

**SAND AND GRAVEL RESOURCES  
OF MEDINA COUNTY, OHIO**  
by Michele L. Risser  
1981

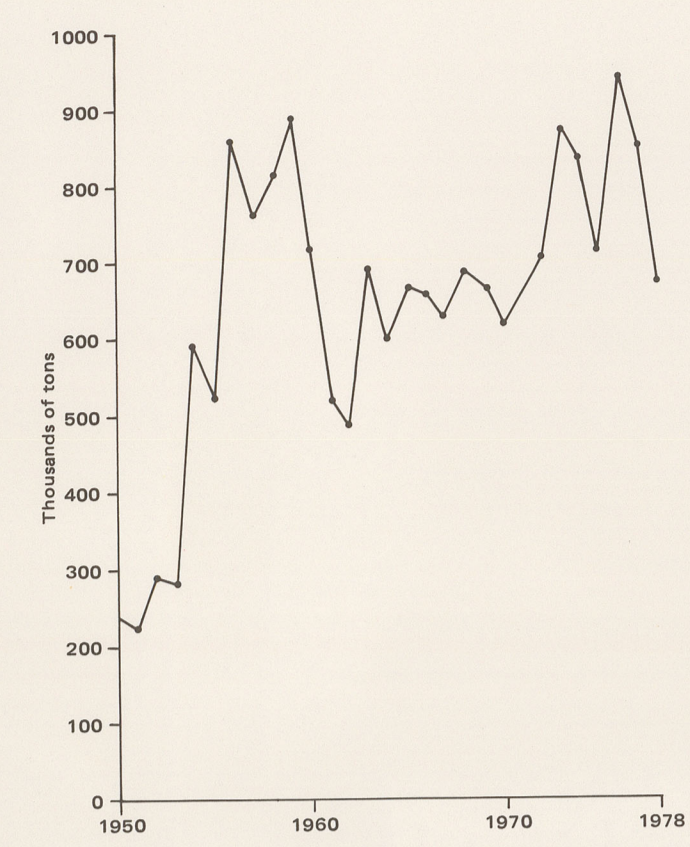
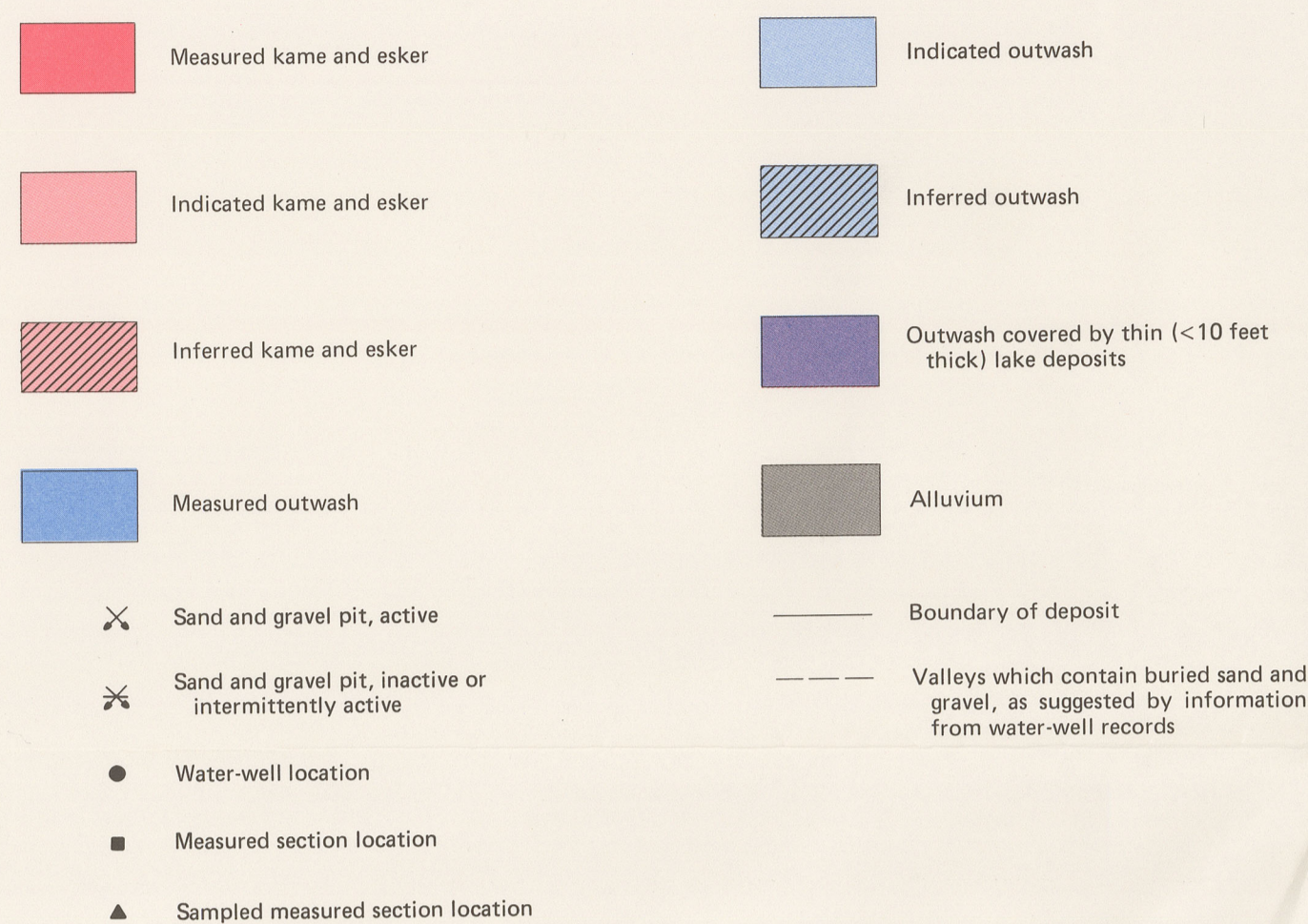


FIGURE 1.—Medina County sand and gravel production for the years 1950 to 1978 (Ohio Division of Mines, 1981-1979).

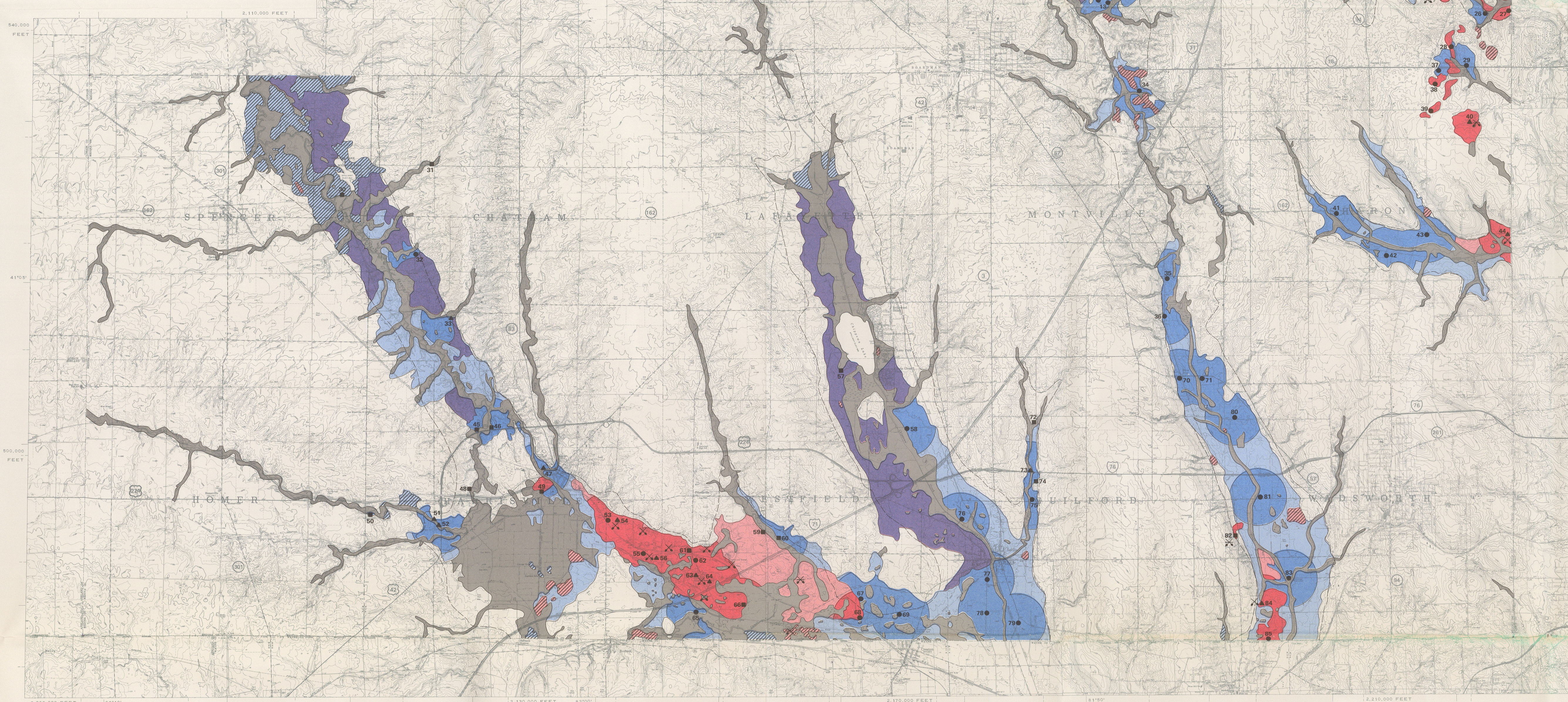


TABLE 1.—Sand and gravel resources, Medina County<sup>1</sup>

Township	Kames and eskers				Outwash				Alluvium (tons, assuming average thickness of 10 feet)
	Measured (tons)	Inferred (tons)	Measured (tons)	Inferred (tons)	Measured (tons)	Inferred (tons)	Measured (tons)	Inferred (tons)	
Brunswick Hills	11,633,800	24,393,600	71,900	348,800	8,237,900	17,975,500	348,800	8,237,900	17,975,500
Chatham	1,840,000	3,141,200	1,251,000	16,195,600	227,000	10,911,300	1,251,000	227,000	10,911,300
Guilford	29,936,800	1,840,000	3,141,200	16,195,600	227,000	10,911,300	1,251,000	227,000	10,911,300
Harrisville	1,840,000	3,141,200	1,251,000	16,195,600	227,000	10,911,300	1,251,000	227,000	10,911,300
Westfield	46,302,400	63,031,300	2,210,700	115,653,200	69,776,600	9,402,600	2,210,700	115,653,200	69,776,600
<b>Total</b>	<b>219,968,800</b>	<b>84,342,200</b>	<b>28,299,800</b>	<b>883,863,100</b>	<b>509,440,000</b>	<b>44,376,900</b>	<b>343,122,000</b>		

TABLE 2.—Results of sieve analysis

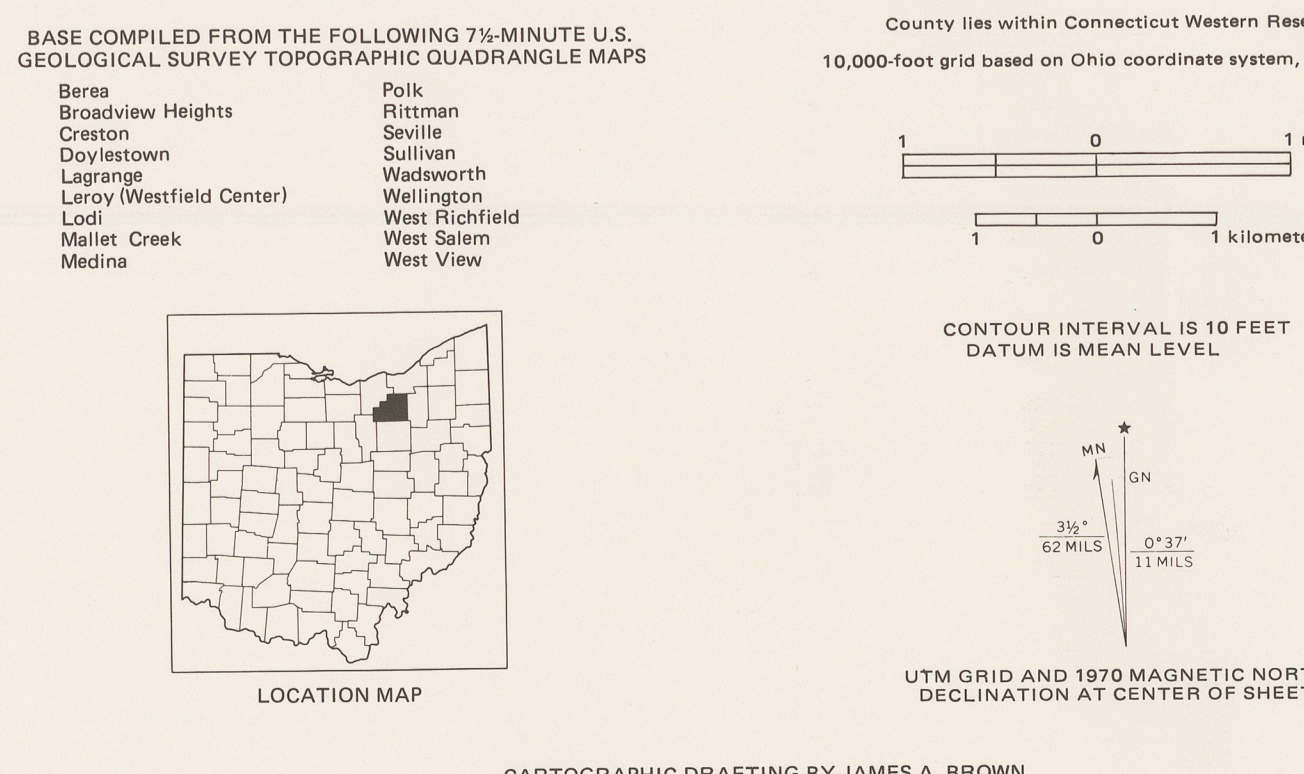
Sample no.	Wentworth grain-size scale <sup>1</sup>	% retained										Total
		1/16" (3.18 mm)	1/8" (3.18 mm)	3/16" (4.75 mm)	1/4" (6.35 mm)	3/8" (9.52 mm)	1/2" (12.70 mm)	3/4" (19.05 mm)	1" (25.40 mm)	1 1/2" (38.10 mm)	2" (50.80 mm)	
34	11.8	75.2	8.6	27.4	16.5	8.0	4.2	99.9	222	100.0		
33	14.0	37.1	9.6	24.1	14.1	10.4	4.8	100.1	28	100.0		
40	14.0	66.4	5.0	10.5	10.9	8.1	2.3	100.1	102	100.2		
47	11.8	47.7	5.6	14.2	16.0	8.7	99.8	99.8	100	100.0		
51	22.0	41.3	8.4	14.9	5.6	4.8	5.1	100.1	54	100.0		
54	5.0	53.8	7.8	19.5	8.2	4.1	1.8	100.0	101	100.1		
56	11.8	37.7	5.2	11.1	11.1	11.1	1.7	100.1	98	100.0		
56a	11.8	8.6	5.2	6.4	18.9	68.9	6.6	100.0	60	100.0		
63	8.6	66.8	7.2	13.4	2.4	1.3	0.8	100.0	92.9	99.9		
64	8.6	0.8	0.4	4.1	20.1	46.1	28.6	100.1	101	100.1		
71	14.0	4.6	1.2	11.2	4.4	1.7	1.7	100.1	100.1	100.1		
82	8.6	28.4	6.7	14.0	8.2	17.4	24.4	100.1	100.1	100.1		
84	11.8	16.2	10.7	16.0	14.8	8.4	3.6	99.8	99.8	99.8		

TABLE 3.—Pebble counts

Sample no.	Lithology			Deterioration			Total
	Count	%	Count	Count	%	Count	
34	4	6.6	36	99.0	12	10.7	61
33	11	7.6	46	31.5	84	26.7	141
40	47	12.8	83	28.4	87	29.0	217
47	17	11.7	94	33.3	17	5.8	128
51	11	8.0	34	21.1	16	9.9	61
54	13	8.1	34	21.1	16	9.9	63
56	18	11.1	94	33.3	17	5.8	129
56a	15	8.6	89	50.9	36	20.6	140
63	15	8.6	89	50.9	36	20.6	140
64	16	25.2	19	31.2	17	27.9	52
71	2	1.5	10	7.0	22	16.5	34
82	3	2.2	27	20.0	43	41.8	73
84	3	2.2	27	20.0	43	41.8	73

TABLE 4.—Pebble counts

Sample no.	Lithology			Deterioration			Total
	Count	%	Count	Count	%	Count	
34	4	6.6	36	99.0	12	10.7	61
33	11	7.6	46	31.5	84	26.7	141
40	47	12.8	83	28.4	87	29.0	217
47	17	11.7	94	33.3	17	5.8	128
51	11	8.0	34	21.1	16	9.9	61
54	13	8.1	34	21.1	16	9.9	63
56	18	11.1	94	33.3	17	5.8	129
56a	15	8.6	89	50.9	36	20.6	140
63	15	8.6	89	50.9	36	20.6	140
64	16	25.2	19	31.2	17	27.9	52
71	2	1.5	10	7.0	22	16.5	34
82	3	2.2	27	20.0	43	41.8	73
84	3	2.2	27	20.0	43	41.8	73



CARTOGRAPHIC DRAFTING BY JAMES A. BROWN

**ABSTRACT**

Of the approximately 2 billion tons of sand and gravel resources in Medina County, Ohio, the estimated amount of sand and gravel resources is 883,863,100 tons. The estimated amount of sand and gravel resources is 883,863,100 tons. The estimated amount of sand and gravel resources is 883,863,100 tons.

**INTRODUCTION**

Sand and gravel are used primarily in the construction and paving industries. A principal use is as an aggregate for portland cement. Although sand and gravel are very important raw materials, they are also a low-value, over-volume commodity, and shipping costs limit the distance over which this material can economically be transported. Therefore, demand for sand and gravel exists, it is economically advantageous to utilize local sand and gravel deposits.

**Geologic Occurrence**

Medina County was overridden by the Killebuck sublobe of the Wisconsin glacial advance and is covered predominantly by glacial deposits composed of an unsorted unbedded mixture of clay and silt with varying amounts of sand and coarser material; this mixture is termed till. In some areas of the county, materials released from glacial ice were reworked by meltwater and deposited as outwash, kames, and eskers; these deposits constitute Medina County's presently extractable sand and gravel resources.

**Resources**

The accompanying map depicts the distribution of sand and gravel deposits in Medina County and categorizes them according to glacial origin. Data were collected by field examination of deposits and geologic interpretation of information from water-well records, aerial photographs, soil maps, and topographic maps. Sand and gravel resources are not included in resource calculations because of a lack of quantitative information to define these resources. Sand and gravel in alluvial deposits, although not subdivided into resource categories, are assigned a thickness, and tonnage estimates are presented. Sand and gravel in kames, eskers, and outwash are divided, depending on the information available, into measured, indicated, and inferred resource categories.

**Measures**

Measured resources include all sand and gravel within a specific deposit that is within a 1/4-mile radius of a control point; control points are sites where the thickness of the deposit is known, and may be either locations where field measurements were taken or sites where water wells were drilled into the deposit.

**Indicated Resources**

Indicated resources are defined as sand and gravel associated and contiguous with a measured resource but lying more than 1/4 mile from a control point. Indicated resource units are assumed to have thicknesses equivalent to contiguous measured deposits. Where an indicated unit is bounded by more than one measured unit, the thickness of the measured units are averaged to approximate the thickness of the indicated resource.

**Inferred Resources**

Inferred resources are those sand and gravel deposits interpreted to exist on the basis of air-photo interpretation of soils data, but which are not contiguous with a measured deposit. Thickness of inferred units are estimated from the relief shown on topographic maps.

**Alluvium**

Alluvium, recent water-laid sediment, is found along all major streams, on floodplains, and in kettle holes throughout Medina County. Alluvium is dominantly silt and clay with some organic material; however, in many areas alluvium may contain lenses or layers of sand and gravel eroded from surrounding glacial deposits or may occur outwash/kame sand and gravel at relatively shallow depths. In this report, only that alluvium which is interpreted to contain or overlie sand and gravel is shown on the map.

**Measures**

The volume of sand and gravel in Medina County was determined by planimetry the area of each deposit as mapped on 1:24,000 topographic maps and then multiplying the surface area (in acres) by the thickness (in feet) of the particular deposit. It should be noted that the thickness of sand and gravel used in the tonnage calculation is generally a minimum value; water wells many times do not penetrate an entire sand and gravel unit, and field exposures are quite limited in vertical extent. Alluvium was arbitrarily assigned a uniform aggregate thickness of 10 feet.

**Tonnage**

Tonnage for the various resource categories were then computed by multiplying the volume of sand and gravel (in acre-feet) by a conversion factor of 2,178 tons per acre-foot assuming a density of 100 pounds per cubic foot of dry sand and gravel; table 1 lists calculated sand and gravel tonnages for each resource classification. An estimated 2 billion tons of sand and gravel exist in Medina County. It should be noted that the tonnages shown in table 1 represent approximations of the amount of sand and gravel in the ground and are not necessarily equivalent to the amount that could be extracted by mining. Additionally, reported tonnages do not reflect depletion of sand and gravel through prior mining, although production from 1950 through 1978 would only amount to a 0.92 percent decrease in the total estimated resource.

**Analysis of Materials**

During field reconnaissance in Medina County, 10 to 15 pounds of aggregate were collected at each suitable exposure (pits, roadcuts, excavations) for laboratory analysis of size gradation and lithologic characteristics. Generally, one channel sample containing proportionate amounts of the material exposed was collected at each sampling location. At sites 56 and 64, however, two samples were taken at each site.

**Acknowledgments**

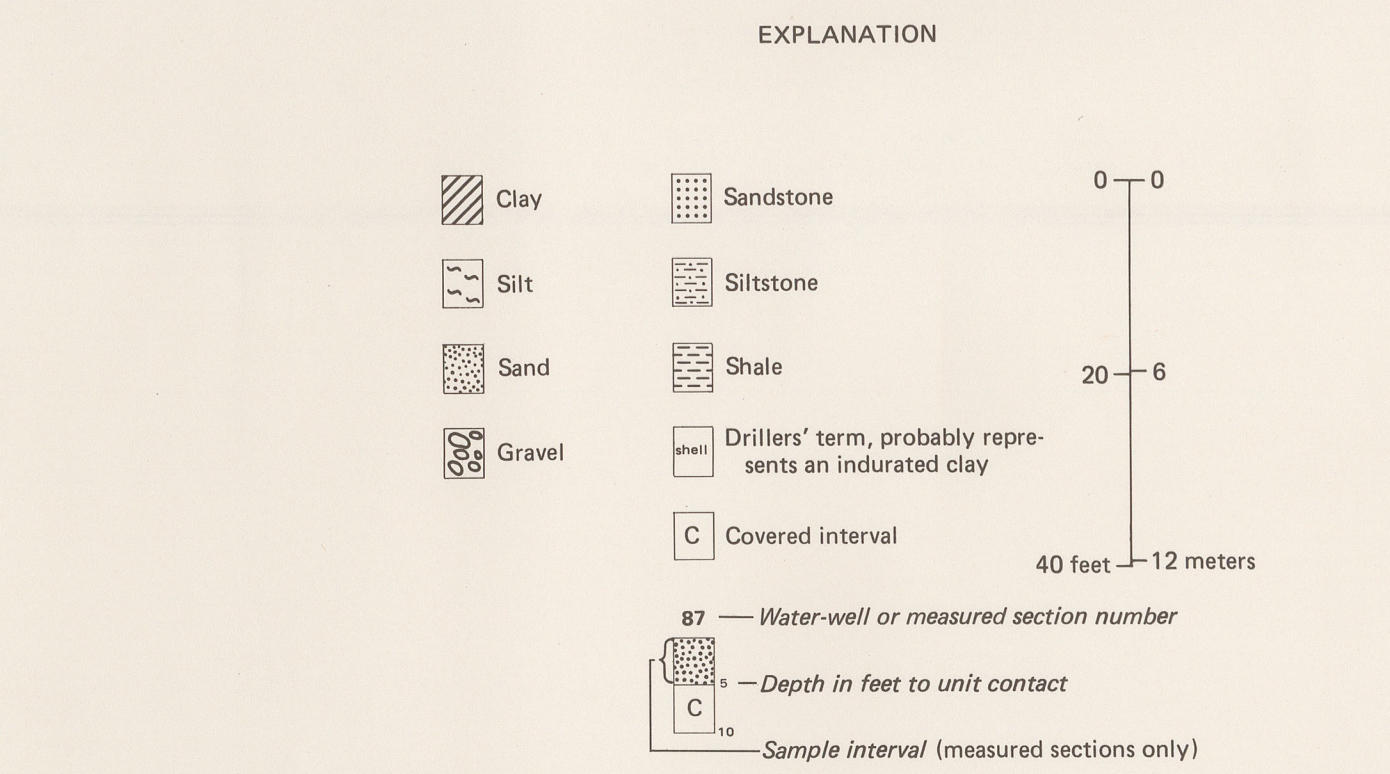
Dennis N. Hull assisted in the field and laboratory. Thanks are extended to the Medina County sand and gravel contractors, who were cooperative and helpful throughout this study.

**References Cited**

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**Conclusion**

This study in Medina County delineates various types of glacial deposits which contain sand and gravel and estimates the amounts of aggregate resources within these deposits. Although almost all sand and gravel production in Medina County has come from kames, table 1 shows that outwash deposits have the greater potential for future exploitation. Information of the nature presented in this report should be considered as a guide for further, more detailed work in specific areas.



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