-sediment deformation are preserved locally. The shale is mostly black on fresh surfaces, but locally gray, charcoal-gray to tan on weathered surfaces; contains poorly exposed fossiliferous zones with fragments of brachiopods, ammonoids, nautiloids, crinoids, gastropods, and rugosans. Locally there are flat gypsum laminae less than a quarter inch (6 millimeter) thick, limestone lenses typically no more than two feet (0.6 meter) thick, and fossiliferous conglomerate lenses up to three feet (1 meter) thick containing ferruginous pebble-size concretions. Conformable with the underlying Pitkin Limestone. 180 - 400 feet (55 - 122 meters) thick.

### Stratigraphic Column



- limestone and chert
- shale with siltstone
- limestone
- shale with sandstone
- sandstone
- calcareous shale
- ripple-bedded sandstone and shale
- unconformable surface

### References

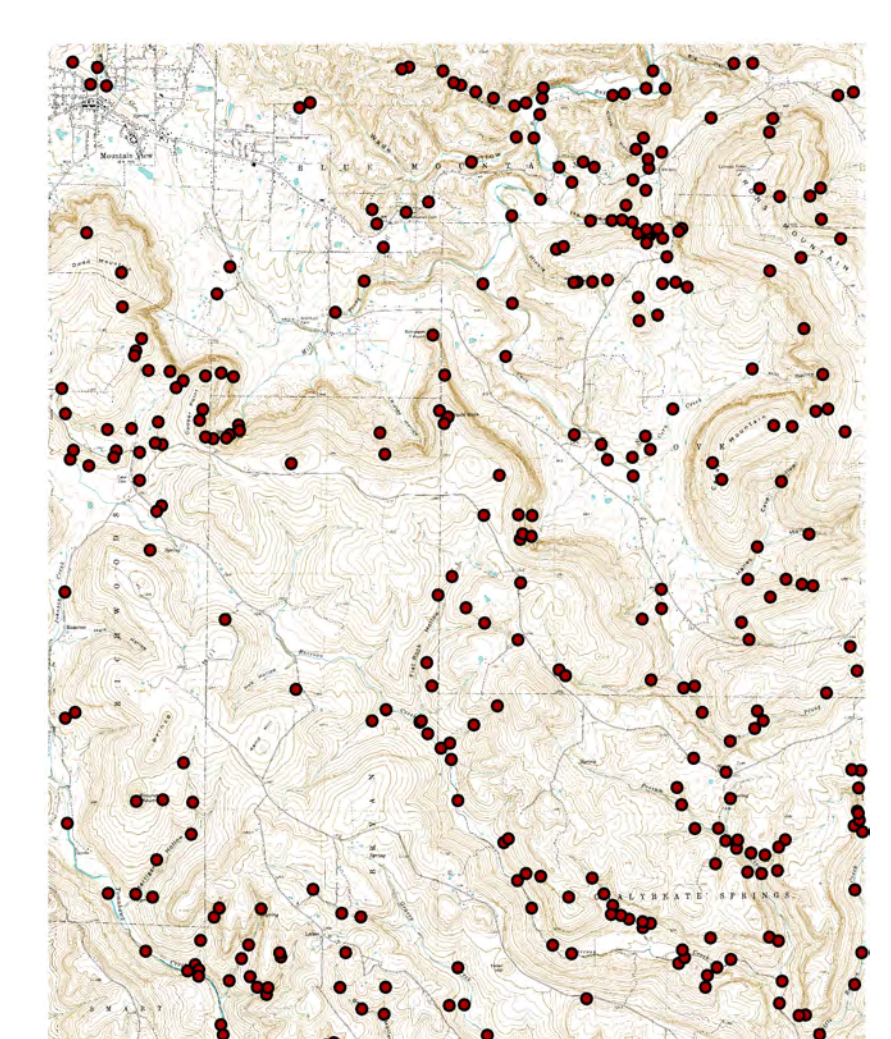
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Ingram, R. L., 1954, Terminology for the Thickness of Stratification and Parting Units in Sedimentary Rocks, Geological Society of America Bulletin, v. 65, pp. 937 - 938.

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Photomicrograph of the Mountain View quadrangle showing location of data collection points.



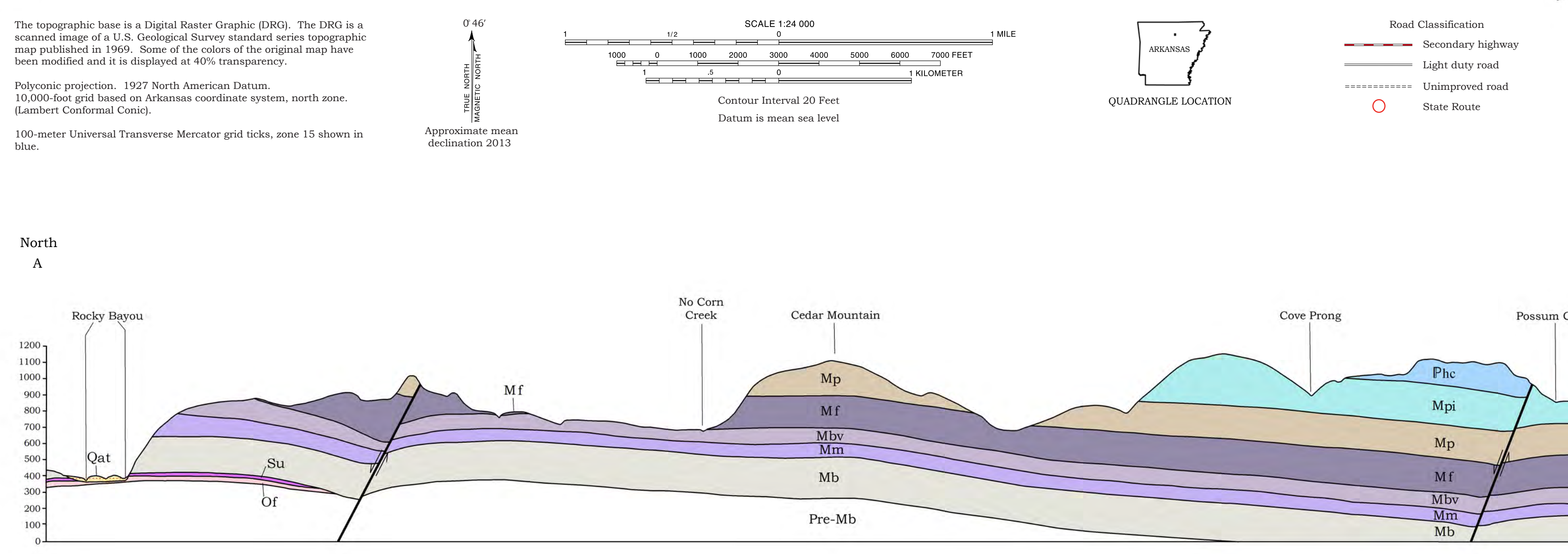
Interbedded siltstone and shale: Pitkin Limestone

**Acknowledgments:** This map was produced for the National Cooperative Geologic Mapping Program (NCGMP), a joint effort of the U.S. Geological Survey and the State Geological Surveys. Special thanks to the private landowners who graciously allowed access to their properties. Very special thanks to Angela Chaudier for her tireless dedication to this mapping project.

**Lithologies:** This map, like all geologic maps, is based on observations which were made from data available at the time it was created. As work continues and new data is collected, the contacts and structures depicted on this map may be changed.

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**Supporting citation for this map:**  
Hutto, Richard S., and Rains, Daniel S., 2013, Geologic map of the Mountain View quadrangle, Stone County, Arkansas: Arkansas Geological Survey, Digital Geologic Map, DGM-00604, 1 sheet, 1:24,000.



Geologic Cross Section A - A'

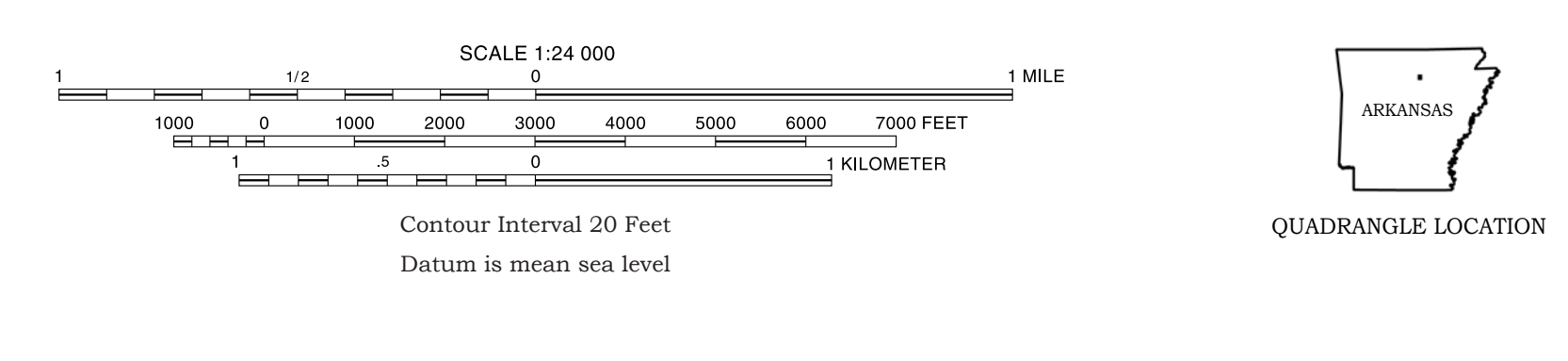
Scale:  
Horizontal: 1 inch = 2000 feet  
Vertical: 1 inch = 500 feet (4X exaggeration)

The topographic base is a Digital Raster Graphic (DRG). The DRG is a scanned image of a U.S. Geological Survey standard series topographic map published in 1969. Some of the colors of the original map have been modified and it is displayed at 40% transparency.

Polyconic projection. 1927 North American Datum. 10,000-foot grid based on Arkansas coordinate system, north zone. (Lambert Conformal Conic).

100 meter Universal Transverse Mercator grid ticks, zone 15 shown in blue.

Approximate mean declination 2013



- Secondary highway
- Light duty road
- Unimproved road
- State Route