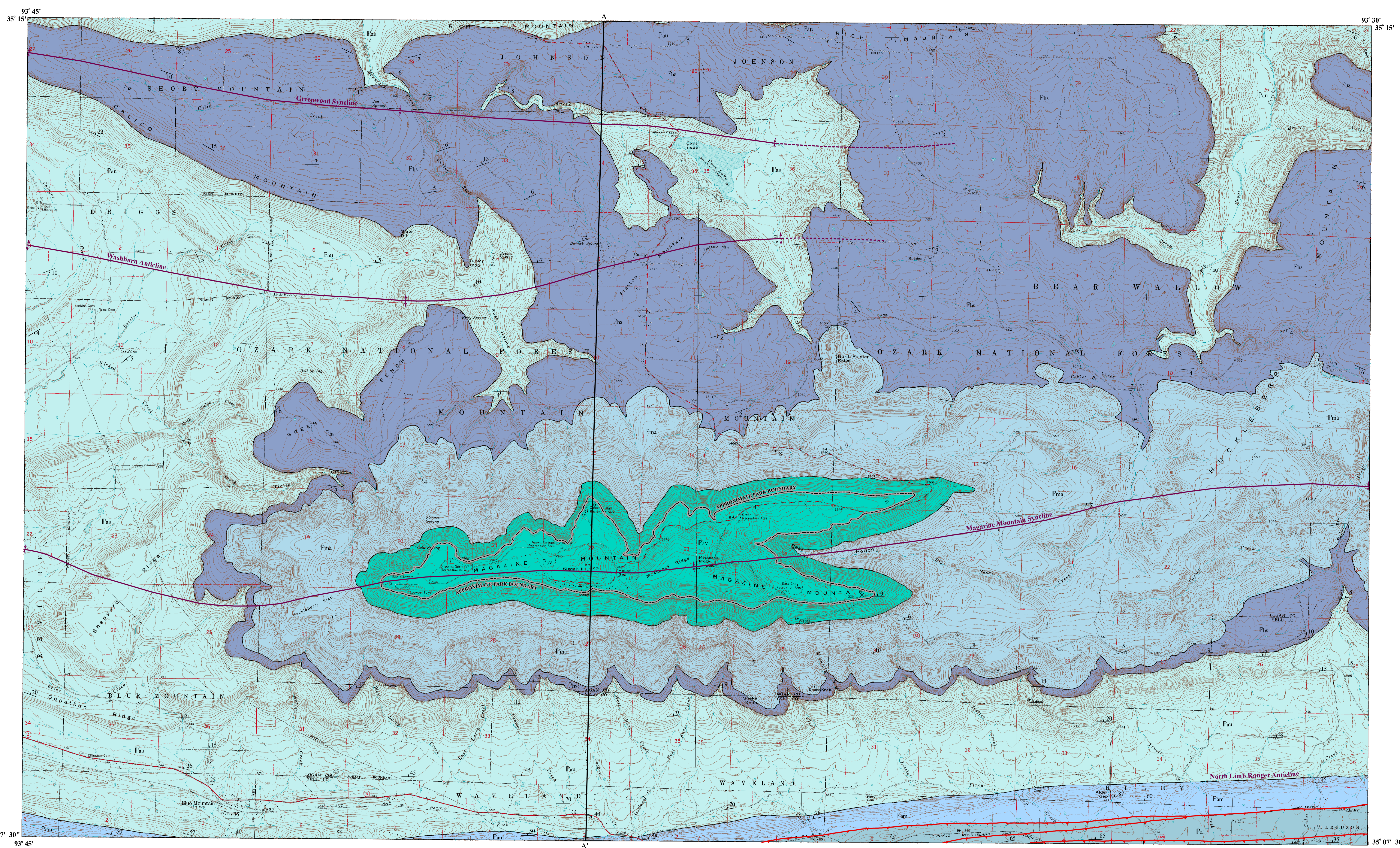
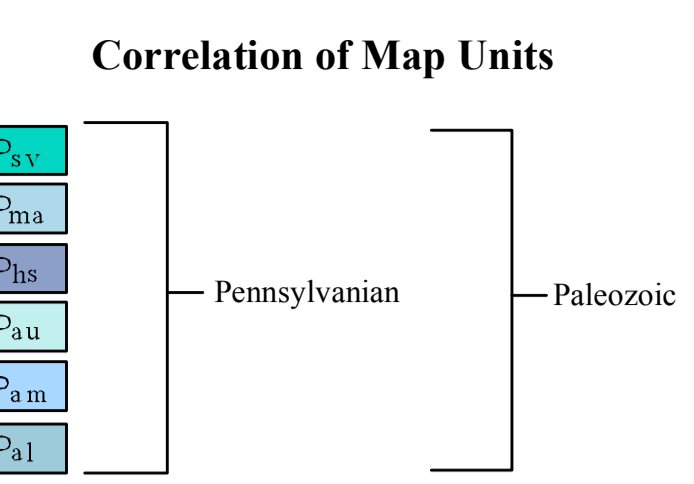


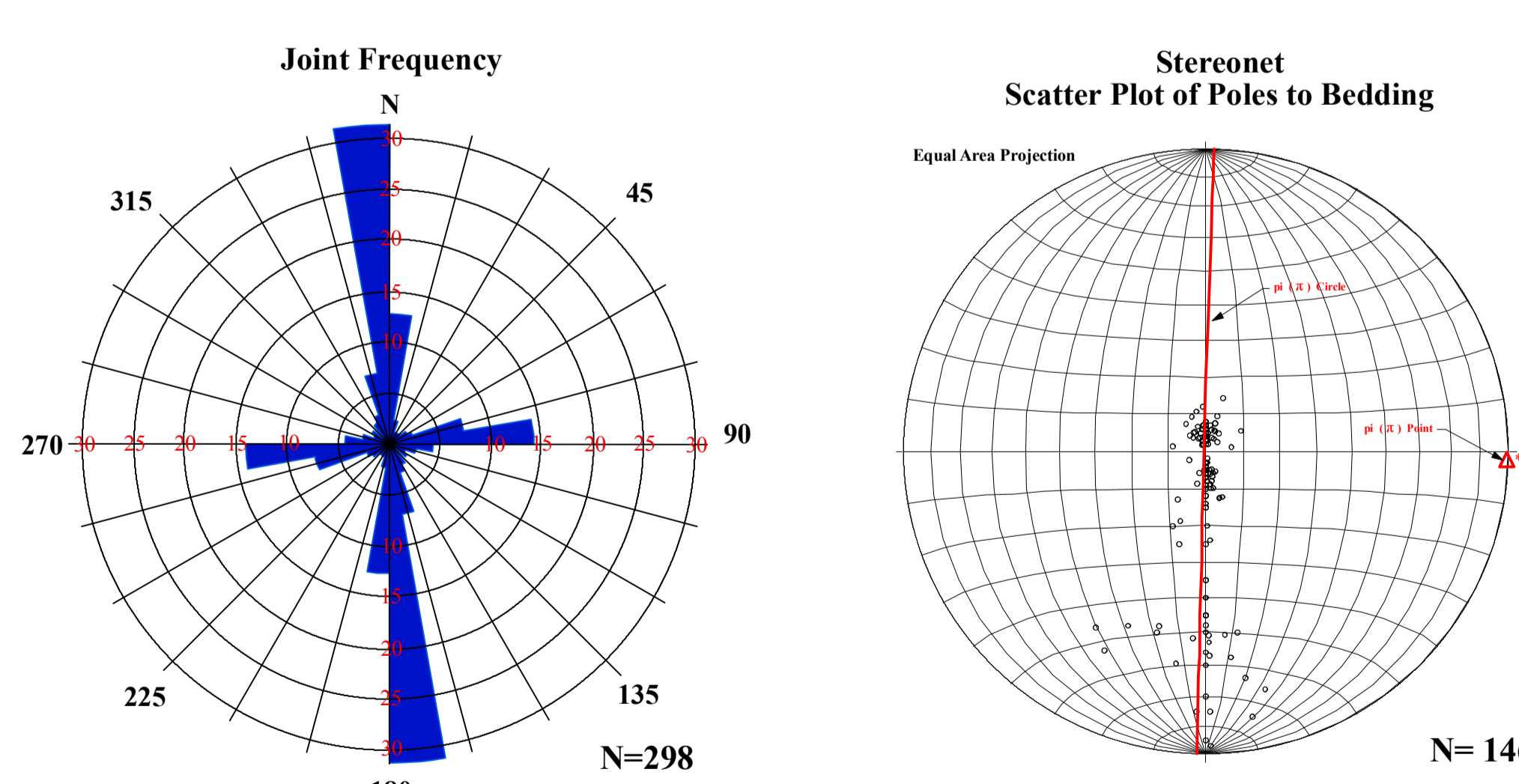
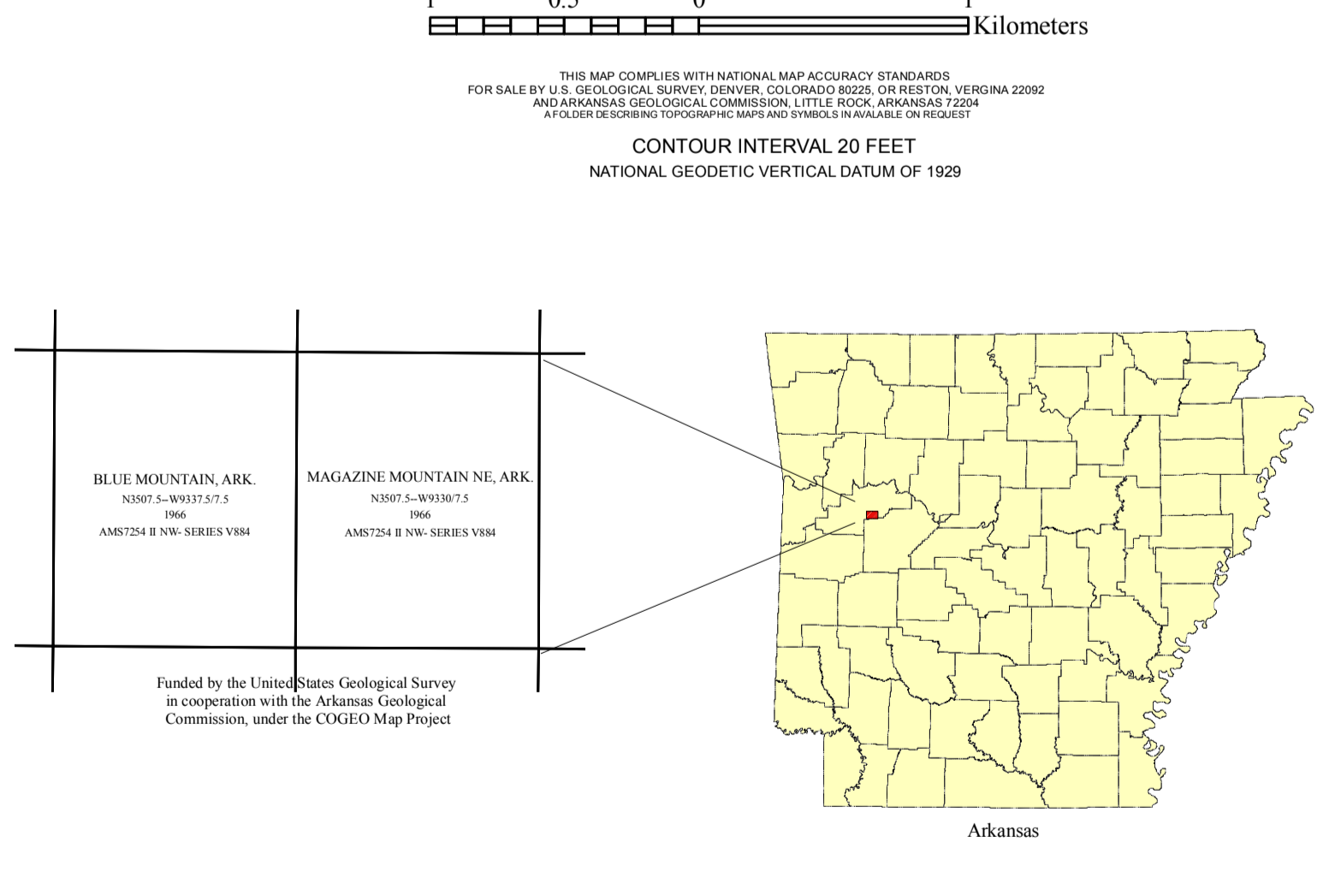
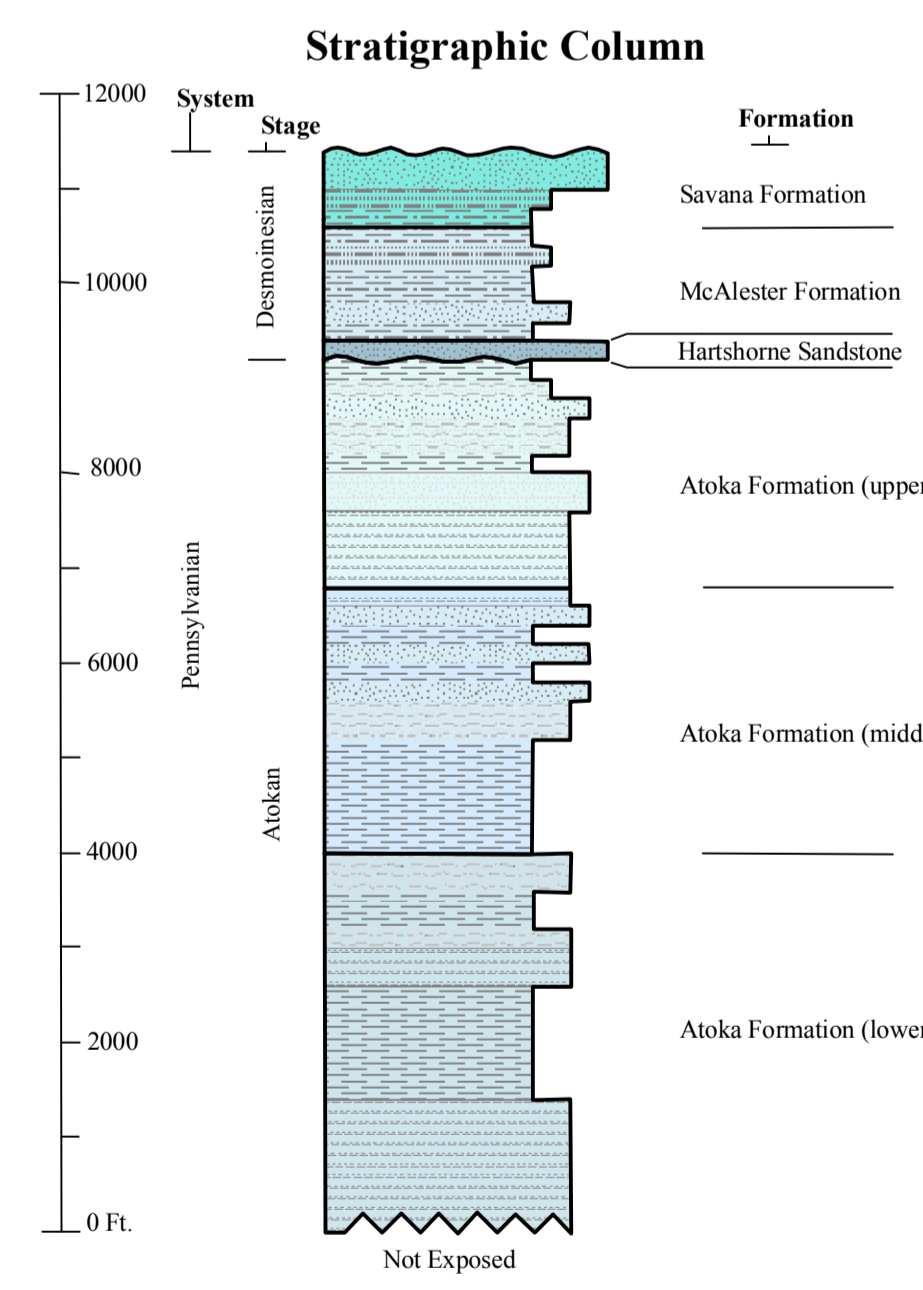
Geologic Map of Mount Magazine State Park and Vicinity

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Digital Compilation by Jerry W. Clark and Tiffany L. Celis
2006
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Arkansas Geologic Commission, Bekki White, State Geologist

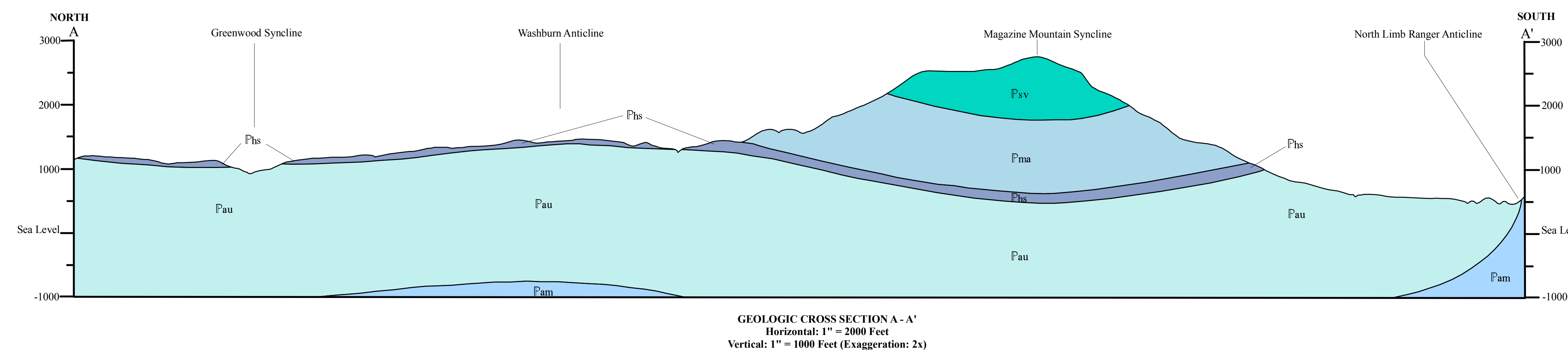


- Description of Map Units**
- Savanna Formation (Pennsylvanian)** The Savanna Formation is a sequence of dark-gray shale and silty shale with varying amounts of light-gray siltstone and medium-gray, very fine to fine-grained sandstone. These rocks were deposited in shallow marine, deltaic and fluvial (stream) environments. The siltstone and sandstone beds in the lower and upper portions of the section are normally the thickest. Numerous coal seams and an occasional limestone bed are present in the formation. This unit caps isolated synclinal mountains in the western Arkansas River Valley, including Magazine Mountain. Fossils are few, but plant and marine invertebrate remains have been observed. The Savanna Formation is conformable with the underlying McAlester Formation. Thickness ranges from approximately 750 to 1250 feet locally, but the upper portion of the sequence is missing throughout most of Arkansas.
 - McAlester Formation (Pennsylvanian)** The McAlester Formation is a sequence of gray to black shale, silty shale, siltstone, and tan to gray, thin-bedded, very fine-grained sandstone, with three or more coal beds (including the Lower Hartshorne Coal). The beds of sandstone are lenticular, irregularly to regularly bedded, and rest on shale sometimes exhibiting a channel type relationship. The sandstones were deposited both in deltaic and fluvial environments. The shale is fissile, thin-bedded and locally contains ironstone concretions. This shale mostly represents shallow marine deposition. The McAlester rests conformably on the Hartshorne Sandstone. Plant and invertebrate fossils have been observed from several horizons. Thickness ranges from approximately 900 to 1200 feet locally.
 - Hartshorne Sandstone (Pennsylvanian)** The Hartshorne Sandstone is a sequence of light to medium-gray to brown, thin to massive, frequently cross-bedded, fine to medium-grained sandstone, deposited in a westward fluvial (stream) environment. Channel-type sandstones with intermittent ripple, cross, and undulating bedding are common. Pressure solution stylolites often occur in the sandstones. Some of the sandstones may be interbedded with shale, and an occasional coal seam may be present throughout the unit. The shale is fissile, thin-bedded and locally contains ironstone concretions and coalified to silicified logs and twigs. The formation is a prominent ledge-former under favorable structural conditions. The Hartshorne Sandstone is unconformable with the underlying Atoka Formation. The upper contact with the overlying McAlester Formation is the top of the first continuous sandstone below the Lower Hartshorne Coal. Fragmental plant fossils have been observed. Thickness ranges from approximately 90 to 225 feet locally.
 - Atoka Formation (Pennsylvanian)** The Atoka Formation is a sequence of predominantly marine and deltaic, mostly tan to dark-gray, fine to medium-grained sandstones and grayish-black shales. The shales typically are fissile, thin-bedded and may contain thin beds of siltstone, or very fine-grained sandstone. The bedding of middle Atoka sandstones is extremely variable. They vary from lenticular, irregular to regular, and very thin to massive. This unit has the largest areal extent of any of the Paleozoic formations in the state. Geologic mapping in the Arkansas Valley and Frontal Ouachita Mountain provinces has divided this formation into the upper, middle, and lower members.
 - Atoka Formation upper (Pennsylvanian)** The Upper Atoka Formation is a sequence of predominantly marine and deltaic, mostly tan to dark-gray, fine to medium-grained sandstones and grayish-black shales. The shales typically are fissile, thin-bedded and may contain thin beds of siltstone, or very fine-grained sandstone. The bedding of upper Atoka sandstones is extremely variable, ranging from lenticular, irregular to regular, and very thin to massive. Ironstone concretions and small coal seams occur in some intervals. Plant and invertebrate fossils are often present in several horizons. Thickness ranges from approximately 2100 to 2700 feet locally.
 - Atoka Formation middle (Pennsylvanian)** The Middle Atoka Formation is a sequence of predominantly marine and deltaic, mostly tan to dark-gray, fine to medium-grained sandstones and grayish-black shales. The shales typically are fissile to platy and may contain thin beds of siltstone, or very fine-grained sandstone. The bedding of middle Atoka sandstones is extremely variable. They vary from lenticular, irregular to regular, and very thin to massive. Many of these sandstone and shale sequences have considerable continuity and extent. Small coal seams and minor limestones occur in some intervals. Trace fossils occur throughout the section. Plant and invertebrate fossils are often present in several horizons, yielding goniatite and snail remains have been observed from several horizons. Thickness increases southward from about 2000 to over 3500 feet in the region.
 - Atoka Formation lower (Pennsylvanian)** The Lower Atoka Formation is a sequence of predominantly deep marine, mostly tan to dark-gray, fine to medium-grained sandstones, gray siltstones, and grayish-black shales. The shales typically are fissile, thin-bedded and may contain thin beds of siltstone, or very fine-grained sandstone. The bedding of the lower Atoka sandstones is extremely variable. The beds vary from lenticular, undulating to even-bedded, and very thin to massive. These deposits represent proximal deep water turbidites and debris flows, where the water depth below normal wave base was most likely greater than 600 feet. Calcareous beds, siltstone shales, and shale intervals containing ironstone concretions are known. Trace fossils occur throughout the section. Plant and invertebrate remains have been observed in several horizons. They were transported in from the north by turbidity currents flowing off the shelf platform. Thickness increases southward from about 4000 to over 9000 feet in the region.

Scale bars in miles and kilometers, and contour interval information.



- Symbols**
- Contact
 - Thrust Fault (Barb on Uphrown Plate)
 - Anticline
 - Anticline Inferred
 - Syncline
 - Syncline Inferred
 - Strike and Dip
 - Abandoned Quarry
- ROAD CLASSIFICATION**
- Heavy duty
 - Light duty
 - Unimproved dirt
 - State Route



- References**
- Haley, B. R., & Stone, C. G., 1997. Geologic Map of the Magazine NE Quadrangle, Logan and Yell Counties, Arkansas. Arkansas Geological Commission Open-File Report, scale 1:24,000.
 - Haley, B. R., & Stone, C. G., 1997. Geologic Map of the Blue Mountain Quadrangle, Logan and Yell Counties, Arkansas. Arkansas Geological Commission Open-File Report, scale 1:24,000.
 - McFarland, J. D., 1998. Stratigraphic Summary of Arkansas. Arkansas Geological Commission Information Circular 36, 39p.
- Revised 01 May 2007**

