

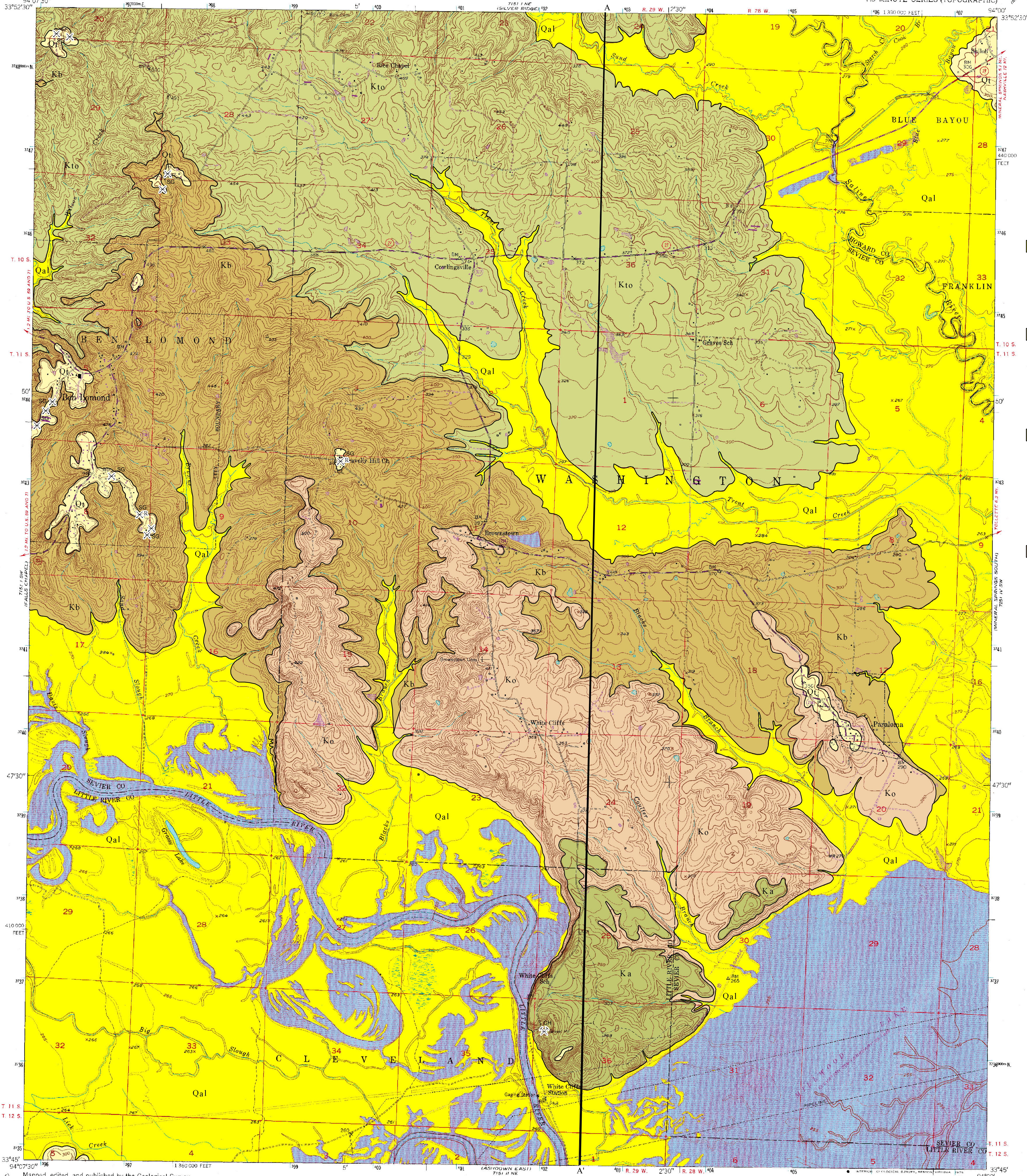
GEOLOGIC MAP OF THE BEN LOMOND QUADRANGLE, LITTLE RIVER, HOWARD, AND SEVIER COUNTIES, ARKANSAS

Geology by William D. Hanson, Benjamin F. Clardy, and Steven L. Martin
1998
Arkansas Geological Commission, William V. Bush, State Geologist
Digital compilation by Steven L. Martin, William D. Hanson, and Tiffany L. Celis

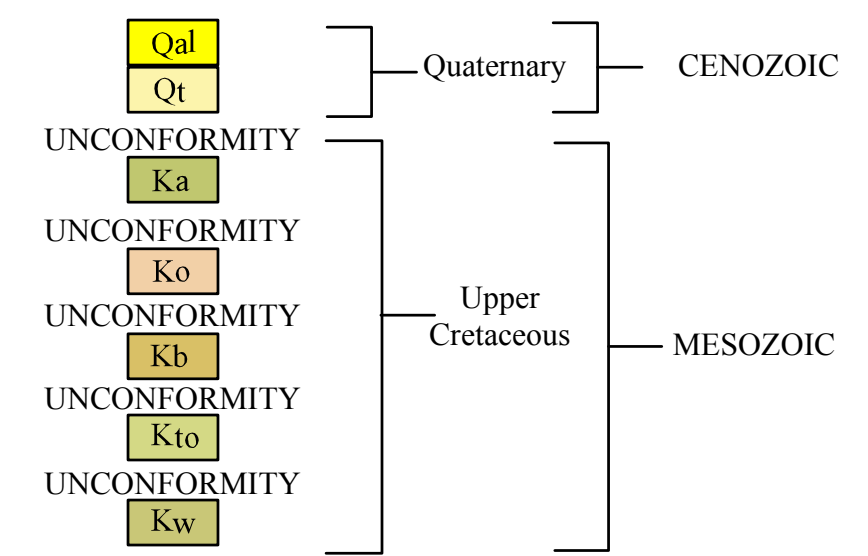
DIGITAL GEOLOGIC QUADRANGLE MAP
BEN LOMOND QUADRANGLE, ARKANSAS
DGM-AR-00065

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BEN LOMOND QUADRANGLE
ARKANSAS
7.5 MINUTE SERIES (TOPOGRAPHIC)



Correlation of Map Units



Description of Map Units

- Qal** **Alluvium (Quaternary)**: Variably sized gravel overlain by unconsolidated sand, silt, and clay comprises the 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.
- Qr** **Terrace Deposit (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.
- Ka** **Annona Chalk (Upper Cretaceous)**: The Annona Chalk is a hard, massive, thick-bedded, fossiliferous chalk. The chalk is gray-blue when fresh and weathers white. Notable fossils occurring in the unit are (*Gryphaea*, *Echinocory texana*, and *Inoceramus*). The unit outcrops from north of Columbus, AR, southwest to the Arkansas-Oklahoma state line near Foreman, AR, and dips to the south approximately 80 feet per mile. The thickness in the area is about 120 feet. The unit was deposited in a nearshore marine environment following an unconformity separating it from the underlying Ozan Formation.
- Ko** **Ozan Formation (Upper Cretaceous)**: The Ozan Formation consists of sandy marl, marl, and a sandy glauconitic marl. The unit is fossiliferous, micaceous, and weathers to a yellow-brown sticky clay. The basal sandy glauconitic marl, known as the Buckrange Sand Lenticle, has shark teeth and phosphate nodules, and is about 15 feet thick. Thickness of the unit on this quadrangle is about 120 feet. Notable fossils are the (*Exogyra ponderosa* and *Gryphaea*). The outcrop belt extends from west of Arkadelphia, southwest to the Arkansas-Oklahoma border, and dips approximately 80 feet per mile to the southwest. The unit was deposited in a nearshore marine environment and rests unconformably on the Brownstown Marl.
- Kb** **Brownstown Marl (Upper Cretaceous)**: The Brownstown Marl consists of dark-gray calcareous clay, marl, and sandy marl. The unit is fossiliferous and weathers yellow to gray in color. Notable fossils are the (*Exogyra ponderosa* and *Inoceramus*). The outcrop belt extends from east of Arkadelphia, AR, southwest to the Arkansas-Oklahoma state line, and dips approximately 80 feet per mile to the south. The unit was deposited in a nearshore marine environment and rests unconformably on the Tokio Formation.
- Kto** **Tokio Formation (Upper Cretaceous)**: The Tokio Formation consists of cross-bedded sand, gravel, gray clay, and volcanic ash. Basal cross-bedded gravels are approximately 30 feet thick. Minor sand and clay lenses occur within the gravel. Thinner beds (less than 1 foot in thickness) and lenses of gravel occur within the formation's sand intervals. The gravels range from pea-size to 6 inches in diameter and are composed of quartz, novaculite, sandstone, and quartzite. Iron-oxide-cemented conglomerates may be present locally. The cross-bedded sands are medium to fine-grained quartz with minor amounts of heavy minerals, glauconite, iron-oxide concretions, and rip-up clasts of gray clay. Sands weather yellow to orange-red in color. Gray clays are lignitic, pyritic, fossiliferous, and may contain leaf imprints. The volcanic ash is light gray to white and has altered to kaolinitic clay. The source area for much of the formation's sediment was the Ouachita Mountain region. The formation outcrop belt extends from near Arkadelphia, southwest to the Arkansas-Oklahoma state line, and dips to the south at approximately 80 feet per mile. The approximate thickness in the quadrangle is 250 feet. The unit was deposited in a nearshore marine environment on an unconformable surface which separates it from the underlying Woodbine Formation (Upper Cretaceous).
- Kw** **Woodbine Formation (Upper Cretaceous)**: This unit is found only in the subsurface. 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 thick and form a 1/2 to 6 inches in diameter, well-rounded and are composed of novaculite, quartz, sandstone, and quartzite. Iron-cemented conglomerates may be present locally. Igneous rock pebbles and cobbles are interbedded within the tuffs. Unweathered tuffs range from the area between Murfreesboro and Lockesburg, Arkansas. The source area for the gravels was the Ouachita Mountain region west of the Arkansas-Oklahoma state line, and dips approximately 80 feet per mile to the south. The unit was deposited in a near-shore marine environment following a major unconformity which separates it from the underlying Trinity Group (Lower Cretaceous). The approximate thickness in the quadrangle is 30 feet.

Symbols

- Contact
- Abandoned sand and/or gravel pit
- Reclaimed sand and/or gravel pit
- Abandoned mine or quarry
- Chalk
- Sand & Gravel

References

- Bush, W. V., and Clardy, B. F., 1971, Geologic Map of the Ben Lomond Quadrangle, Little River, Howard and Sevier Counties, Arkansas: Arkansas Geological Commission Open-File Report, scale 1:24,000.
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- Howard, J.M., 2006, Arkansas Mineral Commodity Database, in-house data, Arkansas Geological Commission.

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Control by USGS and USC&GS
Culture and drainage in part compiled from aerial photographs taken 1949
Topography by plane-table method 1950
Polyconic projection: 1927 North American datum
10,000 foot grid based on Arkansas coordinate system, south zone
1:000 metre Universal Transverse Mercator grid ticks, zone 16, shown in blue
Revisions shown in purple compiled from aerial photographs taken 1975. This information not field checked.

SCALE 1:24,000
CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5 FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1988

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

QUADRANGLE LOCATION
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND ARKANSAS GEOLOGICAL COMMISSION, 1111 LE ROCK, ARKANSAS 72204
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
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BEN LOMOND, ARK.
N 32° 45' - W 94° 00' 7.5
1990
PHOTO REPRODUCED 1975
AND 7.5' 1:6 SE-SERIES 1984

Revision Date: November 2011
Digital Revision by: Nathan H. Taylor

