

PLANNING ISSUES—MINERAL RESOURCES

Objectives

1. To protect productive and valuable sand, gravel, and dolomite resources ensuring their availability for future generations.
 2. To minimize conflicts between the mining industry and other land uses.
 3. To promote proper reclamation techniques ensuring future use of mined land for recreation, open space, agriculture, or residential development.
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Chapter Focus

Mineral resources—sand, gravel, and limestone—have historically played an important role in the development and economic growth of Kane County. Kane County is the second leading producer of sand and gravel in Illinois. Kane County’s mineral resources should be managed carefully to ensure availability for future generations. After removal of the mineral resources, it is imperative that sites be properly reclaimed to beneficial land uses.

This chapter examines:

- Economic impact of mineral resources
 - Mining and deposits
 - Mineral resource management
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Economic Impact Of Mineral Resources

The sand, gravel, and limestone deposits of Kane County are its more valuable mineral resources. Stone quarries in South Elgin and Batavia were once the chief source of limestone used locally in buildings and foundations. In the 1890’s, some county residents earned a living by simply digging a hole in the ground, removing the layers of limestone, then transporting it to a local contractor in the Fox Valley. By the early 1900’s, six street car loads of crushed limestone were transported to Chicago each day for use as packing stone in streets and roads.

Natural aggregate production is closely related to the population and levels of industrial development of a specific area. Based on 1996 data, the major aggregate-producing states in descending order were Texas, California, Ohio, Pennsylvania, and Illinois.

Kane County contributes to Illinois’ high rank in the nation in sand, gravel, and limestone production. The demand for Kane County sand, gravel, and limestone primarily used for construction aggregate, will continue to rise because of the strong housing market and continued road construction in the western suburbs of Chicago. Because of its low unit price and high transportation costs, most construction sand and gravel is not shipped more than 50 miles. Limestone is also used in chemicals, agriculture, as well as for other purposes. Kane County also has small deposits of building stone, which is used as veneer in house construction, retaining walls, rubble, and flagging. The U.S. Geological Survey predicts vast quantities of crushed stone, sand, and gravel will be mined nationwide. It is anticipated that the amount of aggregate mined in the next 25 years will equal almost all the mining in this country during the past 100 years.

Mining and Deposits

In 2000, Kane County had 26 pits and quarries, most for sand and gravel extraction, on more than 2,406 acres concentrated in south central and northeastern Kane County. This includes just over 100 acres added since 1994. Blackberry, a south central township, has more than 550 acres in mining, mostly along the Kaneville Esker, a large glacial deposit extending into the thick sand and gravel deposits in

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southeastern Kaneville Township. The other area with considerable mining and quarrying activity is the northeastern township of Dundee with 545 acres.

Areas with good potential for sand, gravel, and limestone deposits are shown by the Illinois State Geological Survey Earth Materials map of Kane County (Refer to Figure 55). Sand and gravel deposits—formed by glaciers 10,000 to 15,000 years ago—are often prominent features in the landscape, taking the form of plains, hills (kames), and ridges (eskers).

The most productive sand and gravel deposits are outwash plains 20 to 60 feet thick. The largest concentrations occur in northeastern Kane County, specifically eastern Dundee Township and parts of Elgin and northeastern St. Charles townships.

Kame and esker deposits vary widely in gravel size and composition. The Kaneville Esker, running roughly between Harter Road and Illinois Route 56, is especially rich in sand and gravel deposits. However, many of the kames and eskers in Kane County are too small or isolated for commercial extraction. Other areas with high sand and gravel mining potential are northwestern Hampshire, southern Sugar Grove, and parts of Virgil, Burlington, and Blackberry townships (Refer to Figure 55).

Limestone occurs in major deposits along the Fox River and in Big Rock Township, where limestone is within 50 feet of ground level. Other deposits with some potential for mining exist in Kaneville, Sugar Grove, Blackberry, and St. Charles townships.

Mineral Resource Management

Kane County's approach to mineral resource management is to plan and preserve, regulate and reclaim. The long-term benefits of this approach are mineral resource protection for future generations, economic development support, and desirable subsequent use reclamation.

Land use planning and geologic information are vital to the protection of mineral resources for future generations. A study by the Illinois State Geological Survey, *Geology for Planning*, has provided valuable information on the distribution and location of mineral deposits. Major potential deposits should be protected until extraction becomes feasible. Further, many deposits are groundwater recharge areas that need to be protected from contamination. Areas protected for future extraction must be far enough away from residential development and sufficiently buffered. Current pits and quarries should also have a sufficient buffer to allow for possible future expansion.

Besides planning and preservation, regulation and reclamation are important aspects of the mineral resource industry. As regulated by the Kane County Zoning Ordinance, mining is allowed as a Special Use within the "F" Farming District. A mining license, effective for five years, is required. An approved reclamation plan is required as part of the licensing process. Semi-annual on-site inspections monitor the status of the reclamation plan for that area already mined out. The license can be revoked if the reclamation progress is unsatisfactory. A performance guarantee is required to ensure that after mineral extraction is complete the land is returned to a productive and environmentally sound use instead of becoming an unsightly and useless wasteland. Achieving a balance between no regulation and too much regulation requires cooperation between the state, county, and mining operators.

The county's reclamation regulations are some of the most rigorous in the state. In the mining and preparation of sand and gravel, fine sediments coating sand and gravel need to be washed to meet industry standards. Wash water for this process

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comes from lakes, often created as a result of mineral resource extraction. Fine sediments washed from the sand and gravel accumulates at the bottom of the lake, making the lake shallower over time. These lakes can be managed to prevent sediment accumulation by avoiding lakeshore erosion and by using only a portion of the lake for washing. Berms can keep washed sediments contained in one side of the lake to improve the reclamation of the lake for future uses. After the site has been exhausted of its mining opportunities, the remaining lake provides many long-term opportunities for water sport recreation, a visual amenity for bike trails and hiking, wildlife habitat, and potentially a focal point for a new residential community (Refer to Figure 56).

Quarries often leave behind an expanse of vacant land, spring fed lakes and considerable relief, creating ideal opportunities for open space preservation and for master planned communities in the Urban and Critical Growth Corridors. The potential for the adaptive reuse of quarries in Kane County is substantial. When quarries are reclaimed, local economies are boosted as open space sites generate investment and creative mixed-use developments are successfully built to cater to the communities needs. The trend has already begun for this transformation. In Carpentersville, town homes, condos, and single-family homes are being built surrounding a 13-acre reclaimed lake, prized as the centerpiece of the development. A walking path surrounds the lake with a bridge connecting two gazebos at the lakes center. In Algonquin, houses are being built surrounding three reclaimed lakes that will provide recreational amenities to the community as a beach and launching area for canoes or paddleboats.

Policies

1. Discourage development likely to interfere with potential mineral extraction.
2. Cooperate with the Illinois State Geological Survey and other state or federal agencies to identify and more precisely map mineral deposits.
3. Allow controlled expansion of existing sand and gravel pits and dolomite quarries when consistent with adjacent land uses.
4. Encourage extraction in new mineral areas, tied to county and regional growth forecasts and market conditions.
5. Require land reclamation plans prior to extraction as well as adequate buffer zones and landscaping between mining operations and potentially incompatible land uses.
6. Encourage environmental stewardship to ensure that mineral development is environmentally sound, and protects groundwater resources, and mined areas are reclaimed to be safe, free of pollution and suitable for future uses.
7. Encourage research on improved mining and reclamation techniques.
8. Enforce the licensing and reclamation provisions of the Kane County Code.
9. Require reclamation plans to specify that lakes used for wash plant operations should be managed so that no more than 25% of sediments from wash plant operations are allowed to encroach on the remaining 75% of the lake.

Figure 55—Earth Materials Map

EARTH MATERIALS of KANE COUNTY

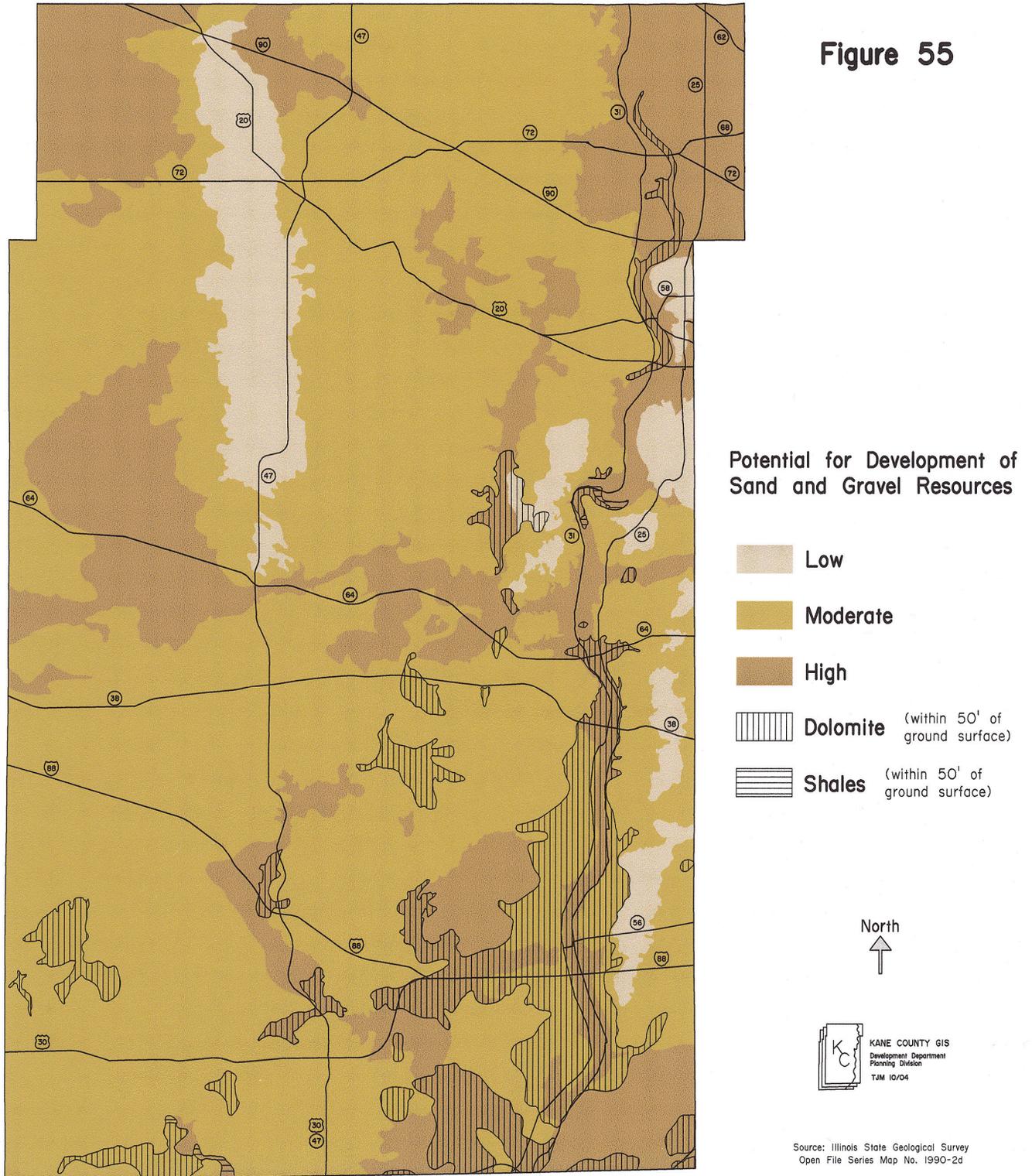


Figure 56

Big Rock Quarry

Big Rock quarry is a fine example of the use and reclamation of a stone quarry located in one of Kane County's western townships. The original quarry, 95 acres in size was approved for mining by the county in 1973. Upon depletion of the commercial quality of sand and gravel, the Meyer Material Company took over operation to produce crushed limestone. At this time it was expanded to 135 acres in size. To comply with county requirements, an expansion and reclamation plan was prepared and approved. The average depth of the limestone was 70 feet.

At the time the reclamation plan was prepared, the vegetation on the site was mixed. Some of the land was used for cultivation and pasture, while other parts were wooded. Big Rock creek traversed the site in an east-west direction. The previous mining operation left behind the quarry, spoil banks, the plant site, stockpiles and associated haul roads. Water infiltrated the quarry at a rate of 50,000 gallons per day. The water was collected by sump pump and discharged into Big Rock Creek.

The goals of the reclamation plan were as follows:

1. To produce the maximum amount of material consistent with good reclamation practices.
2. To provide for efficient and economically sound operation of the quarry.
3. To provide for the restoration of the site to a condition closely resembling the surrounding terrain.

The Kane County Forest Preserve District acquired the land in 1995 and it is now a deep-water lake with excellent fishing. It is open to the public for other recreational purposes.

Source: Meyer Material Company, 2000.