

**SAND AND GRAVEL RESOURCES OF CAROLINE COUNTY**

**Introduction**

This map shows past and present mining operations and areas of potential mineral resources in Caroline County. Sand and gravel are the county's only mineral resources. Because the county is located at a considerable distance from the major population centers, most of the material is used locally. The gravels of the Eastern Shore counties tend to be finer grained than those west of Chesapeake Bay. Most pits in Caroline County contain some gravel, but the material is usually sold as bankrun.

The sand and gravel industry has grown from three operators in 1966 to eight in 1989. Production from Caroline County in 1988 was 32,500 tons.

Approximately 84 acres have been disturbed by mining since the Surface Mining act of 1975, of which about 15% have been reclaimed. The following chart gives a summary of the disturbed land in 1989:

Inactive and Abandoned Acreage	Reclaimed Acreage	Working Acreage	Total Acreage
40	13	71	124

Acreage data were compiled from surface-mining permits, field investigations, aerial photographs, and information furnished by various sand and gravel operators. Numerous small pits, some not found and some obliterated by time, are not reflected in these figures.

**Geology**

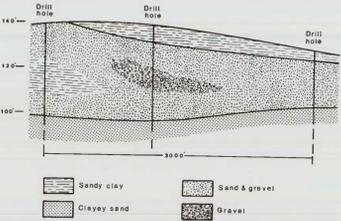
Sand and gravel deposits can occur almost anywhere in Caroline County and are represented by three stratigraphic units. In decreasing order of importance, these are the Pensauken Formation (Upper Miocene), which covers most of the county; the Kent Island Formation (Pleistocene), which straddles the Choptank River and Talbot Creek; and the Parsonsburg Sand (Pleistocene), a sand unit found principally along the east side of Marshyhope Creek. The Pensauken and the Kent Island Formations are usually in excess of 20 feet thick, but the Parsonsburg Sand is normally thinner.

The Pensauken and the Kent Island are shown on this map as a single unit covering almost the entire county except for areas of marsh and floodplain immediately adjacent to streams and rivers; the Parsonsburg Sand is depicted by the screened, or shaded, area along the east side of Marshyhope Creek in the southeast corner of the county.

These formations are not everywhere suitable for aggregate or fill. The quality of the material is variable and its use is often determined by its location and by the particular specifications of the job for which it is needed.

During the course of this investigation, 21 exposures and 21 drill hole logs were examined. Using sand and gravel thickness from these sources, an attempt was made to delineate those areas in which economic sand and gravel deposits are most likely to occur, but deposits tend to be site specific and no continuity could be established except that the Pensauken Formation nearly everywhere contains some gravel. No attempt was made to examine quality or overburden thickness. The information on this map should be used with great caution because sand and gravel deposits commonly change in thickness and composition over short distances, and in some cases location is the determining factor as to whether a particular deposit can be used. Specific site investigations must be made before any actual reserve estimates or economic projections can be made.

The following cross section from a site west of Leonardtown, Maryland serves to illustrate both the lateral and vertical facies changes that can occur over relatively short distances.



**Resource Pre-emption**

Other factors not considered here influence economic viability of sand and gravel operations in certain areas. Important among these are both the proximity to and pre-emption by urban development.

**SELECTED REFERENCES**

Bachman, L. J. and Wilson, J. M., 1984, The Columbia aquifer of the Eastern Shore of Maryland: Maryland Geological Survey Rept. of Invest. No. 40, 144 p.

Cleaves, Emery T. et al., 1987, Quaternary geologic map of the Chesapeake Bay 4" x 6" quadrangle, United States: U.S. Geological Survey, map I-1420, scale 1:1,000,000.

Glaser, John D., Geologic Map of Caroline County: Maryland Geological Survey, unpublished manuscript, scale 1:62,500.

Hess, Melodie, 1977, Drill hole logs and location map of surface and shallow subsurface materials, central and southern Delmarva Peninsula, Maryland, Delaware, and Virginia: U.S. Geological Survey, map MF-899, scale 1:250,000.

Owens, J. P. and Denny, C. S., 1979, Surface and shallow subsurface geologic studies in the emerged coastal plain of the Middle Atlantic States: U.S. Geological Survey Prof. Paper 1067-A, 28 p.

**ACTIVE OPERATIONS**

- |                               |                      |
|-------------------------------|----------------------|
| 1. Bramble, David A. Inc.     | Bankrun              |
| 2. Breeding, Otis             | Bankrun              |
| 3. Council, William, Jr.      | Bankrun              |
| 4. Davidson, Mike, Excavating | Washed sand & gravel |
| 5. Dixon, Owen                | Bankrun              |
| 6. Hab-Nab Farms, Inc.        | Bankrun              |
| 7. Walker, James              | Bankrun              |
| 8. Wye Nursery, Inc.          | Bankrun              |

**MAP SYMBOLS**

- ⊗ Active sand and gravel, sand, or borrow pit  
Number refers to operator.
- ⊗ Abandoned sand and gravel, sand or borrow pit
- ☁ Areas of potential sand or sand and gravel
- ☁ Areas consisting predominantly of sand

Base map, Caroline County Topographic Map published by the Maryland Geological Survey, 1984

**MINERAL RESOURCES OF CAROLINE COUNTY MARYLAND**

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STATE OF MARYLAND  
DEPARTMENT OF NATURAL RESOURCES  
MARYLAND GEOLOGICAL SURVEY  
Kenneth N. Weaver, Director

1950 (TOPOGRAPHIC BASE)  
1983, 1984 (REVISED CULTURE)

REVISED BY E. M. WARD AND J. L. CHANDLER

