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ILLINOIS STATE GEOLOGICAL SURVEY
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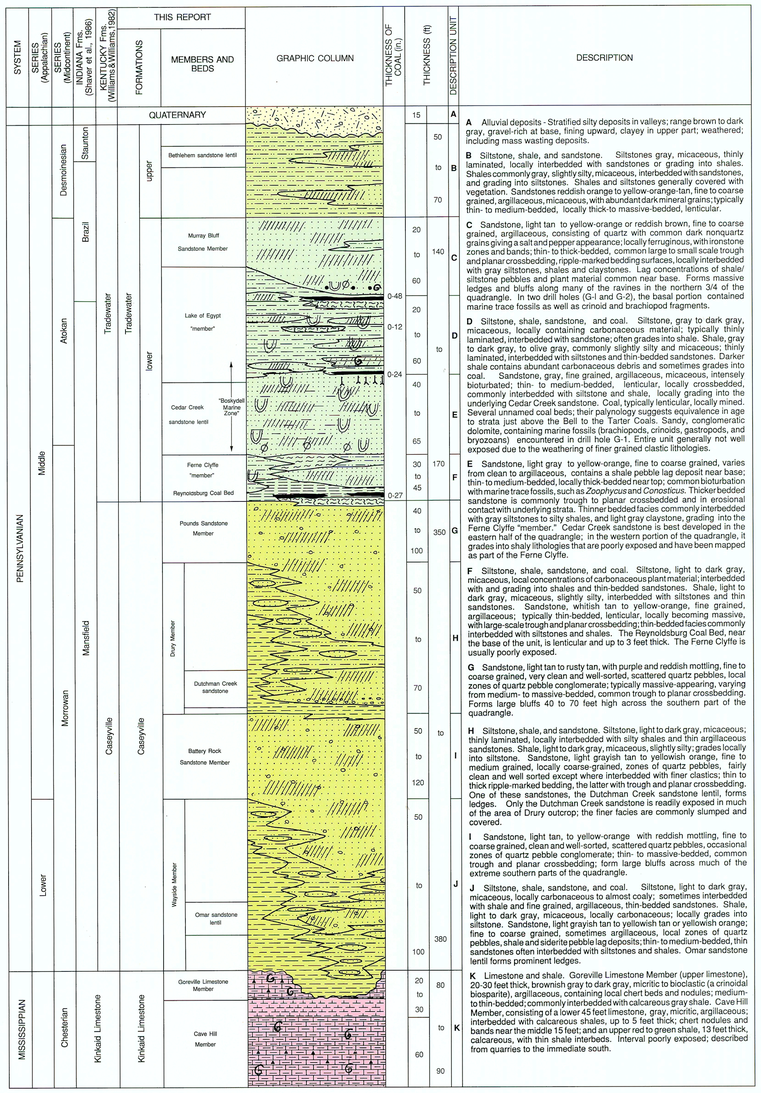

A Alluvial deposits - Stratified silty deposits in valleys; range brown to dark gray, gravel-rich at base, fining upward, clayey in upper part; weathered; including mass wasting deposits.

B Siltstone, shale, and sandstone. Siltstones gray, micaceous, thinly laminated, locally interbedded with sandstones or grading into shales. Shales commonly gray, slightly silty, micaceous, interbedded with sandstones, and grading into siltstones. Shales and siltstones generally covered with vegetation. Sandstones reddish orange to yellow-orange-tan, fine to coarse grained, argillaceous, micaceous, with abundant dark mineral grains; typically thin- to medium-bedded, locally thick-to massive-bedded, lenticular.

C Sandstone, light tan to yellow-orange or reddish brown, fine to coarse grained, argillaceous, consisting of quartz with common dark nonquartz grains giving a salt and pepper appearance; locally ferruginous, with ironstone zones and bands; thin- to thick-bedded, common large to small scale trough and planar crossbedding, ripple-marked bedding surfaces, locally interbedded with gray siltstones, shales and claystones. Lag concentrations of shale/siltstone pebbles and plant material common near base. Forms massive ledges and bluffs along many of the ravines in the northern 3/4 of the quadrangle. In two drill holes (G-l and G-2), the basal portion contained marine trace fossils as well as crinoid and brachiopod fragments.

D Siltstone, shale, sandstone, and coal. Siltstone, gray to dark gray, micaceous, locally containing carbonaceous material; typically thinly laminated, interbedded with sandstone; often grades into shale. Shale, gray to dark gray, to olive gray, commonly slightly silty and micaceous; thinly laminated, interbedded with siltstones and thin-bedded sandstones. Darker shale contains abundant carbonaceous debris and sometimes grades into coal. Sandstone, gray, fine grained, argillaceous, micaceous, intensely bioturbated; thin- to medium-bedded, lenticular, locally crossbedded, commonly interbedded with siltstone and shale, locally grading into the underlying Cedar Creek sandstone. Coal, typically lenticular, locally mined. Several unnamed coal beds; their palynology suggests equivalence in age to strata just above the Bell to the Tarter Coals. Sandy, conglomeratic dolomite, containing marine fossils (brachiopods, crinoids, gastropods, and bryozoans) encountered in drill hole G-1. Entire unit generally not well exposed due to the weathering of finer grained clastic lithologies.

E Sandstone, light gray to yellow-orange, fine to coarse grained, varies from clean to argillaceous, contains a shale pebble lag deposit near base; thin- to medium-bedded, locally thick-bedded near top; common bioturbation with marine trace fossils, such as *Zoophycus* and *Conostichus*. Thicker bedded sandstone is commonly trough to planar crossbedded and in erosional contact with underlying strata. Thinner bedded facies commonly interbedded with gray siltstones to silty shales, and light gray claystone, grading into the Ferne Clyffe "member." Cedar Creek sandstone is best developed in the eastern half of the quadrangle; in the western portion of the quadrangle, it grades into shaly lithologies that are poorly exposed and have been mapped as part of the Ferne Clyffe.

F Siltstone, shale, sandstone, and coal. Siltstone, light to dark gray, micaceous, local concentrations of carbonaceous plant material; interbedded with and grading into shales and thin-bedded sandstones. Shale, light to dark gray, micaceous, slightly silty, interbedded with siltstones and thin sandstones. Sandstone, whitish tan to yellow-orange, fine grained, argillaceous; typically thin-bedded, lenticular, locally becoming massive, with large-scale trough and planar crossbedding; thin-bedded facies commonly interbedded with siltstones and shales. The Reynoldsburg Coal Bed, near the base of the unit, is lenticular and up to 3 feet thick. The Ferne Clyffe is usually poorly exposed.

G Sandstone, light tan to rusty tan, with purple and reddish mottling, fine to coarse grained, very clean and well-sorted, scattered quartz pebbles, local zones of quartz pebble conglomerate; typically massive-appearing, varying from medium- to massive-bedded, common trough to planar crossbedding. Forms large bluffs 40 to 70 feet high across the southern part of the quadrangle.

H Siltstone, shale, and sandstone. Siltstone, light to dark gray, micaceous; thinly laminated, locally interbedded with silty shales and thin argillaceous sandstones. Shale, light to dark gray, micaceous, slightly silty; grades locally into siltstone. Sandstone, light grayish tan to yellowish orange, fine to medium grained, locally coarse-grained, zones of quartz pebbles, fairly clean and well sorted except where interbedded with finer clastics; thin to thick ripple-marked bedding, the latter with trough and planar crossbedding. One of these sandstones, the Dutchman Creek sandstone lentil, forms ledges. Only the Dutchman Creek sandstone is readily exposed in much of the area of Drury outcrop; the finer facies are commonly slumped and covered.

I Sandstone, light tan, to yellow-orange with reddish mottling, fine to coarse grained, clean and well-sorted, scattered quartz pebbles, occasional zones of quartz pebble conglomerate; thin- to massive-bedded, common trough and planar crossbedding; form large bluffs across much of the extreme southern parts of the quadrangle.

J Siltstone, shale, sandstone, and coal. Siltstone, light to dark gray, micaceous, locally carbonaceous to almost coaly; sometimes interbedded with shale and fine grained, argillaceous, thin-bedded sandstones. Shale, light to dark gray, micaceous, locally carbonaceous; locally grades into siltstone. Sandstone, light grayish tan to yellowish tan or yellowish orange; fine to coarse grained, sometimes argillaceous, local zones of quartz pebbles, shale and siderite pebble lag deposits; thin- to medium-bedded, thin sandstones often interbedded with siltstones and shales. Omar sandstone lentil forms prominent ledges.

K Limestone and shale. Goreville Limestone Member (upper limestone), 20-30 feet thick, brownish gray to dark gray, micritic to bioclastic (a crinoidal biosparite), argillaceous, containing local chert beds and nodules; medium- to thin-bedded; commonly interbedded with calcareous gray shale. Cave Hill Member, consisting of a lower 45 feet limestone, gray, micritic, argillaceous; interbedded with calcareous shales, up to 5 feet thick; chert nodules and bands near the middle 15 feet; and an upper red to green shale, 13 feet thick, calcareous, with thin shale interbeds. Interval poorly exposed; described from quarries to the immediate south.

STRUCTURAL GEOLOGY

Strata in the area exhibit little structural relief. They are nearly horizonal with only a slight regional dip of 1 to 5 degrees to the north-northeast. Faulting is extremely rare. One fault, the extension of the western bounding fault of a graben that, has been extensively mapped to the east in the Creal Springs Quadrangle (Trask and Jacobson, 1990), crosses the extreme southeast corner of the quadrangle.

ECONOMIC GEOLOGY

Most mining activity in this quadrangle has been limited in scope because the coal seams are thin and discontinuous. Most mines are small adits, and were operated only for local consumption.

All coals mined are in the lower and middle parts of the lower Tradewater Formation. Exposures are few and poor. Thicknesses range from a thin shaley coal band to as much as 4 feet. An unnamed coal has been mined near the north-center of Section 32,T.11S.,R.3E., and the NW 1/4 of SW 1/4 of SE 1/4 of NE 1/4 of Section 26, T.11S., R.2E. Another unnamed coal is exposed in a northwest trending ravine in the NE 1/4 of Section 21. T.10S., R.2E, but has not been mined. Immediately to the north of this quadrangle in a valley in the extreme western to southwestern part of Section 24,T.10S., R.2E., a coal not found in this quadrangle has been mined in a large number of small adits beneath the Murray Bluff Sandstone along the narrow valley of the Little Saline Creek; records indicate that this coal ranged from 3.5 to 4 feet thick.

The Reynoldsburg Coal Bed, found near the base of the lower Tradewater Formation, is the most continuous coal bed in the quadrangle. It generally rests on a thick (as much as 5 feet) underclay that overlies the Pounds Sandstone Member of the Caseyville Formation. All exposures in the southeastern portion of the quadrangle (NE 1/4 of NW 1/4 of NW 1/4 of Section 31, T.11S., R.3E. and near the center of Section 5, T.12S., R.3E.) show the coal bed may be as much as 3 feet thick. Although the coal has not been mined, it is well developed in parts of this area; immediately to the south in the Vienna Quadrangle, it is well exposed in road cuts on I-24. A small surface mine was developed in this area of the Vienna quadrangle, near the extreme southeast corner of Section 5, T.12S., R.3E. and the NE corner of Section 8,T.12S., R.3E.

Limestone resources in the area are limited to the southwestern part of the quadrangle where the upper portion of the Kinkaid Limestone can be seen cropping out along ravines below the Caseyville Formation in portions of Sections 33 and 34 of T.11S., R.2E., and Sections 3 and 4 of T.12S., R.2E. The Kinkaid has been locally quarried in the past near the center of Section 4, T.12S., R.2E. Extensive quarrying of the Kinkaid has and still is occurring to the immediate south of the quadrangle, in the northwestern corner of the Vienna Quadrangle.

Only three exploration holes have been drilled for oil and gas in the quadrangle. They are located in the SW 1/4 of NW 1/4 of Section 26, T.10S., R.2E. (County number 2104), near the center of the SW 1/4 of Section 24, T.11S., R.2E. (County number 59); and near the center of Section 30, T.11S. R.3E. (County number 25). All three tests were unsuccessful.

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Geologic Map of the
GOREVILLE QUADRANGLE, ILLINOIS
IGQ-7

EXPLANATION

- Qal — Alluvial deposits — Holocene — QUATERNARY
- Unconformity
- Ptu — b — Tradewater Formation: b, *Bethlehem sandstone lentil*; Ptu, *upper Tradewater* — Desmoinesian
- Ptl — mb, le, c, cd, fc, r — mb, *Murray Bluff Sandstone Member*; le, *Lake of Egypt "member"*; c, *unnamed coal*; cd, *Cedar Creek sandstone lentil*; fc, *Ferne Clyffe "member"*; r, *Reynoldsburg Coal Bed*; Ptl, *lower Tradewater* — Abokan
- Pcv — p, dr, dc, br, ws, o — Caseyville Formation: p, *Pounds Sandstone Member*; dr, *Drury Member*; dc, *Dutchman Creek sandstone lentil*; br, *Battery Rock Sandstone Member*; ws, *Wayside Member*; o, *Omar sandstone lentil* — Morrowan — PENNSYLVANIAN
- Unconformity
- Mk — Kinkaid Limestone — Chesterian
- Mcu — Chesterian undifferentiated (cross section only) — MISSISSIPPIAN

LINE SYMBOLS: Dashed where inferred; dotted where concealed

- Contact
- Coal bed
- Fault: bar and ball on downthrown side
- A—A' Line of cross section
- 600 Structure contour (drawn on the top of the Murray Bluff Sandstone)

SYMBOLS

- Strike and dip of bedding (representative sample). Number indicates degree of dip
- Abandoned coal adit
- 2979 Coal exposure with ISGS coal maceration and palynological analysis number
- Outcrop of special note, shown where contact, map unit, or fault was well exposed at time of mapping

DRILL HOLES FROM WHICH SUBSURFACE DATA WERE OBTAINED

- G-1 ISGS cored test hole
- 25 Oil test hole, with ISGS county number
- 95 Water well, with ISGS county number

GEOLOGIC MAP OF THE GOREVILLE QUADRANGLE, JOHNSON AND WILLIAMSON COUNTIES, ILLINOIS

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