GEOLOGIC MAP OF HAMILTON COUNTY, TENNESSEE

Including Mineral Resources Data and Contours Showing Magnetic Intensity

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STATE OF TENNESSEE
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DIVISION OF GEOLOGY

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PLATE I

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SCALE 1:48000

CONTOUR INTERVAL 20 FEET
DASHED LINES REPRESENT HALF-INTERVAL CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

DESCRIPTION OF MAP UNITS

[Alluvium and other surficial deposits not shown on map]

PENNSYLVANIAN

Pr ROCKCASTLE CONGLOMERATE

Sandstone, some conglomeratic (with quartz pebbles), yellowish-gray to yellowish-brown, fine- to medium-grained, thin- to thick-bedded, crossbedded in part. Maximum preserved thickness about 100 feet.

Pv (Pvu, Pvn, Pvl) VANDEVER FORMATION

Shale, sandstone, and conglomerate. Upper shale member (Pvu) is primarily light-brown to dark-gray silty and sandy shale, with minor fine-grained sandstone throughout and medium-grained sandstone near top; contains Morgan Springs coal seam near top and No. 12 coal seam near base; thickness 150 feet. Middle conglomeratic sandstone member, Needlesaye Conglomerate (Pvn), is light-brownish-gray to light-brown sandstone, fine- to medium-grained, thin- to thick-bedded, crossbedded in part, with quartz pebbles as much as 1 inch long, thinner and nonconglomeratic to north; thickness about 60 to 150 feet. Lower shale member (Pvl) is primarily silty shale, light-brown to dark-gray, with minor clay shale, carbonaceous shale, and sandy shale; contains Lantana coal seam near base; thickness 60 to 140 feet.

Pn NEWTON SANDSTONE

Sandstone, yellowish-gray to pale-yellowish-brown, medium-grained, medium- to thick-bedded, crossbedded in part. Thickness 60 to 130 feet.

Pw WHITWELL FORMATION

Shale and sandstone. Shale is light-brown to dark-gray, primarily silty, with minor clay shale, carbonaceous shale, and sandy shale. Sandstone is yellowish-gray to pale-yellowish-brown, fine- to medium-grained, thin- to thick- bedded, crossbedded in part. Contains Sewanee and Richland coal seams. Thickens to northeast, where as much as 80 feet of sandstone is present in the middle. Thickness 60 to 220 feet.

Ps SEWANEE CONGLOMERATE

Conglomerate and sandstone, yellowish-gray to pale-yellowish-brown, with quartz pebbles as much as 1 inch long; sandstone is medium-grained, crossbedded. Thickness 60 to 200 feet.

Pcg CRAB ORCHARD MOUNTAINS AND GIZZARD GROUPS, UNDIFFERENTIATED

Sandstone, conglomerate, shale and coal seams.

Pg GIZZARD GROUP, UNDIFFERENTIATED

Includes the Signal Point Shale, Warren Point Sandstone, and Raccoon Mountain Formation. Signal Point Shale consists of shale, yellowish-brown to dark-gray, primarily silty, with minor clay shale, carbonaceous shale, and sandy shale, locally contains thin coal seams; thickness 60 to 160 feet. Warren Point Sandstone consists of sandstone, light-brownish-gray to moderate-brown, fine- to medium-grained, thin- to thick-bedded, crossbedded in part; in some areas the middle part of the unit is largely yellowish-brown sandy shale with local coal beds; in places contains lenses of quartz pebbles as much as 1 inch long; thickness 150 to 180 feet. Raccoon Mountain Formation consists of shale, olive or light-brown to dark-gray, silty; with minor sandstone and thin local coal seams, including Nelson coal seam in upper part; thickness 50 to 140 feet. Thickness of group about 300 to 400 feet.

MISSISSIPPIAN

Mp PENNINGTON FORMATION

Shale with sandstone layers. Shale is argillaceous, olive-gray with typically variegated red and green layers; sandstones are grayish-orange, fine-grained, thin- to thick-bedded, occur mostly in upper part. Thickness about 400 to 500 feet. (The Pennington-Raccoon Mountain contact is gradational.)

Mn (Mnu, Mnl) NEWMAN LIMESTONE

The upper part of the Newman Limestone (Mnu) contains equivalents of the Bangor and Hartselle Formations. The unit consists mostly of limestone, light-olive-gray to brownish-black, fine- to medium-grained, thin- to medium- and even-bedded, fossil-fragmental with some oolitic zones, locally has petroliferous odor when broken, some beds dolomitic, stylolites common; locally contains partings and very thin beds of greenish-gray to gray shale. The base is marked by as much as 40 feet of shale, olive, fissile to thinly laminated, commonly very fossiliferous; and sandstone, fine-grained, olive-gray, thin- to medium-bedded, in part crossbedded, in some areas has calcareous matrix. Thickness about 200 to 460 feet.

The lower part of the Newman Limestone (Mnl) contains equivalents of the Monteagle, St. Louis, and Warsaw Limestones. The unit consists of limestone, light-olive-gray to olive-gray to dark-gray, and a few interbeds of dusky-yellowish-gray dolomite. The limestone is cryptocrystalline and very fine grained to coarse grained and crystalline, thin to very thick bedded, commonly crossbedded, stylolitic; many beds oolitic with very high percentage of calcium carbonate, many fossil-fragmental, some dolomitic; locally has petroliferous odor when broken; partings and very thin beds of greenish-gray to gray shale present in places; locally cherty. Thickness about 400 feet.

Mfp FORT PAYNE CHERT

Limestone and dolomite, highly siliceous, gray, fine- to coarse-grained, weathers to thick chert ledges. Thin pale-green shale (Maury Shale) at base. Thickness about 200 feet.

DEVONIAN and MISSISSIPPIAN

MDc CHATTANOOGA SHALE

Shale, brownish-black (weathers yellowish-orange to brown), bituminous, fissile. Thickness 10 to 20 feet.

SILURIAN

Sr ROCKWOOD FORMATION

Shale, gray and greenish-gray, with thin beds of siltstone and sandstone. Thin hematite layers and lenses occur in upper part. Thickness 200 to 300 feet.

ORDOVICIAN

Ou UPPER ORDOVICIAN FORMATIONS, UNDIFFERENTIATED

Includes equivalents of the Inman, Leipers, Shellmound, and Sequatchie Formations. Inman and Sequatchie Formations are mostly greenish-gray to grayish-red dolomitic calcilutites to calcisiltites, which in places contain an abundance of mudcracks and rip-up clasts. Shellmound Formation is generally medium-gray, argillaceous or silty, fossiliferous calcilutite to calcarenite. Shellmound and Sequatchie Formations commonly contain the Fernvale Limestone Member, which is gray, yellowish-orange or grayish-red, fossiliferous, hematitic calcarenite.

Och (On, Osr) CHICKAMAUGA SUPERGROUP

Limestone, gray, mostly fine- to medium-grained, thin- to medium-bedded, in part shaly and nodular. Locally contains beds of crystalline limestone, and reddish silty limestone. Thickness 1,500 to 1,800 feet. Och-Chickamauga Supergroup, Undifferentiated; On - Nashville Group; Osr - Stones River Group.

Oku KNOX GROUP (ORDOVICIAN FORMATIONS)

Dolomite and minor limestone, very siliceous, light- to dark-gray, fine- to coarse-grained, thin- to thick-bedded, weathers to cherty rubble. Thickness about 1,600 feet.

CAMBRIAN and ORDOVICIAN

Ock KNOX GROUP, UNDIFFERENTIATED

Dolomite and minor limestone, very siliceous, light- to dark-gray, fine- to coarse-grained, thin- to thick-bedded, weathers to cherty rubble. Thickness about 2,600 feet.

CAMBRIAN

Ccr COPPER RIDGE DOLOMITE

Dolomite, siliceous, light- to dark-gray, fine- to coarse-crystalline, medium- to thick-bedded, asphaltic odor when broken; weathers to dark-colored chert. Cryptozoans abundant in lower part. Thickness about 1,000 feet.

Cc (Cmn) CONASAUGA GROUP

Includes Conasauga Shale (Cc) and Maynardville Limestone (Cmn). Shale, argillaceous, with thin interbeds of limestone and siltstone layers in lower part; light-olive to brown, gray limestone (Maynardville) as much as 300 feet thick occurs at top. Estimated thickness 1,500 feet.

Cr ROME FORMATION

Shale, siltstone and sandstone, divided into an upper sandstone-bearing member and a lower Apison Shale Member. Sandstone-bearing member consists of about 300 feet of thin to massively bedded sandstone interbedded with grayish-red, purple, yellow and green siltstone and shale; in places contains a prominent bed of gray, argillaceous, dolomitic limestone in lower part. Apison Shale Member consists of about 500 feet of grayish-red, green, purple and brown siltstone and shale.

GEOLOGIC SYMBOLS

- Contact, approximately located, dotted where concealed
- Fault, approximately located, dotted where concealed; on upper plate of thrust fault
- (K) Klippe

MINERAL RESOURCES

- ms Coal cropline, approximately located, Morgan Springs coal seam
- 12 Coal cropline, approximately located, No. 12 coal seam
- l Coal cropline, approximately located, Lantana coal seam
- sr Coal cropline, approximately located, Sewanee and Richland coal seams
- n Coal cropline, approximately located, Nelson coal seam
- Limestone potentially suitable for construction and agricultural purposes and for the manufacture of cement
- Limestone potentially suitable for construction and agricultural purposes
- Active contour strip mine
- Inactive contour strip mine
- Inactive area strip mine
- Adit, active mine
- Adit, inactive mine
- Active quarry
- Inactive quarry or mine
- Active pit
- Inactive pit
- Trench
- Prospect
- Drill hole
- Oil and gas test, show of gas
- Cement plant, active
- Sand and gravel plant, active
- Coke ovens, active
- Brick plant, inactive
- Blast furnace, inactive
- ? Questionable or approximate location
- 2 Mineral resources identification number

Ba	Barite	ls	Limestone
Al	Bauxite	Mn	Manganese
ch	Chert	s	Sand
cl	Clay	s,g	Sand and gravel
c	Coal	ss	Sandstone
Fe	Iron	sh	Shale

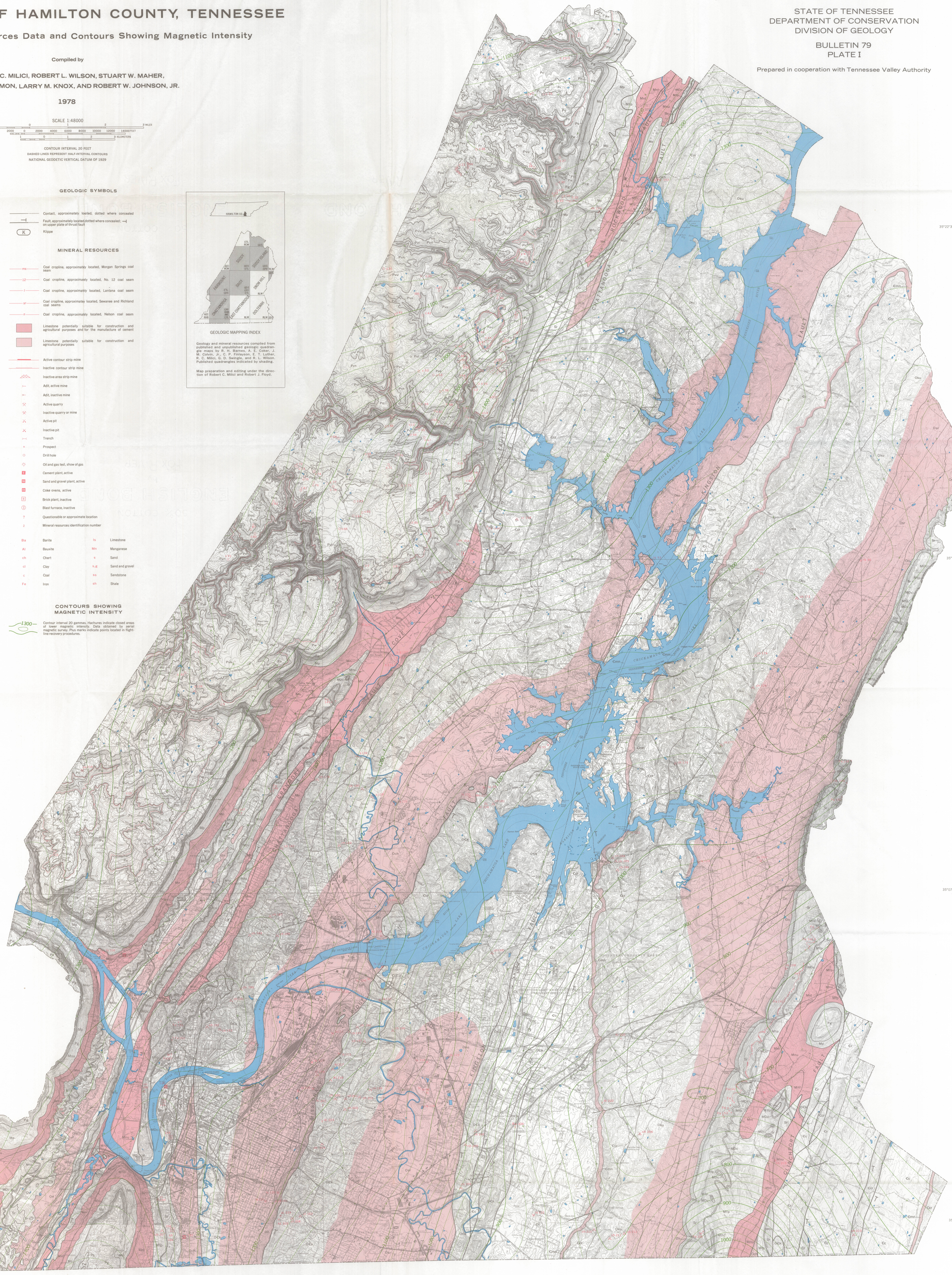
CONTOURS SHOWING MAGNETIC INTENSITY

1300 — Contour interval 20 gammas. Hachures indicate closed areas of lower magnetic intensity. Data obtained by aerial magnetic survey. Plus marks indicate points located in flight-line recovery procedures.

GEOLOGIC MAPPING INDEX

Geology and mineral resources compiled from published and unpublished geologic quadrangle maps by R. H. Barnes, A. E. Coker, J. M. Colvin, Jr., C. P. Finlayson, E. T. Luther, R. C. Milici, G. D. Swingle, and R. L. Wilson. Published quadrangles indicated by shading.

Map preparation and editing under the direction of Robert C. Milici and Robert J. Floyd.



Base map compiled by photoreduction of USGS-TVA 7½-minute topographic quadrangles