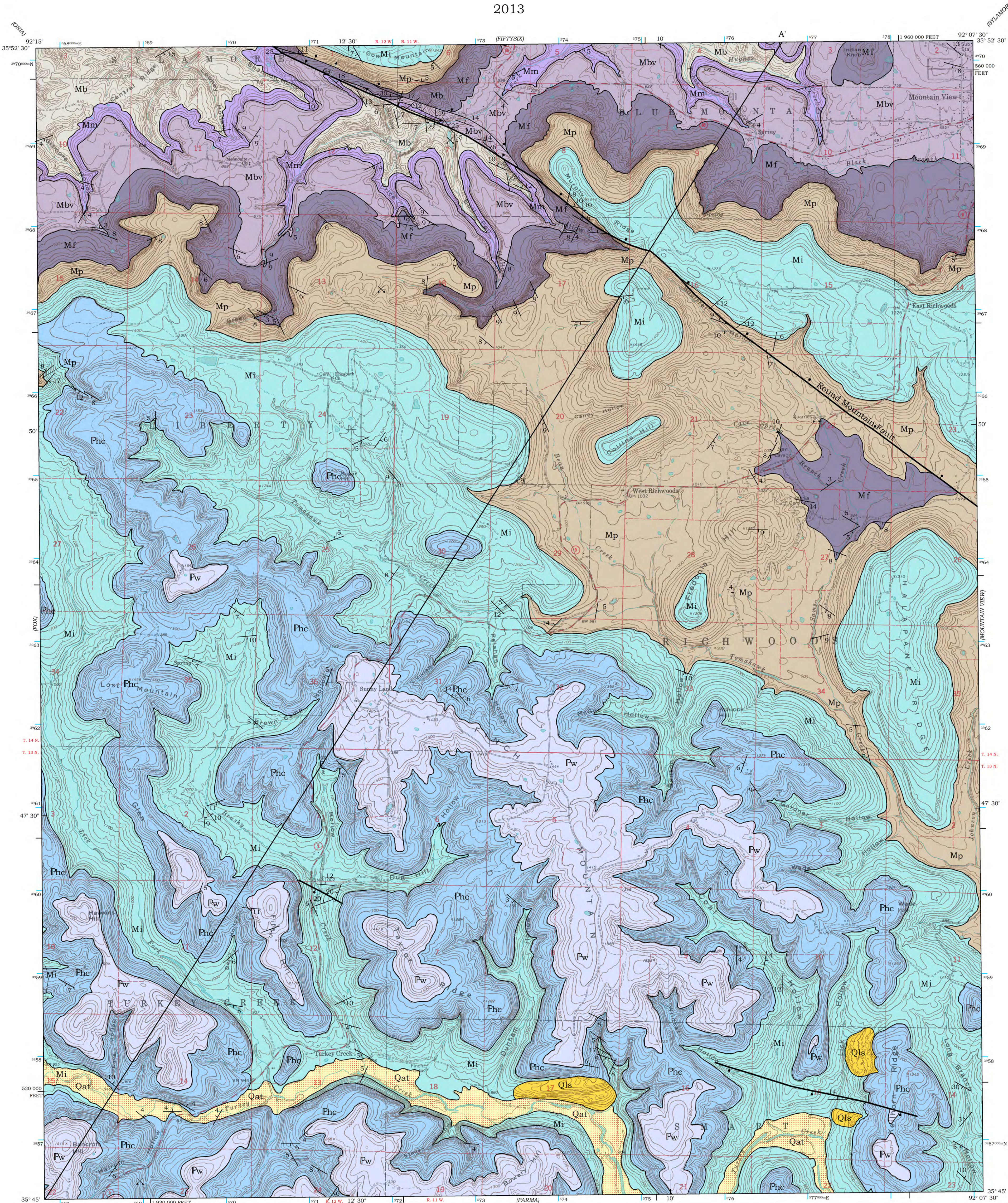
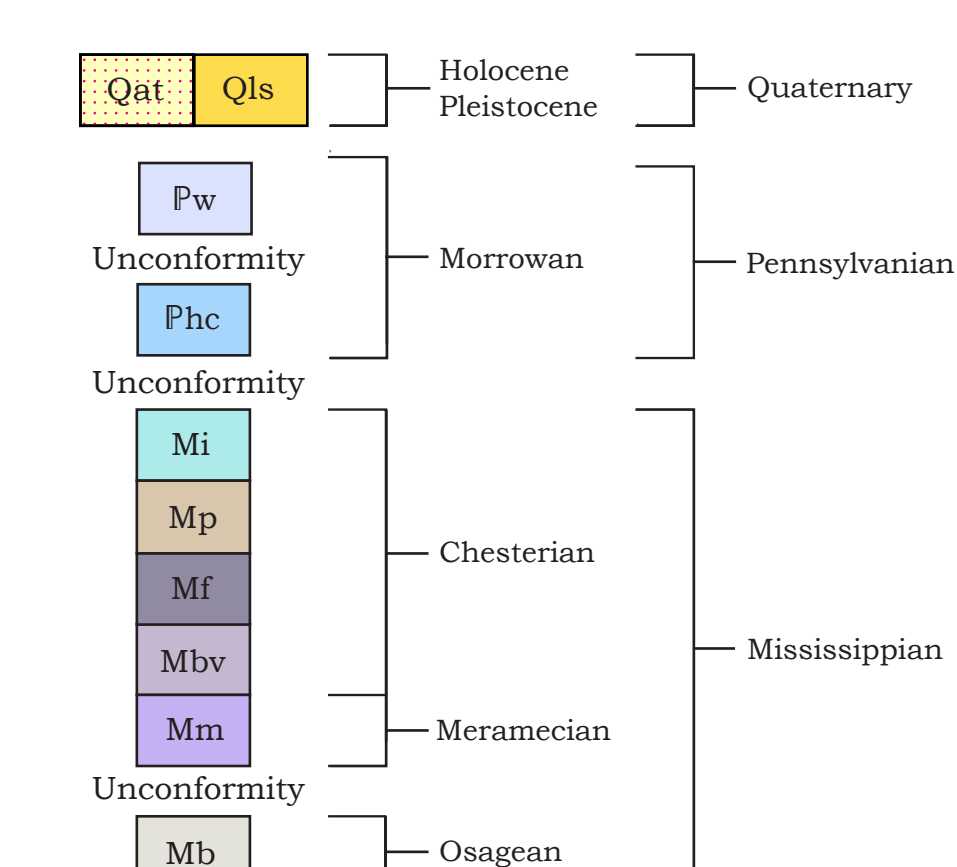


Geologic Map of the Mountain View SW Quadrangle, Stone County, Arkansas

Richard S. Hutto and Daniel S. Rains
 2013



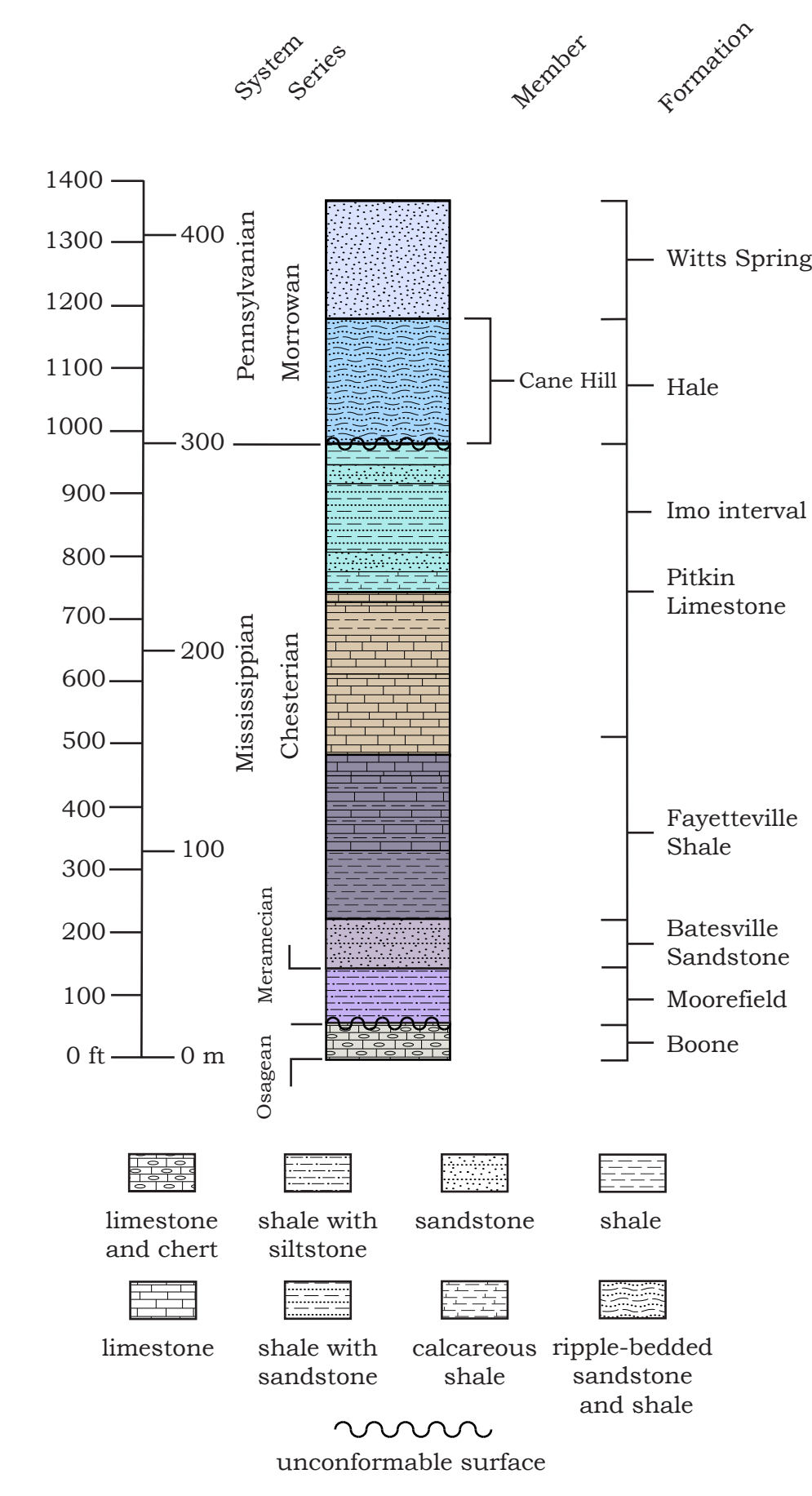
Correlation of Map Units



Description of Map Units

- Qat** **Alluvium (Quaternary)** - unconsolidated clay, silt, sand and gravel that was deposited by fluvial processes on either the modern flood plain 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 large prominent landslide deposits are depicted.
- Pw** **Witts Springs Formation (Pennsylvanian, Morrowan)** - Primarily consists of fine- to medium-grained sandstone that is buff to tan on freshly broken surfaces and gray after weathering. It is typically thin- to medium-bedded and weathers to massive bluffs and boulders. It is commonly cross bedded, calcareous and locally displays honeycomb structure. Liesegang banding and conglomeratic intervals are rare. Unconformable with the Cane Hill Member below. Up to 180 feet (55 meters) thick.
- Pbc** **Hale Formation (Pennsylvanian, Morrowan)** - Consists of two members: the Prairie Grove and the Cane Hill. Only the Cane Hill Member is depicted on this quadrangle. The shale is very fine grained to silty, ripple-bedded or flat-bedded, and typically tan to brown on fresh surfaces and brown after weathering; locally contains trace fossils, sole marks, manganese stains, and limonitic boxwork; locally micaceous on bedding planes. The shale is usually clay-rich but locally silty; dark-gray to black freshly broken and dark-gray after weathering; locally contains abundant fat to round concretions. Unconformable with the underlying Imo interval. 140 - 280 feet (43 - 85 meters) thick.
- Mi** **Imo interval (Upper Mississippian, Chesterian)** - Typically consists of thin- to thick-bedded sandstone interbedded with shale. Sandstone is mostly very fine grained, buff to brown on fresh surfaces, and weathers to brown, gray or tan; displays well-developed and abundant stylonitic surfaces and well-preserved plant fossils including *Calamites*, *Lepidodendrons*, and *Sigmaria*; contains coal traces; cross bedded sections are common throughout; honeycomb structure, liesegang banding and soft-sediment deformation are preserved locally. The shale is mostly black when freshly broken but locally grayish-brown, and charcoal-gray to tan after weathering; contains poorly exposed fossiliferous zones with fragments of brachiopods, ammonoids, nautiloids, crinoids, gastropods, rugosans, and bivalves; flat gypsum laminae, less than a quarter inch (6 millimeters) thick, are prevalent locally. Conglomeratic lenses and limonitic boxwork are common. Limestone lenses typically no more than two feet (6 meters) thick are rare within the shale. Conformable with the underlying Pitkin Formation. 180 - 280 feet (55 - 85 m) thick.
- Mp** **Pitkin Limestone (Upper Mississippian Chesterian)** - Mostly thick-bedded, very finely to coarsely crystalline bioclastic limestone with lesser intervals of shale, some of which contain thin, slightly calcareous siltstone interbeds. The limestone is usually light-gray to medium-gray on freshly broken surfaces and gray to tanish-gray after weathering; contains abundant fossil fragments including crinoid stems, ammonoids, and *Archimedes*; locally oolitic, stylonitic, oncoid and cross bedded. The shale and siltstone is black when freshly broken and buff on weathered surfaces. Nearly orthogonal joint sets produce square to rhombic siltstone float where these units are weathering at the surface. One location contained bright orange limonite-stained limestone concretions. Abundant sinkholes are developed in the Pitkin Formation. Conformable with the underlying Fayetteville Shale. Ranges from 140 - 400 feet (43 - 122 m) thick.
- Mf** **Fayetteville Shale (Upper Mississippian)** - Primarily composed of shale with interbedded micrite and very finely granular limestone. The shale is black when freshly broken, dark-gray when weathered, and clay-rich. The micrite is black on fresh surfaces and light-gray after weathering; characteristically petroliciferous when freshly broken, thin- to medium-bedded, and grades from being almost absent in the lower portion to almost ubiquitous near the upper contact; where fossiliferous brachiopods are a primary constituent. Locally there are up to 4 inch (10 centimeters) bedded, light-orange siltstone concretions and cobble-sized septarian concretions. Conformable with the underlying Batesville Sandstone. Thickness ranges from 120 - 400 feet (37 - 122 meters).
- Mbv** **Batesville Sandstone (Upper Mississippian)** - Primarily sandstone units with lesser intervals of shale between them. Typical sandstone is very fine grained, tan to gray to orange-gray on freshly broken surfaces and weathers buff to brown; outcrops are typically either blocky and non-calcareous or cross bedded and calcareous; bedding thickness is highly variable ranging from thin to thick. The shale intervals are clayey, black when freshly broken, and tan- to buff-colored after weathering. Beds of bioclastic limestone are rare. Springs commonly develop near the conformable contact with the Moorefield Formation. Total thickness ranges from 40 - 120 feet (12 - 37 meters).
- Mm** **Moorefield Formation (Upper Mississippian)** - Consists primarily of shale, sandstone, and siltstone. The shale is usually dark-gray to black when freshly broken, buff to brown after weathering, and clay-rich. The silty sandstone is very fine grained and mostly thick bedded but thin to medium beds are interspersed locally; dark-gray when freshly broken and brown to buff after weathering; locally very limy and fossiliferous with abundant, well-preserved brachiopods. The siltstone is usually similar in color and bedding as the sandstone and locally calcareous. Near the unconformable contact with the Boone Formation limy siltstone is common. Thickness ranges from 60 - 120 feet (18 - 37 meters).
- Mb** **Boone Formation (Upper Mississippian, Osagean)** - Typically consists of thick-bedded, finely granular to coarsely bioclastic limestone interbedded with chert as nodules and anastomosing beds. Limestone is usually medium- to dark-gray freshly broken and light-gray weathered; common fossils include crinoids and brachiopods though others have been noted (see McFarland, 2004). Pyrite crystals are rare. Chert is commonly white to gray on freshly broken and weathered surfaces, but weathers to tan locally. Geomorphology is characterized by rolling hills with abundant sinkholes and springs, covered by unconsolidated regolith composed primarily of red clay and chert gravel. Up to 260 feet (79 meters) thick.

Stratigraphic Column

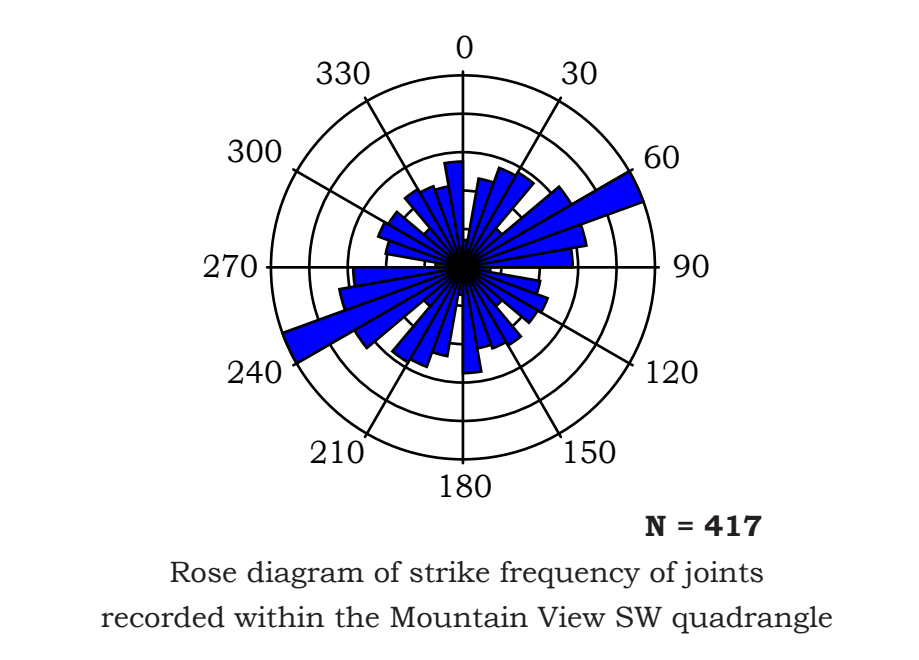


Introduction

This map depicts the bedrock and surficial geology of the Mountain View SW 7.5-minute quadrangle. In this area approximately 1400 feet (427 meters) of Lower Mississippian through Pennsylvanian (Morrowan) clastic and carbonate sedimentary rocks are near the surface. The bedrock is overlain by a veneer of Quaternary-age regolith. Regional geology of the area is controlled by an uplift centered in the St. Francois 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 completely transects the north part of the quadrangle.

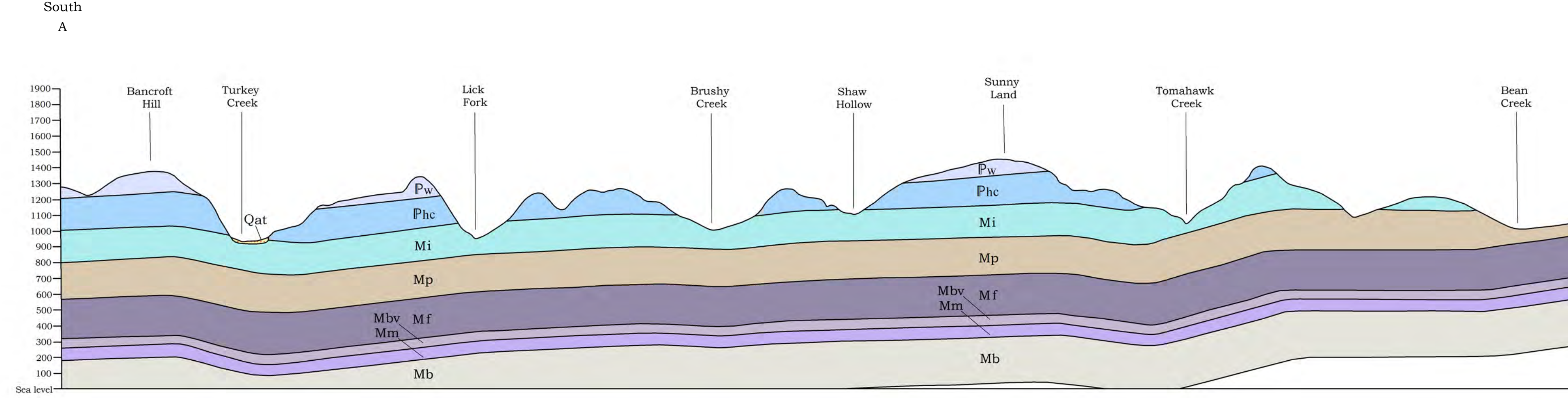
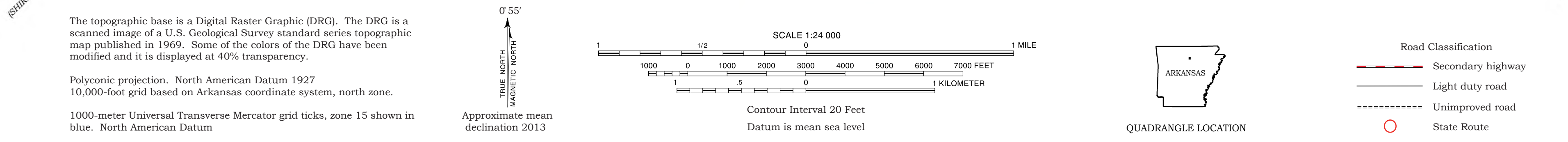
The geology of the Mountain View SW quadrangle was mapped circa 1973 by E. E. Glick for the 1:500,000-scale Geologic Map of Arkansas. This map builds on the previous work but uses a more detailed stratigraphic section and depicts structures in greater detail. The contacts and structural features on the 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



Symbols

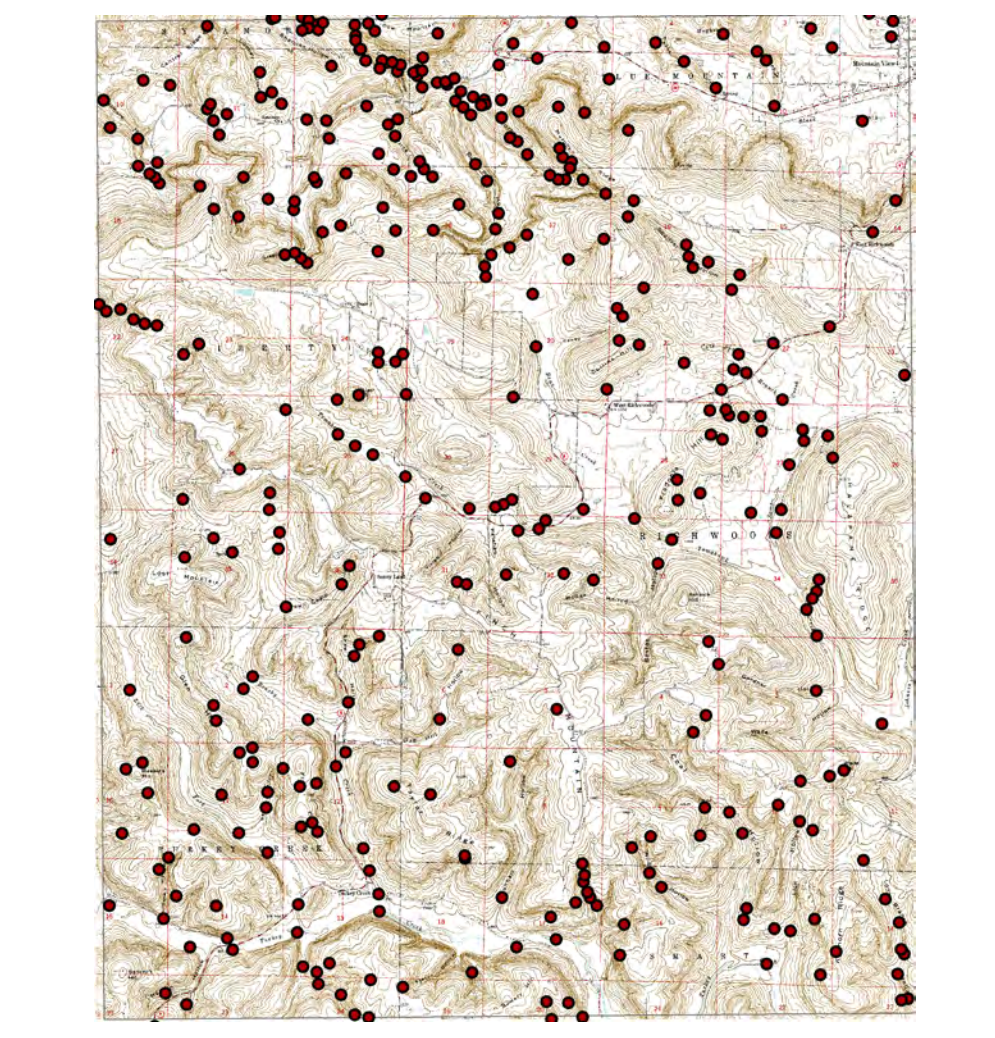
- Contact
- Normal fault - bar and ball on downthrown side. Dotted where concealed
- Indicates orientation of fault plane
- Inclined bedding showing direction and magnitude of dip
- Gravel pit
- Inactive gravel pit
- Cross-section line



Geologic Cross Section A - A'
 Scale:
 Horizontal: 1 inch = 2000 feet
 Vertical: 1 inch = 500 feet (4X exaggeration)

References

- Glick E. E., 1973. Preliminary Geologic map of the Mountain View SW quadrangle, Stone County, Arkansas: Arkansas Geological Commission, Geologic Worksheet, 1 sheet, 1:24,000.
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Topographic map of the Mountain View SW quadrangle showing location of data collection points.

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Limitations: This map, like all geologic maps, is based on interpretations which were made from the 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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