DIGITAL GEOLOGIC QUADRANGLE MAP
OKOLONA SOUTH QUADRANGLE, ARKANSAS
DGM-AR-00648

GEOLOGIC MAP OF THE OKOLONA SOUTH QUADRANGLE, CLARK, NEVADA, AND PIKE COUNTIES, ARKANSAS

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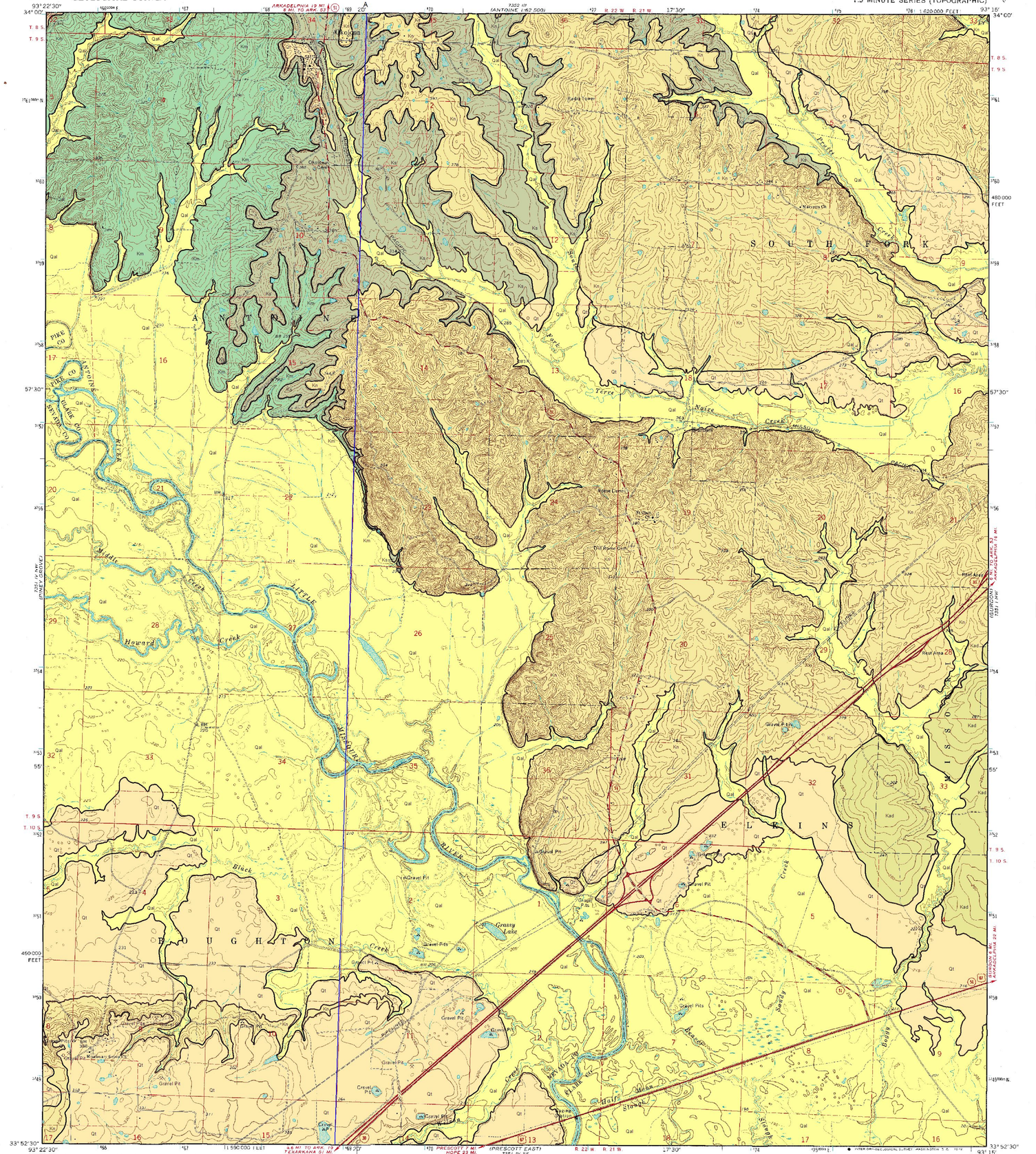
Digital compilation by William D. Hanson, Jennifer R. Perkins, Jerry W. Clark, and Daniel K. Smith
2001
Arkansas Geological Commission, William V. Bush, State Geologist

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OKOLONA SOUTH QUADRANGLE
ARKANSAS
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1968. Field checked 1970.

Polyconic projection. 1927 North American datum.
10,000-foot grid based on Arkansas coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Fine red dashed lines indicate selected fence and field lines where they generally visible on aerial photographs. This information is unchecked.

UTM GRID AND 1970 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT HALF-TOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Primary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Secondary highway, all weather, hard surface
Unimproved road, fair or dry weather
Interstate Route
U. S. Route
State Route

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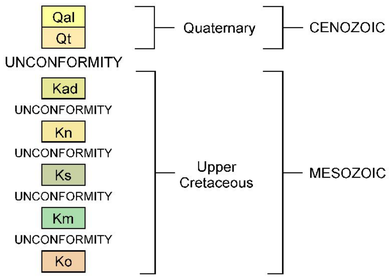
Funded by the Arkansas Geological Commission in cooperation with the United States Geological Survey, STATEMAP Project No. 1434-94-A-1223

OKOLONA SOUTH, ARK.
N3352.5—W9315/7.5

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 unit occurs in the floodplains of streams and rivers. The sediments form a rich loam and are excellent for agriculture. Gravels, primarily novaculite, originated in the Ouachita Mountain region and from 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 from 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.

Kad **Arkadelphia Marl (Upper Cretaceous)** - The Arkadelphia Marl is a dark-gray to black marl or marly clay. It contains some limy, gray sandstone, gray sandy clay, sandy limestone, concretionary limestone, and white to light brown impure chalk. The sandy marls and limestones are found near the base of the unit, while the impure chalks are found near the top of the unit. The Arkadelphia Marl is approximately 70 feet thick in the mapped area. The unit strikes to the northeast and has a dip of approximately 80 feet per mile to the southeast in this quadrangle. Fossils present in the Arkadelphia Marl include corals, bivalves, gastropods, cephalopods, shark teeth, and various microfossils. The unit was deposited in a nearshore marine environment and rests unconformably on top of the Nacatoch Sand.

Kn **Nacatoch Sand (Upper Cretaceous)** - The Nacatoch Sand is composed of unconsolidated, cross-bedded, yellowish and gray fine quartz sand, hard fossiliferous sandy limestone, coarse highly glauconitic sand, fine argillaceous blue-black sand, and bedded light-gray clay and marl. Hard fossiliferous limestones are found near the base of the unit. Near the middle of the unit a coarse, highly glauconitic lens is observed. The lens appears black on outcrop and may be 30 to 60 feet thick. Thin bedded gray clay is interbedded with fine sands at the top of the unit. The Nacatoch Sand is approximately 300 feet thick in the mapped area. The unit strikes to the northeast and has a dip of approximately 80 feet per mile to the southeast in this quadrangle. Fossils present in the Nacatoch Sand unit include corals, echinoderms, bryozoa, annelids, bivalves, gastropods, cephalopods, crab remains, and shark teeth. The Nacatoch Sand was deposited in a nearshore marine environment and rests unconformably on top of the Saratoga Chalk.

Ks **Saratoga Chalk (Upper Cretaceous)** - The Saratoga Chalk is a fossiliferous, hard, glauconitic chalk with beds of marly chalk and chalky sand. It is blue-gray when freshly exposed and weathers white, light gray, and light brown. The Saratoga Chalk is 30 to 40 feet thick in the mapped area. The unit strikes to the northeast and has a dip of approximately 80 feet per mile to the southeast in this quadrangle. Fossils present in the Saratoga Chalk include sponges, bryozoa, echinoderms, annelids, bivalves, gastropods, cephalopods, crustaceans, and fish teeth. The Saratoga Chalk was deposited in a nearshore marine environment and rests unconformably on top of the Marlbrook Marl.

Km **Marlbrook Marl (Upper Cretaceous)** - The Marlbrook Marl is a uniform chalky marl that is blue-gray when freshly exposed and weathers white to light brown. The unit is moderately fossiliferous in the upper part and slightly fossiliferous in the lower part. The thickness in this quadrangle is approximately 100 feet. The unit strikes to the northeast and has a dip of approximately 80 feet per mile to the southeast in this quadrangle. Notable fossils include *Exogyra*, *Gryphaea*, and *Ostrea* oyster species and reptile remains. The Marlbrook Marl was deposited in a nearshore marine environment and rests unconformably on top of the Ozan Formation.

Ko **Ozan Formation (Upper Cretaceous)** - The Ozan Formation consists of sandy marl, marl, and a sandy glauconitic marl at the base of the formation. The unit is fossiliferous, micaceous, and weathers to a yellow-brown sticky clay. Thickness in the quadrangle is less than 30 feet. Notable fossils are the *Exogyra ponderosa* and *Gryphaea*. The outcrop belt extends from west of Arkadelphia, southwest to the Arkansas-Oklahoma border, and dip approximately 80 feet per mile to the southeast in this quadrangle. The unit was deposited in a nearshore marine environment and rests unconformably on the Brownstown Marl (Upper Cretaceous).

SYMBOLS

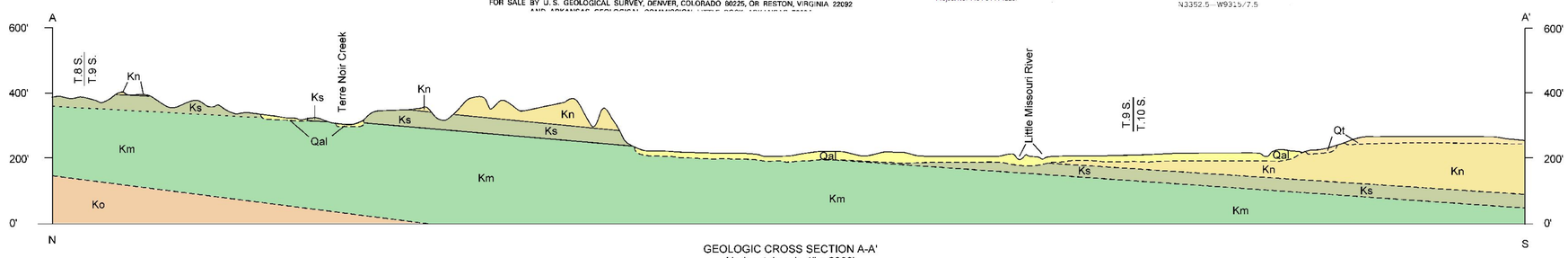
Gravel and/or sand pit
Contact

REFERENCES

Bush, W. V., and Clardy, B. F., 1971, Geologic Map of the Okolona South Quadrangle, Clark, Nevada, and Pike Counties Arkansas: Arkansas Geological Commission Open-File Report, scale 1:24,000.

Dane, C. H., 1929, Upper Cretaceous Formations of Southwestern Arkansas: Arkansas Geological Survey Bulletin 1, 215 p.

McFarland, John David, 1998, Stratigraphic Summary of Arkansas: Arkansas Geological Commission Information Circular 36, 39 p.



GEOLOGIC CROSS SECTION A-A'
Horizontal scale 1" = 2000'
Vertical scale 1" = 200'