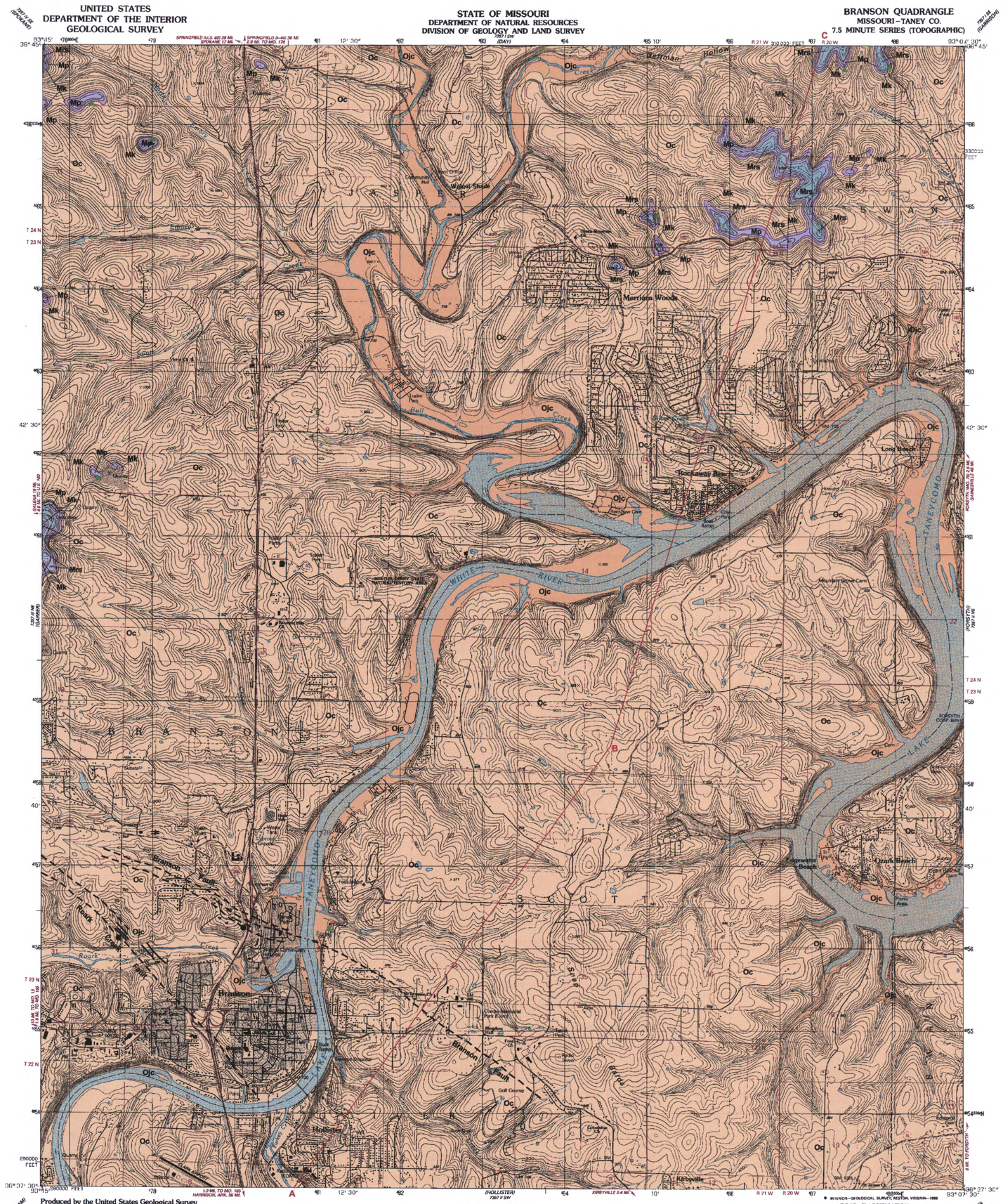

Produced by the United States Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1952. Field checked 1956. Revised from aerial photographs taken 1986. Field checked 1987. Map edited 1989
Projection and 10,000-foot grid ticks: Missouri coordinate system, central zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone 15
1927 North American Datum
To place on the predicted North American Datum 1983, move the projection lines 4 meters south and 16 meters east as shown by dashed corner ticks
There may be private inholdings within the boundaries of the National or State reservations shown on this map
Areas covered by dashed light-blue pattern are subject to controlled inundation
Gray tint indicates areas in which only landmark buildings are shown
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1989 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

ROAD CLASSIFICATION
Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route · U. S. Route · State Route

BEDROCK GEOLOGIC MAP OF THE BRANSON 7.5' QUADRANGLE TANEY COUNTY, MISSOURI

Geology by
John W. Whitfield

Digital Compilation by
Christopher B. Vierrether

2004

OFM-04-488-GS
(replaces OFM-97-320-GS)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY AND RESOURCE ASSESSMENT DIVISION
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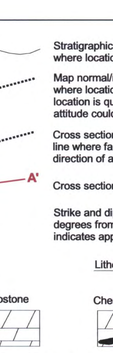
THIS GEOLOGIC MAP WAS FUNDED IN PART BY THE USGS
NATIONAL COOPERATIVE GEOLOGICAL MAPPING PROGRAM

ACCESS PERMISSION NEEDS TO BE GRANTED TO VISIST ANY PRIVATELY OWNED LAND

DESCRIPTION OF MAP UNITS



REEDS SPRING FORMATION - Limestone and chert (50 to 70 percent); limestone light- to olive-gray, finely crystalline to sublithographic, thin- to medium-bedded (although as a ledge it can appear massive), contains a few crinoid fragments. Chert, black to dark-blue, some with a white rind, interbedded with limestone, forms slightly irregular to wavy beds (two to eight inches thick), nodular to anastomosing, dense, few fossils; easily fractured into small, angular pieces with sharp edges. Weathering has converted much of the Reeds Spring into a thick mass of cherty residuum that covers the surface. Broken pieces of chert weather to pale reddish-brown or white and exhibit small black spots. On slopes, accumulations of chert fragments resemble patches of snow.

Solution-enlarged joints are common in the Reeds Spring Formation. Examples of enlarged joints are present in roadcuts along the Ozark Mountain Highroad (SW¼, Sec06, T23N, R21W, Garber 7.5' Quadrangle) immediately west of the Branson 7.5' Quadrangle.

Reeds Spring is present on hills and knobs above 1200 feet elevation in the west and northeast portion of the mapping area. Bedrock exposures in the stratigraphic interval of the Reeds Spring are sparse because of the thick blanket of chert residuum/colluvium that covers the surface. Selecting the contact with the underlying Pierson Limestone is usually a matter of judgement due to the transitional character of the contact and the lack of well-exposed contacts.

Mrs

PIERSON LIMESTONE - Limestone, light gray to greenish-gray, finely to coarsely crystalline, thin- to thick-bedded, fossiliferous with crinoid fragments, horn corals and gastropods. Near the top of the formation, chert often occurs as anastomosing beds in shades of mottled gray and yellow-brown with a yellow-brown rind. The "middle" Pierson consists of thin to thick beds of limestone with scattered chert nodules. On steep hillslopes, the Pierson forms ledges 5 to 10 feet high, in which the exposed ends of the beds are often rounded. The limestone varies from light greenish-gray to dark red. Chert is primarily in the form of elongated nodules with brown rinds and red or dark-blue centers. Solution joints are common.

Mp

The thickness of the Pierson is estimated because areal extent of the overlying Reeds Spring is limited to the tops of a few knobs. The contact between the two formations is covered by cherty residuum. The Pierson ranges from 20 to 60 feet in thickness. On hilltops in the western side of the quadrangle, up to 60 feet of Pierson is present. However, on knobs and hills in the northeast quarter of the quadrangle, only 20 feet of Pierson is present.

KINDERHOOKIAN SERIES - The Kinderhookian Series is composed of the Northview Formation, Compton Limestone and Bachelor Formation. These units are grouped together because they lack sufficient thickness for clear individual representation at the 1:24,00 scale. The Kinderhookian Series maintains a thickness of about 20 feet where exposed in the mapping area. A description of the individual units is presented below.

Mk

NORTHVIEW FORMATION - Argillaceous limestone, gray-green to olive-green to brown, up to 10 feet thick. The distribution of the Northview shale is not laterally uniform, and in most locations the shale is not present. The stratigraphic interval normally occupied by the shale consists of thin wavy beds of argillaceous limestone, sometimes with a thin 1 to 2 inch bed of green clayey shale at the top. Where present, the shale is thickest in the western portion of the quadrangle where it attains a thickness of 3 feet.

The Northview is usually concealed by cherty colluvium except on roadcuts or where gullies have cut into hillslopes. The clay breaks down rapidly and forms a distinct bench on hillsides. Springs often occur on hillslopes at the Pierson-Northview contact.

Oc

COMPTON LIMESTONE - Limestone, greenish-gray to light gray, finely to coarsely crystalline. The upper part of the Compton crops out in distinct layers of medium-bedded, fossiliferous limestone. The lower portion contains thin, wavy beds 0.5 to 1 inch thick with green shale partings. The limestone beds are fossiliferous, and weathered exposures exhibit broken fragments of small crinoids and brachiopods. The Compton is generally 10 to 15 feet thick, but there are local areas where it may exceed this amount.

BACHELOR FORMATION - Orange-red to olive-green quartzose and/or calcareous sandstone, 1 to 6 inches thick. In some localities, a green, clayey sandstone has been "welded" onto the top of the underlying Cotter Dolomite, which may also be a sandstone. The Bachelor contains phosphatic nodules and abraded chert pebbles. Fragments that are several inches thick often exhibit a "glint" calcareous surface.

Ojc

COTTER DOLOMITE - Light-gray to light brown, finely to medium crystalline dolomite. It varies from thin-bedded, silty argillaceous, white to light-brown "mudstone", to finely crystalline, massive beds with pitted surfaces, uneven, gnarly, dense algal beds. There are several sandstone beds in the Cotter; most are 4 to 6 inches thick, but can be as thick as four feet. Sandstone is reddish-brown, fine- to medium-grained and often quartzose.

Chert (5 to 20 percent) is present in nodules or thin to medium beds; white to gray banded or mottled dull brown. In the upper part of the formation, nodules of black to reddish-brown "bull's-eye" chert are present.

A very thick, brecciated algal chert, the Rockaway Conglomerate (Cullison, 1944), was used as the boundary between the Cotter and Jefferson City formations. Field mapping in the eastern third of the quadrangle revealed the presence of several beds of algal chert, 1 to 2 feet thick, in the lower Cotter above the Rockaway Conglomerate. These chert beds extend laterally over several sections but become thinner or disappear in the western part of the quadrangle. In places, there are thick algal dolomite beds between the chert beds.

JEFFERSON CITY DOLOMITE - Light-brown to dark-gray, fine to medium-crystalline to silty to argillaceous dolomite, thin- to massive bedded. Chert (up to 20 percent), white to gray to light reddish-brown, banded and mottled, thin- to medium-bedded or flattened nodules.

Over most of the quadrangle, the Jefferson City is poorly exposed and covered by cherty colluvium and alluvium. The formation is best exposed in the lower parts of bluffs bordering Lake Taneycomo, just upstream of the Ozark Beach Dam. Well logs on the Branson Quadrangle show up to 230 feet of Jefferson City Dolomite. In southern Missouri the upper 45 to 65 feet of the Jefferson City contains several beds of massive to thick chert conglomerate and breccia. Often these chert beds are algal and will change laterally into algal dolomite.

The upper massive chert bed has been called the Rockaway Conglomerate and used as the boundary between the Jefferson City Dolomite and the Cotter Dolomite.

DESCRIPTION OF STRUCTURAL FEATURES

ROARKE CREEK FAULT - The Roark Creek Fault strikes N40°W and is exposed in roadcuts along Stockstill Road and in nearby Roark Creek (SW¼, NW¼, Section 32, T23N, 21W). The fault consists of several closely-spaced, high-angle faults in the Cotter Dolomite that dip 5° to 20° to the north and northeast. In places, faulting is intense; the fault lane is up to 2 feet wide and filled with breccia and calcite. Small palm structures and calcite-filled veins are also present. Nearby well log data and field observation indicate only minor vertical displacement of bedrock.

BRANSON FAULT - The Branson Fault is exposed in a roadcut on the east side of Highway 65 by-pass (SE¼, NE¼, NE¼, Section 32, T23N, R21W). At least four high-angle faults are exposed in the Cotter Dolomite and strike in a west-northwest, east-southeast direction. All four faults occur within a lateral distance of 80 feet. One of the middle faults shows evidence of high-angle thrusting. This fault has a wide fault plane filled with dolomite breccia and calcite filling. Vertical displacement on the two outside faults is estimated to be less than 10 feet. Each fault is down on the southwest side. Although this structure is dipping 10° to the northeast, well log data on either side of the faults indicate only minor vertical displacement.

REFERENCE

Cullison, James, A., 1944, The stratigraphy of some lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical series, volume 15, number 2, 105 pages, 35 plates.

Middendorf, Mark A., and others, 2003, Geologic map of Missouri: Missouri Department of Natural Resources, Geologic Survey and Resource Assessment Division, scale 1:500,000.

CORRELATION OF MAP UNITS

MAP UNIT SYMBOL	SYSTEM	SERIES	FORMATION/MAPPABLE UNIT	THICKNESS IN FEET
Mrs	Mississippian	Osagean	Reeds Spring Formation	60 (a)
Mp	Mississippian	Osagean	Pierson Limestone	20 - 60
Mk	Mississippian	Kinderhookian	Kinderhookian Series	20
***** erosional unconformity *****				
Oc	Ordovician	Ibexian	Cotter Dolomite	310 - 370
Ojc	Ordovician	Ibexian	Jefferson City Dolomite	50 (a)

(a) Unit is not completely exposed

LEGEND

CROSS SECTION A - C