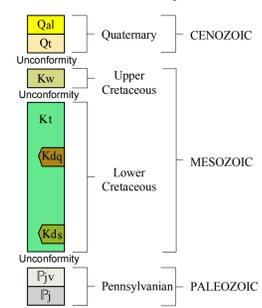


GEOLOGIC MAP OF THE DIERKS QUADRANGLE, HOWARD AND SEVIER COUNTIES, ARKANSAS

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Digital Compilation William D. Hanson and Steve Martin
1997
Arkansas Geological Commission, William V. Bush, State Geologist

Correlation of Map Units



Description of Map Units

- Qal Alluvium (Quaternary)** - Variably sized gravel overlain by unconsolidated sand, silt, and clay comprises this unit. This alluvium occurs in the floodplains of streams and rivers. The sediments form a rich loam suitable for agriculture. Gravels, primarily novaculite, originated in the Ouachita Mountain region and local Cretaceous formations. Thickness varies from 0 to 25 feet. Areas of alluvium are presently receiving sediment deposition.
- Qt Terrace Deposits (Quaternary)** - Terrace deposits generally grade from basal gravel to silt and clay at the top. Gravels, primarily novaculite, originated in the Ouachita Mountain region and local Cretaceous formations. Thicknesses are generally less than 50 feet. Terraces are topographic features which are former floodplains of nearby streams and/or rivers. The sediments form a rich loamy soil. The basal gravel is sometimes utilized for water-well production and gravel-mining operations.
- Kw Woodbine Formation (Upper Cretaceous)** - The Woodbine Formation consists of water-laid, cross-bedded tuffs, tuffaceous sands, gravel, and red and gray clay. Basal cross-bedded gravels are approximately 20 feet (6 meters) thick and form a 1/2 to 6 inches (1 centimeter to 15 centimeter) in diameter, well-rounded and are composed of novaculite, quartz, sandstone, and quartzite. Iron-cemented conglomerates may be present locally. The source area of the gravel was the Ouachita Mountain region west of the Arkansas-Oklahoma state line. The unit dips to the south 80 feet per mile. The unit was deposited in a near-shore marine environment following a major unconformity which separates it from the underlying Trinity Group (Lower Cretaceous).
- Kt Trinity Group (Lower Cretaceous)** - The Trinity consists of sand, gravel, clay, limestone, asphalt, and evaporite deposits. Members exposed are the Pike Gravel, Dierks Limestone Lenticle, and the De Queen Limestone Member. The Pike Gravel is the basal member of the Trinity and consists of gravel along with a few boulders. Boulders are usually sandstone while the gravels are composed of novaculite, chert, sandstone, and quartzite. This member has a maximum thickness of 100 feet. The sand-rich intervals in the Trinity are medium- to fine-grained, cross-bedded, and usually weather orange-red to tan. Some barite-cemented sand intervals and celestite beds occur in the upper part of the unit. The Dierks Limestone consists of interbedded calcareous clay and limestone and is about 40 feet thick. The De Queen Limestone consists of calcareous clay, limestone, marl, gypsum, and celestite. Marginal marine fossils are noted from these two members. The Trinity rests unconformably on a surface of upturned and eroded Paleozoic rocks. The Trinity Group is bounded by unconformities separating it from Pennsylvanian age rocks below and Upper Cretaceous age rocks above.
- Kdq DeQueen Limestone (Lower Cretaceous)** - The DeQueen Limestone consists of marl, calcareous clay, limestone, and gypsum. Marls and calcareous clays weather to red, green, and yellow-brown and are sticky. Limestones are gray to light brown, pyritic, and fossiliferous. The DeQueen was deposited in a restricted nearshore marine environment and dips 80 feet per mile to the south.
- Kds Dierks Limestone Lenticle (Lower Cretaceous)** - The Dierks is an interbedded calcareous clay and fossiliferous limestone found in the lower part of the Trinity Group. The limestones weather to twin slabs and nodular masses. Notable fossils include the *Ostrea franklini*.
- Pjv Johns Valley Formation (Pennsylvanian)** - The Johns Valley Shale typically consists of alternating intervals of grayish-black shale and light gray micaceous, silty, fine- to medium grained sandstone. The shale weathers to a buff gray color and the sandstone weathers to a light to dark brown color. Thin beds of black siliceous shale and chert with siderite concretions are present in some shale. Chaotic intervals occur near the base of the formation and may contain exotic, calcareous fossiliferous siltstones. Carbonized plant remains occur in some of the silty sandstones. The formation has a thickness of about 2,500 feet, but structural deformation prevents an accurate estimate for this area. Deep marine turbidite deposition is indicated by the abundant sedimentary features and trace fossils. The formation is conformable with both the underlying Jackfork Sandstone and the overlying Atoka Formation (Pennsylvanian).
- Pj Jackfork Formation (Pennsylvanian)** - The Jackfork Sandstone contains alternating layers of grayish black shale, fine- to medium-grained light gray, quartzose sandstone. Shales weather reddish- to tanish-gray in color. The sandstone weathers white to reddish-brown in color. Some granule-conglomerate intervals occur in massive quartzose sands in both the upper and lower portions of the formation. Thin intervals of black siliceous shale with some pinkish siltstone laminae are sometimes present. Debris flows containing clasts of shale, sandstone, and siltstone are locally present sedimentary features and trace fossils. In the Athens Plateau, the Jackfork Sandstone has a total thickness of about 7,000 to 7,500 feet in the quadrangle. About 800 feet of the uppermost Jackfork Sandstone and thick conformable sequences of younger Pennsylvanian strata are absent due to overlap by Lower Cretaceous strata.

Symbols

- 15° Strike / Dip
- Thrust Fault
- Formation Contacts
- Abandoned sand and/or gravel pit
- Abandoned mine or quarry
- Reclaimed mine or quarry
- Prospect
- Barite
- Sand & Gravel
- Strontium

References

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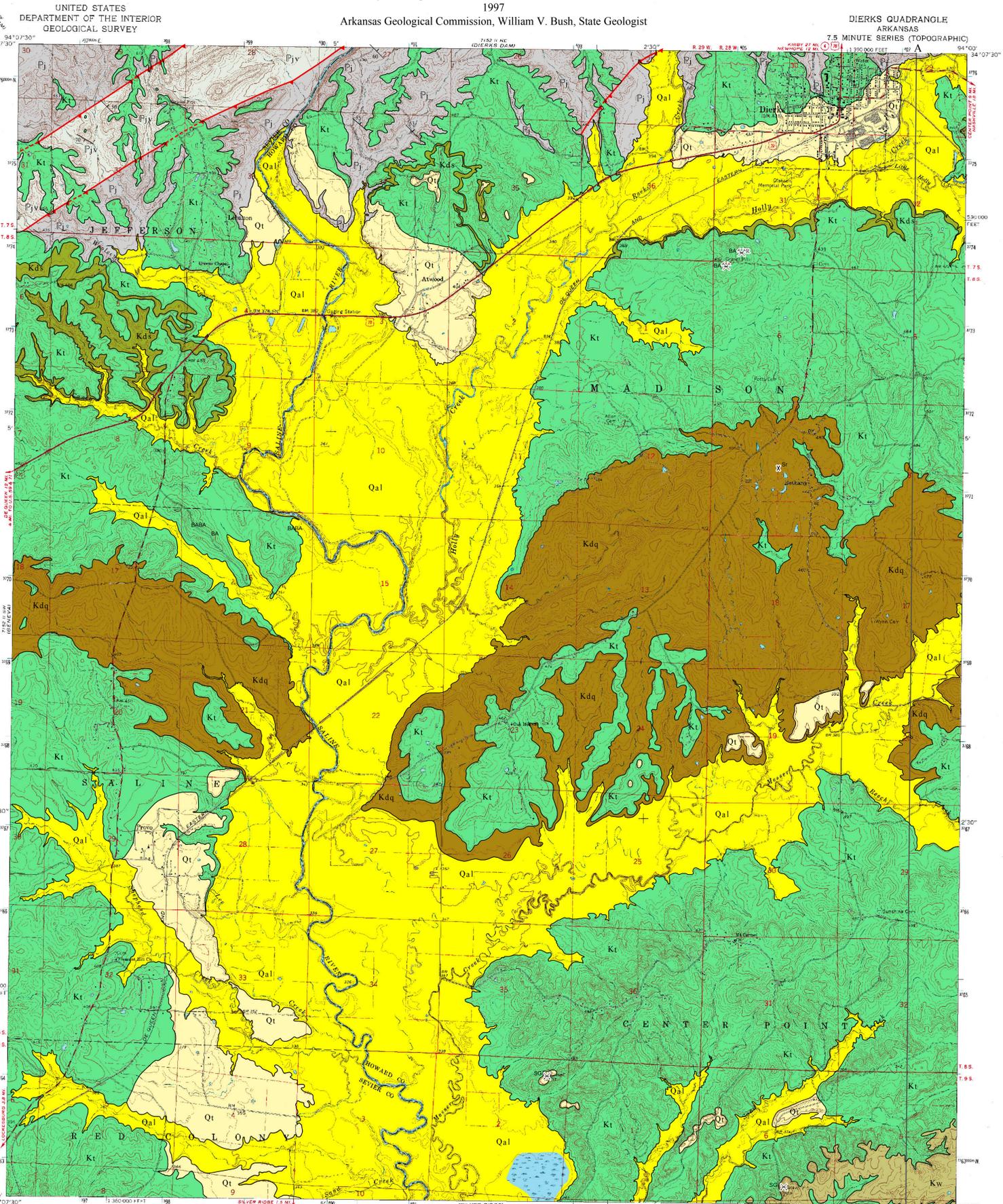
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Mapped, edited, and published by the Geological Survey
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Topography by photogrammetric methods from aerial photographs taken 1964 and 1966. Field checked 1966.
Polyconic projection. 1927 North American datum.
10,000-foot grid based on Arkansas coordinate system, south zone.
1:000-foot Universal Transverse Mercator grid lines, zone 15, shown in blue.
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photograph. This information is unchecked.

ROAD CLASSIFICATION
Heavy duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

CONTOUR INTERVAL 10 FEET
NATURE IS NEARLY AS ABOVE.

SCALE 1:24,000

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
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Funded by the Arkansas Geological Commission in cooperation with the United States Geological Survey, STATEMAP
Project No. 1434-94-A-1223

DIERKS, ARK.
N3400—W9400/7.5
1966
AMS 7152 II SE—SERIES 9884

