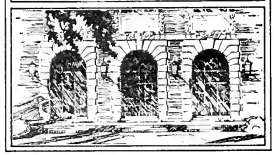

Atlas of
Illinois
Resources

Section 2

Mineral Resources

6

Atlas of Illinois Resources

Section 2

Mineral Resources

STATE OF ILLINOIS
William G. Stratton, Governor

DEPARTMENT OF
REGISTRATION AND EDUCATION
Vera M. Binks, Director

DIVISION OF INDUSTRIAL
PLANNING AND DEVELOPMENT
Richard Nowinson, Chairman
James F. Cannon, Superintendent

Printed by Authority of
the State of Illinois

FOREWORD

The Division of Industrial Planning and Development in the Department of Registration and Education, with the cooperation of other state agencies, has undertaken a comprehensive survey of the economic resources of Illinois. Resulting from this research is the *Atlas of Illinois Resources*, which is being published as a series of ten separate documents. On behalf of the Division, I take pleasure in presenting Section II of this series, entitled *Mineral Resources*. Section I, *Water Resources and Climate*, was presented to the citizens of Illinois in November, 1958. Other facets of the natural and human resources of the state will be presented in forthcoming sections and will describe, by maps and text, the facts of Illinois farms and forests, of its people and educational facilities, its transportation and public utilities, its markets and manufacturing, and its recreational and governmental characteristics.

The *Atlas of Illinois Resources* is designed to enable those manufacturers who are considering locations in the American Midwest to evaluate correctly the advantages of Illinois relative to those of other states and to select for further study from within Illinois a number of communities which best satisfy their particular locational requirements. The Atlas also will be of immense value to manufacturers and businessmen now located in Illinois, to chambers of commerce, manufacturing associations, and industrial development corporations, to educational institutions, and to federal, state, county, and local governments.

June, 1959

Richard Nowinson
Chairman

Office of The Governor

SPRINGFIELD

WILLIAM G. STRATTON
GOVERNOR

June 30, 1959

Illinois provides commerce and industry with a combination of favorable conditions that is virtually unique in the world. It lies in the heart and at the crossroads of the rapidly-growing American Midwest. Here it enjoys a temperate climate, fertile soils, and an abundance of water and mineral resources. Our people, working with energy, foresight, and resourcefulness for the common good, have achieved, among many other things, a position of eminence in the nation's economy.

The great productive system of Illinois is supplied with raw materials and fuels from the State's mines, quarries, oil wells, soils, and forests; its workers are fed from Illinois farms and fields; and the entire State is served by an already magnificent, yet constantly developing, system of railroads, roads, airlines, and inland waterways. Thus is provided an environment that is extremely favorable for the establishment, growth, and development of industry and commerce. Our enterprises flourish.

A most striking aspect of our industrial complex is its location at the very heart of the nation's productive plant. The far-flung transport systems focusing upon Illinois draw people, goods, and materials together, and from this central location are distributed Illinois' finished products. Few areas in the world are so well served. Here, truly, is the "hub" of productive America.

Illinois, in its setting in the American Midwest, is destined to become a major focus of economic activity in the world of tomorrow. As we embark upon this course, an assessment and inventory of our resources for the task ahead seems necessary. We have made the inventory. We are proud to make the results of our work available to Illinois citizens and prospective citizens alike in Section 2 of our ATLAS OF ILLINOIS RESOURCES.

Governor

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MINERAL RESOURCES OF ILLINOIS

Illinois has for many years occupied a prominent position both as an industrial and as an agricultural state. Her eminent position in the industrial fabric of the Upper Mississippi Valley and the nation rests, in no small part, upon the state's mineral industry, which provides many of the materials for a wide range of economic activities. The primary materials of industrial production—fuels and iron ore, the latter from the Lake Superior district—are available in abundant quantities. They are assembled, at low cost, for processing along the shores of Lake Michigan near the large Chicago market and in the associated complex of smaller cities in the industrial belt of Illinois, Indiana, and Wisconsin. In addition, certain minerals essential in the initial processing of steel, such as refractory materials and fluxes, are present in the area, together with a variety of the mineral substances necessary for foundry, chemical, construction, and other purposes. Coal and oil, the leading minerals in value within the state, supply power and fuel for all the needs of a modern society, including manufacturing, rail, highway, and air transportation, space heating, and mechanically powered agriculture.

The primary steel industry serves as a nucleus around which a large number of industries have developed for the manufacture of transportation equipment and industrial, agricultural, and electrical machinery. Low-cost transportation and ready market outlets have attracted large petroleum refineries, particularly near Chicago and East St. Louis. The production of coke and refined oil has resulted in the development of associated chemical industries, also important in Chicago and East St. Louis.

Along with the huge demands for coal, oil, and iron ore, there is a large and ever increasing call for nonmetallic minerals and Illinois makes a substantial contribution of these. The importance of, and the great need for, these minerals is well illustrated by their widespread and mounting use in the manufacture of supplies for various kinds of building construction—industrial, commercial, residential, and agricultural. Each of these construction categories has its special requirements in addition to those needs shared in common. Mounting timber prices have focused the builder's attention more and more upon other materials, and Illinois is meeting these demands, wholly or partly, through the processing of the state's own reserves of nonmetallic minerals and rocks. The list of products is long and includes bricks, concrete and concrete blocks, hollow tile, glass blocks, and dimension stone. There are also industries in the state that process out-of-state nonmetallic minerals for construction purposes. The favorable marketing position of the state within the nation's network of transportation, in addition to the large local markets, supports the production of great quantities and a wide variety of nonmetallic construction materials.

Illinois's impressive assemblage of industrial activities is in the midst of one of the most efficient food-producing areas of the United States, if not of the world.

The fertile soils of this region, plus a long growing season, ample moisture, and a relatively level topography provide a crop environment favorable to high yields and these conditions have also promoted the widespread use of cost-saving farm machinery. The almost total mechanization of Illinois agriculture has brought production costs down to a low level. Also, the proximity of major food-consuming markets contributes to reduced charges for the transportation of farm products.

As a reflection of these circumstances, the growth of commercial agriculture in conjunction with a great industrial development has encouraged the expansion and improvement of Illinois transportation facilities and services. Among the most important materials moving over the state's transportation systems are the great quantities of minerals, mineral products, and fuels necessary in the proper functioning and development of Illinois agriculture and industry. To these can be added the many items of mineral origin used in the operation and maintenance of the network of transportation itself. The reciprocal interdependence of a productive mineral and mineral products economy with an unexcelled rail, highway, and inland waterway system is a matter of great significance.

Half the tonnage carried by Illinois railroads is of mineral origin. The production of power and steel alone calls for moving enormous amounts of raw materials. Manufactured goods made of metals and minerals account for an additional 20 percent of rail traffic. To these should be added the huge tonnages of coal, oil, sand, gravel, stone, and cement shipped on lake and inland waterways or moved by truck, as well as oil transported by pipeline.

The extensive railway system has its own large mineral requirements not only for fuels but for such items as roadbeds and ballast, steel and concrete structures, and railway housing. The automobile has stimulated the building of an extensive network of highways with consequent need for concrete, paving brick, asphalt, crushed stone, gravel, and similar materials.

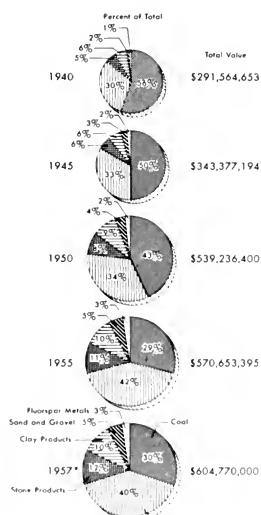
Minerals for special purposes—refractory clays and clays for pottery making, or silica sand for glass and other specialized industries—are produced in considerable quantities. Illinois, for example, maintains a leading position in the production of fluorspar, a mineral which plays an important part in a variety of industries.

Illinois Mineral Production

For more than a quarter of a century, Illinois has ranked among the leading states in the value of minerals produced annually. Seldom during this period has Illinois dropped below seventh place, and during a number of years it ranked among the upper five. The annual production of minerals exceeds 600 million dollars in total value. Fuels are most important and account for more than 70 percent of the total annual worth of produced minerals. For many years, coal was first from a dollar standpoint, but the value of petroleum and its associated hydrocarbon liquids and gases has surpassed coal each year since 1954.

With a current production of more than 75 million barrels per year, Illinois ranks eighth among the oil-producing states of the nation. Oil recovery began in Illinois in about 1883. Production rose from 1000 barrels in 1905 to more than 30 million barrels per year some five years later. It then declined to an annual rate of less than 10 million barrels for the fifteen years preceding 1937. Discovery of major oil fields in the deep part of the Illinois Basin in 1937 and their rapid exploitation resulted in an upsurge in production until 1940, when almost 150 million barrels were marketed. In the years since World War II, production has been maintained at a level ranging between 60 and 80 million barrels per year. "Secondary recovery" has been a major factor in this regard since 1943.

Although no longer in first place, coal maintains a vital position in Illinois's mineral economy and the annual coal production now has a value of more than 180 million dollars. Coal has made a significant contribution to the industrial activity and income of the state since the 1880's. Until about 1935, manufacturing industries, space heating, and railroads provided the major markets for Illinois coal. During the past 20 years marked trends to diesel locomotives and the widespread use of natural gas and oil for space heating and industrial purposes have greatly reduced coal consumption. The losses in these markets have been offset, to a considerable degree, by the increased use of coal for steam production of electrical power. Another outlet of considerable promise lies in the growing use of Illinois coal for making metallurgical coke. Today, Illinois holds fourth place among coal producing states, and the vast reserves of thick, easily mined coal near dynamic major market areas ensures an important position in coal production for years to come.



ILLINOIS MINERAL PRODUCTION

Illinois limestone and dolomite quarries and the plants manufacturing cement and lime account for about 60 million dollars yearly, or roughly 10 percent by value of the state's mineral industry output. Because of the widespread occurrence of limestone and dolomite and the relatively low unit value of these minerals, their full significance is not generally appreciated. Widely used in agriculture, construction and paving, railbed maintenance, iron and steel manufacture, and many other industrial activities, about 25 million tons of these materials are produced each year.

Clay products also add about 60 million dollars a year to the wealth of Illinois. The wide variety of clay products manufactured within the state includes common

and face brick, sewer pipe, flue pipe, drain and building tile, vitreous plumbing fixtures, glazed tile, and electrical porcelains. Special refractory materials for the metallurgical industries are also produced.

Sand and gravel are valuable mineral products in Illinois. Although less significant economically than some others, they are abundant, easily recovered, and play an important role in construction.

Fluorspar is among the important minerals that contribute to the total annual output. Illinois has for years been the nation's leading producer of this mineral, accounting today for more than half of the country's annual production. Fluorspar is a source of chemicals, an agent in the manufacture of aluminum, and an important fluxing material in the processing of iron and steel. Lead, zinc, silica sand, tripoli (amorphous silica) and special sands are also produced within the state and their presence has led to the development of special types of industries.

Illinois's past record and future promise as a major contributor to America's economic and industrial progress rests in large part on mineral resources. Research aiding the full development of these resources is carried out by the state through the Illinois State Geological Survey Division located in Urbana. Activities of the Geological Survey include studies of the location, occurrence, recovery, and utilization of the mineral resources of the state. Information resulting from this research is disseminated to the public through reports, bulletins, statistical compilations, and maps. The collection of coal statistics and the administration of state laws and regulations affecting mining and oil and gas development are the responsibility of the State Department of Mines and Minerals in Springfield.

Assembly Point for Raw Materials

The industrial position of Illinois is greatly strengthened by having coal, oil, and natural gas as major mineral resources. These three mineral fuels supply most of the world's power and in their roles as sources of energy have a strong attraction for many manufacturing enterprises. This drawing power of the basic fuels is partly explained by the large quantities needed in comparison to the need for other materials in processing and fabrication. The great manufacturing centers of the world were first located with reference to direct water power sites and wood supplies, but these sources of energy were soon supplanted by coal and, somewhat later, by oil, gas, and electric power. The Ruhr of Germany, many of the British centers, the Donetz (Dombas) area of the U.S.S.R., and the Pittsburgh, Buffalo–Niagara Falls, and Gulf Coast industrial complexes are but a few examples. All manufacturing does not follow this pattern but, over the last few decades, localities served by cheap and readily available sources of power have demonstrated a remarkable ability for developing industrial complexes of increasing size and variety. Such increases provide markets that can be served by still more industry.

Thus the forces of industrial attraction provided by fuels and power are con-

tinuing stimuli to the economic growth and development of the productive plant. Since industrial and domestic demands may eventually exceed local supplies of power and fuels, particular advantages accrue to localities properly situated with regard to rail, highway, pipeline, water transport, and high-line facilities. As industry becomes more and more complex, a favorable location with regard to the assembly of materials, labor, and capital becomes increasingly important in conjunction with the assembly of fuels and power.

Illinois, having major deposits of power minerals and located as it is at the heart of a richly endowed continent, has superlative accessibility not only to its own continental hinterland but to the world. Virtually every major east-west railroad and highway crosses the state. Major routeways also provide direct communication to the South, Southeast, and Southwest, and two of the most important railroad centers in the United States lie within Illinois: Chicago and East St. Louis. Pipelines and power lines complete this unparalleled system of land transportation, but the assembly and distribution of goods is further facilitated by an abundance of water transportation. River towns and cities on the Mississippi and Ohio Rivers and on the busy Illinois waterway attest to the navigability of these by barge. Chicago is already a leading port for traffic generating within the Great Lakes, and it also handled about 40 percent of all the direct overseas import and export traffic that moved via the St. Lawrence route prior to the opening of the enlarged Seaway. There is every reason to believe that Chicago will handle a very large part of the increased direct overseas traffic that will use the new St. Lawrence Seaway, and this will create new horizons of trade.

PHYSIOGRAPHY

Illinois is essentially a broad prairie plain. The plain extends from east to west across the state, bordered on the north by the Rock River Hill Country and on the south by the Mount Vernon Hill Country and the rugged Shawnee Hills. Near Lake Michigan the plain is relatively flat and low, but westward it is more rolling, interrupted at intervals by belts of hilly glacial deposits known as moraines. About half-way across the state the country gradually becomes more uneven, ending in hills and steep bluffs along the Mississippi River.

Although Illinois has no large-scale relief features, the physiographic divisions are readily apparent and have great local significance. More than 90 percent of the state lies within the Central Lowlands of North America. The remaining parts, along the southern and western borders, are included within one or another of the three areas known as the Ozark Plateaus, the Interior Low Plateaus, and the Coastal Plain Provinces.

The greatest differences in local relief within the state are near the major valleys, especially in the northwestern and southern uplands. For example, hill tops reach a maximum of 775 feet above adjacent lowlands in Pope County along the Ohio River Valley. In most areas, however, local relief is less than 200 feet. The total relief of the state is 937 feet—the difference in elevation between Charles Mound, which is 1,235 feet above sea level, and a point at the juncture of the Mississippi and Ohio Rivers which is only 298 feet above sea level. The mean elevation of Illinois is about 600 feet, lower than any of the other North-Central states.

The existing contrasts between the various parts of Illinois are primarily related to the action of the several glaciers which spread over parts of the state in past ages. As the glacial ice melted away, deposits of unconsolidated material—glacial till on the uplands and sand and gravel in the valleys—were left to mantle the previous surface. The topography of the bedrock also helped shape the present landscape. The prominent, scenic hills in the northwest and in the extreme southern parts of the state were not glaciated; they stand in marked contrast to the plain, with its broadly looping morainic ridges swinging across its eastern expanse.

Stream and river systems are also a major factor in determining the surface patterns of the area. Drainage flows generally toward the southwest, except along the eastern side of the state, where it flows toward the Wabash River. The Illinois River flows southwestward to the Mississippi and with its tributaries, drains most of the central part of the state. The Rock River to the north and the Kaskaskia and Big Muddy Rivers to the south roughly parallel the Illinois.

Illinois
Industrial Planning and Development

PHYSIOGRAPHY
And Physiographic Divisions

Illinois State Geological Survey

MAJOR PHYSIOGRAPHIC DIVISIONS
THE CENTRAL UNITED STATES

GEOLOGY

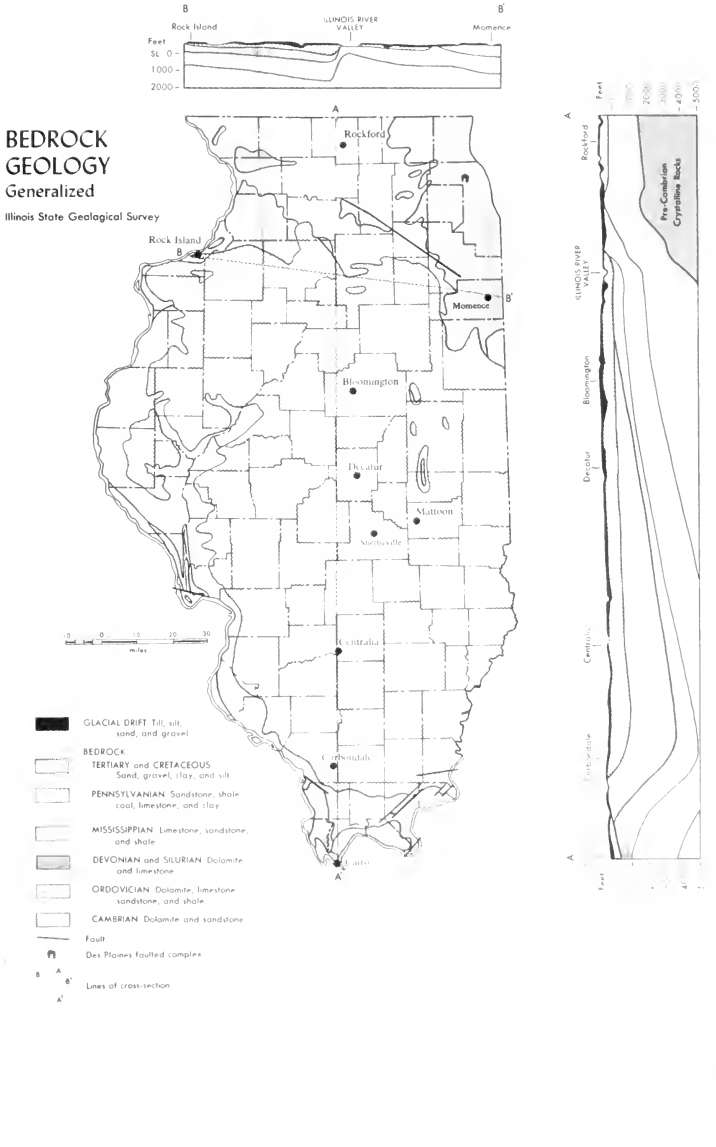
The mineral wealth of Illinois results from a long sequence of events occurring in the geological history of the state. Granite of the very remote Precambrian geologic age underlies most of Illinois, but it is hidden everywhere by hundreds of feet of younger rocks. These younger rocks, which are the source of most of the state's mineral output, were originally deposited as sand and clay or as the accumulation of the hard parts of organisms. These were laid down chiefly in ancient oceans that covered all or parts of Illinois. Some thousands of years ago, but only yesterday geologically speaking, the earlier sedimentary rocks were buried under deposits left by great glaciers that spread southward from Canada over most of the state.

The deposits of clay, sand, and gravel that the glaciers left behind still cover most of the sedimentary strata, except where streams have cut through to expose the bedrock. These glacial deposits are valuable chiefly because they provide sand and gravel suitable for concrete and roads, clay for brick-making, natural-bonded molding sand, and in places, water for home and industrial use.

The sediments deposited in the ancient seas during the various geologic periods are today the limestones, sandstones, and shales that make up the bedrock. During the long Pennsylvanian Period, enormous swamps contained luxuriant vegetation that grew, died, and accumulated as peat, to become later the extensive coal deposits so important to Illinois today. From the various sedimentary rock formations also come valuable cement-making materials, crushed stone, marble, agricultural limestone, brick-making clays, refractory clays, molding sand, glass sand, tripoli, and a variety of other mineral products. Some of the limestones and sandstones function as underground reservoirs in which oil and gas have accumulated. At other places, rock formations are important sources of water.

The sedimentary rocks of Illinois, originally deposited as relatively flat-lying beds or strata, were subsequently down-folded into a large spoon-shaped basin, the deepest part of which lies in southeastern Illinois. Within this basin are the great coal reserves, and, in succession toward the outer edge, appear the deeper and older rocks. Lesser upfolds and downfolds also are present within the basin. Some of the upfolds, or anticlines, became traps in which the petroleum of Illinois's rich oil pools accumulated.

The fluorspar, lead, and zinc deposits of Hardin and Pope counties in southeastern Illinois are related directly or indirectly to fractures or faults in the bedrock. In these counties, too, occur the state's only surface exposures of the underlying igneous rocks. In northwestern Illinois, fracturing and gentle rock folding influenced the deposition of lead and zinc ores.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Mattoon
Shelbyville
Centralia
Carbondale
Cairo
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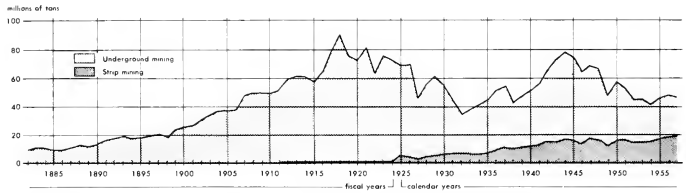
miles
GLACIAL DRIFT Till, silt, sand, and gravel
BEDROCK
TERTIARY and CRETACEOUS Sand, gravel, clay, and silt
PENNSYLVANIAN Sandstone, shale coal, limestone, and clay
MISSISSIPPIAN Limestone, sandstone, and shale
DEVONIAN and SILURIAN Dolomite and limestone
ORDOVICIAN Dolomite, limestone sandstone, and shale
CAMBRIAN Dolomite and sandstone
Fault
Des Plaines faulted complex
Lines of cross-section
Pre-Cambrian Crystalline Rocks

COAL INDUSTRY

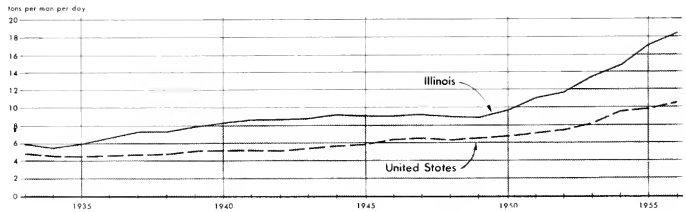
Coal is one of the nation's most valuable mineral resources, for it is a major fuel for the production of heat and power and the only source of coke for the iron and steel industry. For almost 150 years, Illinois has contributed to the United States' production of coal. During this period the state has provided about 3.5 billion tons, nearly one-eighth of the country's total tonnage. Illinois reached a production peak of 89 million tons in 1918; output was 46.7 million tons in 1957, with an estimated value of almost 185 million dollars.



ILLINOIS COAL PRODUCTION 1882–1957

Strip Mining

Before 1910, nearly all Illinois coal came from underground mines. Only small quantities of surface coal were produced, stripped with the use of teams of horses or mules pulling slip or wheel scrapers. In 1911, 45,153 tons, representing only 0.09 percent of that year's production, were strip mined. In 1957 some 18,439,200 tons, 41.4 percent of total output, were produced by strip mining, a method which now involves the latest in earth moving machinery.



COAL PRODUCTION PER MAN DAY

Mechanization

A progressive coal industry operating in Illinois has taken advantage of favorable natural conditions to make this the foremost state in coal mining productivity among

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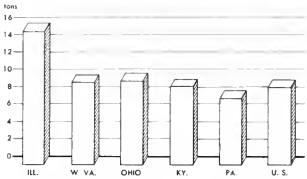
TOTAL COAL PRODUCTION 1882-1957

Illinois State Geological Survey

the six leading coal-producing states. Illinois was 80 percent above the national average in tons per manshift in 1957.



TONS PER MANSHIFT IN UNDERGROUND MINES 1958

Mechanization in both surface and underground mines has played a major part in the industry's progress. Mining machines were in use in Illinois as early as 1882, the first electric mine locomotive was put into service in 1888, and the earliest recorded use of a mechanical loading device was in 1890. By 1957, as much as 99 percent of the coal mined by Illinois surface and underground shipping mines was loaded mechanically.

Coal Production in 1957

In 1957, coal was produced in 34 counties widely distributed throughout the state. A major part of the tonnage came from a group of southern counties. Other centers of production were located northeast of St. Louis and northwest of Peoria. Coal mined from the Herrin (No. 6) bed provided 71.6 percent of the 1957 production, and coal from Harrisburg (Springfield) (No. 5) 20.9 percent. Coal from Nos. 1, 2, and 7 beds and from the Davis and DeKoven seams provided the remaining 7.5 percent. There were 195 active mines which provided employment for [redacted] men in 1957.

Markets

While most of the coal produced in Illinois is marketed within the state, substantial shipments are made to Michigan, Wisconsin, Indiana, Minnesota, Iowa, Kentucky, and Missouri. Smaller quantities go also to Kansas, Nebraska, and the Dakotas. Today, Illinois coal is primarily in demand for electric power generation, general industrial and commercial use, and domestic heating. Each year, however, more than three-quarters of a million tons of Illinois coal goes into blends for the production of metallurgical coke, a market that promises to become much more important in the future.

Safety

Just as the Illinois coal industry has made great progress in mechanization and productive efficiency, it has made comparable advances in accident prevention and safety. Mine management and workers, with help and guidance from the Illinois State Department of Mines and Minerals, are waging a winning battle against accidents and injury in the state's coal mines.

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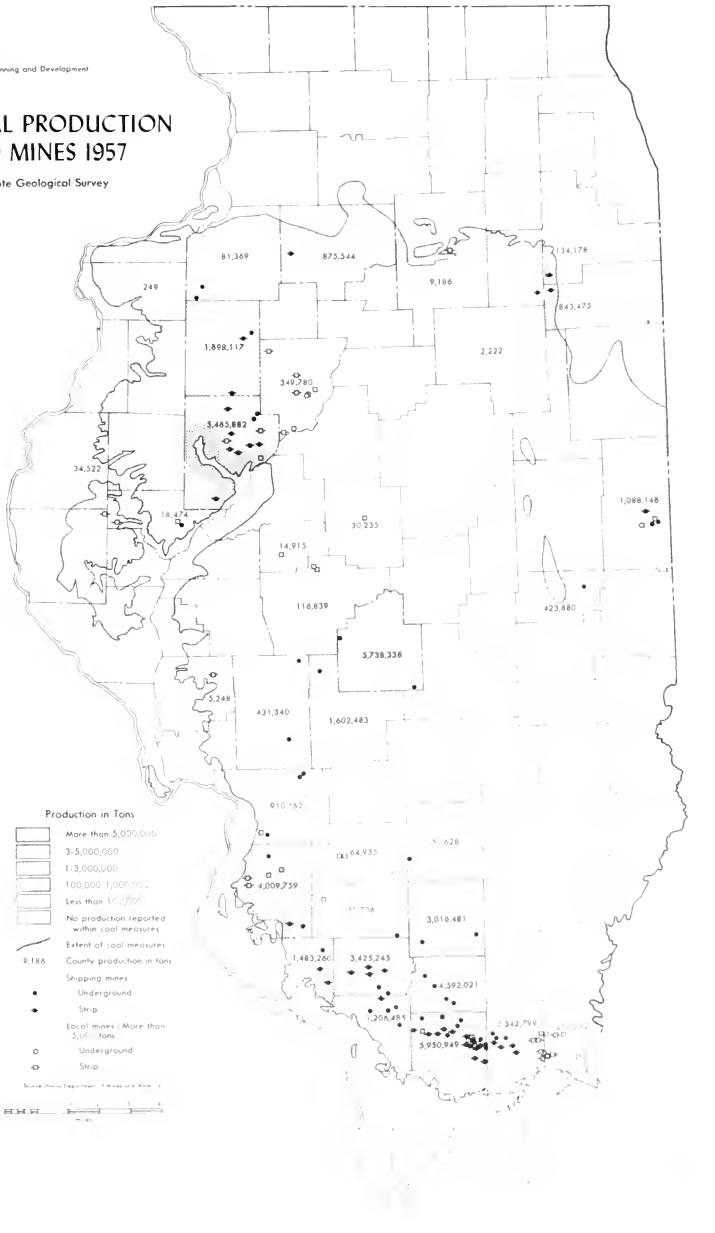
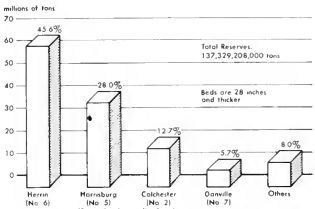
COAL PRODUCTION AND MINES 1957

Illinois State Geological Survey



COAL BEDS

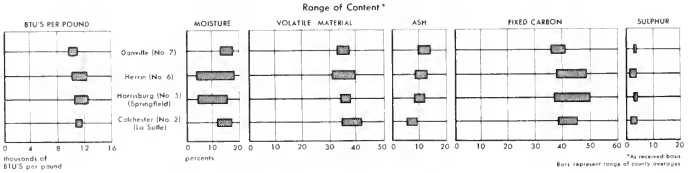
Lying within the Pennsylvanian System or "Coal Measures" of Illinois are perhaps 40 to 50 coal beds. These beds vary in thickness from thin streaks to more than 12 feet. About 20 of them have been mined in various parts of the state at one time or another during the past 75 years. At present, the Herrin (No. 6), Harrisburg (Springfield) (No. 5), Danville (No. 7), and the Colchester (LaSalle) (No. 2) beds are most important commercially. The 1957 output from these four beds accounted for 96.5 percent of total production. Studies by the Illinois State Geological Survey indicate that these same beds also constitute most of the reserves of the state.



ESTIMATED RESERVES BY BEDS

Quality of Illinois Coals

All Illinois coals rank as high-volatile types. Most of them fall within the High-Volatile C classification (11,000 to 13,000 Btu's per pound) and the High-Volatile B classification (13,000 to 14,000 Btu's per pound). There are, however, some areas in the extreme southeastern part of the state that produce High-Volatile A coal (14,000 or more Btu's per pound, and fixed carbon less than 69 percent). British thermal units (Btu's) are given in terms of moist, mineral-matter-free coal. The analyses in the graph below are for raw coal. Coals mined in Illinois are washed in most instances and otherwise prepared for market. Prepared coals have considerably reduced ash and sulfur content.

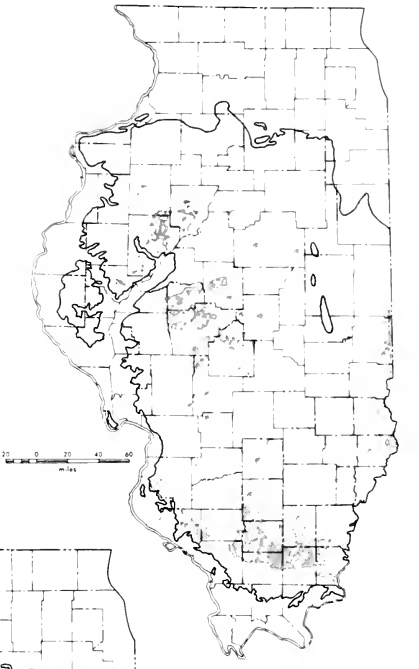


ANALYSES OF ILLINOIS COALS

Illinois
Industrial Planning and Development

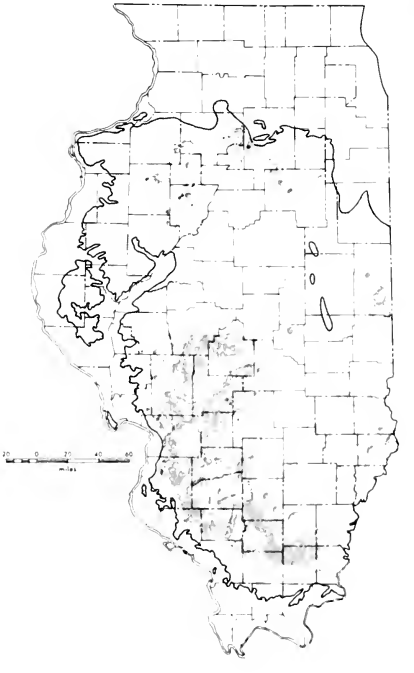
MINABLE COAL RESOURCES IN BED NUMBER 5

Proved resources
Probable resources
Strongly indicated resources
Weakly indicated resources
Area of thin or absent coal, or insufficient data within coal measures
Extent of coal measures



MINABLE COAL RESOURCES IN BED NUMBER 6

Proved resources
Probable resources
Strongly indicated resources
Weakly indicated resources
Area of thin or absent coal, or insufficient data within coal measures
Extent of coal measures

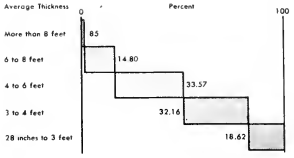


Illinois State Geological Survey

COAL RESOURCES

Reserves

The bituminous coal reserves of Illinois exceed those of every other state in the nation. Reserves of minable thickness (28 inches or more) are estimated at over 137 billion tons by the State Geological Survey. Coal-bearing formations underlie about 37,778 square miles, or 67 percent of the state's area. Seventy-six of the 102 counties in Illinois are partially or totally underlain by coal.

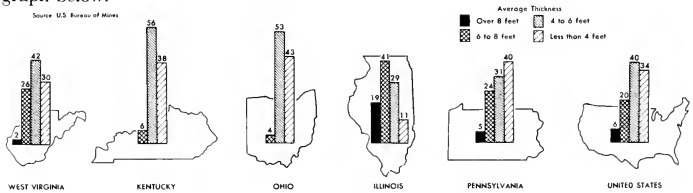


PERCENT OF COAL RESERVES BY AVERAGE BED THICKNESS

Bed Thickness

Tonnage figures alone, however, cannot demonstrate the full importance of Illinois's coal reserves. The thickness of the beds is also extremely important since this aspect has a bearing on mining methods and, therefore, on productivity. Fortunately for Illinois, most of the coal beds are thick enough to permit effective mechanical mining.

The effect of mechanization and seam thickness upon productivity is illustrated by comparing production in Illinois with that in other leading states as shown by the graph below.



PERCENT OF COAL MINED BY BED THICKNESS, 1955

Depth

Coal seams in Illinois are at depths ranging from a few feet to several hundred feet below the surface. Ages ago, the coal-bearing formations were down-folded into a huge spoon-shaped basin centered in the southeastern part of the state. As a result, some beds at the center of the basin lie at depths in excess of 1000 feet while along the outer rim millions of tons lie near enough to the surface to be recovered by strip mining. Underground mines produced coal from depths as great as 800 feet in 1957.

Future Prospects

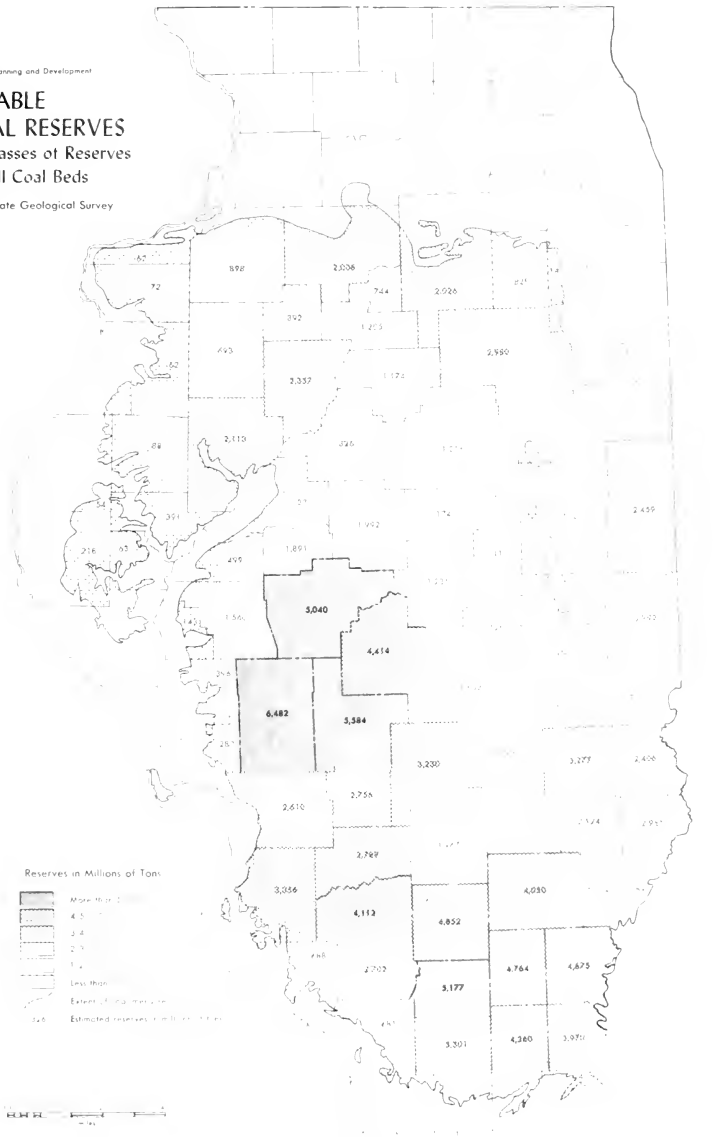
In all its years of mining, Illinois has produced about 3.5 billion tons of coal. If only 50 percent of the known reserves are recovered, there is still enough coal to last 1400 years at the 1957 rate of production. Improvements in machines and methods will increase the percentage of recovery and extend the life of these reserves even further.

Illinois
Industrial Planning and Development

MINABLE COAL RESERVES

All Classes of Reserves and all Coal Beds

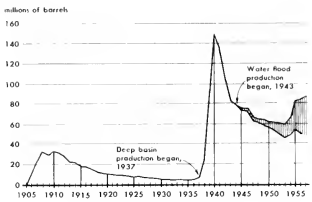
Illinois State Geological Survey



OIL AND GAS

The petroleum with its associated hydrocarbon liquids and gases that Illinois produces annually has a greater dollar value than that of any other state lying wholly east of the Mississippi River. These products, furthermore, account for more than 40 percent of the total value of all mineral products in Illinois each year, and their value also exceeds that of any other mineral produced in the state.

The first recorded commercial production of oil occurred in the 1880's, from the Litchfield pool, in Montgomery County. Since then the state has produced about 2 billion barrels of oil. In the early years, almost all of Illinois' oil came from the southeastern field. Production rose from less than a million barrels in 1905 to a peak of 33 million in 1910; then it declined gradually until the early 1930's, when less than 5 million barrels a year were being recorded.



ILLINOIS CRUDE OIL PRODUCTION 1905–1957

Oil discoveries in the central basin brought new life to the Illinois industry in 1937. This basin had been regarded as having no potential as a producer until discoveries in Michigan in 1928, under similar geologic conditions, stimulated a search. Exploratory drilling began in 1936 and by the next year new fields of major proportions were making their first contributions.

Oil production grew rapidly following these new discoveries—from 7.4 million barrels in 1937 to 147.6 million in 1940—but by 1943 it had dropped back to 77 million barrels. In this same year, however, the use of waterflooding began to play a part in compensating for the downward trend. This process is one in which water, pumped into the oil-bearing strata through injection wells, flushes the oil toward the producing wells. Since the method makes available oil that could not be recovered by ordinary pumping, production through waterflooding is known as secondary recovery. Secondary recovery has been mainly responsible for the more recent gains in Illinois production, and 43 percent of the 1957 output is accountable for the use of this process.

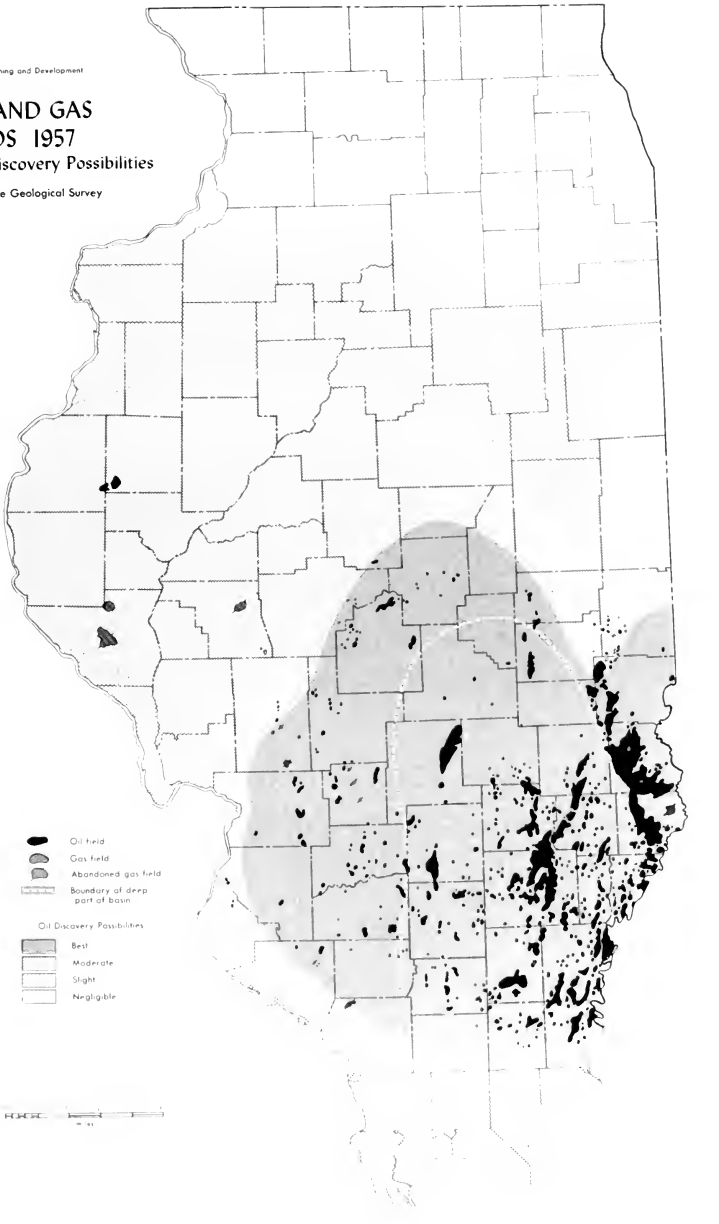
Thus far, oil has been discovered in formations of the Pennsylvanian, Mississippian, Devonian, Silurian, and Ordovician ages in Illinois. Mississippian pools have been by far the most important, accounting for approximately 76 percent of the total yield, with about two-thirds of this coming from the Chester series. Pennsylvanian rocks have been second in importance, contributing an estimated 16 percent; about 6 percent has been produced from the Devonian. The remaining 2 percent has come from Silurian and Ordovician formations.

Illinois
Industrial Planning and Development

OIL AND GAS FIELDS 1957

And Discovery Possibilities

Illinois State Geological Survey



OIL PRODUCTION

Illinois produced 76,649,000 barrels of crude oil in 1957, with an estimated value of $239,911,000. At the end of the year 31,623 oil wells were in production. During the ten years 1948 through 1957, 677.7 million barrels of oil were produced. The estimated reserves were 667.3 million barrels at the end of this period, as compared to 355.0 million ten years earlier. Thus, despite an average annual yield of almost 70 million barrels during the decade, new discoveries and secondary recovery methods enabled the oil industry actually to increase its reserves by more than 85 percent.

About 41 percent of the 2585 wells drilled in 1957 were successful. Twenty-three gas wells and 1045 oil wells were brought in; 15 new oil pools and one new gas pool were discovered in the process. Wells were drilled in 57 counties during the year. They ranged from 350 feet to 4000 feet in depth; the average was 2200 feet. The area of proved production was 550,305 surface acres of oil and 30,425 surface acres of gas at the end of 1957.

Illinois oil refineries have a capacity for handling more than half a million barrels of crude oil per day. Crude oil receipts at the refineries totaled 176.6 million barrels during 1957, of which 23.4 million came from Illinois wells and 153.2 million from other states; meanwhile, 49 million barrels of Illinois oil were shipped to other parts of the country. Most of the out-of-state oil comes by pipeline from Texas, Oklahoma, Kansas, and Wyoming; these accounted for more than 90 percent of the 1957 imports. Gasoline, kerosene, fuel oil, and other refinery products are shipped to their major markets thru pipelines.

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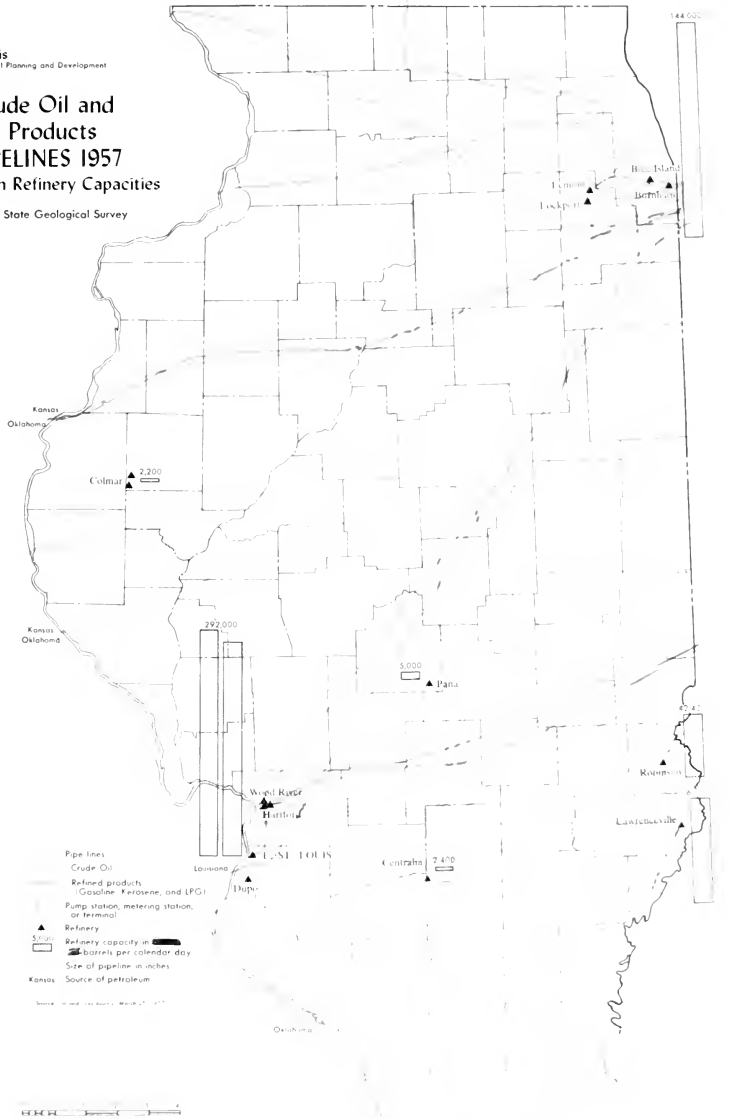
Industrial Planning and Development

Crude Oil and Oil Products PIPELINES 1957

With Refinery Capacities

Illinois State Geological Survey



NATURAL GAS

Natural gas production in Illinois in 1957 totalled 26.8 billion cubic feet. Upwards of 158 million cubic feet were returned to the producing formations for repressuring purposes. Close to 97 percent of the natural gas is casing-head gas produced in conjunction with oil well operations. Processing plants extracted 1,214,100 barrels of natural gasoline and allied products from 5.3 billion cubic feet of the gas.

Illinois produces but a small fraction of the natural gas consumed within the state. More than 400 billion cubic feet are imported via pipelines each year. Imports from the West South-Central region, comprised of Arkansas, Louisiana, Oklahoma, and Texas, account for about 98 percent, and the remainder comes from the West North-Central and East North-Central regions.

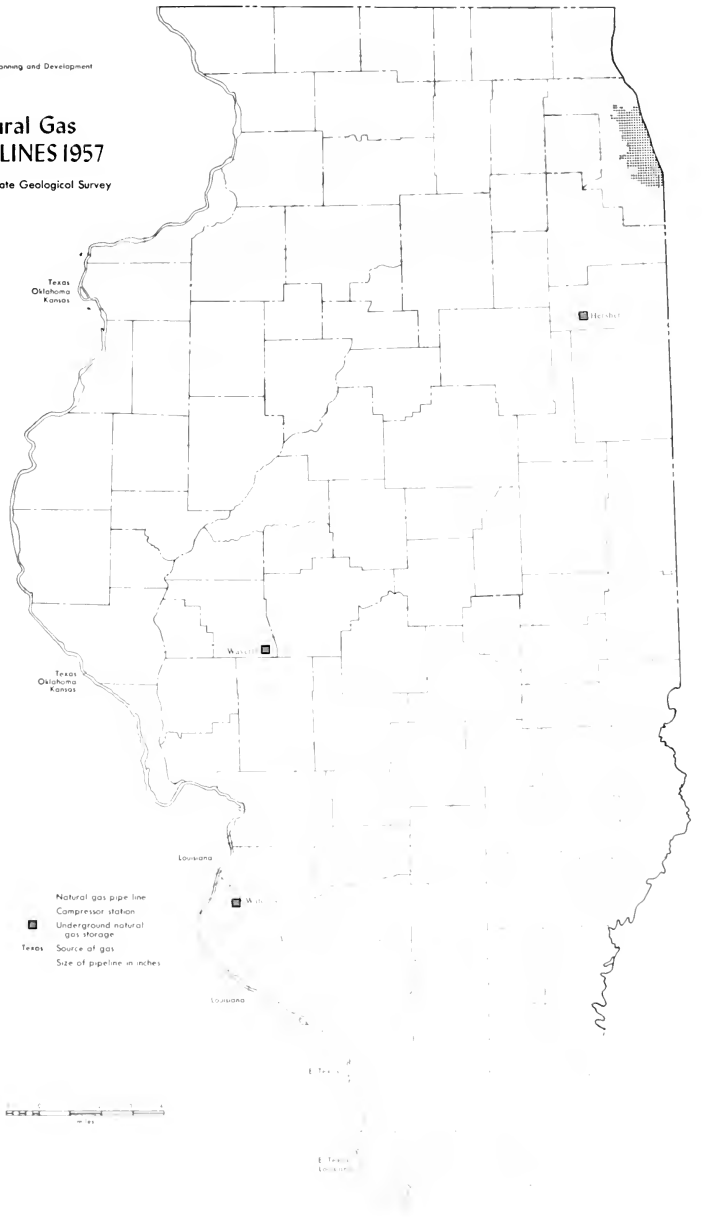
About half of the gas consumed during 1957 was for residential heating (38 percent) and other residential uses (12 percent). Commercial demands accounted for 8.25 percent, and 41.75 percent went for industrial purposes. Approximately two-thirds of the gas purchased for industrial use was sold on an industrial-interruptible basis.

There has been a national trend in recent years toward the underground storage of natural gas near major consuming areas. Gas is piped into the area at the times of low demand and stored by this method for use during periods of peak demand. In 1957 three storage projects were in operation and investigations of other possible sites were under way.

Illinois
Industrial Planning and Development

Natural Gas PIPELINES 1957

Illinois State Geological Survey



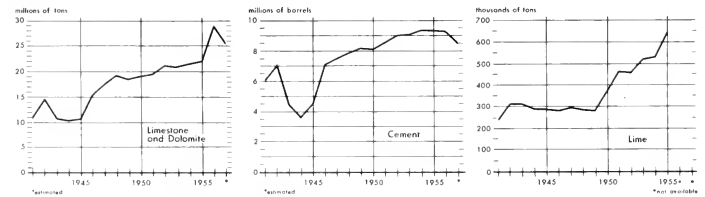
LIMESTONE AND LIMESTONE PRODUCTS

The importance of limestone is largely related to its widespread industrial and agricultural applications, its uses in construction, and its contributions as a component in the manufacture of many construction materials. Its economic use involves, among other things: quality, amount and type of overburden, distribution of workable deposits, distance to market, and transportation costs. The widespread, readily accessible deposits of Illinois limestone are associated with a dense network of roads and railroads as well as a good inland waterway system. Quarries are well located to meet readily the demands of all the markets in the state. Limestone and dolomite (magnesium limestone) and their products account for 10 percent or more of the total value of mineral output each year in Illinois.

Crushed or broken stone has many uses. The larger sizes are used as rip-rap, heavy fill material, sub-bases for roads, and a variety of other construction purposes. Smaller sizes are employed in making concrete aggregate, a material vital to almost every structural enterprise, the road paving industry being one of the largest consumers of this product. Quantities of crushed stone are also in demand for railroad ballast and for metallurgical processes. Finer particles find a ready market as agricultural limestone. While the uses of limestone are many and varied, paving and construction purposes account for 80 percent of the demand, the agricultural market consumes another 10 percent, and the remaining 10 percent goes for railroad ballast, metallurgical processes, and all other uses. The production of Illinois limestone was estimated at more than 25.5 million tons in 1957, with an estimated value of almost 36 million dollars.

Approximately 2.5 million tons of limestone go into the production of cement in Illinois each year. This limestone, with quantities of shale and other mineral ingredients, is used to produce about 9.5 million barrels of cement, two-thirds of the state's annual requirement. In 1957, production centered in La Salle and Lee Counties in northern Illinois, where four plants were in operation.

Another important use for limestone is in the making of lime. More than half a million tons have been produced annually in recent years in Adams, Cook, and St. Clair Counties. The building trades and the chemical industries are principal consumers of lime. Dolomite finds wide use as a refractory material in steel-making.

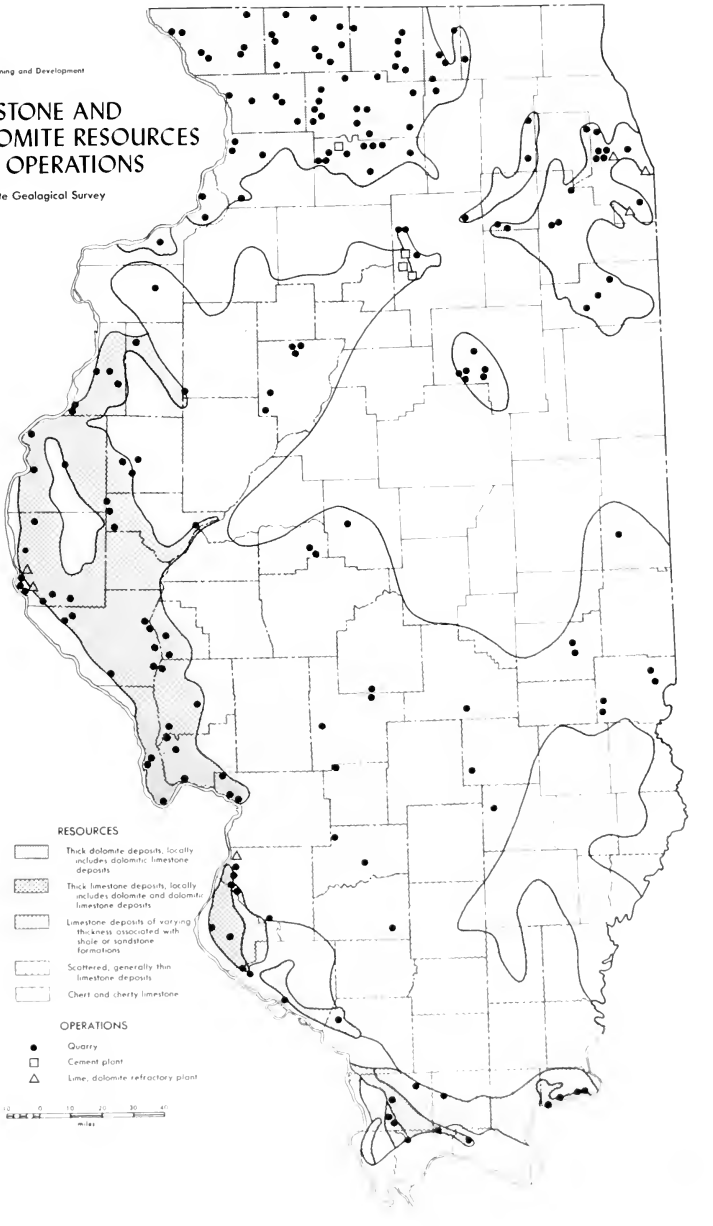


PRODUCTION OF LIMESTONE AND DOLOMITE CEMENT AND LIME

Illinois
Industrial Planning and Development

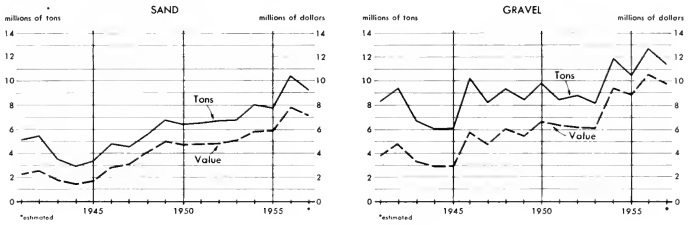
LIMESTONE AND DOLOMITE RESOURCES AND OPERATIONS

Illinois State Geological Survey



SAND AND GRAVEL

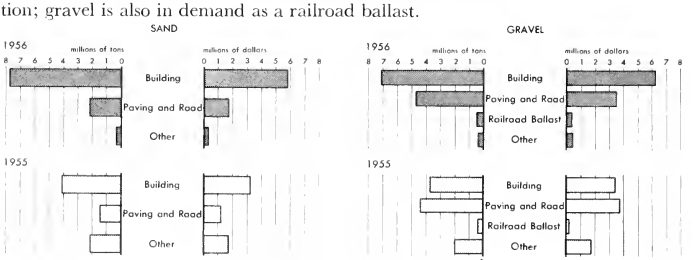
Deposits of common sand and gravel, widely scattered throughout Illinois, provide large quantities of these materials for construction and other uses. An estimated 9 to 10 million tons of sand and 10 to 12 million tons of gravel are produced each year. They have a combined annual value of more than 17 million dollars or about 3 percent of the total value of minerals produced.



ILLINOIS PRODUCTION OF COMMON SAND AND GRAVEL

Most of the sand and gravel deposits of Illinois, especially those in the northern and eastern parts of the state, are directly or indirectly the products of glacial action. The great glaciers of the past, moving southward, carried along clay, sand, and loose rock imbedded in the ice. As the glaciers melted and receded some of these materials were dropped in such a manner that they were roughly sorted, and subsequently deposited in outwash plains and within valleys. Sands and gravels deposited in this way are readily adaptable to many uses with a minimum of processing.

There are geologically older deposits of chert and flint gravels in southern Illinois, which are not of glacial origin. Younger sand deposits, formed since the last Ice Age, are also found along the major river courses and in the bed of Lake Michigan. Illinois sands and gravels are used principally in building and road construction; gravel is also in demand as a railroad ballast.

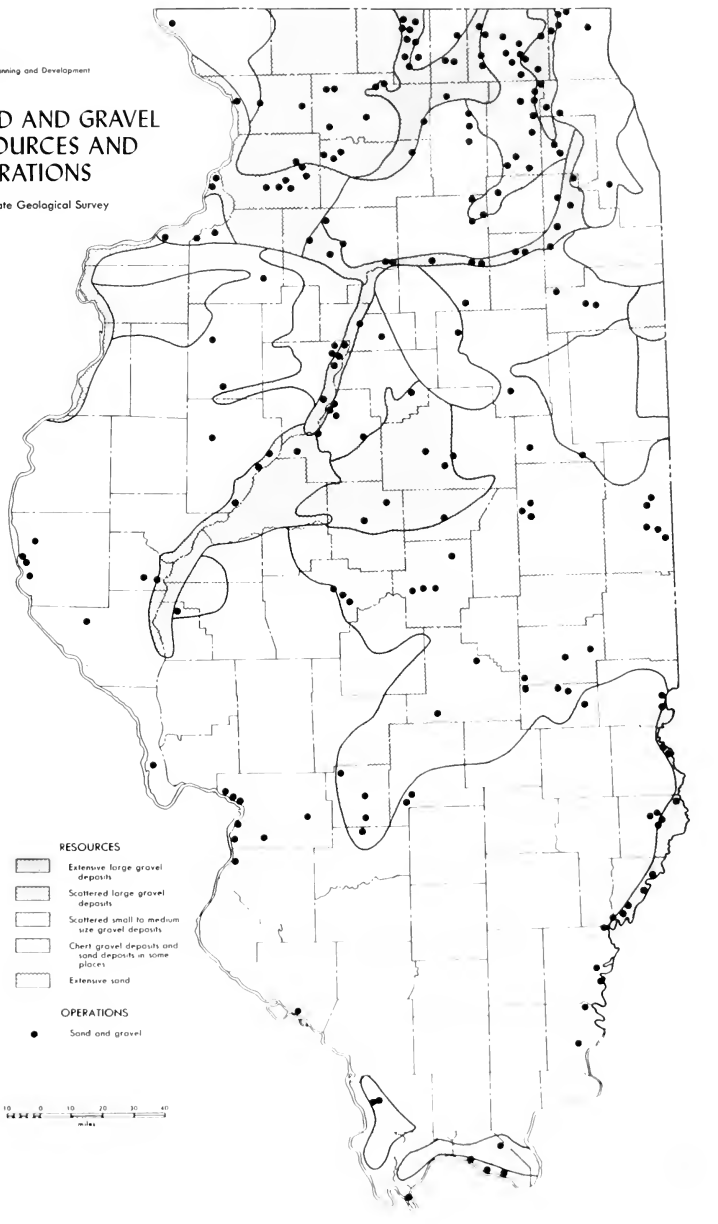


PRINCIPAL USES OF ILLINOIS SAND AND GRAVEL

Illinois
Industrial Planning and Development

SAND AND GRAVEL RESOURCES AND OPERATIONS

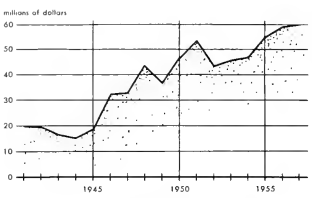
Illinois State Geological Survey



CLAY AND CLAY PRODUCTS

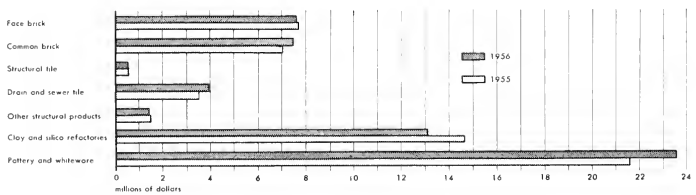
Clay products manufactured in Illinois have an annual value of about 60 million dollars, or 10 percent of the state's total mineral output. In 1957 Illinois clay was produced from more than 60 operations in 33 counties. Products of the industry include common and face brick, drain and sewer tile, structural clay products, refractories, pottery, and whiteware.

Clay comes from glacial and bedrock deposits. That of glacial origin is younger and is usually unconsolidated. It occurs as loess (a wind-blown material) or as alluvial and lake sediments. Glacial till is another commercially productive source of supply. Clay of glacial origin is widespread throughout the state. Residual deposits of clay, the results of the prolonged weathering of limestone, are associated with the more recent geologic history of Illinois.



VALUE OF ILLINOIS CLAY PRODUCTS 1941–1957

Bedrock sources for ceramic materials in Illinois include the Cretaceous-Tertiary clays in the extreme south and Pennsylvanian clays and shales. The latter occur as widely distributed deposits throughout the remainder of the state except for the northern three tiers of counties. Clays of the Cretaceous-Tertiary and the lower Pennsylvanian formations are used in the manufacture of refractory materials, light-burning structural clay products, and stoneware and pottery. Upper Pennsylvanian shales are used for red-burning structural products such as building brick, drain tile, and sewer pipe.



PRINCIPAL ILLINOIS CLAY PRODUCTS 1955 AND 1956

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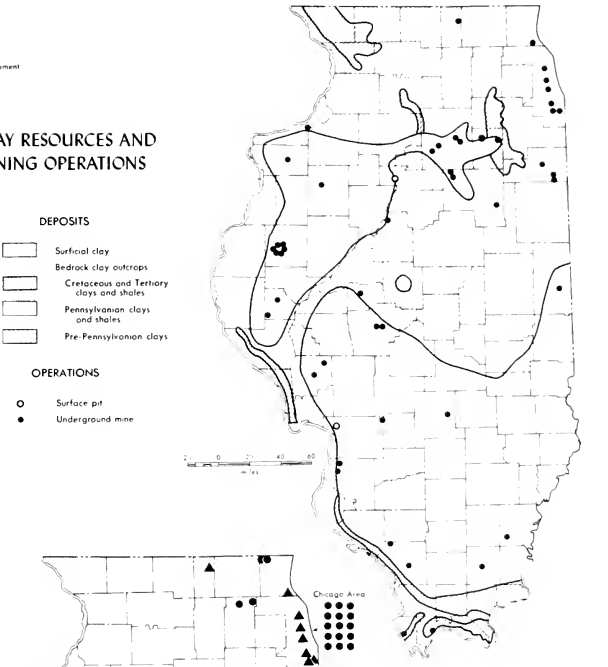
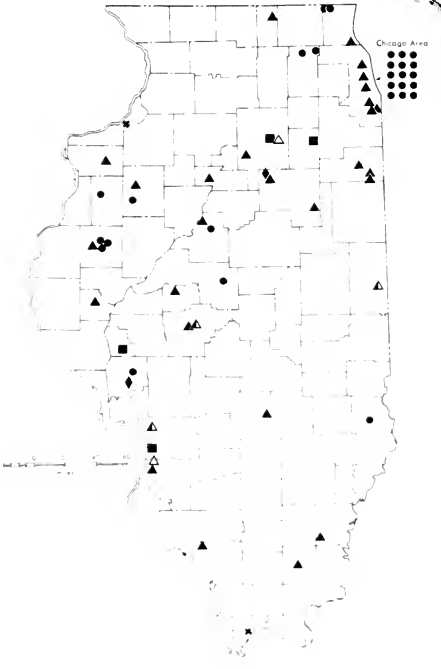
CLAY RESOURCES AND MINING OPERATIONS





CLAY PRODUCTS MANUFACTURERS

MANUFACTURERS

- Structural clay products
- Lightweight aggregate
- Structural and lightweight products
- Sewer pipe
- White ware
- Refractories
- Miscellaneous products

Illinois State Geological Survey

FLUORSPAR, SPECIAL SANDS, METALS, AND TRIPOLI

Fluorspar

For many years Illinois has led the nation in the production of fluorspar and accounts annually for more than 50 percent of the total United States output. Fluorspar occurs in Pope and Hardin counties in the southeast corner of the state, where it is mined from deposits as much as 900 feet below the surface.

The principal use of fluorspar is in the manufacture of hydrofluoric acid. This acid has a major application in the chemical industry as an intermediate in the manufacture of fluorine compounds for such things as insecticides, wood preservatives, and antiseptics. The aluminum industry employs fluorspar in the manufacture of aluminum fluoride and synthetic cryolite; both are necessary to the production of metallic aluminum.

Fluorspar also serves an important function as a flux in the steel industry, where its utilization increases the fluidity of furnace slags and assists in the removal of impurities. Among other uses for this mineral are those concerned with the manufacture or processing of glass and of enamels for coating metal products.

Special Sands

In addition to large quantities of common sand, Illinois also produces important amounts of special sands each year. One of these is the silica or quartz sand from La Salle and Ogle counties. Chiefly used in the manufacture of glass and as molding sand in the cast-metals industry, it is also marketed as engine and filter sand, grinding and polishing sand, and as a sand blasting agent. Finely ground it is used as an abrasive powder, polishing material, and paint filler and as an ingredient in ceramic products.

Natural-bonded molding sand is another special type. This contains clay or other bonding materials as a natural component. In consequence, it can be used for making metal castings molds without further addition of binding materials.

Lead and Zinc

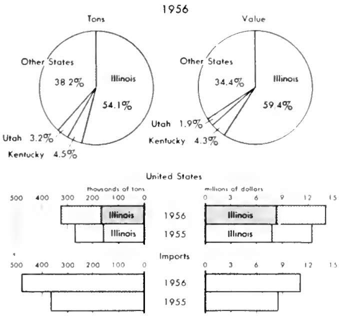
Lead and zinc, which were among the earliest minerals exploited in Illinois, come from Jo Daviess County in the extreme northwest and from Pope and Hardin counties in the southeast corner of the state. In the latter area, lead and zinc minerals occur with fluorspar deposits. The combined value of these two metals is approximately 1 percent of the total value of all minerals produced in the state each year.

Tripoli

Quantities of tripoli and ganister are produced in southern Illinois. Tripoli, or amorphous silica, has many applications, among which are its uses as a buffing compound, paint filler, wood filler, abrasive, and polishing agent. It is employed under the name of "white rouge" for polishing lenses. Ganister, a very finely ground silica, is used in the manufacture of refractory products.

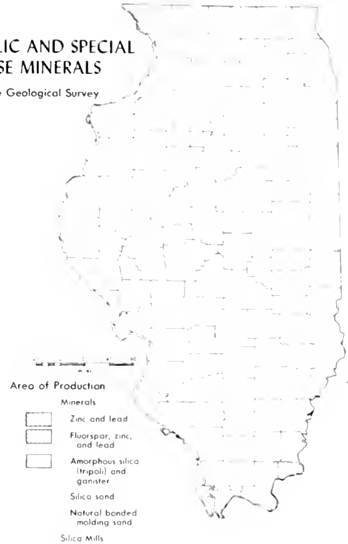
UNITED STATES FLUORSPAR PRODUCTION AND IMPORTS

U. S. Bureau of Mines



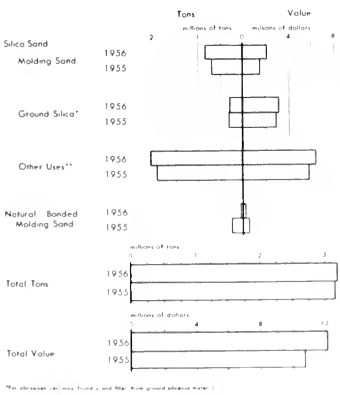
METALLIC AND SPECIAL PURPOSE MINERALS

Illinois State Geological Survey



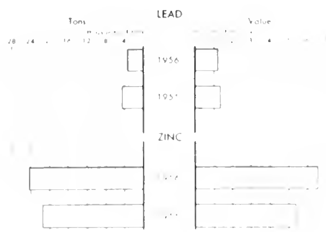
SPECIAL SANDS IN ILLINOIS

U. S. Bureau of Mines



ILLINOIS METAL PRODUCTION

U. S. Bureau of Mines



UNDEVELOPED MINERALS OF POTENTIAL IMPORTANCE

A number of minerals occurring in Illinois are not commercially produced at the present time, but they are potentially of much significance. Among these are gypsum, anhydrite, barite, pyrite, and feldspar sands. Most of the nation's production of these minerals comes from higher-grade deposits, with which Illinois deposits are not at present able to compete. However, with continued growth of population and industry, and gradual depletion of richer resources elsewhere, these Illinois mineral reserves will assume greater economic importance. It is likely, also, that mineral deposits which are now exploited only for one product will be the source of others in the future. For example, it may become economically possible to reclaim the pyrites or coal "brasses" that often occur as bands or nodules in the coal seams. These are now lost as the coal is cleaned, but if recovered and concentrated, pyrites could be processed to produce iron, sulphur, and sulphuric acid, all important industrial materials.

A large area lying east of St. Louis is known to contain deposits of gypsum and anhydrite, although at some depth. Scattered drill holes have revealed strata 3 to 5 feet thick, containing high percentages of gypsum in some localities. The strata occur from 470 to 3000 feet below the surface. Although these deposits cannot be exploited economically at the present time, their proximity to the St. Louis region makes them potentially important as a source of building material in future years.

Feldspar, a mineral used primarily in the making of glass, pottery, and enamel, is a constituent of many Illinois sands. Extensive deposits of sand in the state contain 20 percent feldspar; others contain 30 percent. The potential importance of these deposits is heightened by the fact that there is currently no production of feldspar in the Middle West. Considerable tonnages are imported, however, from Colorado, South Dakota, and North Carolina, and Illinois feldspars could be used to supplement these supplies.

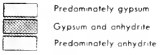
Samples of Illinois oil shales have been studied in the laboratories of the State Geological Survey to determine their oil content. The samples ranged from 0 to 40 gallons of oil per ton with 88 percent containing less than 15 gallons per ton. Although of no immediate commercial importance, these shales will probably deserve further consideration some time in the future, especially if experiments with nuclear explosion, now in progress elsewhere, prove a feasible means for freeing oil from shale.

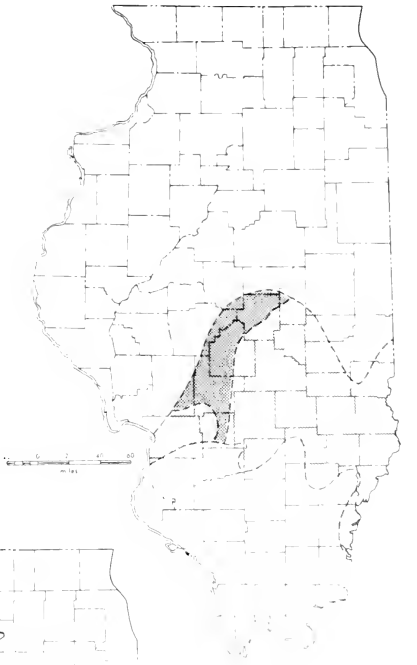
Barite, another mineral of potential commercial significance in Illinois, occurs in association with the fluorspar ores of Hardin and Pope counties. This mineral is used chiefly in well-drilling mud and as a source of barium chemicals.

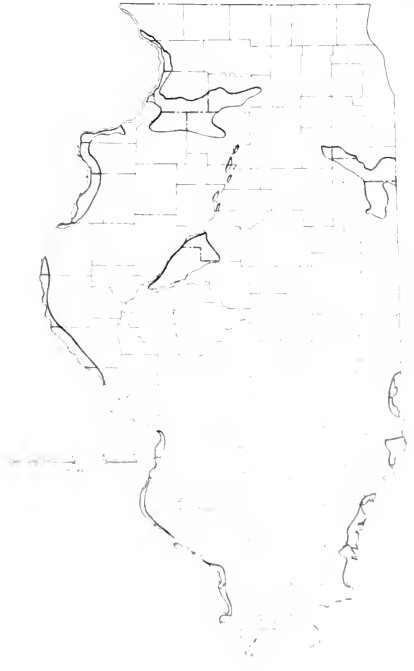
Illinois
Industrial Planning and Development

MAJOR KNOWN OCCURENCES OF GYPSUM AND ANHYDRITE

Approximate Boundaries







Principal Areas of SANDS RELATIVELY HIGH IN FELDSPAR

BRINES FOR INDUSTRIAL USE

Brines from the salt springs of Gallatin County, long used by the Indians, became the basis of a thriving salt industry during the early part of the nineteenth century, the first industry to be established in the area that is now Illinois. As much as 300,000 bushels of salt were produced in one year from the springs and a shallow well located in the vicinity of Equality.

Salt production later became unprofitable in the face of increasing competition, and for a long period little or no use was made of the brines. More recently they have again become important industrially, not as a source of salt, but as flood water used by the oil industry in the secondary-recovery methods of oil production.

Approximately 40 percent of the 70 to 80 million barrels of oil produced in Illinois each year depends upon waterflooding, a method in which brine is pumped into the oil-bearing strata to flush the oil toward the producing wells. About 175 million barrels of brine per year are used for this purpose. Approximately 100 million barrels, or 57 percent of that employed, comes from oil wells and is pumped to the surface with the oil. Where oil-well brines are not available in sufficient quantities for waterflooding, special wells are drilled to meet the need.

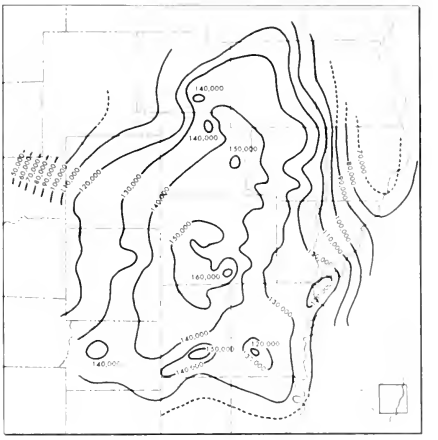
In some instances more oil-well brine is produced than can be used for waterflooding purposes and it must be disposed of by other means. Since brines cannot be discharged on the surface, their handling and disposal presents a tremendous problem. Surplus brine, amounting to approximately 75 million barrels per year, is injected into disposal wells and pumped back into the earth. Small quantities are disposed of in evaporation pits.

The continued expansion of waterflooding operations in Illinois will require more and more water, and it is likely that the use of brine for this important purpose will continue to increase. Any excess brine, at present a nuisance to be disposed of by the best possible means, offers a potential source of chemicals which may some day be recovered by evaporation or precipitation. Sample of oil-field brines tested by the Illinois State Geological Survey showed total solid contents ranging from 10,000 parts per million to more than 100,000 parts per million. In the brines examined, the chloride values ran approximately 60 per cent of the total solids value in parts per million.

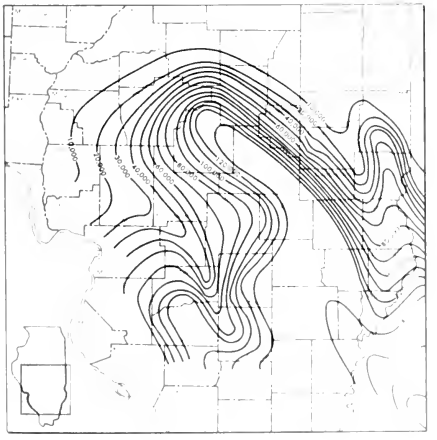
Illinois
Industrial Planning and Development

INDUSTRIAL BRINE CONCENTRATION IN THE STE. GENEVIEVE FORMATION

Brine parts per million total solids



Illinois State Geological Survey



INDUSTRIAL BRINE CONCENTRATION IN THE DEVONIAN-SILURIAN FORMATION

IRON AND STEEL

Illinois produces more than 6 million tons of pig iron and 9 million tons of steel each year, about one-twelfth of the United States' output. Located in the midst of a great industrial area, about halfway between the ore deposits of the Lake Superior region and the coking coal reserves of southern West Virginia and eastern Kentucky, the Illinois iron and steel industry enjoys a favorable position with respect to markets and transportation of materials. Including the immense production of adjacent Lake County Indiana, the Chicago area is the most important iron and steel center in the United States. Resulting from this position is a complex assembly of iron and steel plants which include coke ovens, blast furnaces, open-hearth, crucible, and electric steel-making furnaces, and rolling mills.

The industry consumes about 10 million tons of iron ore annually, most of which comes from the Lake Superior region. Small quantities of ore come also from Missouri and Canada.

The majority of coking coal consumed in Illinois each year—about 4 million tons—is shipped from West Virginia and Kentucky. These states provide more than 83 percent of the total requirement. Southern Illinois supplies about 12 percent, while the rest is mined in Virginia and Pennsylvania.

Michigan is the principal source of fluxing limestone, which is shipped by boat to the Chicago area, although Illinois itself also contributes some limestone for this purpose. The fluorspar mines of southern Illinois meet the steel industry's need for that vital mineral. The steel industry's contribution to the state's economy cannot be measured in terms of tons and value of products alone, for it also benefits the firms and industries which furnish it with machinery, equipment, and materials; in addition, it is a ready source of supply to the fabricators, manufacturers, and others within the state who make use of its products.

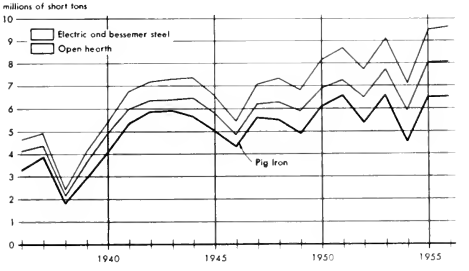
IRON AND STEEL OPERATIONS

OPERATIONS

- ▲ Metallurgical coke ovens
- ● Blast furnaces
- ○ Open hearth
- ⊛ Bessemer
- ◊ Electric and crucible
- ■ Rolling mills
- 16 Number of operations

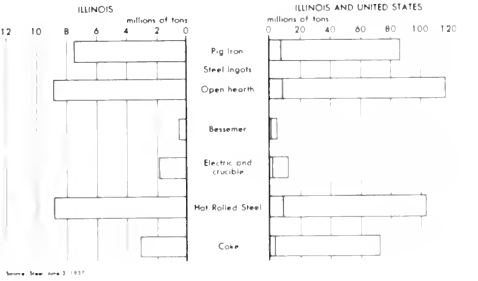
Source: Steel, June 3, 1957

Illinois State Geological Survey



PIG IRON AND STEEL PRODUCTION IN ILLINOIS 1936-1957

COKE, PIG IRON, AND STEEL CAPACITIES 1957



Source: Steel, June 3, 1957

TOPOGRAPHIC MAPS

Quadrangle Maps

Quadrangle topographic maps of Illinois are made cooperatively by the Illinois State Geological Survey and the United States Geological Survey. These maps are available for about 289 standard 15-minute quadrangles, and when taken together they cover all of Illinois.

Each map covers a unit area or quadrangle bounded by parallels and meridians rather than by county or other political lines. Each quadrangle is named from an important town within its limits. The maps show all that the ordinary locational maps may show and, in addition, give expression to the relief and shape of the land surface by contours; they note elevations above sea level and indicate watersheds. They distinguish roads, churches, schools, cemeteries, and other features by symbols and show individual houses where the scale permits. Some of the maps are published with a green overprint indicating woodland areas, and the more recent maps are provided with a red overprint showing the paved highways.

The standard (15-minute) quadrangle map covers approximately 225 square miles and is published on a scale of 1:62,500 (about one inch to the mile); a few sheets include four times this area and are printed at a smaller scale. There are also sheets published at a scale of 1:24,000 (about 2.5 inches to the mile); these are called 7.5-minute maps and one map from this series covers about 57 square miles.

Topographic maps have been prepared for the principal stream valleys of the state and the lands immediately adjacent, on a scale of 1:24,000. These maps are very useful in matters relating to plant location, flood control, drainage, sewage disposal, pollution reservoir projects, and navigation.

Other Maps

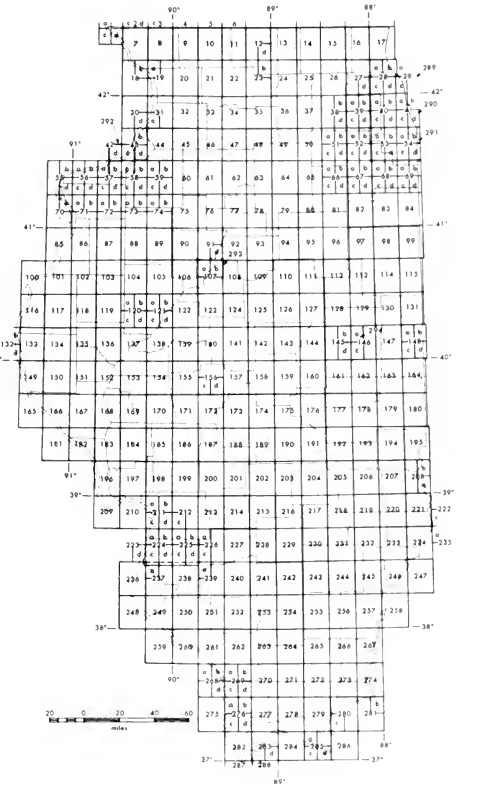
In addition to the standard quadrangle and valley maps, certain other topographic maps are made. Topographic maps similar to quadrangle maps in style and content are published at a scale of 1:62,500 for some of the counties. In addition, maps at a scale of 1:250,000, or about 4 miles to the inch, are published by the U. S. Geological Survey. Other special topographic maps cover Champaign-Urbana and vicinity, the Camp Grant area, Starved Rock State Park, and certain metropolitan areas.

An index of available topographic and other maps of Illinois can be obtained from the Illinois State Geological Survey at Urbana.

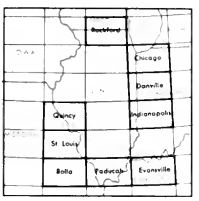
Illinois
Industrial Planning and Development

INDEX OF AVAILABLE TOPOGRAPHIC QUADRANGLE MAPS OF ILLINOIS
November, 1958

Illinois State Geological Survey
U. S. Geological Survey



The numbers within the map are ONLY for reference. Quadrangle maps are designated by their name



1:250,000 Series

LIST OF AVAILABLE TOPOGRAPHIC QUADRANGLE MAPS

1 East Dubuque, Ill. part
1a Dubuque North
1c Dubuque South
1d Menominee
2–3 Mineral Point 30-minute; small-scale map only (Ill. part included on Elizabeth and Galena)
2c Cuba City
2d New Diggings
3c Shullsburg
4 South Wayne (Ill. part included on Lena)
5 Monroe (Ill. part included on Freeport)
6 Brodhead (Ill. part included on Pecatonica)
7 Galena (includes ill. part of SW. quarter of Mineral Point)
8 Elizabeth (includes Ill. part of SE. quarter of Mineral Point)
9 Lena (includes Ill. part of South Wayne)
10 Freeport (includes Ill. part of Monroe)
11 Pecatonica (includes Ill. part of Brodhead)
12 Rockford 15-minute
12d Rockford 7.5-minute
13 Belvidere
14 Harvard
15 McHenry
16 Grays Lake
17 Waukegan
18 Miles, Ill. part
18b Green Island
19 Savanna
19a Blackhawk
20 Mt. Carroll
21 Forreston
22 Oregon
23 Kings
23b Camp Grant
24 Kirkland
25 Genoa
26 Elgin
27 Barrington
27d Palatine
28a Wheeling
28b Highland Park (includes SW part of 29a, unnamed)
28c Arlington Heights
28d Park Ridge
29c Evanston
30d Camanche
31 Clinton, Ill. part (includes Ill. part of Goose Lake)
31c Clinton
32 Morrison
33 Sterling
34 Dixon
35 Rochelle

36 DeKalb
37 Sycamore
38 Geneva 15-minute
38b Geneva 7.5-minute
38d Aurora North
39 Wheaton 15-minute
39a West Chicago
39b Lombard
39c Naperville
39d Wheaton 7.5-minute
40a Elmhurst
40b River Forest
40c Hinsdale
40d Berwyn
41a Chicago Loop (includes SW. part of 41b, unnamed)
41c Englewood
41d Jackson Park
42d Davenport East
43b Cordova
43c Silvis
43d Port Byron
44 Erie
45 Prophetstown
46 Walnut
47 Amboy
48 Mendota
49 Earlville
50 Sandwich
51 Yorkville 15-minute
51a Yorkville 7.5-minute
51b Aurora South
51c Plattville
51d Yorkville Southeast
52 Joliet 15-minute
52a Normantown
52b Romeoville
52c Plainfield
52d Joliet 7.5-minute
53a Sag Bridge
53b Palos Park
53c Mokena
53d Tinley Park
54a Blue Island
54b Calumet Lake
54c Harvey
54d Calumet City
55 Muscatine 15-minute, Ill. part
55b Muscatine 7.5-minute
55d Blanchard Island
56 Edgington
56a Illinois City
56b Montpelier
56c Eliza
56d Buffalo Prairie
57 Milan 15-minute (includes Ill. part of Davenport)
57a Andalusia
57b Milan 7.5-minute
57c Reynolds
57d Mathersville
58 Orion 15-minute
58a Coal Valley
58b Green Rock
58c Orion 7.5 minute
58d Andover
59 Geneseo 15-minute
59a Geneseo 7.5-minute
59b Atkinson
59c Cambridge
59d German Corner
60 Annawan
61 Buda
62 Hennepin
63 LaSalle
64 Ottawa
65 Marseilles
66 Morris 15-minute
66a Lisbon
66b Minooka
66c Morris 7.5-minute
66d Coal City
67 Wilmington 15-minute
67a Channahon
67b Elwood
67c Wilmington 7.5-minute
67d Symerton
68 Peotone 15-minute
68a Manhattan
68b Frankfort
68c Wilton Center
68d Peotone 7.5-minute
69 Crete, Ill. part
69a Steger
69b Dyer
69c Beecher West
69d Beecher East
70 Wapello, Ill. part
70b Toolesboro
71 Keithsburg, Ill. part
71a Joy
71b Aledo West
72 Alexis
72a Aledo East
72b Viola
73 Woodhull 15-minute
73a New Windsor
73b Woodhull 7.5-minute
74 Galva 15-minute
74a Nekoma
74b Galva 7.5-minute
75 Kewanee
76 Bradford
77 Lacon
78 Wenona
79 Streator
80 Odell
81 Dwight
82 Herscher
83 Kankakee
84 Momence
85 Burlington, Ill. part
86 Oquawka, Ill. part
87 Monmouth
88 Galesburg
89 Maquon
90 Elmwood
91 Dunlap
91d Spring Bay
92 Metamora
93 Minonk
94 Flanagan
95 Pontiac
96 Cullom
97 Piper City
98 Gilman
99 Watseka
100 Ft. Madison, Ill. part
101 Lomax, Ill. part
102 La Harpe
103 Good Hope
104 Avon
105 Canton 15-minute
106 Glasford
107 Peoria
107a Peoria West 7.5-minute
107b Peoria East 7.5-minute
108 Mackinaw
109 Danvers
110 Normal
111 Colfax
112 Sibley
113 Buckley
114 Cissna Park
115 Milford, Ill. part
116 Keokuk, Ill. part
117 Carthage
118 Colchester
119 Macomb
120 Vermont 15-minute
120a Adair
120b Smithfield
120c Vermont 7.5-minute
120d Ipava
121 Havana 15-minute
121a Lewistown
121b St. David
121c Duncan Mills
121d Havana 7.5-minute
122 Manito
123 Delavan
124 Minier
125 McLean
126 LeRoy
127 Arrowsmith
128 Gibson City
129 Paxton
130 Potomac
131 Hoopeston, Ill. part
132b Canton
132d LaGrange
133 Mendon (includes Ill. part of Kahoka)
134 Camp Point
135 Augusta
136 Rushville
137 Beardstown
138 Chandlerville
139 Petersburg
140 Mason City
141 Lincoln
142 Kenney
143 Maroa
144 Monticello
145 Mahomet
145b Rising
145d Bondville
146 Urbana 15-minute
146a Thomasboro
146c Urbana 7.5-minute
147 Fithian
148a Danville Northwest
148b Danville Northeast
148c Danville Southwest
148d Danville Southeast
149 Quincy
150 Liberty
151 Mt. Sterling
152 Meredosia
153 Arenzville
154 Virginia
155 Tallula
156 Springfield
156c Springfield West 7.5-minute
156d Springfield East 7.5-minute
157 Mechanicsburg
158 Niantic
159 Decatur

160 Bement
161 Tuscola
162 Villa Grove
163 Newman
164 Ridge Farm, Ill. part
165 Hannibal
166 Barry
167 Pittsfield
168 Griggsville
169 Winchester
170 Jacksonville
171 Waverly
172 Divernon
173 Taylorville
174 Assumption
175 Dalton City
176 Sullivan
177 Arcola
178 Oakland
179 Kansas
180 Paris, Ill. part
181 Bowling Green
182 Nebo
183 Pearl
184 Roodhouse
185 Greenfield
186 Carlinville
187 Raymond
188 Nokomis
189 Pana
190 Shelbyville
191 Stewardson
192 Mattoon
193 Toledo
194 Casey
195 Marshall, Ill. part
196 Hardin
197 Jerseyville
198 Brighton
199 Gillespie
200 Mt. Olive
201 Hillsboro
202 Ramsey
203 St. Elmo
204 Effingham
205 Teutopolis
206 Greenup
207 Annapolis
208 Hutsonville
208b Fairbanks
208d Merom
209 Brussels
210 St. Charles
211 Alton 15-minute
211a Alton 7.5-minute
211b Bethalto
211c Columbia Bottom
211d Wood River
212 Edwardsville 15-minute
212c Edwardsville 7.5-minute
213 New Douglas
214 Greenville
215 Vandalia
216 Kinmundy
217 Edgewood
218 Sailor Springs
219 Newton
220 Hardinville
221 Birds
222c Oaktown
223d Jefferson Barracks (includes north end of Ill. part of Kimmswick)
224a Granite City
224b Monks Mound
224c Cahokia
224d French Village (includes north end of NE. quarter of Waterloo)
225 Belleville
225a Collinsville
225b St. Jacob
225c O'Fallon (includes north end of NW. quarter of New Athens)
225d Lebanon (includes north end of NE. quarter of New Athens)
226 Breese
226a Highland
226c Trenton
227 Carlyle
228 Centralia
229 Salem
230 Xenia
231 Flora
232 Olney
233 Sumner
234 Vincennes
235a Fritchton
236 Kimmswick (large-scale of north end of Ill. part included on Jefferson Barracks)
237 Waterloo (large-scale of north end of Ill. part included on Jefferson Barracks)
237a Columbia
238 New Athens (large-scale of north end included on Lebanon and O'Fallon)
239 Okawville
239a Venedy
240 Nashville
241 Ashley
242 Mt. Vernon
243 Wayne City
244 Fairfield
245 Albion
246 Mt. Carmel
247 Princeton
248 Crystal City
249 Renault
250 Baldwin
251 Coulterville
252 Pinckneyville
253 Duquoin
254 Ina
255 McLeansboro
256 Enfield
257 Carmi
258 New Harmony
259 Weingarten
260 Chester
261 Campbell Hill
262 Murphysboro
263 Herrin
264 West Frankfort
265 Galatia
266 Eldorado
267 New Haven
268 Altenburg 15-minute
268a Crosstown
268b Altenburg 7.5-minute
268d Neelys Landing
269 Alto Pass
269a Gorham
269b Pomona
269c Wolf Lake
269d Cobden
270 Carbondale
271 Marion
272 Harrisburg
273 Equality
274 Shawneetown
275 Cape Girardeau
276 Jonesboro 15-minute
276a Ware
276b Jonesboro 7.5-minute
276c McClure
276d Mill Creek
277 Dongola
278 Vienna
279 Brownfield
280 Golconda 15-minute
280c Golconda 7.5-minute
281 Cave in Rock
281b Repton
282 Thebes (includes Ill. part of Charleston)
283 Cairo (includes Ill. part of Wickliffe)
283d Barlow
284 La Center
285 Paducah
285c Paducah West 7.5-minute
285d Paducah East 7.5-minute
286 Smithland
286a Metropolis
286c Little Cypress
287 Charleston (U.S.C.E. map; Ill. part included on Thebes)
288 Wickliffe, Ill. part (included on Cairo)

Special City Area Maps

289 Chicago and Vicinity, sheet No. 1 of 3 (Evanston)
290 Chicago and Vicinity, sheet No. 2 of 3 (Chicago Loop)
291 Chicago and Vicinity, sheet No. 3 of 3 (Blue Island)
292 Davenport, Rock Island, and Moline and Vicinity
293 Peoria and Vicinity
294 Champaign-Urbana and Vicinity

LAND DIVISIONS

Without some definite plan or system of survey the accurate identification of any specific parcel of land would be extremely difficult and often impossible. In Illinois, as in 29 other states, this problem of identification is solved by a system of rectangular surveys which divide the surface into "surveyor's" townships, each six miles square. The townships are divided, in turn, into 36 "sections," each one mile square or as close to this size and shape as the conditions of survey permit. The sections are further divided into quarter-sections. The intersection of a north-south "principal meridian" and east-west "base line" establishes the initial point for the survey, and hence provides the point of reference for the division of land into townships and sections. Parcels of land may also be defined in terms of "metes and bounds" within the framework of this system.

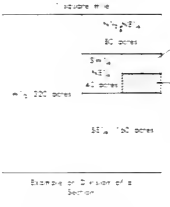
Within each surveyed area, townships are designated according to their positions with respect to the principal meridian and base line. Townships are numbered consecutively north and south from the base line and east and west from the principal meridian or "range" line and are, therefore, identified by two numbers. Thus, a township lying three rows north and four rows east of the intersection of the meridian with the base line is designated as Township 3 North, Range 4 East of the principal meridian. All land is described within the framework of this system according to established procedures.

Township designations in Illinois are based on three governing surveys. The control lines of these surveys are as follows:

	Longitude of Principal Meridian *West from Greenwich*			Latitude of Base Line *North from the Equator*		
Second	85°	25′	00″	38°	28′	20″
Third	88°	10′	15″	39°	28′	20″
Fourth	90°	25′	45″	40°	00′	30″

The second principal meridian is located in Indiana and only four ranges along the eastern edge of Illinois south of Kankakee are included within the area of the survey relating to this line.

The identification of a particular piece of land within the framework of the system of survey is illustrated by the shaded areas on the accompanying diagram and the facing map page. The shaded part of the diagram is the south one-half, of the southeast one-quarter, of the northeast one-quarter, of Section 16, which is shaded on the diagram on the opposite page. Section 16 is in Township 10 North, Range 2 West of the Third Principal Meridian of Illinois and is identified on the large map. This description written in the usual abbreviated form reads as follows: S½, SE¼, NE¼, Sec. 16, T10 N, R 2 W, 3rd PM. No other parcel of land in the world has the same identification.

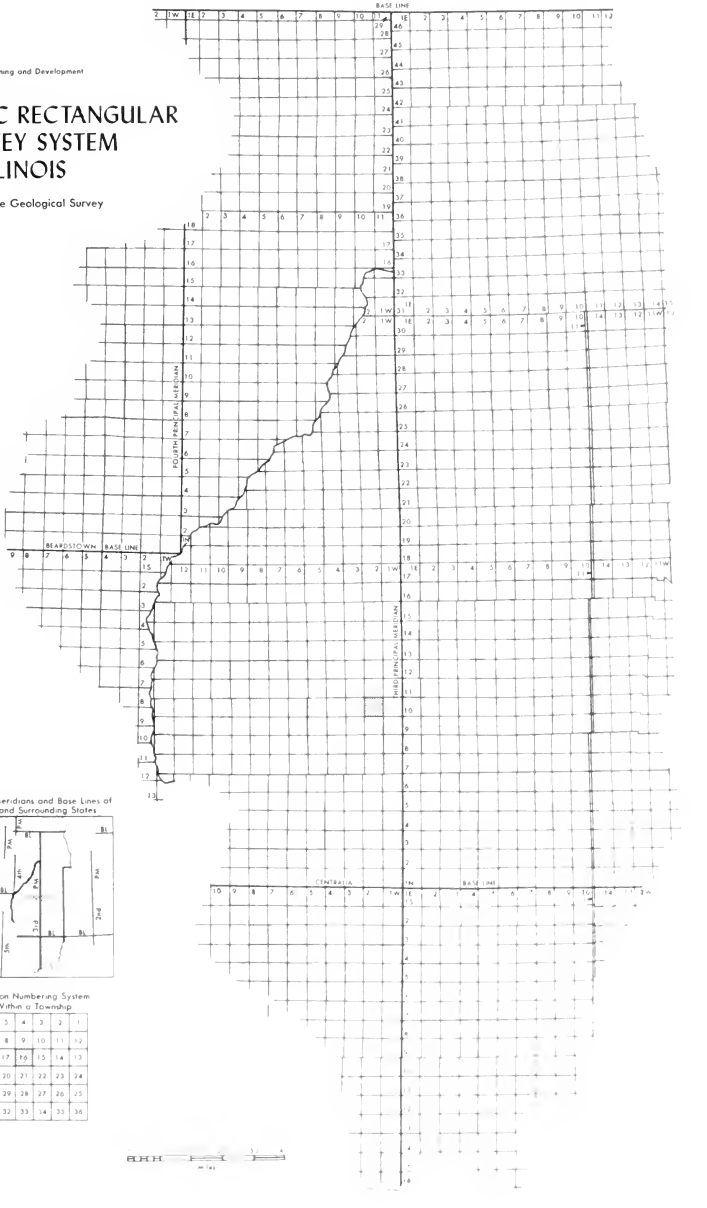


SUBDIVISIONS OF A SECTION

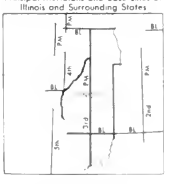
Illinois
Industrial Planning and Development

BASIC RECTANGULAR SURVEY SYSTEM IN ILLINOIS

Illinois State Geological Survey



Principal Meridians and Base Lines of Illinois and Surrounding States



Section Numbering System Within a Township

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

MINING LAWS

The constitution of the state of Illinois as adopted in 1848 contained no provisions authorizing the enactment of laws to govern mines and mining because prior to that time there had not been sufficient mining activity within the state to make the need for such laws apparent. Two decades later, however, full recognition of the need for such legislation was indicated by the members of the Constitutional Convention who, when meeting in 1870, included as Article 4, Section 29, of the new State Constitution the following provision: "It shall be the duty of the General Assembly to pass such laws as may be necessary for the protection of operator miners, by providing for ventilation, when the same may be required, and the construction of escapement shafts or such other appliances as may secure safety in all coal mines, and to provide for the enforcement of said laws by such penalties and punishments as may be deemed proper." The following year, 1871, the first mining law, providing for inspection of mines by county boards, was passed.

During the more than 85 years since the passage of the first mining law in Illinois there has been a steady progress in the field of mine legislation and mine safety. Continuous changes and revisions of the law have been required in order to keep the laws abreast of the rapidly changing conditions and technology of the industry. The state mining laws of Illinois today are among the best written and best administered in the nation.

The laws of Illinois pertaining to mines and minerals are distributed widely throughout the General Statutes of the state. For the convenience of those concerned, and to facilitate the administration and enforcement of the mining laws, they have been extracted from the General Statutes and published in separate form as follows:

The Coal Mining Act

Laws and Regulations Governing the Operation of Metal Mines

An Act in Relation to Oil, Gas, Coal and Other Surface and Underground Resources, and Rules and Regulations

These publications are available from the Department of Mines and Minerals in Springfield.

The 1871 mining law, providing inspection of coal mines by county inspectors, was revised in 1883 to provide for state inspectors rather than county inspectors, and a State Examining Board was set up to examine applicants for the job of inspector. Changes in the law in 1891 and 1895 required the examination and certification by the State Examining Board of those who worked at mines in the capacity of mine manager, fire boss (mine examiner), or hoisting engineer.

A general revision of the mining laws in 1899 replaced the State Examining Board with a State Mining Board. Legislation in 1908 authorized a Miners' Examining Board to examine miners and certify as to their competency.

In 1910 the establishment of three mine rescue stations was authorized, and a

state program of mine rescue and first aid training was initiated. This program has been expanded and continued until today there are five stations, four of which contain mobile rescue units that can be rushed quickly to any location where they are needed.

In 1917, with the passage of the Civil Administrative Code, all matters pertaining to the mining of coal and other minerals were placed under the Department of Mines and Minerals. The Mining Board became responsible for administering most of the various laws with respect to mines and minerals and for establishing such rules and regulations as may be necessary from time to time. The Board consists of two miners and two operators, appointed by the Governor, and the Director of the Department. The Director is the executive officer of the Board, responsible for carrying out the orders, rules, and regulations which it promulgates. The Miners' Examining Board, under the Administrative Code, was also placed under the Department of Mines, as were the state mine inspectors, the mine rescue stations, and the accident prevention program.

In the years since its formation in 1917, the major responsibility of the Department of Mines and Minerals has been in connection with the regulation and safety of the coal mines of the state. In addition to the mine inspection service, mine rescue stations, and accident prevention work, the coal program was further strengthened by the establishment of an analytical laboratory in 1947, to analyze air and dust samples from coal mines. The combined efforts of the various groups within the Department, in cooperation with the coal industry, have been successful in effecting a remarkable improvement in mine safety through the years. The passage of a new Coal Mining Act in 1953 also was instrumental in this success.

An act passed in 1921 provided for the inspection of metal mines and authorized the appointment of an "inspector of mines." In 1945 a further act was passed "concerning metal mines and subjects relative thereto and providing for the health and safety of persons employed therein." Under this act the Metal Mines Division of the Department has authority to inspect the mines, conduct investigations, and enforce the provisions of the law. The law also specifies the qualifications and duties of mine inspectors, and of mine foremen and hoisting engineers.

The Division of Oil and Gas, authorized in 1941, is charged with enforcing legislation that pertains to prevention of waste and dissipation of natural resources. Inspectors and field supervisors operating under the supervision of the Oil Conservation Supervisor are responsible for seeing that laws, rules, and regulations pertaining to conservation, drilling, pollution, and protection of coal seams through which oil wells are drilled are observed. An Oil and Gas Board, consisting of the Director of the Department and four members, is subject to call by the Director. The Board is called to advise and consultation on matters pertaining to the oil and gas industry.

AGENCIES SUPPLYING INFORMATION RELATING TO MINERAL RESOURCES IN ILLINOIS

Illinois State Geological Survey

The Illinois State Geological Survey, Urbana, is the principal source of information on the mineral resources of Illinois. The Geological Survey explores and maps the geology and mineral resources of the state. It conducts fundamental and applied research and supplies information on the geology, mineral resources, mineral utilization, ground water geology, and topographic mapping in Illinois. Information is made available to the public through the following types of publications:

- Monographs
- Bulletins
- Reports of Investigations
- Circulars
- Educational Series
- Industrial Mineral Notes
- Illinois Petroleum Series
- Oil and Gas Drilling Reports
- Oil and Gas Development Maps
- Other oil and gas maps
- General maps and cross-sections
- Coal structure maps
- Maps of outcrops of workable coals
- Illinois Coal Mining Investigations
- Mined-out areas (maps)
- State maps
- Reprint series

In addition to publications resulting solely from its own research, the Illinois State Geological Survey, through a cooperative agreement with other agencies, also assists in the production of other publications, as follows:

- University of Illinois Engineering Experiment Station (Mining Investigation Bulletins)
- United States Bureau of Mines (Bulletins, Technical Papers)
- United States Geological Survey (Topographic Maps, Bulletins)

Illinois State Department of Mines and Minerals

The Illinois Department of Mines and Minerals, Springfield, is responsible for the administration of state laws and regulations affecting mining and oil and gas development and for the collection of mine operation and well-drilling statistics. Publications of the Department include the following:

- Annual Coal Report
- Monthly Coal Production Report
- Monthly Report of Total Accidents
- Annual Oil Report
- Weekly List of [Drilling] Permits Issued
- Monthly Report by Counties of Permits Issued
- Coal Mining Act
- Metal Mines Laws
- Oil and Gas Act
- Oil and Gas Rules and Regulations

Illinois State Water Survey

A number of bulletins published by the State Water Survey, Urbana, contain considerable amounts of geological information on municipal water supplies that come from underground sources in Illinois.

University of Illinois Engineering Experiment Station

The Engineering Experiment Station of the University of Illinois, Urbana, conducts studies of mining practices within the state. Reports of these studies are published in a number of Mineral Investigation Bulletins.

United States Bureau of Mines

The United States Bureau of Mines, Washington, D. C., conducts studies and investigations of mining and the mineral industries within the United States. Studies pertaining to Illinois are included among or in the following Bureau publications:

- Bulletins
- Technical Papers
- Reports of Investigations
- Information Circulars
- Minerals Yearbooks

United States Geological Survey

The United States Geological Survey, Washington, D. C., publishes information about various aspects of the geology and mineral resources of the United States. Included among these are studies of Illinois. Among those applicable to the state are publications under the following Survey classifications:

- Bulletins
- Water Supply Papers
- Annual Reports
- Professional Papers of the U. S. Geological Survey
- Geologic Folios of the U. S. Geological Survey
- Maps

SELECTED REFERENCE LIST OF DOCUMENTS PERTAINING TO MINERAL RESOURCES

General

Illinois State Geological Survey

Mineral Production in Illinois in 1956, Circ. 238, 1957.
Mineral Production in Illinois in 1957, Circ. 257, 1958.

Geology

Illinois State Geological Survey

Geologic Map of Illinois, 1945.
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GLOSSARY FOR MINERAL RESOURCES

Alluvial. Pertaining to sediments deposited by running water.

Area of Proved Production. An area which has been drilled sufficiently to indicate the extent of an oil deposit.

Base Line. An east-west line, through the initial point of a land survey, governing the designation of townships and ranges within a given area.

Bed. A naturally occurring layer or stratum of material, as a bed of coal or of limestone.

Brine. Commonly, water containing chloride or sodium chloride; the term is sometimes limited to water containing a sodium chloride concentration exceeding 100,000 parts per million.

Btu—British Thermal Unit. The amount of heat energy required to raise the temperature of one pound of water through 1 degree Fahrenheit—from 60 degrees to 61 degrees.

Casing-Head Gas. Natural gas occurring in solution in crude oil and separated or recovered from the oil at the head of the well.

Central Basin. The central or deep part of the Illinois basin.

Coal Measures. The geologic system of sedimentary rocks (sandstones, shales, limestones, etc.) in which beds of coal occur.

Crude Oil. Oil in its crude or natural state, before refining or processing.

Dolomite. A limestone containing a high percentage of magnesium carbonate.

Expanded Light-Weight Aggregate. Concrete aggregate materials made by heating clay, shale, or other rocks or minerals that tend to expand or bloat when heated.

Fireboss. A coal mine employee whose duty is to make examinations for explosive gas or other unsafe conditions underground.

Fluorspar (also called fluorite). A mineral consisting mostly of calcium fluoride (CaF_2) and used principally as a flux in steel making, as a source of chemicals, and in the manufacture of aluminum.

Flux. A material added to the charge of a metallurgical furnace to promote fusion.

Formation. A sequence of sedimentary rocks that is more or less distinct from those above and below it, that can be identified and traced.

Ganister. A naturally occurring, granular, high silica material whose grains are composed of fine particles of quartz. (This definition applies only to southern Illinois ganister.)

Glacial Till. A mixture of unstratified, unsorted rock material ranging in size from boulders to particles of clay, deposited directly by glacial ice.

Glass Wool. A material composed of fine intermingled filaments of glass having a fibrous wool-like appearance, made from manufactured glass.

Hydrocarbon Liquids. Natural substances consisting only of hydrogen and carbon: also natural gasoline, liquid propane, and liquid butane occurring with petroleum.

Loess. A wind-blown deposit of silt and fine sand.

Mean Elevation. Average elevation of a given area, usually stated in feet above sea level.

Metallurgical Coke. Coke satisfactory for use in iron smelting blast furnace operations.

Moraine. A ridge or belt of ridges and hills built up at the margin of a glacier and consisting usually of a stony clay with varying amounts of sand and gravel.

Mine Manager. Person in charge of the underground operations of a mine; mine foreman.

Natural-Bonded Molding Sand. A sand naturally containing sufficient clay or other bonding material to make it suitable for use in foundries for making molds for metal casting.

Non-Ferrous. Non-iron; metals other than iron, such as copper, lead, and zinc.

Physiography. Physical geography; study of surface features of the earth.

Plateau. An elevated and relatively level or flat tableland that may be cut by valleys or canyons.

Principal Meridian. A north-south line through the initial point of a land survey governing the designation of townships and ranges within a given area.

Produced Water. Water produced with oil from an oil well.

Quadrangle. An area covered by a standard map of the United States Geological Survey, bounded by meridians of longitude and parallels of latitude.

Range. A land survey division consisting of a north-south row of townships, and numbered east or west from the principal meridian.

Raw Coal. Coal as produced from the mine, before processing or cleaning; run-of-mine coal.

Refractory. Heat-resistant material, used to line high-temperature furnaces and ovens.

Relief. The variation in elevation of portions of the earth's surface; the difference between the highest and lowest elevation in an area.

Repressuring. Restoring pressure in an oil reservoir by pumping gas or water, under pressure, into the formation.

Reserves. Known deposits of mineral which have not yet been mined or otherwise produced.

Residual Clay. Clay remaining after the solution of the limy material from limestone.

Rock Wool. Material composed of fine intermingled glassy filaments, having a fibrous wool-like appearance and made from slag or rock.

Seam. A layer or stratum, as a seam of coal.

Secondary Recovery. The further recovery of oil after the first pumping is completed, accomplished by injecting water or gas into the oil-bearing formations and flushing it toward the producing wells.

Section. A standard unit of land measure, derived by division of the surveyor's township into 36 parts. Although the section theoretically is one mile square (640 acres), its area varies in practice.

Sedimentary. Material formed by settling or precipitation of sediments.

Shipping Mines. Mines from which coal is shipped by rail (in some cases, water) as contrasted with local mines which have no rail connections and ship by truck

Space Heating. House or building heating.

Strata. Beds or layers of rock or rock materials.

Strip Mining. Surface mining; mining in which the waste cover-material or overburden is stripped off to make coal or other mineral deposits accessible.

Synthetic Cryolite. Man-made sodium aluminum fluoride ($Na_3 Al F_6$) as contrasted with the naturally occurring mineral. Used in the production of aluminum.

Topographic. Pertaining to the physical features of an area, especially the contour and relief.

Township. A land division established by public land surveys which is, with certain exceptions, six miles wide on its southern boundary and six miles long on its eastern and western boundaries. Since the latter lines follow the converging meridians, the northern boundaries are slightly less than 6 miles. The township contains 36 sections as a general rule.

Tripoli. A high-silica product produced by finely pulverizing a rock material consisting of microcrystalline quartz particles in the form of powder or aggregates; also called "amorphous silica." Also the natural deposits from which tripoli is mined. (Definition applies only to southern Illinois tripoli.)

Volatile Matter. The products, exclusive of moisture, which are driven off as gas and vapor by heating a substance, such as coal, under specified laboratory conditions.

Water Flooding. Repressuring an oil-bearing stratum by injecting water into it, for the purpose of recovering more oil.

Whiteware. White ceramic materials, such as china, lavatories, etc.

INDEX OF COUNTIES, CITIES, AND TOWNS

Incorporated Cities and Towns with Populations of 1000 or more in 1950

COUNTIES

County	*Map Coordinate*	*County*	*Map Coordinate*	*County*	*Map Coordinate*	*County*	*Map Coordinate*
Adams	A-8	Ford	G-6	Livingston	G-5	Randolph	D-13
Alexander	E-16	Franklin	F-13	Logan	E-7	Richland	H-11
Bond	E-11	Fulton	D-6	McDonough	B-6	Rock Island	B-4
Boone	F-1	Gallatin	H-14	McHenry	G-1	St. Clair	D-12
Brown	B-8	Greene	C-10	McLean	F-6	Saline	G-14
Bureau	E-4	Grundy	G-4	Macon	F-8	Sangamon	E-9
Calhoun	B-10	Hamilton	G-13	Macoupin	D-10	Schuyler	C-7
Carroll	D-2	Hancock	A-7	Madison	D-11	Scott	C-9
Cass	C-8	Hardin	H-15	Marion	F-12	Shelby	G-10
Champaign	H-7	Henderson	B-5	Marshall	F-5	Stark	D-5
Christian	E-9	Henry	D-4	Mason	D-7	Stephenson	E-1
Clark	J-10	Iroquois	J-6	Massac	F-16	Tazewell	E-6
Clay	G-11	Jackson	E-14	Menard	D-8	Union	E-15
Clinton	E-12	Jasper	H-10	Mercer	B-4	Vermilion	J-7
Coles	H-9	Jefferson	F-13	Monroe	C-13	Wabash	J-12
Cook	J-2	Jersey	C-10	Montgomery	E-10	Warren	C-6
Crawford	J-11	Jo Daviess	C-1	Morgan	C-8	Washington	E-12
Cumberland	H-10	Johnson	F-15	Moultrie	G-9	Wayne	G-12
De Kalb	F-2	Kane	G-2	Ogle	E-2	White	H-13
De Witt	F-7	Kankakee	H-4	Peoria	D-5	Whiteside	D-3
Douglas	H-8	Kendall	G-3	Perry	E-13	Will	H-4
Du Page	H-2	Knox	C-5	Piatt	G-8	Williamson	F-14
Edgar	J-9	Lake	H-1	Pike	B-9	Winnebago	F-1
Edwards	H-12	La Salle	F-4	Pope	G-15	Woodford	F-5
Effingham	G-10	Lawrence	J-11	Pulaski	F-16		
Fayette	F-10	Lee	E-3	Putnam	E-4		

CITIES AND TOWNS

Place	*Map Coordinate*	*Population*	*County*	*Place*	*Map Coordinate*	*Population*	*County*
Abington	C-5	3,330	Knox	Auburn	D-9	1,963	Sangamon
Albion *	H-12	2,287	Edwards	Aurora	G-3	50,576	Kane
Aledo *	B-4	2,919	Mercer	Barrington	H-1	4,209	Cook-Lake
Algonquin	G-1	1,223	McHenry	Barry	B-9	1,529	Pike
Alorton	C-12	2,547	St. Clair	Bartonville	E-6	2,437	Peoria
Alsip	J-3	1,228	Cook	Batavia	G-2	5,838	Kane
Altamont	G-10	1,580	Effingham	Beardstown	C-8	6,080	Cass
Alton	C-11	32,550	Madison	Beckemeyer	E-12	1,048	Clinton
Amboy	E-3	2,128	Lee	Belleville *	D-12	32,721	St. Clair
Anna	E-15	4,380	Union	Bellevue	E-6	1,529	Peoria
Antioch	H-1	1,307	Lake	Bellwood	H-2	8,746	Cook
Arcola	G-9	1,700	Douglas	Belvidere *	F-1	9,422	Boone
Arlington Hts.	H-2	8,768	Cook	Bement	G-8	1,459	Piatt
Arthur	G-8	1,573	Douglas-Moultrie	Benld	D-10	2,093	Macoupin
				Bensenville	H-2	3,754	Du Page
Ashland	D-8	1,039	Cass	Benton *	F-13	7,848	Franklin
Assumption	F-9	1,466	Christian	Berkeley	H-2	1,882	Cook
Astoria	C-7	1,308	Fulton	Berwyn	J-2	51,280	Cook
Athens	D-8	1,048	Menard	Bethalto	D-11	2,115	Madison
Atlanta	E-7	1,331	Logan	Bloomington *	E-6	34,163	McLean

* County Seat

Place	Map Coordinate	Population	County
Blue Island	J-3	17,622	Cook
Bourbonnais	H-4	1,598	Kankakee
Bradley	H-4	5,699	Kankakee
Braidwood	H-4	1,485	Will
Breese	E-12	2,181	Clinton
Bridgeport	J-11	2,358	Lawrence
Bridgeview	J-3	1,393	Cook
Broadview	H-2	5,196	Cook
Brookfield	H-2	15,472	Cook
Brooklyn	C-12	2,568	St. Clair
Brookport	G-16	1,119	Massac
Bunker Hill	D-11	1,238	Macoupin
Burnham	J-3	1,331	Cook
Bushnell	C-6	3,317	McDonough
Byron	E-1	1,237	Ogle
Cairo *	F-16	12,123	Alexander
Calumet City	J-3	15,799	Cook
Calumet Park	J-3	2,500	Cook
Cambridge *	C-4	1,489	Henry
Canton	D-6	11,927	Fulton
Carbondale	F-14	10,921	Jackson
Carlinville *	D-10	5,116	Macoupin
Carlyle *	E-12	2,669	Clinton
Carmi *	H-13	5,574	White
Carpentersville	H-2	1,523	Kane
Carrier Mills	G-14	2,252	Saline
Carrollton *	C-10	2,437	Greene
Carterville	F-14	2,716	Williamson
Carthage *	A-7	3,214	Hancock
Casey	H-10	2,734	Clark
Caseyville	D-12	1,209	St. Clair
Central City	F-12	1,231	Marion
Centralia	F-12	13,863	Clinton-Marion
Cerro Gordo	G-8	1,052	Piatt
Champaign	H-7	39,563	Champaign
Charleston *	H-9	9,164	Coles
Chatsworth	G-6	1,119	Livingston
Chenoa	G-6	1,452	McLean
Chester *	D-14	5,389	Randolph
Chicago *	J-2	3,620,962	Cook
Chicago Hts.	J-3	24,551	Cook
Chillicothe	E-5	2,767	Peoria
Chrisman	J-8	1,071	Edgar
Christopher	F-14	3,545	Franklin
Cicero	J-2	67,544	Cook
Clarendon Hills	H-3	2,437	Du Page
Clay City	G-11	1,103	Clay
Clinton *	F-7	5,945	De Witt
Coal City	G-4	2,220	Grundy
Cobden	E-15	1,104	Union
Colchester	B-7	1,551	McDonough
Collinsville	D-12	11,862	Madison-St. Clair
Columbia	C-12	2,179	Monroe
Coulterville	E-13	1,160	Randolph
Crete	J-3	2,298	Will
Creve Coeur	E-6	5,499	Tazewell
Crotty	G-4	1,435	La Salle
Crystal Lake	G-1	4,832	McHenry
Cuba	C-6	1,482	Fulton
Dallas City	A-6	1,275	Hancock-Henderson
Danville *	J-7	37,864	Vermilion
Decatur *	F-8	66,269	Macon
Deerfield	J-1	3,288	Lake
De Kalb	G-2	11,708	De Kalb
Delavan	E-7	1,248	Tazewell
Depue	E-4	2,163	Bureau
Des Plaines	H-2	14,994	Cook
Divernon	E-9	1,013	Sangamon
Dixmoor	J-3	1,327	Cook
Dixon *	E-2	11,523	Lee
Dolton	J-3	5,558	Cook
Downers Grove	H-3	11,886	Du Page
Dupo	C-12	2,239	St. Clair
Du Quoin	E-14	7,147	Perry
Dwight	G-5	2,843	Livingston
Earlville	F-3	1,217	La Salle
East Alton	D-11	7,290	Madison
East Chicago Hts.	J-3	1,548	Cook
East Dubuque	C-1	1,697	Jo Daviess
East Dundee	H-2	1,466	Kane
East Hazel Crest	J-3	1,066	Cook
East Moline	C-3	13,913	Rock Island
East Peoria	E-5	8,698	Tazewell
East St. Louis	C-12	82,295	St. Clair
Edwardsville *	D-11	8,776	Madison
Effingham *	G-10	6,892	Effingham
Eldorado	G-14	4,500	Saline
Elgin	G-2	44,223	Cook-Kane
Elmhurst	H-2	21,273	Du Page
Elmwood	D-5	1,613	Peoria
Elmwood Park	J-2	18,801	Cook
El Paso	F-6	1,818	Woodford
Erie	D-3	1,180	Whiteside
Eureka *	E-6	2,367	Woodford
Evanston	J-2	73,641	Cook
Evergreen Park	J-3	10,531	Cook
Fairbury	G-6	2,433	Livingston
Fairfield *	G-12	5,576	Wayne
Fairmont City	D-12	2,284	St. Clair
Farmer City	G-7	1,752	De Witt
Farmington	D-6	2,651	Fulton
Flora	G-12	5,255	Clay
Flossmoor	J-3	1,804	Cook
Forest Park	J-2	14,969	Cook
Forrest	G-5	1,040	Livingston
Forreston	E-2	1,048	Ogle
Fox Lake	H-1	2,238	Lake
Fox River Grove	H-1	3,313	McHenry
Franklin Park	H-2	8,899	Cook
Freeburg	D-12	1,661	St. Clair
Freeport *	E-1	22,467	Stephenson
Fulton	D-2	2,706	Whiteside
Galena *	C-1	4,648	Jo Daviess
Galesburg *	C-5	31,425	Knox
Galva	D-4	2,886	Henry
Geneseo	D-3	4,325	Henry
Geneva *	G-2	5,139	Kane
Genoa	G-2	1,690	De Kalb
Georgetown	J-8	3,294	Vermilion

* County Seat

Place	Map Coordinate	Population	County
Gibson	G-6	3,029	Ford
Gillespie	D-10	4,105	Macoupin
Gilman	H-5	1,602	Iroquois
Girard	D-9	1,740	Macoupin
Glen Carbon	D-11	1,176	Madison
Glencoe	J-1	6,980	Cook
Glen Ellyn	H-2	9,524	Du Page
Glenview	J-2	6,142	Cook
Golconda *	G-15	1,066	Pope
Grafton	C-11	1,117	Jersey
Grandview	E-8	1,349	Sangamon
Granite City	C-12	29,465	Madison
Grays Lake	H-1	1,970	Lake
Grayville	H-13	2,461	White-Edwards
Greenup	H-10	1,360	Cumberland
Greenville *	E-11	4,069	Bond
Griggsville	B-9	1,199	Pike
Gurnee	H-1	1,097	Lake
Hamilton	A-7	1,776	Hancock
Hanover	C-1	1,643	Jo Daviess
Harrisburg *	G-14	10,999	Saline
Hartford	D-11	1,909	Madison
Harvard	G-1	3,464	McHenry
Harvey	J-3	20,683	Cook
Havana *	D-7	4,398	Mason
Hazel Crest	J-3	2,129	Cook
Henry	E-5	1,966	Marshall
Herrin	F-14	9,331	Williamson
Heyworth	F-7	1,072	McLean
Highland	D-11	4,283	Madison
Highland Park	J-1	16,808	Lake
Highwood	J-1	3,813	Lake
Hillsboro *	E-10	4,141	Montgomery
Hillside	H-2	2,131	Cook
Hinsdale	H-3	8,676	Du Page-Cook
Homer	H-8	1,030	Champaign
Homewood	J-3	5,887	Cook
Hoopeston	J-6	5,992	Vermilion
Itasca	H-2	1,274	Du Page
Jacksonville *	C-9	20,387	Morgan
Jerseyville *	C-10	5,792	Jersey
Johnson City	F-14	4,479	Williamson
Joliet *	H-3	51,601	Will
Jonesboro *	E-15	1,607	Union
Kankakee *	H-4	25,856	Kankakee
Keithsburg	B-5	1,006	Mercer
Kenilworth	J-2	2,789	Cook
Kewanee	D-4	16,821	Henry
Kincaid	E-9	1,793	Christian
Knoxville	C-5	2,209	Knox
Lacon *	E-5	2,020	Marshall
Ladd	F-3	1,224	Bureau
La Grange	H-2	12,002	Cook
La Grange Park	H-2	6,176	Cook
La Harpe	B-6	1,295	Hancock
La Salle	F-4	12,083	La Salle
Lake Bluff	J-1	2,000	Lake
Lake Forest	J-1	7,819	Lake
Lanark	D-2	1,359	Carroll
Lansing	J-3	8,682	Cook
Lawrenceville *	J-11	6,328	Lawrence
Lebanon	D-12	2,417	St. Clair
Lemont	H-3	2,757	Cook
Lena	D-1	1,227	Stephenson
Le Roy	F-7	1,820	McLean
Lewistown *	D-7	2,630	Fulton
Lexington	F-6	1,181	McLean
Libertyville	H-1	5,425	Lake
Lincoln *	E-7	14,362	Logan
Lincolnwood	J-2	3,072	Cook
Litchfield	E-1	7,208	Montgomery
Lockport	H-3	4,955	Will
Lombard	H-2	9,817	Du Page
Loves Park	F-1	5,366	Winnebago
Lovington	G-9	1,152	Moultrie
Lyons	J-2	6,120	Cook
McHenry	H-1	2,080	McHenry
McLeansboro *	G-13	3,008	Hamilton
Mackinaw	E-6	1,011	Tazewell
Macomb *	B-6	10,592	McDonough
Madison	C-12	7,963	Madison
Mahomet	G-7	1,017	Champaign
Manteno	J-4	1,789	Kankakee
Marengo	G-1	2,726	McHenry
Marion *	F-14	10,459	Williamson
Marissa	D-13	1,652	St. Clair
Markham	J-3	2,753	Cook
Maroa	F-8	1,100	Macon
Marseilles	G-4	4,514	La Salle
Marshall *	J-9	2,960	Clark
Martinsville	H-10	1,440	Clark
Mascoutah	D-12	3,009	St. Clair
Mason City	D-7	2,004	Mason
Matteson	J-3	1,211	Cook
Mattoon	G-9	17,547	Coles
Maywood	J-2	27,473	Cook
Melrose Park	J-2	13,366	Cook
Mendota	F-3	5,129	La Salle
Merrionette Park	J-3	1,101	Cook
Metamora	E-5	1,368	Woodford
Metropolis *	G-16	6,093	Massac
Midlothian	J-3	3,216	Cook
Milan	C-4	1,737	Rock Island
Milford	J-6	1,648	Iroquois
Milledgeville	D-2	1,044	Carroll
Millstadt	D-12	1,566	St. Clair
Minonk	F-5	1,955	Woodford
Moline	C-3	37,397	Rock Island
Momence	J-4	2,644	Kankakee
Monmouth *	C-5	10,193	Warren
Monticello *	G-8	2,612	Piatt
Morris *	G-4	6,926	Grundy
Morrison *	D-3	3,531	Whiteside
Morrisonville	E-9	1,182	Christian
Morton	E-6	3,692	Tazewell
Morton Grove	J-2	3,926	Cook
Mound City *	F-16	2,167	Pulaski
Mounds	F-16	2,001	Pulaski
Mount Carmel *	J-12	8,732	Wabash
Mount Carroll *	D-2	1,950	Carroll
Mount Morris	E-2	2,700	Ogle
Mount Olive	D-10	2,401	Macoupin

* County Seat

Place	*Map Coordinate*	*Population*	*County*	*Place*	*Map Coordinate*	*Population*	*County*
Mount Prospect	H-2	4,009	Cook	Port Byron	C-3	1,050	Rock Island
Mount Pulaski	E-8	1,526	Logan	Posen	J-3	1,795	Cook
Mount Sterling *	B-8	2,246	Brown	Princeton *	E-4	5,765	Bureau
Mount Vernon *	F-13	15,600	Jefferson	Princeville	D-5	1,113	Peoria
Moweaqua	F-9	1,475	Shelby	Prophetstown	D-3	1,691	Whiteside
Mundelein	H-1	3,189	Lake	Quincy *	A-8	41,450	Adams
Murphysboro *	F-14	9,241	Jackson	Rantoul	H-7	6,387	Champaign
Naperville	H-3	7,013	Du Page	Red Bud	D-13	1,519	Randolph
Nashville *	E-13	2,432	Washington	Ridgway	H-14	1,148	Gallatin
Nauvoo	A-6	1,242	Hancock	Riverdale	J-3	5,840	Cook
Neoga	G-10	1,125	Cumberland	River Forest	J-2	10,823	Cook
New Athens	D-13	1,518	St. Clair	River Grove	J-2	4,839	Cook
New Baden	D-12	1,428	Clinton-St. Clair	Riverside	H-2	9,153	Cook
				Riverton	E-8	1,450	Sangamon
New Lenox	H-3	1,235	Will	Roanoke	F-5	1,368	Woodford
Newman	H-8	1,140	Douglas	Robbins	J-3	4,766	Cook
Newton *	H-11	2,780	Jasper	Robinson *	J-11	6,407	Crawford
Niles	J-2	3,587	Cook	Rochelle	F-2	5,449	Ogle
Nokomis	E-10	2,544	Montgomery	Rockdale	H-3	1,393	Will
Normal	F-6	9,772	McLean	Rock Falls	D-3	7,983	Whiteside
Norridge	J-2	3,428	Cook	Rockford *	F-1	92,927	Winnebago
Norris City	G-14	1,370	White	Rock Island *	C-3	48,710	Rock Island
Northbrook	J-1	3,348	Cook	Rockton	F-1	1,432	Winnebago
North Chicago	J-1	8,628	Lake	Roodhouse	C-9	2,368	Greene
North Chillicothe	E-5	1,741	Peoria	Roselle	H-2	1,038	Du Page
Northfield	J-2	1,426	Cook	Roseville	B-6	1,080	Warren
North Lake	H-2	4,361	Cook	Rosiclare	G-15	2,086	Hardin
North Pekin	E-6	1,758	Tazewell	Rossville	J-7	1,382	Vermilion
North Riverside	J-2	3,230	Cook	Round Lake Beach	H-1	1,892	Lake
Oak Forest	J-3	1,856	Cook	Round Lake Park	H-1	1,836	Lake
Oak Lawn	J-3	8,751	Cook	Roxana	D-11	1,911	Madison
Oak Park	J-2	63,529	Cook	Royalton	F-14	1,506	Franklin
Oblong	H-11	1,639	Crawford	Rushville *	C-7	2,682	Schuyler
Odin	F-12	1,341	Marion	St. Anne	J-5	1,403	Kankakee
O'Fallon	D-12	3,022	St. Clair	St. Charles	G-2	6,709	Kane
Oglesby	F-4	3,922	La Salle	St. Elmo	F-11	1,716	Fayette
Olney *	H-11	8,612	Richland	St. Francisville	J-12	1,117	Lawrence
Onarga	H-6	1,455	Iroquois	Salem *	F-12	6,159	Marion
Oregon *	E-2	3,205	Ogle	Sandoval	F-12	1,531	Marion
Oswego	G-3	1,220	Kendall	Sandwich	G-3	3,027	De Kalb
Ottawa *	F-4	16,957	La Salle	Savanna	D-2	5,058	Carroll
Palatine	H-2	4,079	Cook	Schiller Park	H-2	1,384	Cook
Palestine	J-11	1,589	Crawford	Sesser	F-13	2,086	Franklin
Pana	F-9	6,178	Christian	Shawneetown *	H-14	1,917	Gallatin
Paris *	J-9	9,460	Edgar	Shelbyville *	F-9	4,462	Shelby
Park Forest	J-3	8,130	Cook	Sheldon	J-5	1,114	Iroquois
Park Ridge	H-2	16,602	Cook	Silvis	C-3	3,055	Rock Island
Paxton *	H-6	3,795	Ford	Skokie	J-2	14,832	Cook
Pecatonica	E-1	1,438	Winnebago	South Beloit	F-1	3,221	Winnebago
Pekin *	E-6	21,858	Tazewell	South Chicago Hts.	J-3	2,129	Cook
Peoria *	E-6	111,856	Peoria	South Elgin	G-2	1,220	Kane
Peoria Heights	E-6	5,425	Peoria	South Holland	J-3	3,247	Cook
Peotone	J-4	1,395	Will	South Jacksonville	C-9	1,165	Morgan
Peru	F-4	8,653	La Salle	South Pekin	E-6	1,043	Tazewell
Petersburg *	D-8	2,325	Menard	Sparta	D-13	3,576	Randolph
Phoenix	J-3	3,606	Cook	Springfield *	E-8	81,628	Sangamon
Pinckneyville *	E-13	3,299	Perry	Spring Valley	F-4	4,916	Bureau
Pittsfield *	B-9	3,564	Pike	Staunton	D-11	4,047	Macoupin
Plainfield	H-3	1,764	Will	Steeleville	E-14	1,353	Randolph
Plano	G-3	2,154	Kendall	Steger	J-3	4,358	Will-Cook
Polo	E-2	2,242	Ogle	Sterling	D-3	12,817	Whiteside
Pontiac *	G-5	8,990	Livingston	Stickney	J-2	3,317	Cook

* County Seat

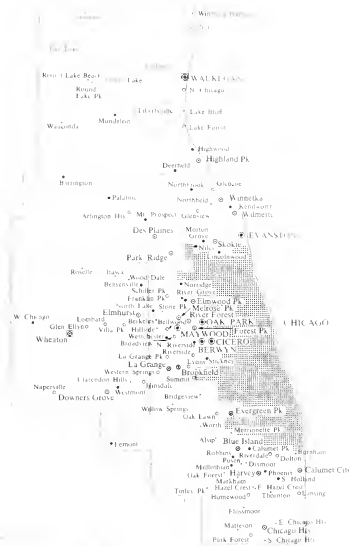
Place	Map Coordinate	Population	County
Stockton	D-1	1,445	Jo Daviess
Stone Park	J-2	1,414	Cook
Stonington	F-9	1,120	Christian
Streator	F-4	16,469	La Salle-Livingston
Sullivan *	G-9	3,470	Moultrie
Summit	J-3	8,957	Cook
Sumner	J-11	1,170	Lawrence
Swansea	D-12	1,816	St. Clair
Sycamore *	G-2	5,912	De Kalb
Taylorville *	E-9	9,188	Christian
Thornton	J-3	1,217	Cook
Tilton	J-7	1,638	Vermilion
Tinley Park	J-3	2,326	Cook
Tolono	H-8	1,065	Champaign
Toluca	F-5	1,419	Marshall
Toulon *	D-5	1,173	Stark
Tremont	E-6	1,138	Tazewell
Trenton	E-12	1,432	Clinton
Troy	D-11	1,260	Madison
Tuscola *	H-8	2,960	Douglas
Urbana *	H-7	22,834	Champaign
Vandalia *	F-11	5,471	Fayette
Venice	C-12	6,226	Madison
Vienna *	F-15	1,085	Johnson
Villa Grove	H-8	2,026	Douglas
Villa Park	H-2	8,821	Du Page
Virden	D-9	3,206	Macoupin
Virginia *	C-8	1,572	Cass
Walnut	E-3	1,093	Bureau-Washington
Wamac	F-12	1,429	Marion-Clinton
Warren	D-1	1,378	Jo Daviess
Warsaw	A-7	2,002	Hancock
Washington	E-6	4,285	Tazewell
Washington Park	D-12	5,840	St. Clair
Waterloo *	C-13	2,851	Monroe
Watseka *	J-5	4,278	Iroquois
Waukegan *	J-1	38,946	Lake
Waverly	D-9	1,330	Morgan
Wenona	F-5	1,005	Marshall
Westchester	H-2	4,308	Cook
West Chicago	H-2	3,973	Du Page
West City	F-14	1,081	Franklin
West Dundee	H-2	1,948	Kane
Western Springs	H-2	6,364	Cook
West Frankfort	F-14	11,584	Franklin
Westmont	H-3	3,402	Du Page
Westville	J-8	3,196	Vermilion
Wheaton *	H-2	11,638	Du Page
White Hall	C-9	3,082	Greene
Willow Springs	H-3	1,314	Cook
Wilmette	J-2	18,162	Cook
Wilmington	H-4	3,354	Will
Winchester *	C-9	1,591	Scott
Windsor	G-9	1,008	Shelby
Winnetka	J-2	12,105	Cook
Winthrop Harbor	J-2	1,765	Lake
Witt	F-10	1,156	Montgomery
Wood Dale	H-2	1,855	Du Page
Wood River	D-11	10,190	Madison
Woodstock *	G-1	7,192	McHenry
Worth	J-3	1,472	Cook
Wyoming	D-7	1,496	Stark
Zeigler	F-14	2,516	Franklin
Zion	J-1	8,950	Lake

County Seats with Populations Less than 1000 [illegible]

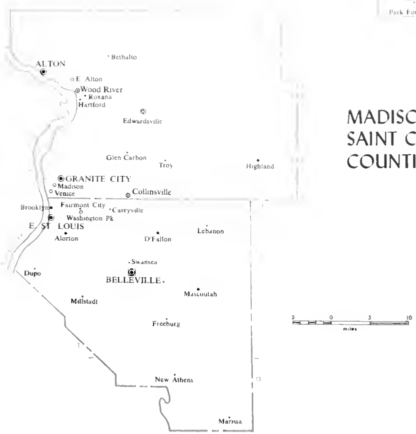
Elizabethtown *	G-15	583	Hardin
Hardin *	C-10	928	Calhoun
Hennepin *	E-4	312	Putnam
Louisville *	G-11	970	Clay
Ognawka *	B-5	929	Henderson
Tobeco *	H-10	905	Cumberland
York [illegible]	G-5	632	Edgar

* County Seat

LAKE, COOK, AND DU PAGE COUNTIES



MADISON AND SAINT CLAIR COUNTIES

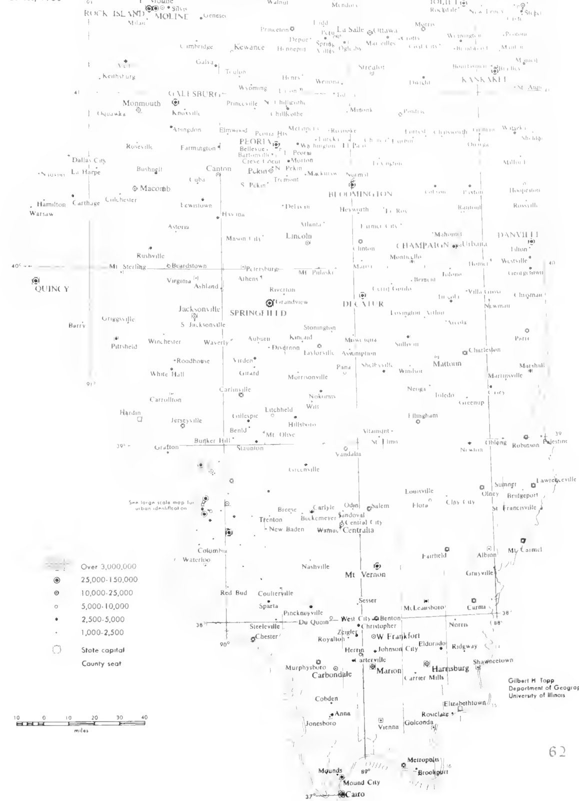


Illinois
Industrial Planning and Development

URBAN POPULATION AND LOCATION

Incorporated Cities and Towns with Populations of 1,000 or More

U S Census, 1950



Gilbert H Topp
Department of Geography
University of Illinois

Attach Supplementary Map to This Strip