

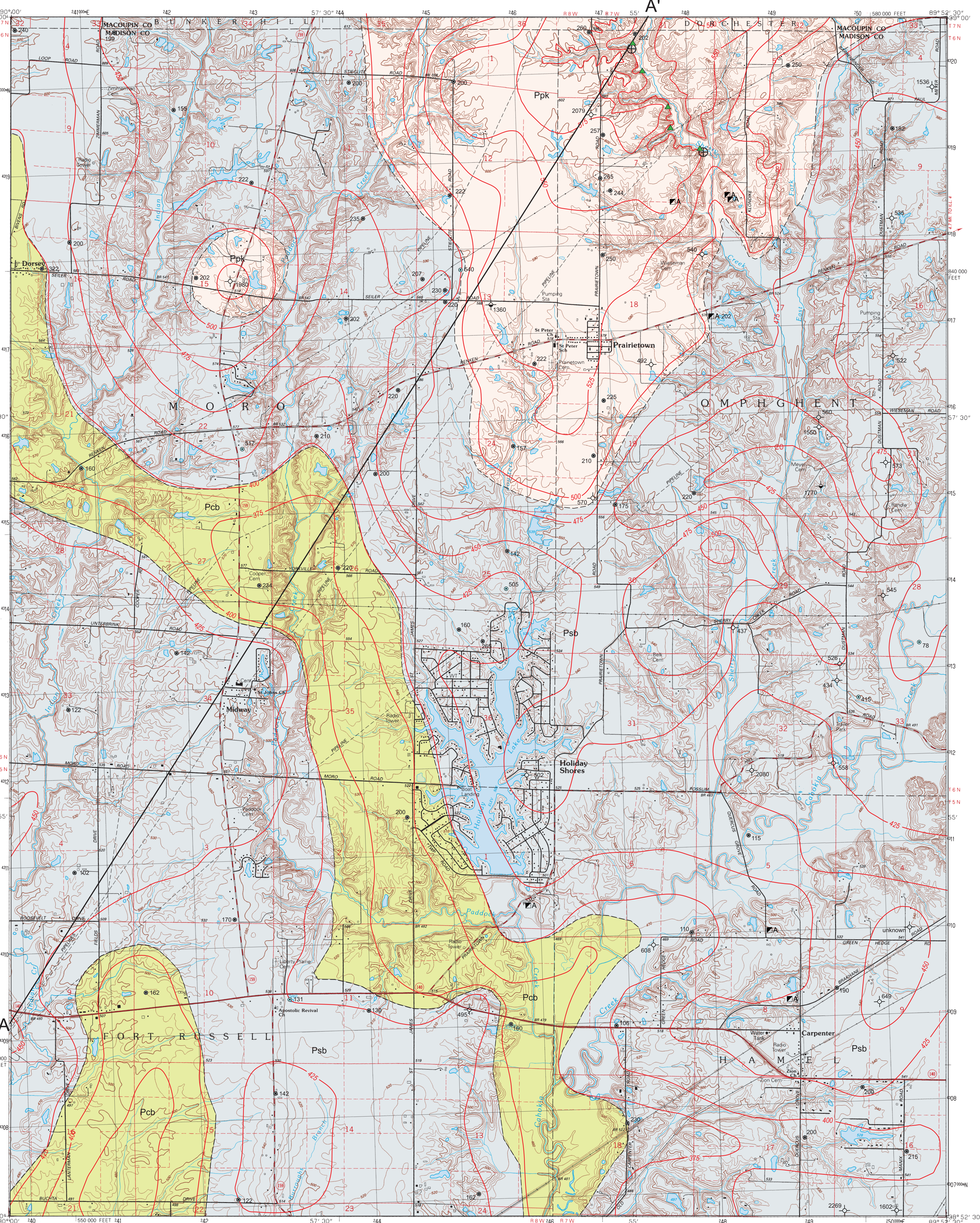
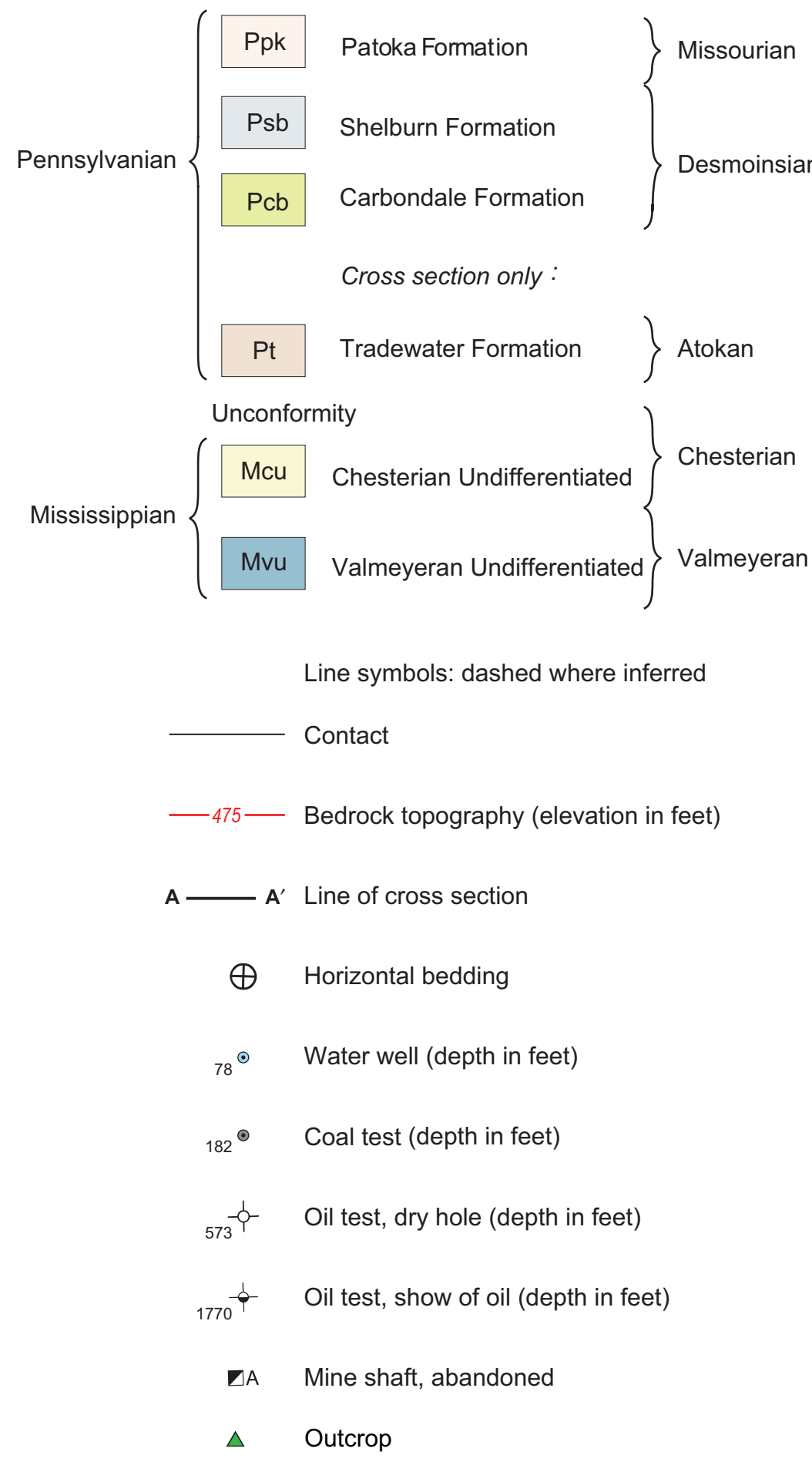
BEDROCK GEOLOGY OF PRAIRIETOWN QUADRANGLE

Department of Natural Resources  
ILLINOIS STATE GEOLOGICAL SURVEY  
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MADISON AND MACOUPIN COUNTIES, ILLINOIS

Illinois Preliminary Geologic Map  
IPGM Prrietown-BG

F. Brett Denny  
2004



Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled from imagery dated 1986. Field checked 1988. Map edited 1990.

North American Datum of 1983 (NAD 83)  
Projection: Transverse Mercator  
10,000-meter ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator)  
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16

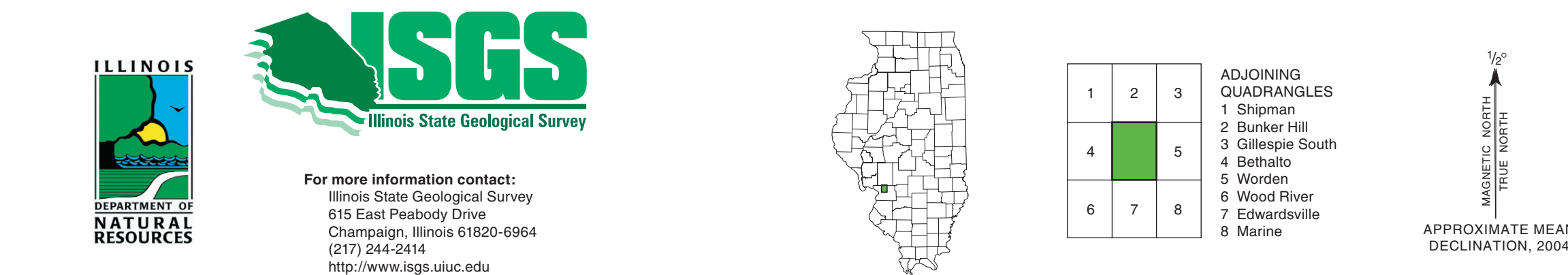
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Released by the authority of the State of Illinois: 2004

Geology based on fieldwork by F.B. Denny, 2003.  
Digital cartography by F.B. Denny, J. Dornier and J. McLeod, Illinois State Geological Survey.

This Illinois Preliminary Geologic Map (IPGM) is a lightly edited product, subject to less scientific and cartographic review than our Illinois Geological Quadrangle (IGQ) series. It will not necessarily correspond to the format of IGQ series maps, or to those of other IPGM series maps. Whether or when this map will be upgraded depends on the resources and priorities of the ISGS.

The Illinois State Geological Survey, the Illinois Department of Natural Resources, and the State of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this document and accept no liability for the consequences of decisions made by others on the basis of the information presented here. The geologic interpretations are based on data that may vary with respect to accuracy of geographic location, the type and quantity of data available at each location, and the scientific/technical qualifications of the data sources. Maps or cross sections in this document are not meant to be enlarged.



Introduction

Bedrock Geology of Prairietown Quadrangle was prepared as part of a statewide 1:24,000-scale geologic mapping program by the Illinois State Geological Survey (ISGS). This geologic map was funded in part through a contract with the United States Geological Survey. Bedrock geologic maps may aid in the exploration for economic minerals including coal, petroleum, and natural gas and may facilitate regional planning by locating groundwater resources and aggregate materials for infrastructure support.

Several data sources have been used to construct this map. Well records from files of the ISGS were the primary source. Most data locations are shown on the map sheet, but locations from several confidential records used to construct the geologic and structural contour maps are not shown. In addition, bedrock outcrops were observed along the east side of Sherry Creek (Ses. 6 and 7, T6N, R7W).

Bedrock topographic surface contours at 25-foot intervals were generated and overlain on the geologic map. Unconsolidated or surficial material thickness may be estimated by subtracting bedrock elevations from surface elevations on the topographic base map.

Economic Geology

**Coal**  
The primary economic coal is the Herrin Coal, located near the top of the Carbonate Formation. The Herrin averages 5 feet in thickness, but is eroded or not deposited in a few locations (see inset map of Herrin structure on top of the Herrin Coal).

ISGS records indicate six abandoned coal mine shafts in the quadrangle. These mines operated during the 1800s through the early to middle 1900s. Henry Voigt operated a shaft mine from 1897-1898 in the Herrin #6 Coal (Sec. 8, T6N, R7W). This mine was later operated by the Mt. Olive and Staunton Coal Company from 1898-1900, the Staunton Coal Company from 1900-1905, and again by the Mt. Olive and Staunton Coal Company from 1905-1926. Another abandoned mine shaft is reported very close to the Mt. Olive and Staunton Mines (Sec. 8, T6N, R7W). This shaft was sunk in 1900 by the Mitchell Brothers until 1904. It operated under the direction of Theo. Schuler from 1904-1912, Hardin and Stregier from 1912-1913, E.E. Stregier from 1913-1917, John Kowalski from 1917-1931, and the Kowalski Coal Company from 1931-1941. The Prairietown Coal Company (Sec. 18, T6N, R7W) operated from 1937 through 1945 and mined the Herrin #6 Coal. F.C. Bach operated a shaft mine (Sec. 5, T5N, R7W) recovering the Herrin #6 Coal, but no information concerning the years of operation is available. John Glasmeier operated a shaft mine (Sec. 8, T5N, R7W) about 1 mile south of the F.C. Bach Mine. The only information concerning the years of operation of the Glasmeier Mine is that it operated before 1922. An abandoned mine (Sec. 1, T5N, R8W) was also operated before 1922. All mines were probably small and provided a source of fuel for local uses only (as depicted on the mined-out areas in the 1:500,000 scale inset map of Petroleum and Coal Resources).

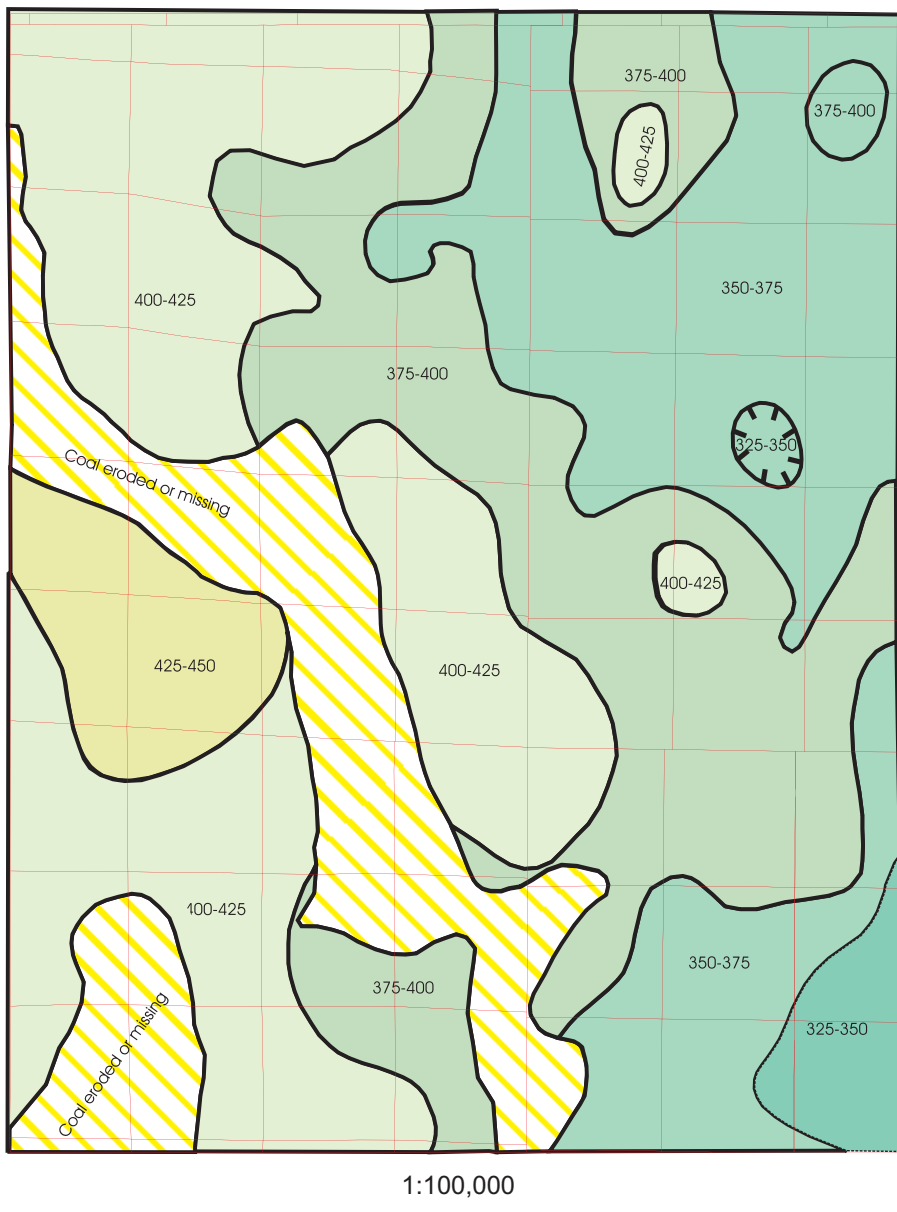
The regional dip of the Carbonate Formation is generally easterly. The Herrin Coal in the western portion of the quadrangle near Midway is approximately 100 feet below the surface and over 200 feet below the surface along the eastern edge of the quadrangle. Quaternary overburden is present throughout the quadrangle, but is thin in the north-central portion (Grimsby and Phillips, in prep; see NE end of cross section). Coal may be present within 100 feet of the surface in an area along the southwestern corner.

**Oil**  
Several oil tests were drilled in the quadrangle. All wells were dry holes, although two (Sec. 20, T6N, R7W, and Sec. 13, T6N, R8W) had shows of oil. The majority were abandoned at the top of the Valmeyeran below the Aux Vases. Several wells, including the two with shows of oil, were drilled through the Devonian and into Silurian formations. Oil is produced from several areas in the surrounding quadrangles (see inset map) and undiscovered accumulations of oil may be present in the Prairietown Quadrangle. The structural contours of the Herrin Coal may define targets for exploration wells.

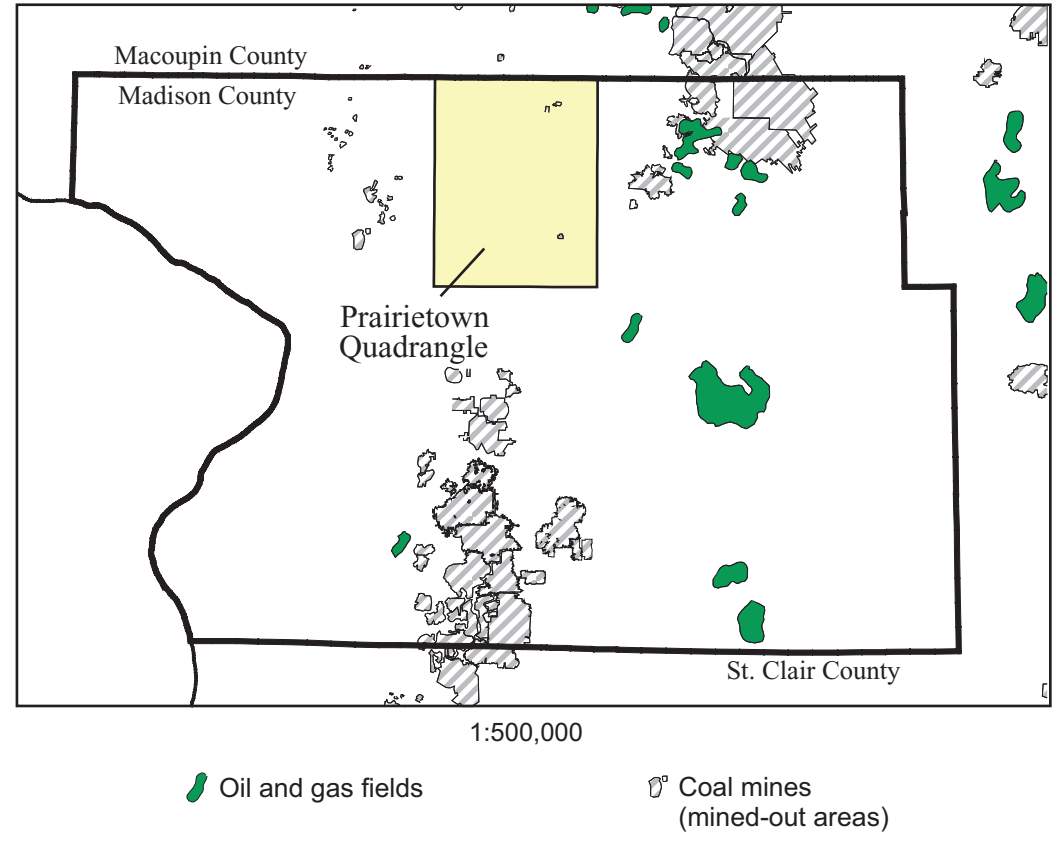
Structural Geology

Structural contours on the top of the Herrin #6 Coal indicate regional dip of the Paleozoic bedrock is to the east at approximately 25 feet per mile, or a dip of less than 1 degree. No major faults have been located offsetting any bedrock units in the immediate area.

Top of Herrin Coal Structure



Petroleum and Coal Resources of Madison County



SYSTEM	SERIES	FORMATION	MEMBER AND BED	GRAPHIC COLUMN	THICKNESS (feet)	DESCRIPTION
Penneyan	Missourian	Patoka			0-80	A. <b>Patoka Formation:</b> (claystone, shale, siltstone, sandstone, and limestone); <i>claystone</i> medium to dark gray, with greenish-gray siltstones in upper part, calcareous in places with marine invertebrates, where associated with limestone, black shale with marine bivalves; <i>siltstone</i> green to gray, laminated to massively bedded; <i>sandstone</i> medium grained, light gray, with occasional channel development; <i>limestone</i> dark gray, lenticular very argillaceous, containing marine fossils.
		Shelburn			100-150	B. <b>Shelburn Formation:</b> (claystone, shale, siltstone, limestone, sandstone, and coal); <i>claystone</i> light to medium to dark gray, variegated in places red and green where associated with Piasa Limestone; black shale above Danville Coal; <i>siltstone</i> gray to gray-green, laminated to thick bedded, commonly micaceous; <i>limestone</i> light gray to dark gray, argillaceous, with crinoids and brachiopods, dominantly lime mudstone with fossil wackestone; fusulines common in lower part of Piasa Limestone, with thin red shale just above marker bed in drill cuttings and on wireline logs; <i>sandstone</i> rare, light gray to tan, medium grained, micaceous, quartz arenite; <i>coal</i> thin and discontinuous, bituminous and commonly overlain by thin, black shale, red and green claystones and a limestone.
	Desmoinesian	Carbonate			130-150	C. <b>Carbonate Formation:</b> (shale, claystone, sandstone, limestone, and coal); <i>shale</i> and <i>claystone</i> , light gray to black; Anna Shale marine black shale above Herrin Coal; <i>claystones</i> light gray to white with carbonized root remains below coals; <i>sandstone</i> sporadic, gray, medium grained, thick bedded quartz arenites; Hanover Limestone dark to medium gray, nodular, two to three feet thick, a persistent bed of argillaceous limestone brecciated and containing primarily brachiopods; Oak Grove Limestone lithologically distinct sequence of thin lime-mudstones interbedded with thin dark gray and black shales; Herrin and Colchester Coals both bright bands; Herrin Coal near top contains a bluish gray argillaceous layer near base; "blue band"; Colchester Coal near base of Carbonate, thinner than Herrin; basal Breerton Limestone character unknown in mapped area.
		Tradewater			35-120	D. <b>Tradewater Formation:</b> (sandstone, siltstone, shale and conglomerate); <i>sandstone</i> mostly micaceous quartz arenites with some clay or altered feldspar subtharenites, grain size fine to coarse with cross bedding in places; <i>siltstone</i> gray to tan, abundant mica, laminated to thick bedded; shales light to dark gray with carbonaceous debris, typically interbedded with siltstone; <i>conglomerate</i> rare, composed of chert gravel and pebbles with coarse grained to medium grained sand; fossil plant debris is also found within conglomerates that mainly occur at or near base of unit.
Mississippian	Chesterian	Cypress			0-25	E. <b>Cypress Sandstone</b> (sandstone and shale); <i>sandstone</i> white to light gray, fine grained, well sorted quartz arenite with occasional sucrose texture; <i>shale</i> only as clay droppers in laminated sheets near upper formation.
		Paint Creek			0-45	F. <b>Paint Creek Formation</b> (claystone, limestone, and sandstone); <i>claystone</i> variegated, red and green to light gray, soft, locally with marine fossils such as crinoid and blastoid calyxes and ossicles, productid brachiopods, rugose corals, and fenestrate bryozoans; <i>limestone</i> medium gray to dark gray, fossiliferous packstone and wackestone with shale interbeds containing fine grained quartz sand stringers; upper limestone with occasional pink chert-replaced crinoid material; basal limestone predominantly dark greenish gray, with some red, green, and brownish shales.
		Trenton			0-25	G. <b>Yanketown Sandstone</b> (sandstone, shale, and chert); <i>sandstone</i> very fine grained, quartz-rich, white, red, and gray green, in places silicified and preserved as chert, with stacked ripple bedded chert structures containing very fine angular quartz sand; <i>claystone</i> , typically red, at top of unit, but can be variegated with greens and grays, grades into underlying limestone.
		Aux Vases			2-25	H. <b>Remant Limestone</b> (limestone, sandy limestone, and limestone conglomerate); <i>limestone</i> light to medium gray, with oolites, fossils and diagnostic red echinoderm fragments; quartz <i>sandstone</i> within this limestone, and in places carbonate conglomerates at base.
	Valmeyeran	St. Genevieve Limestone			60-80	I. <b>Aux Vases Sandstone:</b> (sandstone and shale); <i>sandstone</i> clean, white, well sorted, quartz arenite with crossbedding and current ripples; green shale and green clay drapes near upper part of unit; lower part of sand calcareous, locally unconformable contact with underlying unit.
		St. Louis Limestone			200-250	J. <b>St. Genevieve Limestone:</b> (limestone and sandstone); <i>limestone</i> white, with abundant oolites and echinoderm fragments, oolitic crossbedded grainstones or oolites in upper part of formation; <i>sandstone</i> , light greenish gray, botrytoid, approximately seven feet thick, very fine grained with calcareous cement, near upper part of unit; lower formation predominantly crinoidal packstones with tightly packed coated grains and thin greenish shale laminae, common stylolites, scattered chert nodules and greenish oncolites.
						K. <b>St. Louis Limestone:</b> (limestone, chert, dolostone); <i>limestone</i> dominated by lime-mudstones, dark gray to light gray, with conchoidal fracture; stylolites common; some fossil wackestone and packstone beds; unit thin bedded, white to dark gray chert nodules and stringers common; yellowish dolostone and breccia in middle part of formation; colonial corals <i>Acrocyathus</i> common near lower part of unit.

