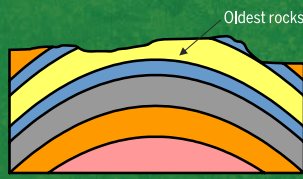
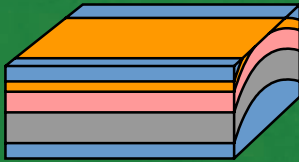




Anticline



Eroded Anticline



Non-Plunging Anticline



Plunging Anticline



Arch

A

is for
Anticline,

a fold in rocks where the rocks are arched upward. Bedrock of Indiana is folded into a large anticline that plunges to the northwest. This anticline is called the Cincinnati Arch in southeastern Indiana and the Kankakee Arch in northwestern Indiana. A smaller anticline occurs on the west side of the Mt. Carmel Fault in eastern Monroe and Lawrence Counties. The Leesville Anticline is used for gas storage.

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B *is for* Building Stone,

any rock that is suitable in strength and appearance to be used in the construction of buildings. Sandstone and limestone are common building stones in Indiana. Today, most building stone is used as an attractive covering or cladding on the exterior of a building.



C *is for* Cross Bedding,

a physical sedimentary structure formed in clastic sedimentary rocks. Cross beds form from the migration of ripples, dunes, and sand waves by water and wind. The migration of these bedforms produces an inclined pattern defined by changes in sediment characteristics that “crosses” between the main bed partings.

D



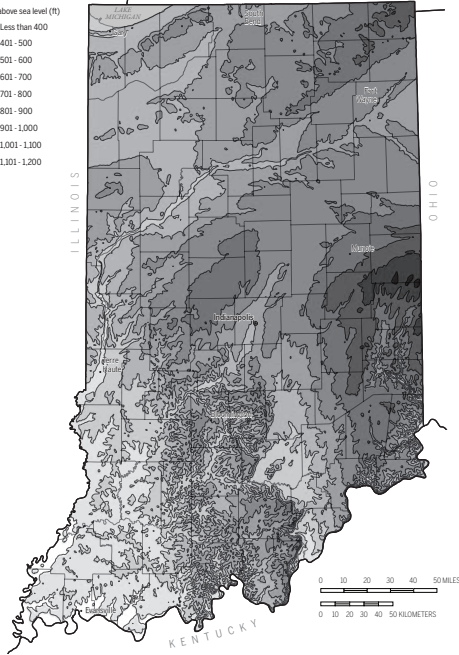
is for
Dune,

a hummocky to ridgelike deposit of sand that is formed by winds. Dunes are common along the shore of Lake Michigan. These dunes are large, some being more than 150 feet high. Dunes also occur on the eastern margin of Indiana's large rivers. These riverine dunes formed during glacial times when sand was blown from the banks of the rivers eastward onto uplands.

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Elevation above sea level (ft)



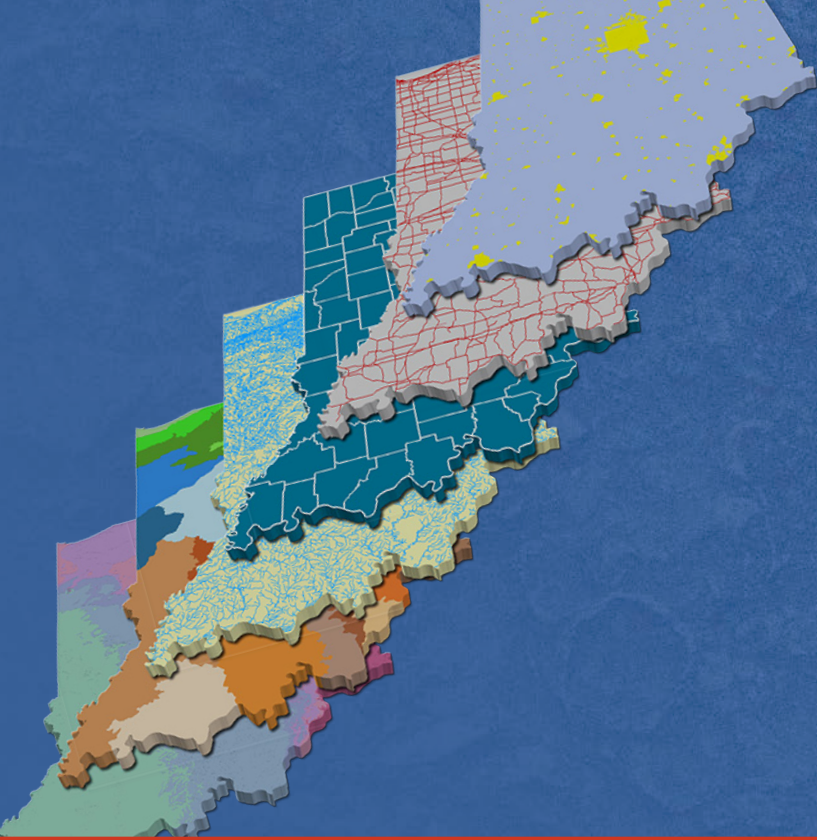
E *is for* Elevation,

a measurement of vertical distance above a reference point. Indiana elevations are referenced to mean sea level. The highest point in Indiana is in northeastern Wayne County at 1,257 feet above mean sea level. In Posey County where the Wabash and Ohio Rivers join is the lowest point, at 325 feet above mean sea level. The sedimentary rock sequence in Indiana is as much as 4 miles thick, so it is common for the elevation of many of Indiana's rock units to be below sea level.



F *is for* Fault,

a fracture in rocks, producing a plane where rocks are displaced on each side of the plane. Most large faults consist of numerous smaller faults. Many faults occur in the southwestern part of Indiana in an area known as the Wabash Valley Fault Zone. A 50-mile-long area of normal faults called the Mt. Carmel Fault extends throughout the eastern parts of Monroe and Lawrence Counties into southwestern Jackson and northeastern Washington Counties.



G *is for* GIS,

or “geographic information system,” a computerized method for handling and displaying spatial data. Geologists can store, retrieve, query, and display geologic data using a GIS. It is a vital tool in constructing geologic maps and other maps derived from geospatial data.

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H

is for
Horn Coral,

a conical-shaped marine invertebrate animal. Known also as “rugose corals,” horn corals have a calcite skeleton around an anthozoan polyp. These corals are known from the Ordovician to the Permian Periods. Horn corals are a common fossil found in southeastern Indiana.

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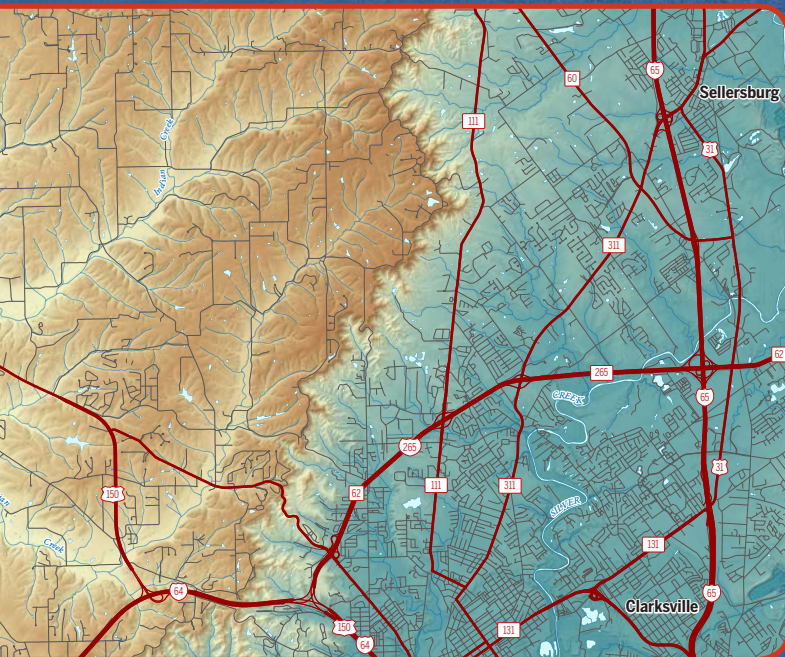
I *is for* Index Fossil,

a fossil of limited stratigraphic but wide environmental range that can be used to define the age of sedimentary rocks. A common index fossil in Indiana is the conodont, a marine animal whose evolutionary changes can be traced in Cambrian through Pennsylvanian-age rocks.



J *is for* Jointing,

a term used to describe aligned fractures in layers of rocks. Joints are not faults because no significant displacement occurs on joints. Along McCormick's Creek, two nearly right-angle joint systems can be seen that produce many loose blocks of St. Louis Limestone. Quarries and mines are aware of joints in their operations because they can create hazards for workers.



K *is for* **Knobstone Escarpment,**

the eastern edge of the physiographic province called the Norman upland. The Norman upland consists of dissected fine grained sandstone, siltstone, and shale of the Borden Group. These rocks are more resistant to erosion rising up to 350 feet above eroded limestone to the east and northeast.

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is for

Limestone,

a crystalline or clastic rock made up of the mineral calcite. Most limestones consist of fossil fragments of invertebrate animals. Limestone has many industrial uses—aggregate, building stone, and additives in industrial, chemical, and food products. For example, antacid tablets are made of calcite from limestone.

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M

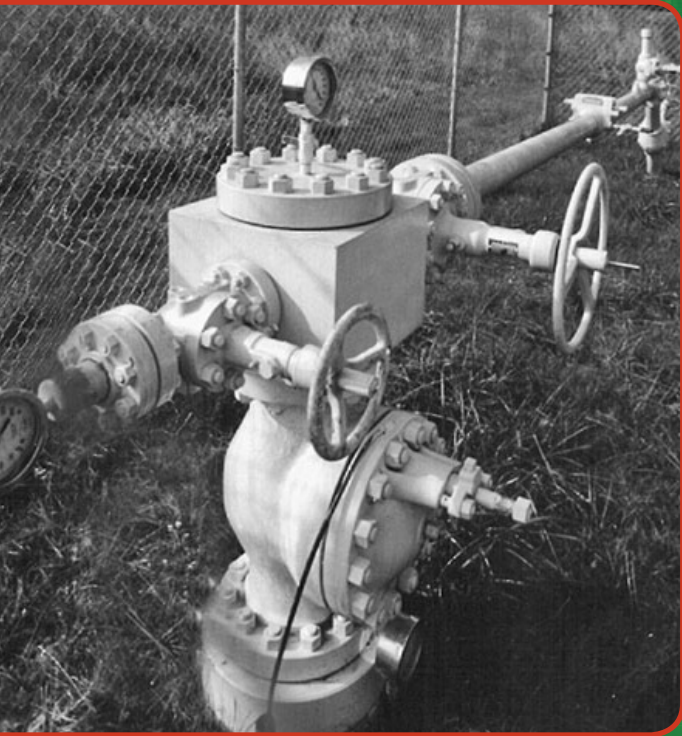
is for

Meteor Impact Feature,

a structure that formed from the impact of a meteor. In Newton County, the Kentland Dome is a nearly circular feature with a fault along the southwestern side, which contains rocks that are turned vertical. The oldest rocks in the center of the structure are Ordovician, and the surrounding rocks are Pennsylvanian in age.

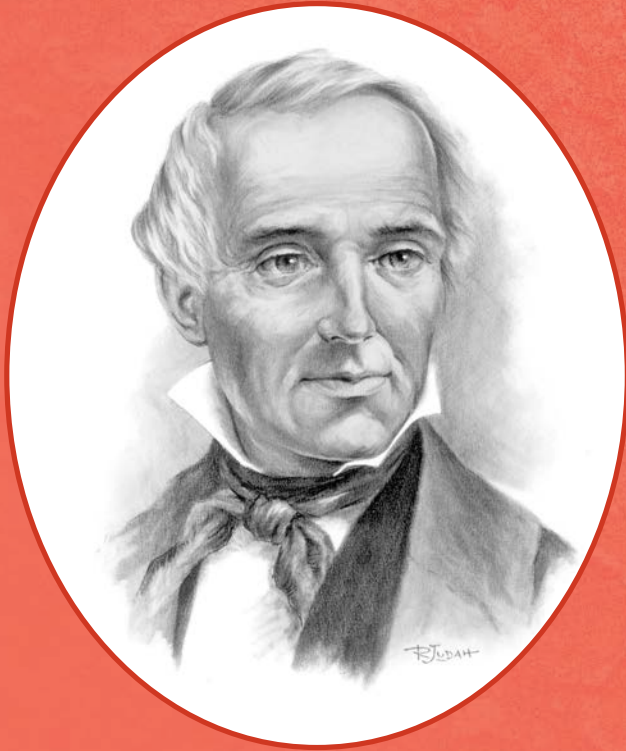
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N *is for* Natural Gas,

a colorless, odorless methane gas mixture that occurs naturally beneath the earth's surface. Natural gas is withdrawn from wells and processed into numerous hydrocarbon products including ethane, propane, and butane. Natural gas is a non-renewable resource used for heating, cooking, and electricity generation.



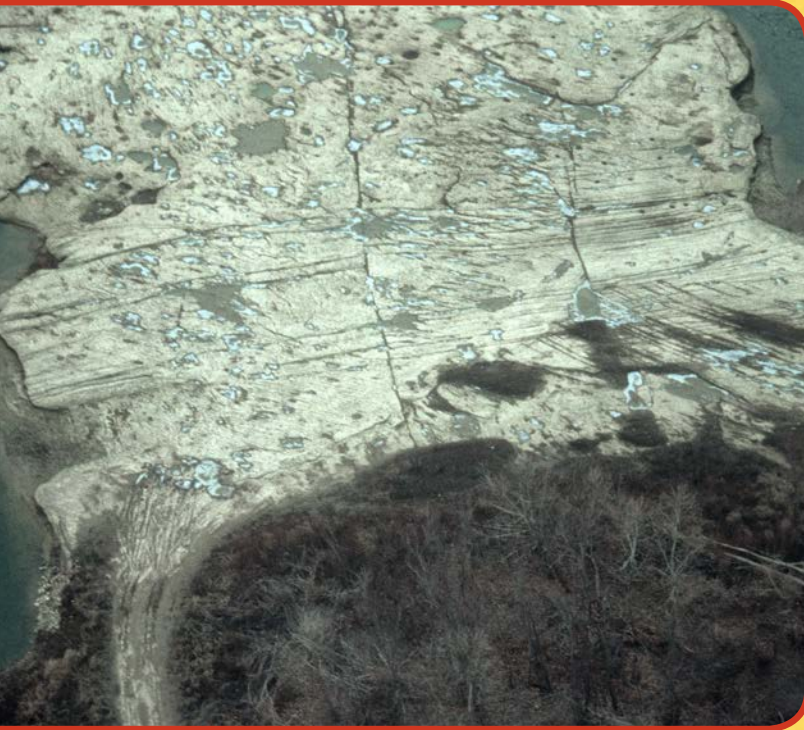
O

is for
**Owen,
David Dale,**

the first state geologist of Indiana. Son of Robert Owen, David Dale Owen was raised in New Harmony, Indiana. He conducted the first geological assessment of Indiana's mineral wealth in 1837.

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P

is for **Plucking,**

the mechanical process of fracturing and carrying debris beneath a glacier. As a glacier advances, meltwater infiltrates the spaces between the underlying rock and freezes, causing the rock to break and become incorporated into the ice mass. This glacial phenomenon results in a jagged surface with joints, indentations, and scratch marks.



Q

is for
Quartz,

the crystal form of silicon dioxide (SiO_2). Quartz is a mineral that is chemically and physically resistive to weathering and is, therefore, a common mineral in clastic sedimentary rocks.

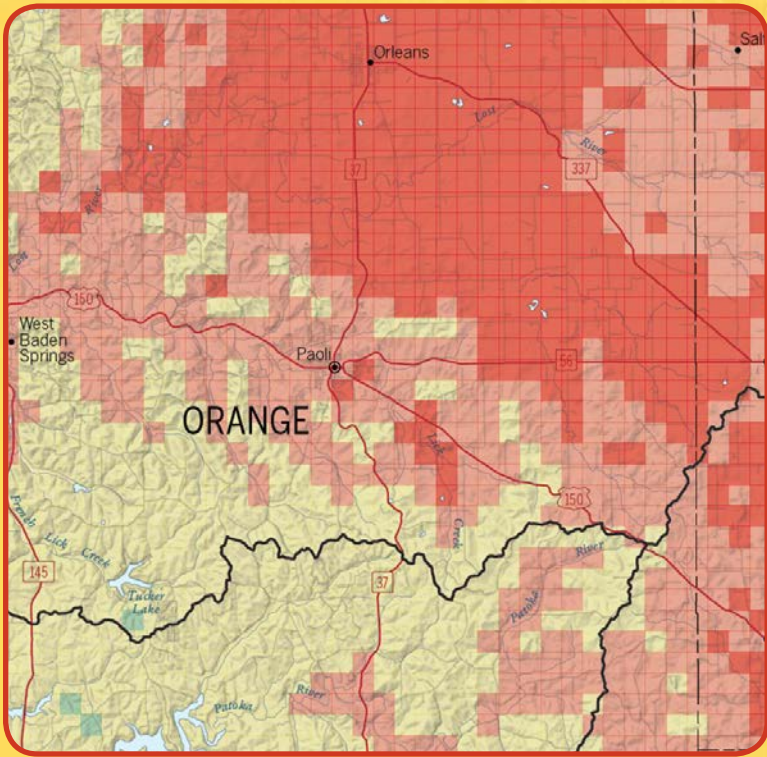
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R *is for* Ripples,

a wavelike bedding pattern that occurs in sedimentary rocks and unconsolidated deposits. Ripples are formed by water and wind by the transport and deposition of sand-sized grains. Larger ripples are called dunes and sandwaves. The migration of ripples across the bedding surface produces cross bedding.



S *is for* Sinkhole,

a funnel- or bowl-shaped depression at the earth's surface that connects to underground drainage. Sinkholes are major features in karst terrains; they develop through the dissolution of limestone and dolostone. Many sinkholes occur in the south-central and southeastern parts of Indiana where carbonate rocks are prevalent.



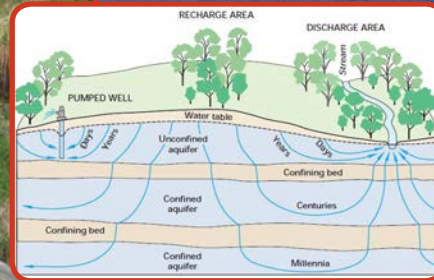
T *is for* Trilobite,

an arthropod that has three body segments. The first arthropod to appear in the fossil record, trilobites were common in Paleozoic seas. They could roll themselves into a ball, probably for protection. Trilobites became extinct with many other genera at the end of the Permian period.



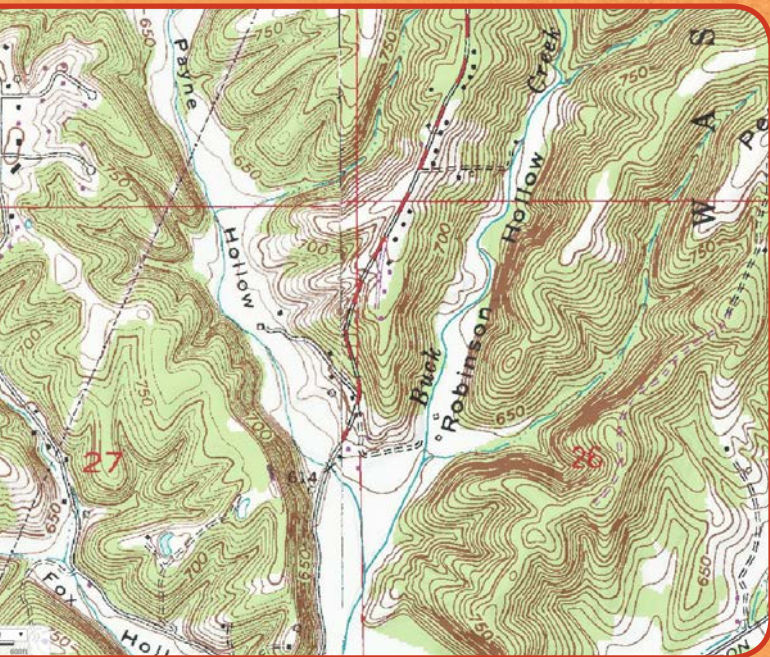
U

is for
**Unconfined
Aquifer,**



an underground layer of water-bearing rock whose upper water surface is close to the Earth's surface. This allows water to seep from the ground surface directly into the permeable rock. Unconfined aquifers are not bounded by an impermeable layer and can be impacted by drought conditions.

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V *is for* V-Shaped Valley,

a steep-sided channel with a narrow bottom cut into resistant sediment or rock. These types of valleys are common where fine-grained sandstones and siltstones of the Borden Group crop out. Geologists find these valleys good places to find outcrops not covered with soil.



W

is for
Whetstone,

a fine-grained sandstone that was quarried in southwestern Indiana for more than 150 years. This durable stone was shaped into many different types of sharpening stones, grave markers, and cuticle boards. While gravestone production shifted to limestone and marble in the mid-1800s, whetstone is far more resistant to weathering. As a result, whetstone grave markers are easy to read even today, while the engraving on other stones has faded.

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X *is for* Xenolith,

a rock fragment within an igneous rock. Because Indiana has no igneous rocks near the surface, xenoliths are observed only in rocks transported to Indiana by glaciers. These rocks foreign to Indiana are called glacial erratics. They and their xenoliths can be traced back to certain areas in Canada.

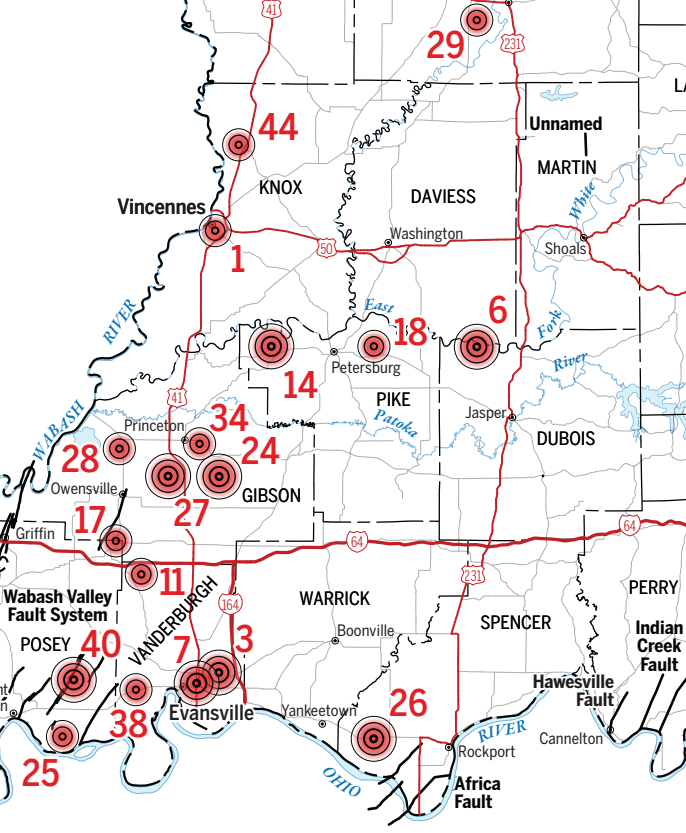


Y

is for
**Younging
Upward,**

which describes the relative age of rocks and sediments in Indiana. That is, younger rocks and sediments occur on top of older-aged rocks and sediments everywhere in Indiana. Younging can be used to describe the direction, upward or horizontal, toward the youngest deposits.

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Z is for Zone,

a loosely used term to describe an area or volume that is distinct from another. For example, the coastal zone of Indiana contains the landforms and deposits associated with the development of the southern shore of Lake Michigan. The Wabash Valley Fault Zone is a concentrated region of buried normal faults in southwestern Indiana.

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