

EXPLANATION

**INDIANA GEOLOGICAL SURVEY
PETROLEUM WELL SYMBOLS**

The following symbols include all of the primary petroleum well symbols used by the Indiana Geological Survey. These symbols may be modified using the three modifiers listed below to provide additional information about the status or source data for a particular well. This list may include symbols not shown on this particular map.

- permitted location
- ◇ dry hole
- oil
- ✱ gas
- ✱ oil and gas
- ✱ shut-in gas
- gas storage
- gas storage formerly oil
- ✱ gas storage formerly gas
- ✱ water injection
- ✱ water injection and/formerly oil
- ✱ water injection and/formerly gas
- ✱ water injection and/formerly oil and gas
- observation
- ✱ observation and/formerly gas
- ✱ observation and/formerly gas storage
- ◇ Trenton well, possibly productive; only available information is an uncertain location
- salt water disposal
- ✱ salt water disposal and/formerly oil
- ✱ salt water disposal and/formerly gas
- ✱ salt water disposal and/formerly gas storage
- potable water supply
- ◇ nonpotable water supply
- ◇ nonpotable water supply formerly oil
- waste disposal
- ◇ temporarily abandoned
- ▽ confidential well
- ▼ confidential workover
- confidential boring
- boring
- stratigraphic test
- surface location of deviated hole
- path of deviated hole

SYMBOL MODIFIERS

Modifiers may be added to any standard IGS well symbol to denote the following three criteria:

- ✱ abandoned
- ✱ completion type uncertain
- ✱ location uncertain

○ Petroleum field boundary; encloses wells classified in a single field, but is not intended to indicate the extent of producing reservoirs.

○ Gas storage project boundary; encloses wells classified in a single gas storage project, but is not intended to indicate the extent of the gas storage reservoir.

▨ Federal Property

PETROLEUM WELL DATA LABELS

Petroleum well data labels displayed on this map represent the total depth of the well. In densely drilled areas, it is not possible to post well data labels for all wells present because the labels would overlap well symbols and other labels, making the map unreadable. For a more complete representation of well data in such areas, the IGS provides Petroleum Well Location Maps at larger scales.

SURVEYED LAND UNITS

In addition to land units that are designated as sections within the Congressional Township and Range System, Indiana contains tracts of land which were surveyed prior to the Congressional surveys of 1807. These tracts were grouped into different land-unit types based on the purpose of the particular survey in which they were determined. Individual parcels of land within each of these tracts were identified by their land-unit type plus a number and (or) name. Some tracts were not assigned a land-unit type, and are termed "named tracts." Named tracts may or may not be numbered. These land units are identified on the map by a prefix indicating the land-unit type, followed by the land-unit number (for example, L121). Prefixes used to indicate the land-unit type are as follows:

- G Grant
- L Location
- D Military Donation
- S Survey
- M Michigan Road Line
- Res. Reserve

ARTIFICIAL TOWNSHIPS

Because these land units are not part of the Congressional Township and Range System, they technically do not fall within specific townships. The Indiana Geological Survey superimposes artificial township boundaries onto the areas that were not surveyed in the Congressional system so that individual land units can be assigned to an unofficial township and range designation. The imaginary township boundaries follow the outline of individual land units so land units are not split into more than one artificial township, resulting in artificial township boundaries which do not follow straight lines, but rather zigzag as necessary. Well locations that fall in these land units are assigned an artificial township and range designation.

ACCURACY OF WELL LOCATIONS

Locational coordinates of wells contained within the Indiana Geological Survey's Petroleum Database Management System (PDMS) and their corresponding locations as shown on maps are believed to be reasonably accurate when portrayed on a scale of 1 inch to 1 mile. Although the coordinates for a great many locations in the database have been very accurately determined, past practices and inherent limitations on the accuracy with which a well was spotted on a 1:24,000-scale USGS topographic map have resulted in well coordinates that locate wells a small distance from their actual locations. Depending on circumstances, this distance could be as great as 100 feet, or rarely, somewhat more. In general, such locations are sufficiently accurate for most petroleum exploration and field mapping purposes. Additionally, it is important to note that new and revised data continually are being entered into the PDMS and, despite the use of careful procedures and proofing of the entered data, human error always remains a possibility. Every effort is made to correct errors and discrepancies whenever they are identified, but it is the responsibility of the user to verify any information to the extent it is deemed important.

DATA AVAILABILITY

Paper copies, as well as digital Adobe Acrobat formats, are available for purchase through the Publications Sales Office of the Indiana Geological Survey, Indiana University. Larger-scale maps, optionally showing additional well information may also be obtained from the IGS. Availability may depend on the current status of information contained in the IGS's Petroleum Database Management System. Prices for larger-scale maps vary depending on the amount of custom preparation needed to produce the map. Requests for specific well information should be directed to the Subsurface Geology Section, Indiana Geological Survey.

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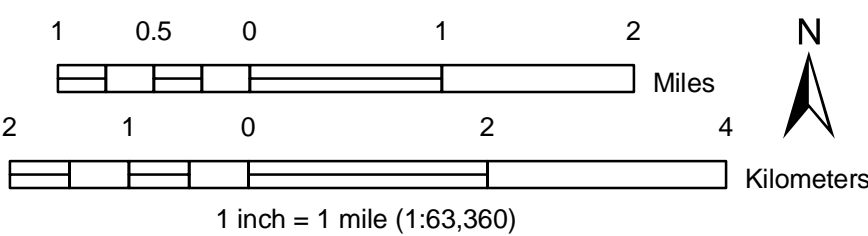


GENERAL DISCLAIMER

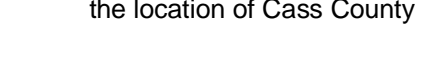
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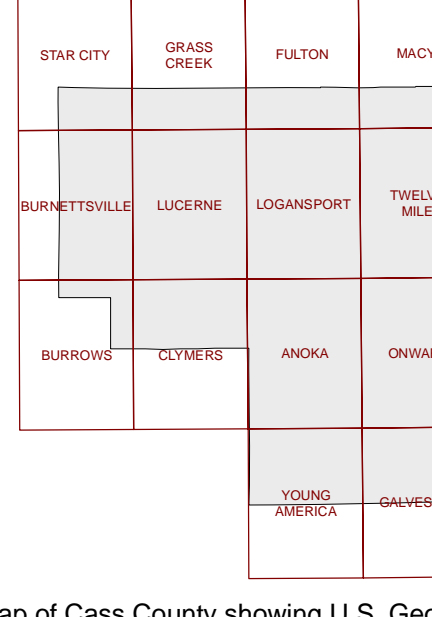
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Index map of Indiana showing the location of Cass County

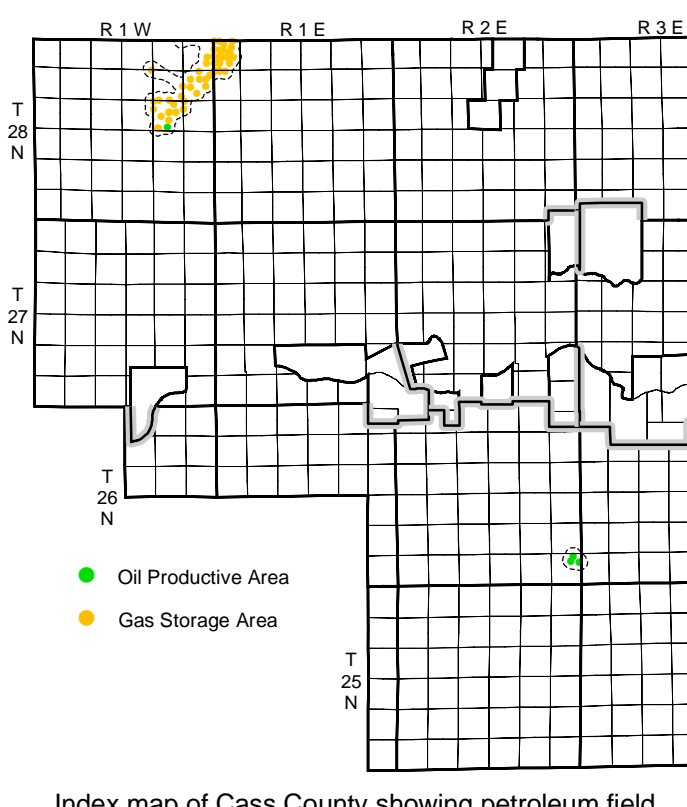


Index map of Cass County showing U.S. Geological Survey 7 1/2-minute topographic quadrangle map names



6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

General diagram of Congressional township showing numbered sections. Ideal sections are 1 mile by 1 mile squares.



Index map of Cass County showing petroleum field boundaries, and oil productive and gas storage areas

