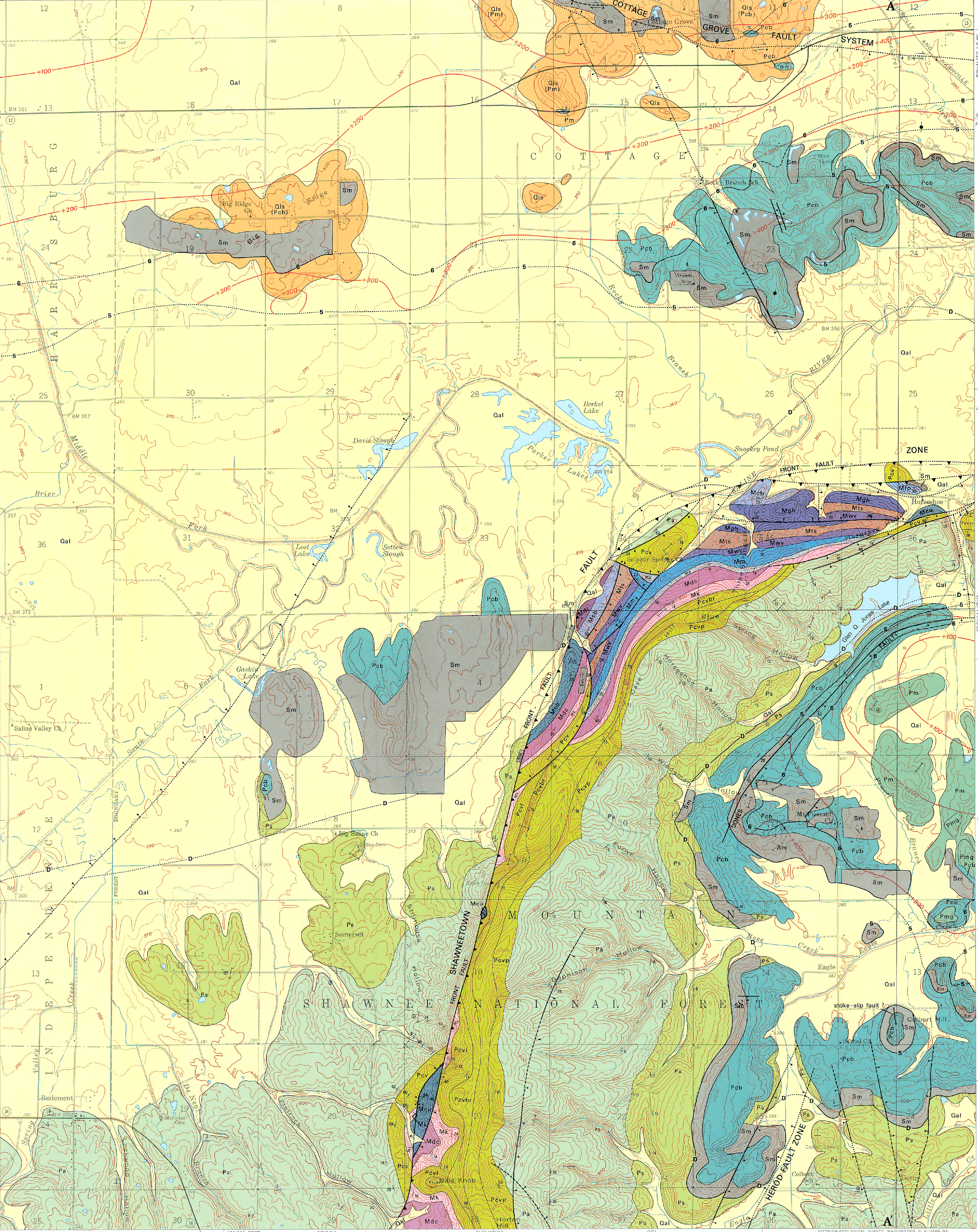


Prepared by Illinois Department of Energy and Natural Resources ILLINOIS STATE GEOLOGICAL SURVEY Morris W. Leighton, Chief Champaign, IL

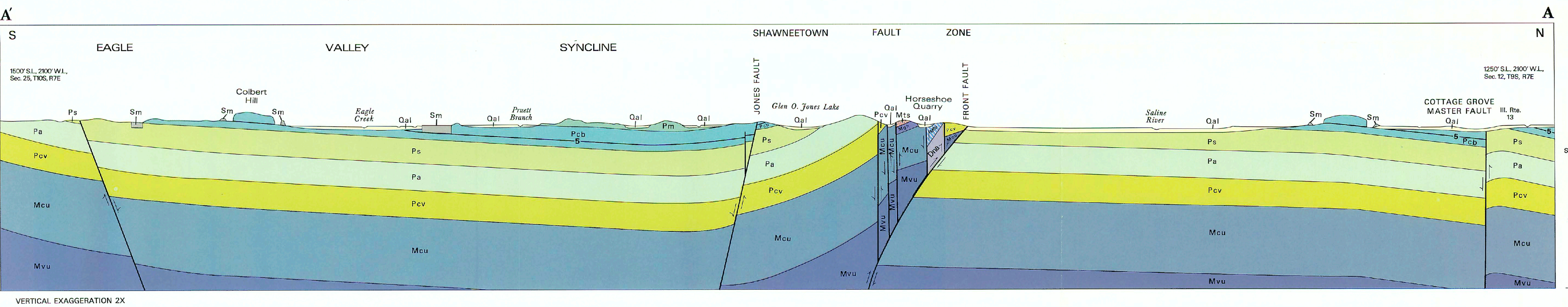
GEOLOGIC MAP OF THE RUDEMENT QUADRANGLE ILLINOIS

EXPLANATION

- Legend for geological units: Qal (Cahokia Alluvium and Equality Formation), Qls (Less deposits), Pm (Modesto Formation), Pmg (Glenfield Sandstone Member), Pcb (Carbondale Formation), Ps (Spoon Formation), Pa (Abbot Formation), Pmv (Murray Bluff Sandstone Member), Paf (Finnie Sandstone Member), Pgr (Grindstaff Sandstone Member), Pcv (Cypress Sandstone), Pm (Murray Bluff Sandstone Member), Pevr (Battery Rock Sandstone Member), Pevl (Lusk Shale Member), Mk (Kinkaid Formation), Mdc (Degonia Formation and Cote Limestone), Mp (Palestine Sandstone), Mm (Menard Limestone), Mvv (Walshburg Sandstone and Vienna Limestone), Mts (Walshburg Sandstone and Vienna Limestone), Mgh (Tar Springs Sandstone), Mcd (Glen Dean Limestone, Hardinsburg Sandstone, and Golconda Group), Mdr (Cypress Sandstone, Ridenhower Shale, and Bethel Sandstone), Mdu (Downey Bluff and Renault Limestones), Mst (Chesterian Series, undifferentiated), Mvu (Fort Payne Formation), Mv (Valmeyer Series, undifferentiated), and Mv (New Albany Shale Group).



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Structural Geology The Shawneetown Fault Zone is the dominant structural feature of the Rudement Quadrangle; it trends westward from Horseshoe, bends sharply to the south-southeast in sec. 34, T10S, R7E, and continues in that direction to the southern boundary of the quadrangle. High-angle, dip-slip faulting characterizes the Shawneetown Fault Zone. Most faults are normal or vertical, but the master fault (front fault) apparently is a high-angle, south-dipping reverse fault along most of the length of the zone. The relative offset across the fault zone is down to the north and northeast. Individual faults, such as the front fault in the Horseshoe Quarry, may have as much as 3,500 ft. of offset. An oil-test hole that cut the fault one-half mile west of the quarry showed 3,500 ft. of repeated sections. Other faults in the Shawneetown Fault Zone include wedge- or lens-shaped upthrown and downthrown slices adjacent to the front fault.

Economic Geology Coal from five coal seams in the quadrangle has been mined by surface and underground operations. In 1985, one surface mine, located west of the village of Cottage Grove, was operating in the Herin Coal. The oldest coal mined in the quadrangle is the Davis Coal of the Spoon Formation. This coal, generally 3 1/2 to 4 ft. thick, has been strip-mined with the overlying Dakevok Coal, which is approximately 3 to 3 1/2 ft. thick. Both coals are laterally persistent. They have been contemporaneous in the southeastern part of the quadrangle and worked in surface mines in the central part of the quadrangle. Small underground mines also have been operated in the Davis Coal.

Oil and gas production from the Shawneetown Fault Zone has been reported in the mid-1950s, but was abandoned by the early 1960s. Coal tests indicate a potential for structural traps along the Shawneetown and Cottage Grove Fault Systems. The Cottage Grove Field was discovered in 1953 and produced 12,857 barrels before abandonment in 1963. The only producing well reported in the SW 1/4 SW 1/4 SW 1/4 sec. 10, T9S, R7E (Eldorado 7.5 minute quadrangle). The "Ohara" Limestone (Kankakee Limestone Member) of the St. Genevieve Limestone was the reported reservoir. The Parkersville Field, in sec. 25, T9S, R7E, was discovered in 1956 and abandoned in 1961. Cumulative production from three wells from the Cypress Sandstone and Aux Vases Sandstone was reported to be 6,428 barrels.

One-half mile west of the summit of Cave Hill in sec. 3, T10S, R7E. At that location, the Negli Creek is a medium gray, dense, fossiliferous, thick bedded to massive bedded limestone about 20 ft. thick. Sandstone has been quarried from the Fort Payne Formation (Valmeyeran) at Horseshoe, where it occupies a narrow fault slice in the Shawneetown Fault Zone. The Fort Payne is a dark gray, highly siliceous, silty limestone; the 150 ft. or more exposed at Horseshoe probably is less than the total thickness of the formation. At least 76 tests have been drilled for oil in the quadrangle. With the exception of two tests, all have been drilled north and northwest of the Shawneetown Fault Zone. Three named oil fields were developed in the mid-1950s, but were abandoned by the early 1960s. Coal tests indicate a potential for structural traps along the Shawneetown and Cottage Grove Fault Systems.