EXPLANATION FOR GEOLOGIC MAP AND CROSS SECTIONS

QUATERNARY

Qal — **Alluvium**. Unconsolidated silt, sand, and gravel containing clasts of local bedrock. Mapped only along larger streams.

PENNSYLVANIAN — POTTSVILLE FORMATION

IPpvu — **Pottsville Formation upper part.** Dark-gray silty shale containing intervals of light- to medium-gray primarily lithic sandstone and interbeds of coal and underclay.

IPpvp — **Pine Sandstone Member.** Very light-gray quartzose sandstone commonly containing scattered quartz pebbles and quartz pebble conglomerate; wavy-bedded sandstone and mudstone common in upper part.

IPpvht — **Hardwick Tunnel member.** Predominantly dark-gray to black shale with occasional interbeds of thin sandstone and rare bioclastic limestone.

IPpv — **Pottsville Formation undifferentiated.** Dark-gray primarily silty shale between the Shades and Pine Sandstone Members.

IPpvs — **Shades Sandstone Member.** Very light-gray quartzose sandstone commonly containing scattered quartz pebbles and quartz pebble conglomerate; includes thin intervals of dark-gray shale.

MISSISSIPPIAN AND PENNSYLVANIAN

IPMpwf — **Parkwood Formation and Floyd Shale undifferentiated.** Dark-gray shale containing interbedded greenish-gray lithic and quartzose sandstone (Parkwood Formation). Dark-gray to black shale locally containing minor laminae and thin beds of light-gray sandstone (Floyd Shale); lower part includes grayish-orange fossiliferous chert (tongue of Bangor Limestone). The formatiions comprising this unit are mapped separtely in the northern part of area shown on plate 1. There, they are mapped as the Floyd Shale (Mf), Mississippian in age, and the Parkwood Formation (P Mpw), Mississippian and Pennsylvanian in age.

MISSISSIPPIAN

Mh — **Hartselle Sandstone.** Very light-gray crossbedded and rippled quartzose sandstone locally containing thin interbeds and partings of dark-gray shale.

Mpm — **Pride Mountain Formation.** Dark-gray shale commonly containing nodules, stringers, and beds of siderite.

Mtfpm — **Tuscumbia Limestone, Fort Payne Chert, and Maury Formation undifferentiated.** Light- to medium-gray coarse bioclastic limestone containing abundant echinoderm columnals (Tuscumbia); chert, light-gray to brown weathering orange-brown, thin- to medium-bedded, nodular, contains brachiopods and echinoderm columnals (Fort Payne); mudstone, maroon, medium- to thick-laminated (Maury).

DEVONIAN

Dfm — **Frog Mountain Sandstone.** Light-gray, poorly sorted, predominantly quartzose sandstone.

ORDOVICIAN

Olol — **Little Oak Limestone and Lenoir Limestone undifferentiated.** Dark-gray partly fossiliferous stylonodular limestone locally containing chert nodules (Little Oak and Lenoir); medium- to dark-gray fenestral limestone at base (Mosheim Member of Lenoir). In the northern part the area show on plate 1, this unit is mapped as the Greensport Formation, Little Oak Limestone and Lenoir Formation undifferentiated (Oglol). The Greensport Formation is composed of maroon and grayish-green shale and interbedded siltstone with minor light-gray sandstone. The Greensport overlies the Little Oak Limestone in this area and pinches out to the southwest.

ORDOVICIAN — KNOX GROUP

Oo — **Odenville Limestone.** Dark-gray mottled dolomitic limestone overlain by dark-gray fossiliferous stylonodular limestone.

On — **Newala Limestone.** Medium-bluish-gray chert-free micritic limestone containing interbeds of light- to light-bluish-gray dolomite and medium- to dark-gray mottled dolomitic limestone.

Olv — **Longview Limestone.** Interbedded light- to medium-gray micritic and partly sandy limestone and light-gray dolomite; commonly contains thin interbeds and nodules of chert.

OЄchcr — **Chepultepec Dolomite and Copper Ridge Dolomite undifferentiated.** Light- to dark-gray dolomite containing intervals of interbedded light- to medium-bluish-gray limestone; produces abundant dense and cavernous chert (Chepultepec); light- to medium-gray dolomite producing abundant predominantly dense chert containing common algal laminations (Copper Ridge).

LOWER TO UPPER CAMBRIAN — KNOX GROUP

Ck — **Ketona Dolomite.** Light- to dark-gray chert-free dolomite.

Cr — **Rome Formation.** Grayish-red-purple and grayish-olive mudstone, shale, and siltstone containing interbedded sandstone, dolomite, and limestone. Not exposed in study area.

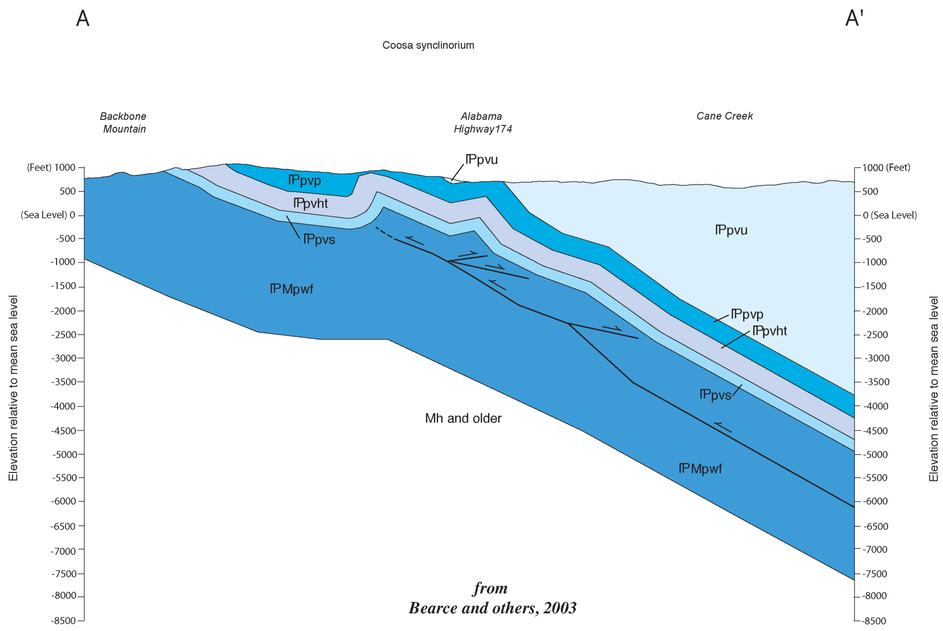
SYMBOLS FOR GEOLOGIC MAP

- Contact, located very approximately, showing location of control point
- Thrust fault, located very approximately, sawteeth on upper plate
- Fault, type of displacement unknown,very approximately located
- Contact or fault, concealed beneath mapped units
- 45 — Strike and dip of beds
- Horizontal beds
- Vertical beds
- 75 — Overturned beds
- Anticline, showing trace and direction of plunge
- Syncline, showing trace and direction of plunge
- Overturned syncline, showing trace and direction of plunge

SYMBOLS FOR CROSS SECTIONS A-A' and B-B'

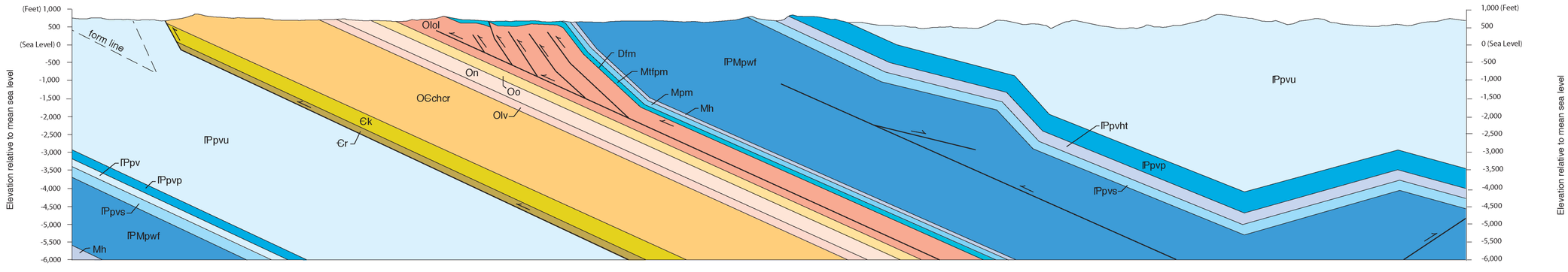
- Stratigraphic contact
- Fault, showing relative movement, dashed where inferred

CROSS SECTION A-A'



from Bearce and others, 2003

CROSS SECTION B-B'



Scale 1:24,000
No vertical exaggeration

CROSS SECTIONS A-A' AND B-B', AND EXPLANATION FOR THE GEOLOGIC MAP AND CROSS SECTIONS OF THE COOKS SPRINGS WATER AUTHORITY'S SERVICE AREA

modified from Ward and Osborne, 2004

Computer graphics by Don Wheat

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