SAND AND GRAVEL AND PEAT RESOURCES IN NORTHEASTERN ILLINOIS

John M. Masters

ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 503/1978

COVER PHOTO: Northward view of an east-west gravel pit face located in northeastern Kane County, Illinois, illustrating the vertical variability in a bouldery outwash plain. In the lower portion are low angle cross-strata of poorly sorted pebble gravels. In the middle portion are well sorted, cross-bedded sands, overlain by a muddy, boulder gravel layer. In the upper portion are crudely horizontal strata of poorly sorted cobble gravels. Scale = 1 meter. Photo by James C. Cobb, October 8, 1973.

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ABSTRACT

Locations of sand and gravel and peat deposits in northeastern Illinois are described to aid the sand and gravel industry, landowners, and land-use planning agencies in the recovery of these resources. Deposits are classified into types and subtypes based on their depositional histories as interpreted from their geometry and particle-size distribution.

INTRODUCTION

Northeastern Illinois, encompassing the Chicago Metropolitan Area, requires and produces large quantities of sand and gravel for the construction industry. Because sand and gravel are relatively low-priced commodities at their point of origin, sources close to the point of use are highly desirable in order to hold down transportation and, therefore, construction costs. This report aids the sand and gravel industry and private citizens by pointing out the locations of potential deposits. It may also help land-use planning agencies to assure that potential aggregate resources will be available for construction in future years.

This study was initiated as part of the work undertaken for the Northeastern Illinois Planning Commission which was supported in part by a grant from the U.S. Environmental Protection Agency under provisions of PL 92-500. The map (Plate 1) was based on the map titled *Geologic Materials to a Depth of 20 feet in Northeastern Illinois*, of the same area (Kempton, Bogner, and Cartwright, 1977, unpublished) prepared for the Northeastern Illinois Planning Commission as part of the above investigation. The map of *Geologic Materials to a Depth of 20 feet in Northeastern Illinois* was compiled using all available types of information, including (1) previously published and unpublished reports and maps, (2) records of engineering tests, water wells, and other borings, (3) modern soil survey maps, (4) Illinois State Geological Survey field notes, including descriptions of outcrops, sand and gravel pits, and peat bogs, and (5) deductions based on knowledge of the geologic history of the area.

This report covers six counties: Cook, Du Page, Lake, Kane, McHenry, and Will (fig. 1). The report updates Illinois State Geological Survey Circular 359, *Sand and Gravel Resources of Northeastern Illinois* (Ekblaw and Lamar, 1964). Although the boundaries of areas containing sand and gravel are essentially the same as those in the 1964 map, a more detailed classification of deposits is used in this report. The types and resource potential of the sand and gravel deposits are discussed. Their distribution is shown on Plate 1. The division of the deposits into types and subtypes is based on their depositional histories as interpreted from their geometry and particle-size distribution. Large areas where sand and gravel have been excavated in the past are shown on Plate 1, but no attempt has been made to determine whether additional reserves exist on these tracts.

Peat bogs having resource potential are also shown on Plate 1. The term peat refers to brown or black, partly decomposed and disintegrated products formed by the natural accumulation of plant materials in poorly drained areas such as bogs and lakes. Peat is used primarily as a soil conditioner in order to increase organic content, to make clayey soil more friable, and to increase moisture retention.

This report does not deal with the problem of legal restrictions or current land use preventing development of areas containing sand and gravel or peat deposits. Long-term commitment of land use has been made in such cases as sites occupied by urban or suburban housing; public, commercial or industrial buildings; estates, parks, roads, or utilities. Usually land values in such cases exceed the commercial value of the underlying sand and gravel.

PREVIOUS INVESTIGATIONS

An extensive literature on the glacial geology of northeastern Illinois has been developed through more than a century of studies. This work is outlined by Ekblaw and Lamar (1964) and Kempton, Bogner, and Cartwright (1977, unpublished). Other basic reports are those of Leverett (1899), Willman and Frye (1970) and Willman

(1971). Sand and gravel reports on Kane County by Block (1960), on Lake County by Larsen (1973) and Hester and Fraser (1973), and on McHenry County by Anderson and Block (1962), Hunter (1967, unpublished), and Hackett and McComas (1969) have been drawn on freely. Information on peat deposits compiled by Hester and Lamar (1969) has been used extensively.

TYPES OF DEPOSITS

Sand and gravel deposits in northeastern Illinois were formed when several closely related pulses of the most recent continental glacier moved into Illinois from the region of the Lake Michigan Basin. As the glacier alternately pushed its way southwestward then melted back, vast amounts of debris-laden meltwater issued from the glacier. The rushing meltwater washed the sand and gravel into the present deposits. Some deposits were modified by wind action, shoreline erosion around lakes, and reworking by post-glacial streams.

The potential of a deposit as a resource depends upon such factors as: (1) thickness and variability of the overburden, (2) thickness and extent of the deposit, (3) particle-size distribution and rock types present in the deposit, (4) accessibility of the deposit to heavy-duty roads, railroads, or navigable waterways, and (5) distance of the deposit from the point of use.

The types of sand and gravel deposits identified by Roman numerals on Plate 1 are differentiated on the basis of depositional history. The amount, particle size, and quality of the gravel are also important factors in the classification. The sand and gravel industry generally differentiates sand and gravel sizes as shown on table 1. Earth scientists generally use a slightly different particle size scale known as the "Wentworth scale" (Wentworth, 1922).

The classification of the deposits mapped in Plate 1 begins with the thickest, most widespread and coarsest-grained types of sand and gravel deposits and ends with the most restricted and finest-grained deposits. The legend on Plate 1 and the following text describe each of the seven major sand and gravel classes. Subdivisions of some classes have been established to include areas that are thinner than 20 feet (6.6 meters) or have more than 10 feet (3.3 meters) of overburden. The greatest number of high quality gravel deposits (those containing at least 25 percent gravel and capable of producing large volumes of coarse and fine aggregate for use in concrete) are found in type I and II areas, with fewer such deposits in type III, IV, and V areas. No type VI or VII area is likely to contain sufficient gravel to make a high quality gravel deposit. In many places types VI and VII are valuable sources of a few grades of fine aggregate. Some types VI and VII deposits also contain sufficient amounts of sand-sized feldspar grains to be potential sources of that mineral for use in the manufacture of certain grades of glass and ceramics. In all types of gravel deposits, there are also lower quality deposits that are economically valuable for the production of many useful grades of material that meet specifications less restrictive than those for concrete aggregate.

As with the sand and gravel deposits, the location of peat bogs in northeastern Illinois is a part of the region's depositional history. The most recent continental glacier to reach Illinois remolded the landscape, leaving behind numerous poorly drained areas and depressions where swamps and lakes formed. In those areas where the input of sand, silt, and clay has been low, peat has formed by the natural accumulation of partly decomposed plant materials, gradually filling in these water bodies to their present condition. The peat bogs included on Plate 1 may constitute usable resources. As with sand and gravel, the potential is determined by volume of the deposit, quality, and distance from markets.

TABLE 1. Particle-size names in general use by the sand and gravel industry.

MATERIAL		MAXIMUM SIZE[a]		MINIMUM SIZE[b]	
		(in.)	(cm)	(in.)	(cm)
Silt and Clay (mud)		0.0029[c]	0.0074	no limit	no limit
Sand		0.187[d]	0.476	0.0029	0.0074
Gravel	Pebbles	2.5	6.4	0.187	0.476
	Cobbles	10.0	25.6	2.5	6.4
	Boulders	no limit	no limit	10.0	25.6

[a]Particles will pass through a sieve with square openings with the following side measurements.

[b]Particles will be retained on a sieve with square openings with the following side measurements.

[c]Number 200 mesh sieve.

[d]Number 4 mesh sieve.

Fig. 1. Study area.

Type I — Bouldery outwash plains

Areas designated as type I are relatively thickly bedded sheetlike deposits of coarse sand and gravel known as outwash plains, with abundant boulders and cobbles in many places. Type I deposits constitute the most valuable and productive sand and gravel deposits in northeastern Illinois. They are mainly located in a band of outwash plains that trends north-northwest to south-southeast and is up to 6 miles (9.7 kilometers) wide and 24 miles (38.6 kilometers) long, extending from T. 43N., R. 8E. in southeastern McHenry County to T. 40N., R. 9E. in northwestern Du Page County. These outwash plains are generally thickest and coarsest on their east side, where they are often more than 60 feet (19.7 meters) thick, where 6-inch (15.2-centimeter) cobbles are abundant, and, where in some areas, boulders more than 10 inches (25.4 centimeters) in diameter are common. Many areas contain more than 40 percent gravel. The deposits also vary in coarseness and thickness. Many areas on the east side are covered by more than 10 feet (3.3 meters) of silty and clayey overburden (subtype I_2 deposits). However, the sand and gravel content of this material is often high enough so that large operations can process it together with the underlying, clean outwash sand and gravel.

The portion of this huge, complex band of type I deposits, between the towns of Crystal Lake and Algonquin in McHenry County, has been studied in detail by Cobb (1974, unpublished), who described three major centers of sand and gravel deposition. These centers represent major discharge points of meltwater from the glacial front; each discharge point spread boulder-laden debris westward, resulting in the deposition of outwash fans that coalesced and built a major outwash plain. Gravel pit exposures exhibit numerous cyclical variations in particle size, with an overall coarsening upward. This is interpreted to reflect encroachment of the glacial front from the east, spreading the coarsest boulder gravel on the top of the deposit. The glacier may have overridden this portion of the outwash plain for a brief time, as indicated by thin deposits of sandy glacial till overlying portions of the outwash plain (combined type I-I_2 deposits).

Large areas of type I deposits extend north from the above area into the eastern half of McHenry County and westernmost Lake County. These thick sand and gravel deposits are commonly overlain by more than 10 feet (3.3 meters) of clayey overburden (subtype I_2 deposits). Closely associated with the entire complex of type I deposits are extensive areas along its western margin where the sand and gravel deposits are designated subtype I_1 because they are generally less than 20 feet (6.6 meters) thick and usually contain finer than boulder size material.

Type II — Cobbly outwash plains

Areas designated as type II deposits are sheetlike deposits (outwash plains) that are generally less thick and finer grained than type I deposits, with common cobbles and rare boulders. The eastern half of McHenry County and westernmost Lake County contain large areas of type II deposits as well as type I deposits. In parts of this area, type II deposits may overlie type I deposits (II/I). Type II deposits extend into north-central McHenry County where one large area has more than 10 feet (3.3 meters) of overburden (subtype II_2). Many type II deposits are dominantly coarse sand with some coarse gravel and are generally not more than 30 to 50 feet (9.8 to 16.4 meters) thick. In some areas of these deposits, cobbles more than 4 inches (10.2 centimeters) in diameter are common. These areas may average 25 percent gravel.

Similar features are found in the large type II outwash plain deposits in northwestern McHenry County (T. 44, 45, and 46N., all in R. 5E.). Drill hole data are sparse in this area; however the deposits probably average about 20 feet (6.6 meters) thick, with 25 percent gravel, becoming somewhat thicker and coarser in some areas along the east side. The thickest and coarsest known portion is in and around Sec. 2, T. 45N., R. 5E., where it is more than 60 feet (19.7 meters) thick and contains 25 to 40 percent gravel. Associated with these deposits are extensive areas designated subtype II_1, where the deposits are generally less than 20 feet (6.6 meters) thick.

An outwash plain smaller than but otherwise similar to the preceding one extends from the northwestern corner of Kane County, (T. 42N., R. 6E.) into the southwestern corner of McHenry County (T. 43N., R. 5E.). Areas on the east side of the deposit contain the thickest and coarsest sand and gravel. Another type II outwash plain lies in the southern part of Kane County (T. 38N., R. 6, 7, and 8E.) and extends into Kendall County. It also seems to be thickest and coarsest on the east side. However, thick areas of sand and gravel are present toward the western side, deeply buried under 10 feet (3.3 meters) or more of overburden (subtype II_2).

Other extensive type II outwash plain deposits occur in Du Page County. Large areas of the deposits are buried by more than 10 feet (3.3 meters) of overburden (subtype II_2), especially along the West Branch of the Du Page River and, to a lesser degree, along the East Branch of the Du Page River (Zeizel, 1962, unpublished). At lower elevations in these river valleys, the deposits lie under thin cover or at the surface and in places may be difficult to distinguish from valley train deposits (type V).

Smaller areas of subtype II_2 deposits excavated in past years are located in T. 39N., R. 11E., in Du Page County and T. 38 and 39N., R. 12E. in Cook County. These Cook County deposits are very thin and overlie dolomite bedrock that has been quarried for crushed stone for many years. Subtype II_2 deposits known as the Lemont drift are exposed in southern Cook County in T. 37N., R 11 and 12E., associated with subtype V_1 deposits in Des Plaines and Sag valleys. One pit is currently operating in these deposits and several others have done so in previous years.

Type III — Pebbly outwash plains, fans, deltas

Areas designated as type III deposits are mainly sheetlike deposits consisting of outwash plains that often grade into more elongate types of deposits. They generally contain finer sized material than do types I or II. Many are outwash fans and deltas that are smaller and more variable than the larger outwash plains. The most extensive type III deposits are in McHenry County in T. 44N., R. 6E., and in T. 43N., R. 6 and 7E., where they grade southward and westward into valley train deposits (type V). These type III deposits are mainly coarse sand with pebbles, but many contain more abundant and coarser gravel toward their eastern margins.

Many small type III deposits are outlined in Kane County in T. 38, 39, 40, 41, and 42N., all in R. 7E., and in T. 41N., R. 8E. They are generally quite variable in grain size and thickness, changing greatly over short distances. In a few places, such as the northeastern part of T. 42N., R. 7E., deposits designated subtype III_1 are generally thin (less than 20 feet [6.6 meters] thick), but contain small areas of very coarse gravel. The relatively elongate subtype III_1 deposits in T. 39, 40, and 41N., R. 6E., are almost entirely silt and sand.

Type IV — Kames, eskers

Areas designated as type IV deposits are usually in the form of kames (round hills) and eskers (ridges) but sometimes have indistinct forms that are difficult to recognize. They originated as ice contact deposits, laid down by meltwaters within, on, or immediately adjacent to the glacial ice. In the subsurface they usually cannot be distinguished from other outwash deposits. Internally they change very rapidly in grain size distribution and thickness. The largest concentration of type IV deposits is along the western edge of Lake County and east of the Fox River in McHenry County, extending south into Cook County. These deposits contain areas of abundant coarse gravel and often overlie thick units of type I and II deposits. There are several large active pits producing many grades of high quality material from this area. Many other type IV deposits extend along a north-northeast-south-southeast trend through central Kane County (T. 38, 39, 40, 41, and 42N., R. 7E.). Much sand and gravel has been produced from the Kaneville Esker at the southern end of this trend of deposits. Many similar but thinner (less than 20 feet [6.6 meters] thick) deposits, designated subtype IV_1, are also scattered along this trend.

In Du Page County, smaller east-west trending type IV deposits extend from Sec. 8, T. 40N., R. 11E., to Sec. 9, T. 40N., R. 10E. and have been utilized as sources of sand and gravel. Scattered throughout Lake, McHenry, and Kane Counties are many other type IV and subtype IV_1 deposits, some of which may contain large quantities of aggregate. However, most of them are probably too small, too thin, or too variable in overburden thickness and contain too many intermixed masses of silt and clay for commercial extraction of the sand and gravel.

Type V — Valley trains

Areas designated as type V are elongate deposits, known as valley trains, and are composed of well sorted, evenly bedded silt, sand, and sometimes gravel. They generally have less than 10 feet (3.3 meters) of overburden. In southwestern McHenry County (T. 44N., R. 5E. and adjacent areas), several outwash plains (types II and III) merge into a broad valley train (type V) in the Kishwaukee River valley. This deposit is known to contain at least 40 feet (13.1 meters) of coarse sand with some gravel. Type V deposits are common in many places along the Fox River in southeastern McHenry and eastern Kane Counties. Many of these are very thin (subtype V_1) or are dominated by clay, silt and sand, but some contain commercial-grade sand and gravel. Several abandoned glacial drainage courses west of the Fox River in Kane County contain type V deposits. Most of these are thin and fine grained (subtype V_1), but some commercial grade deposits may be present, especially along the east edge of T. 38N., R. 7E.

Type V deposits are essentially continuous in the Des Plaines River valley from the Wisconsin state line in eastern Lake County, south parallel to the Lake Michigan shore, terminating in north-central Cook County (T. 40N., R. 12E.). In the Lake County portion, large volumes of many grades of sand and gravel, usually with the exception of coarse aggregate for concrete, have been produced from this valley train over the years. Ekblaw and Lamar (1964) report that much of this production has centered around low ridges of gravel in the valley train that were bars in the glacial river. Also, the valley train was deposited on an uneven till floor, resulting in considerable variations in thickness.

In Du Page County, type V deposits are widespread along the main river valleys, especially the West Branch of the Du Page River, but also its East Branch and south of their confluence in northwestern Will County. Similar but more restricted deposits are present along the Salt Creek valley on the east side of Du Page County and extend east and north into Cook County (T. 38N., R. 12E., and T. 41N., R. 10 and 11E.). Many of these areas contain high quality sand and gravel, especially where they are associated with subtype II_2 deposits that extend into the valleys from under the gently sloping valley sides.

Further south, in western Will County, type V deposits in the Du Page River valley join others in the Des Plaines River valley, forming large areas of thick, high quality sand and gravel deposits that have been and continue to be an important source of construction aggregate. Northeast of this area in southern Cook County, the Des Plaines River

valley and the lowlands of the Sag valley contain thin but often coarse sand and gravel (subtype V_1) that was concentrated on the floor of large outlet channels from high water-levels of ancient, glacial-age lakes located in the same basin as modern Lake Michigan (Bretz, 1955).

Type VI — Beach ridges, bars, spits, deltas

Areas designated as type VI are elongate deposits usually of sand with some fine gravel related to the shoreline of Lake Michigan and its higher glacial-age predecessors. Also included are most widespread, delta or valley train-like deposits of sand that was carried down the Kankakee River valley by glacial-age floodwaters and deposited over large lowland areas that extend northwestward into southwestern Will County.

Along the Lake Michigan shoreline in northeastern Lake County is a large area of type VI deposits, consisting of well-developed, post-glacial beach ridges (Hester and Fraser, 1973). Some material was mined from these deposits in the past; however, nearly all of the area is now enclosed in a state park and conservation area. Further south in the vicinity of Chicago, coarse sand and fine gravel have been dredged from near-shore deposits on the floor of Lake Michigan, but none is being produced at the present (Willman, 1971).

In eastern Cook County many thin (less than 20 feet [6.6 meters] thick) deposits, designated subtype VI_1, were formed as long arcuate beaches, bars, and spits related to shores of ancient high-level glacial lakes. In the past, sand was taken from many small pits in these deposits, but most of the deposits have disappeared under metropolitan Chicago (Willman, 1971). However, a few deposits in the southeastern part of the county may contain sufficient sand for local use.

The type VI and subtype VI_1 deposits in southwestern Will County are widely distributed in the Kankakee River valley. These sands are suitable for some grades of fine aggregate such as blend sand, mortar sand, and fill sand.

Type VII — Sand dunes

Areas designated as type VII and subtype VII_1 (where they are less than 20 feet [6.6 meters] thick), are deposits of sand dunes. The dune sands were derived from type V and VI deposits. Although there are small dune deposits associated with some type V and most of type VI deposits, the only ones extensive and thick enough to show on the map overlie type VI deposits in the Kankakee River valley in southwestern Will County. They should be suitable for the same products as previously suggested for the type VI sand.

Feldspar, an industrial mineral used in the manufacture of various grades of glass and ceramics, could also be produced in large tonnages from these deposits, and possibly from the type VI deposits. Studies at the Illinois State Geological Survey by Willman (1942), Hunter (1965), Ehrlinger, ten Kate and Jackman (1969), and Ehrlinger and Masters (1974) have shown that the sand in the dune fields in Will County and others to the southeast in Kankakee County contain 15 to 20 percent feldspar. The iron oxide content present in most feldspar concentrate samples is largely in the form of grain coatings that can be reduced in the laboratory by acid leaching to less than 0.1 percent Fe_2O_3. This is well within the range of 0.05 to 0.3 percent maximum allowable Fe_2O_3 for feldspar used in various types of glass manufacturing (Neal, 1973).

Peat bogs

Numerous peat deposits that may constitute resources are outlined along with the sand and gravel deposits on Plate 1. These deposits are between 2 and 10 feet (0.7 to 3.3 meters) thick and cover more than 40 acres. Many smaller peat deposits exist that are not included on Plate 1 because of their small size, but some may be suitable for commercial extraction if they are more than the usual thickness or of high quality, or if they satisfy a local market.

The greatest concentration of peat deposits in northeastern Illinois is in a large area located in the western half of Lake County and the northwestern panhandle of Cook County (Hester and Lamar, 1969, and Willman, 1971). The most extensive peat deposit lies in this area. It is more than three square miles (8 square kilometers) in size, surrounds the northern half of Grass Lake, and is now within the Chain O'Lakes State Park and Conservation Area (Larsen, 1973). The thickest known deposit is also in this area at Volo Bog, now contained in a state nature preserve, where 33 feet (10.8 meters) of peat have been found (Evers, 1963, and McComas et al., 1972). This large area contains many other peat deposits (Plate 1) that have been treated in such a way that peat may still be extracted in the future. However, each one will have to be evaluated on its own characteristics since very little data on them exist.

Additional areas of peat deposits are shown on Plate 1 in Kane County, eastern McHenry County, northern Du Page County, southern Cook County, and northern Will County. The deposits in Kane and McHenry Counties probably have more resource potential than do those in the other areas. However, the local market is always an important factor to be considered. Small, very thin or apparently drained peat bogs not shown on Plate 1 may have local value as a resource, as mentioned previously. Many of these are shown on the NIPC map of *Geologic Materials to a Depth of 20 feet in Northeastern Illinois* (Kempton et al., 1977, unpublished) and Willman (1971).

If peat deposits are to be preserved as future resources or for other purposes, the deposits must remain saturated with water. If peat bogs are drained for agriculture or similar uses, the peat begins to oxidize relatively rapidly. It then becomes a silty, organic soil.

Other areas

In the remainder of northeastern Illinois, where no deposits are shown on Plate 1, there is much less chance of finding a sand and gravel deposit or peat bog than in the areas already discussed. As more subsurface data become available, areas that presently contain few control points will be subject to re-examination. Generally these areas are relatively sparsely populated. The most likely types of deposits to be found in the future are ones buried by more than 10 feet of overburden.

SAND AND GRAVEL INDUSTRY

Production

In 1975 the six counties produced 14,937,000 short tons (13,559,808 metric tons) of sand and gravel, valued at $24,224,000. This amounts to 38 percent and 29 percent, respectively, of the state's total production of 39,000,000 short tons (35,404,200 metric tons) and the total value of $83,515,000 (Samson and Dingwell, 1977). The dense population and correspondingly large amount of construction in the Chicago metropolitan area relative to the rest of the state is responsible for the large demand for natural aggregate.

Location of producers

McHenry and Kane Counties, the number one and two producers of sand and gravel in the state in 1975, each produced more than two times as much as the next highest producer in the six-county area. According to Plate 1, McHenry County contains the most extensive sand and gravel deposits, many of which extend into neighboring counties, especially to the east and south in close proximity to the Fox River valley. This area contains more large, high quality sand and gravel deposits than anywhere else in the state.

Table 2 lists, alphabetically within each of the six northeastern Illinois counties, sand and gravel pits with known locations that were active in 1974 (Masters, 1976, unpublished; Malhotra and Smith, 1976). These pits are not shown on Plate 1 because the scale of the map is too small to include them with the types of deposits. However the "Type of deposit" column on table 2 gives an impression of the types of deposits being excavated for natural aggregate. The various types of deposits are produced in the following numbers of pits: I = 26, II = 18, III = 14, IV = 17, V = 14, VI = 2, and VII = 0. This is an indication of the types of deposits that are and will continue to be most useful to sand and gravel producers.

Uses and specifications

Standard specifications for sand and gravel to be used in public road and bridge construction are issued by the Illinois Department of Transportation (1973, p. 533-555). These specifications are rigorous in terms of proper size gradations and maximum allowable amounts of deleterious materials, especially when the aggregate is to be used in concrete. Specifications for other uses—such as asphalt paving mixtures, base courses and shoulders of highways, gravel road surfacing, fill material, ballast under railroad tracks, and various miscellaneous uses—are usually less rigorous but have their own special characteristics.

PEAT INDUSTRY

In 1975 Illinois was third only to Michigan and Florida among the 22 peat producing states in the United States. Six companies produced 96,295 short tons (87,417 metric tons) of peat, valued at $1,511,401 (Samson and Dingwell, 1977) from Kane and Lake Counties in northeastern Illinois and from Whiteside County in northwestern Illinois. Companies producing peat in northeastern Illinois in 1974 are listed in table 3. A few others may excavate peat intermittently.

Also listed in table 3 are some economically important characteristics of those deposits: thickness, areal extent, ash content, pH, and plant material. Data on thickness and extent are needed to calculate reserves. The ash content is a measure of sand, silt, and clay, together with some mineral precipitates and shell material in the peat deposit. The pH is important since plants sometimes require a certain range of soil acidity to prosper. Peat of suitable quality for greenhouse and home garden purposes should be free from hard lumps and excessive salt or alkali, even in texture, fibrous and free from dirt (California Div. Mines, 1956).

TABLE 2. Locations and types of deposits of sand and gravel pits in northeastern Illinois

Company name	Map location[a] Qtr.	Sec.	T.	R.	Type of deposit[b]	Nearby town[c]	Pit name	Rated capacity[de] (tons/day)	Plant no.[ef]
COOK COUNTY									
Accorsi Sand & Gravel	SW	32	41N	9E	I	Bartlett 1.5W	Sand & Gravel	2000	1
Accorsi Sand & Gravel	SE	29	41N	9E	I	Spaulding .25E	Sand & Gravel	–	2
Accorsi Sand & Gravel	SW	20	41N	9E	I	Elgin 1E	Sand & Gravel	1600	3
DU PAGE COUNTY									
Ajax Sand & Gravel	NE	14	40N	10E	IV	Bloomingdale .5E	Ajax	200	7
Elmhurst-Chicago Stn.	SE	35	39N	9E	V,II_2	Warrenville W	Warrenville	600	1
Elmhurst-Chicago Stn.	NE	5	40N	9E	I,I_2	Bartlett 2SW	Bartlett	600	2
River Dell Gravel Co.	NW	23	40N	9E	I,V	Gloverdale 3W	------	1000	5
Sirek, Ted	NE	11	38N	9E	V	Naperville .5N	Erb	--	9
KANE COUNTY									
Bakley Const. Co.	NW	1	42N	7E	III_1	Huntley 3SE	Hoffman	1000	--
Beverly Sand & Gravel	SE	36	42N	8E	I	Elgin .5NE	Beverly	1500	22
Chicago Gravel Co.	NE	25	41N	8E	I, I_1	Elgin 1S	Hammond	2500	8
Elmhurst-Chicago Stn.	NE	25	39N	6E	III, III_1	Kaneville 2E	Kaneville	600	29
Feltes Sand & Gravel	NE	8	38N	7E	IV_1, III	Surgar Grove 2N	Divicki	1400	13
Feltes Sand & Gravel	SE	29	38N	8E	II	Aurora SW	Jericho	1400	14
Feltes Sand & Gravel	SW	30	39N	7E	IV, III	Kaneville 3E	Nichols	1400	15
Feltes Sand & Gravel	SE	29	38N	8E	II	Aurora SW	Fox Valley	1400	16
Feltes Sand & Gravel	NE	6	38N	7E	IV_1, III	Sugar Grove 3.5NW	Marker	1400	23
Feltes Sand & Gravel	SW	5	38N	7E	IV_1, III	Sugar Grove 2NW	Probst	1400	24
Feltes Sand & Gravel	NW	20	39N	7E	III, III_1	Elburn 2.5S	Meredith	1400	27
Kane Sand & Gravel	SW	5	38N	7E	IV_1, III	Sugar Grove 2NW	Zwart	400	5
Material Service Corp.	NW	25	42N	8E	I	Dundee 1E	Dundee	3200	18
Meyer Mat. Co.	SW	2	42N	8E	I, I_2	Carpentersville 1N	Dundee	2500	10
Meyer Mat. Co.	SE	31	39N	7E	IV, III	Sugar Grove 3NW	Kuggler	1400	11
Meyer Mat. Co.	SW	36	42N	8E	I	Elgin 1N	McGraw	4000	31
Road Materials Corp.	SE	24	42N	8E	I	Dundee E	Dundee	5000	19
Road Materials Corp.	NW	35	41N	8E	I	NW Part of S. Elgin	Elgin	2800	20
Schneider, Edward Excv.	SE	28	42N	8E	I	South Elgin	Schuetz	3000	30
Schneider, Edward Excv.	NW	8	41N	8E	IV	Elgin 3.5W	Highland Ave.	1000	1
Sirek, Ted Excv. Inc.	NE	23	39N	7E	IV	Batavia 3W	Bald Mound	2000	28
Steffan Bros. Corp.	NE	15	42N	8E	I_1, I	Carpentersville	Steffan Bros.	1000	21
Steffan Bros. Corp.	NW	1	42N	7E	III_1	Huntley 3SE	--------	---	32
Van Acker Sand & Gravel	SW	14	40N	8E	I_1	St. Charles 2N	--------	300	6
Vulcan Mat. Co.	NW	2	42N	8E	I, I_2	Algonquin 2N	Algonquin	3000	9
LAKE COUNTY									
Economy Sand & Gravel	NE	3	45N	11E	V	Wadsworth 1S	--------	---	11
Gurnee Sand & Gravel	NW	14	45N	11E	V	Gurnee .25NW	--------	1500	5
Lake Co. Grading Co.	NE	33	45N	11E	V	Libertyville 3N	Lake Co.	1500	7
Peterson Sand & Gravel	NW	9	44N	11E	V	Libertyville 1N	Peterson	2000	4
Thelen Sand & Gravel	SW	9	46N	9E	IV, II	Antioch 5W	Barthel	6000	1
Thelen Sand & Gravel	NW	9	46N	9E	IV, II	Antioch 5W	Fox	2500	2
MCHENRY COUNTY									
Bakley Const. Co.	NW	23	44N	7E	IV	Crystal Lake 2.5NW	Woodstock	1000	27
Bakley Const. Co.	SE	4	43N	7E	III	Huntley 4N	Rt. 47	1000	29
D & Z Sand & Gravel	SW	35	44N	6E	III_1	Union 1.5E	--------	1350	18

(continued on next page)

TABLE 2. concluded

Company name	Map location[a] Qtr.	Sec.	T.	R.	Type of deposit[b]	Nearby town[c]	Pit name	Rated capacity[de] (tons/day)	Plant no.[ef]
Fram Materials	SW	8	44N	9E	IV, II	Island Lake 1.5NW	Fram	2000	22
Graver Sand & Gravel	NE	11	44N	6E	III	Woodstock 1W	--------	1000	21
Griebel Sand & Gravel	SW	11	43N	5E	II	Marengo 2.5S	North	1000	4
Griebel Sand & Gravel	SE	14	43N	5E	II	Marengo 4S	Griebel	500	3
Harvard Ready Mix Inc.	SE	2	45N	5E	II	Harvard .5S	Old Peters	5000	8
Ill. Mining & Mfg. Co.	NE	24	44N	8E	II	Burton Bridge 1W	---------	1200	26
Material Service Corp.	SW	22	43N	8E	I	Algonquin 1N	Algonquin	3800	12
McHenry Sand & Gravel	SE	31	45N	9E	IV, II, I_2	Lilymoor W	Possum Run	1000	0
McHenry Sand & Gravel	NW	28	45N	8E	I, I_2	McHenry 2.5W	West	500	11
Meyer Mat. Co.	SE	28	43N	8E	I	Algonquin NW	Algonquin	3000	7
Morris, Wm. Co.	NW	31	46N	6E	II, II_1	Harvard 3E	Andersen	1600	24
Morris, Wm. Co.	NW	26	45N	5E	II	Harvard 4.5S	Jacobs	1600	25
Peterson Sand & Gravel	NE	31	45N	9E	IV, II, I_2	Lilymoor NW	Freund	2000	9
Pistakee Sand & Gravel	SE	20	45N	9E	II, I_2	Fox Lake 2SW	Pistakee	2500	19
O'Leary Bros. Const. Co.	SW	15	44N	7E	I, IV	Woodstock 2SE	Reed	1000	13
O'Leary Bros. Const. Co.	NE	11	44N	6E	III	Woodstock 1.5W	Fox Farm	500	14
Road Materials Corp.	NE	25	44N	8E	IV, II	Island Lake 3W	Island Lake	2500	15
Tonyan Bros. Inc.	NE	20	45N	9E	II, I_2	Lakemoor 2N	Big Hollow	700	16
Vulcan Mat. Co.	NW	9	43N	8E	I	Crystal Lake .5SE	Crystal Lake	7000	6
Vulcan Mat. Co.	NE	11	43N	8E	I, I_2	Cary 1NW	Cary	3000	17
WILL COUNTY									
Avery Gravel Co.	SW	13	36N	9E	V	Plainfield 2SE	Fouser	2000	19
Avery Gravel Co.	NW	23	37N	9E	V, V_1	Plainfield 4N	Avery	2500	21
Bobeck, George Sd. & Gr.	NE	18	32N	9E	VI	Braidwood .5S	Braidwood	300	2
Boughton Mat. Inc.	SW	23	37N	9E	V, V_1	Plainfield 2N	Patterson	1200	18
Chicago Gravel Co.	NE	14	36N	9E	V, V_1	Plainfield 1SE	Plainfield	2500	3
Elmhurst-Chicago Stn.	SW	3	37N	10E	V, V_1	Romeoville 4.5N	Barbers Corners	2500	5
Elmhurst-Chicago Stn.	NW	1	36N	9E	V	Plainfield 2NE	Plainfield	1600	14
Fatlan Bros. Excv.	SW	17	32N	9E	VI	Braidwood 1S	Blend Sand	500	15
Koerner Inc.	SW	8	34N	9E	V	Channahon 1NW	Gaskill	600	10
Tri-County Land Corp.	SE	25	37N	10E	II_2	Romeoville 2NE	Lemont	1000	20

[a]Map location: Abbreviations are for Quarter, Section, Township, Range, North, South, East, West. Locations are given to the nearest quarter section.

[b]Type of deposit: Refers to the sand and gravel classification system used in the text and on Plate 1.

[c]Nearby town: Gives the distance in miles and direction from the town to the pit.

[d]Rated capacity does not indicate actual production.

[e]Source of Rated capacities and Plant numbers is Illinois Department of Transportation Division of Highways Bulletin No. 23 (1973; 1976, unpublished).

[f]Plant no.: Plant identification part of a six-digit source number assigned permanently to the location by the Illinois Department of Transportation.

TABLE 3. Peat producers in northeastern Illinois

Company name	Map locations					Characteristics of deposits				
	Qtr.	Qtr.	Sec.	T.	R.	Thickness[a] (feet)	Areal extent (acres)	Plant material[a]	% Ash content[a]	pH[a]
KANE COUNTY										
Batavia Soil Builders	SW	SW	19	39N	8E	4	± 100	sphagnum moss and reed-sedge	7.3	6.6
LAKE COUNTY										
Grayslake Peat	SE	NE	2	44N	10E	14 max.	± 80	sedge peat	10.2	5.6
Grenus, Joseph W.	SE	SW	20	46N	10E	12 max.	± 40	sedge peat	8-13	5.9
Root's Peat Farm	SE	SE	35	46N	10E	6	± 20	sedge peat	21-23	5.8-6.1

[a]Source of data: Hester & Lamar (1969); the ash and pH analyses do not necessarily typify the entire deposits from which they came.

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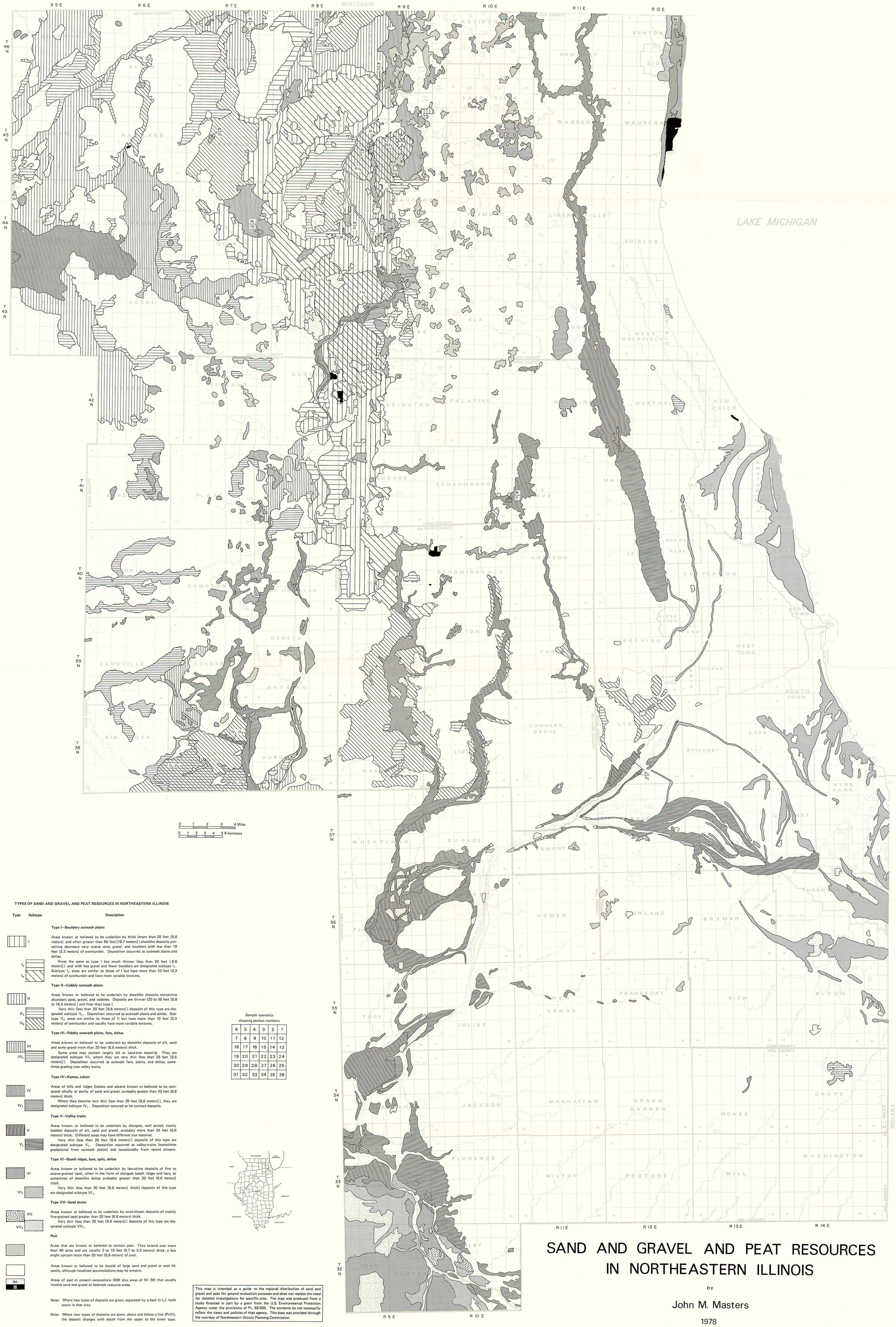

SAND AND GRAVEL AND PEAT RESOURCES IN NORTHEASTERN ILLINOIS

by

John M. Masters

1978

TYPES OF SAND AND GRAVEL AND PEAT RESOURCES IN NORTHEASTERN ILLINOIS

Type	Subtype	Description
		Type I—Bouldery outwash plains
I		Areas known or believed to be underlain by thick (more than 20 feet [6.6 meters] and often greater than 60 feet [19.7 meters]) sheetlike deposits containing abundant very coarse sand, gravel, and boulders with less than 10 feet (3.3 meters) of overburden. Deposition occurred as outwash plains and deltas.
	I_1	Areas the same as type I but much thinner (less than 20 feet [6.6 meters]) and with less gravel and fewer boulders are designated subtype I_1.
	I_2	Subtype I_2 areas are similar to those of I but have more than 10 feet (3.3 meters) of overburden and have more variable textures.
		Type II—Cobbly outwash plains
II		Areas known or believed to be underlain by sheetlike deposits containing abundant sand, gravel, and cobbles. Deposits are thinner (20 to 50 feet [6.6 to 16.4 meters]) and finer than type I.
	II_1	Very thin (less than 20 feet [6.6 meters]) deposits of this type are designated subtype II_1. Deposition occurred as outwash plains and deltas. Subtype II_2 areas are similar to those of II but have more than 10 feet (3.3 meters) of overburden and usually have more variable textures.
	II_2	
		Type III—Pebbly outwash plains, fans, deltas
III		Areas known or believed to be underlain by sheetlike deposits of silt, sand and some gravel more than 20 feet (6.6 meters) thick.
	III_1	Some areas may contain largely silt or sand-size material. They are designated subtype III_1 where they are very thin (less than 20 feet [6.6 meters]). Deposition occurred as outwash fans, plains, and deltas, sometimes grading into valley trains.
		Type IV—Kames, eskers
IV		Areas of hills and ridges (kames and eskers) known or believed to be composed wholly or partly of sand and gravel, probably greater than 20 feet (6.6 meters) thick.
	IV_1	Where they become very thin (less than 20 feet [6.6 meters]), they are designated subtype IV_1. Deposition occured as ice contact deposits.
		Type V—Valley trains
V		Areas known or believed to be underlain by elongate, well sorted, evenly bedded deposits of silt, sand and gravel, probably more than 20 feet (6.6 meters) thick. Different areas may have different size material.
	V_1	Very thin (less than 20 feet [6.6 meters]) deposits of this type are designated subtype V_1. Deposition occurred as valley-trains (sometimes gradational from outwash plains) and occasionally from recent streams.
		Type VI—Beach ridges, bars, spits, deltas
VI		Areas known or believed to be underlain by lacustrine deposits of fine to coarse-grained sand, often in the form of elongate beach ridges and bars, or sometimes of sheetlike deltas probably greater than 20 feet (6.6 meters) thick.
	VI_1	Very thin (less than 20 feet [6.6 meters] thick) deposits of this type are designated subtype VI_1.
		Type VII—Sand dunes
VII		Areas known or believed to be underlain by wind-blown deposits of mainly fine-grained sand greater than 20 feet (6.6 meters) thick.
	VII_1	Very thin (less than 20 feet [6.6 meters]) deposits of this type are designated subtype VII_1.
		Peat
		Areas that are known or believed to contain peat. They extend over more than 40 acres and are usually 2 to 10 feet (0.7 to 3.3 meters) thick; a few might contain more than 20 feet (6.6 meters) of peat.
		Areas known or believed to be devoid of large sand and gravel or peat deposits, although localized accumulations may be present.
SM		Areas of past or present excavations (SM) plus areas of fill (M) that usually involve sand and gravel or bedrock resource areas.

Note: Where two types of deposits are given, separated by a dash (I-I_2), both occur in that area.

Note: Where two types of deposits are given, above and below a line (Pt/II), the deposit changes with depth from the upper to the lower type.

Sample township showing section numbers

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

This map is intended as a guide to the regional distribution of sand and gravel and peat for general evaluation purposes and does not replace the need for detailed investigations for specific sites. The map was produced from a study financed in part by a grant from the U.S. Environmental Protection Agency under the provisions of P.L. 92-500. The contents do not necessarily reflect the views and policies of that agency. This base was provided through the courtesy of Northeastern Illinois Planning Commission.