demonstrate that the Cottage Grove master fault is nearly vertical and or less than 1° of dip. Structure contours on the map depict the elevation average rate of about 70 feet per mile, which equates to a gradient of 1.3% the Illinois Basin. Bedrock strata thus dip northward into the basin at an

The primary sources of data used in making this map are drill-hole records and coal mine maps for this quadrangle (Myers and Obrad 2004). Maps of glacial drift that occur mainly in the northern part of the quadrangle.

A segment of the Cottage Grove master fault crosses the northeastern corner of the quadrangle. Small thrust faults parallel to the Cottage Grove fault are also shown on the map. Such changes in dip and throw are characteristic of faults that appear on mine maps. Although small, the faults have small throws, ranging from less than an inch to about 12 feet. They are recorded as "rolls" as defined by coal company officials and marked on mine maps. Although these "rolls" are not significant enough to be ranked as major geologic structures, they should provide extensive pathways for gas flow.

The five coal bed methane wells within the map area all were drilled to cross the Cottage Grove master fault. Although the coal company officials marked the fault on the mine maps, it is not clear to what extent the faults were considered in the drilling program. The Mt. Rorah Coal has been mined in small open pits and shallow drift mines. The remaining coal is small and thin and is now considered too thin to mine and/or split with clastic partings.

Coal bed methane wells drilled for natural gas in the Tar Springs Formation (Mississippian; forma
tion of the Illinois Basin) generally have an underclay, whereas the lower bench may be siltstone. The upper bench is generally bright-banded, whereas the lower commonly consists of thinly laminated, carbonaceous shale that contains plentiful siderite masses. This in turn grades downward through carbonate nodules and irregular fractures lined with calcite to cross-bedded, and has an erosional contact marked by thin limestone to siltstone, which in turn may grade to either shale or sandstone. Claystone that is olive-gray to greenish gray, heavily slickensided; roots not clearly evident. Small limestone concretions that replaced the peat before it was coalified. In places the coal is very argillaceous and intergrades with lenticular mica and carbonaceous debris than found in younger sandstone.

Essentially all strippable Herrin Coal was removed in two large mines, Black, hard, highly fissile, pyritic coal that contains abundant brachiopods, gastropods, and echinoderm fragments. It is very argillaceous and intergrades with graphic to very finely granular, with scattered fossils that are generally rooted claystone is at the top is claystone that is Bright-banded. (land plants) occur locally near the Carboniferous lime mudstone to wackestone; fossils include pecte
sive. Locally there is a thin basal layer of shaly limestone or

Overall, the Illinois Basin, with its complex geology and varying coal seams, offers a unique opportunity for studying the interaction between geologic structures and coal resources. The map provides a valuable tool for understanding the distribution and characteristics of coal beds, which can inform decisions related to mining and resource management.