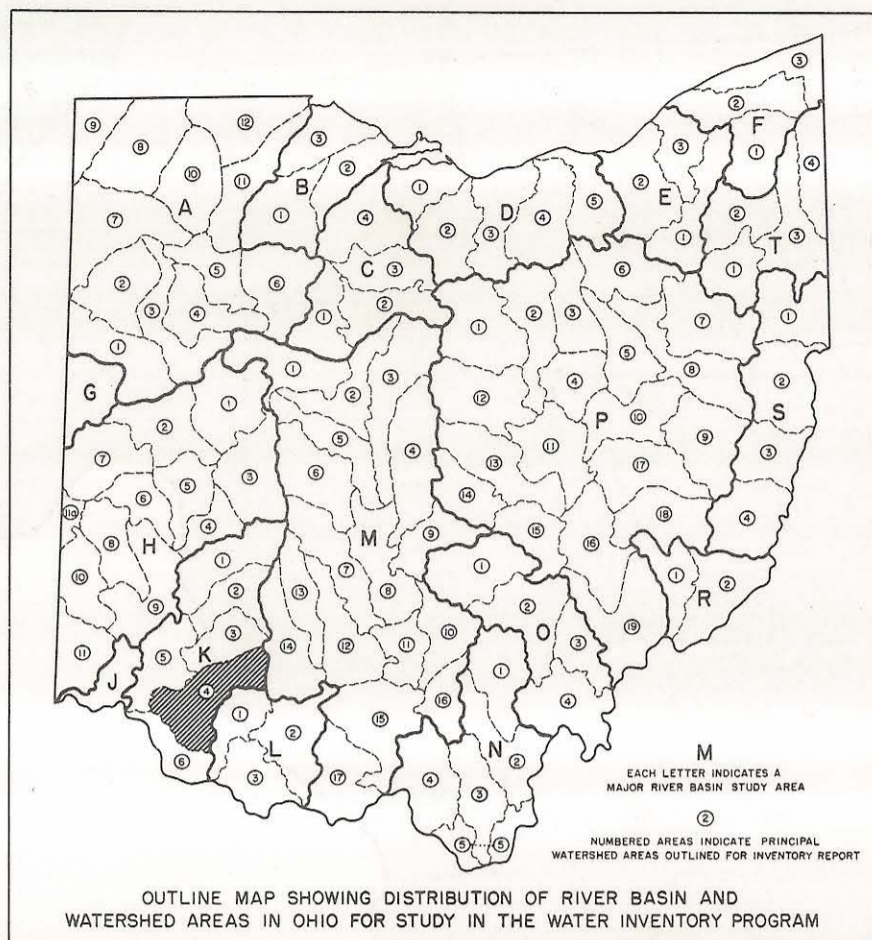
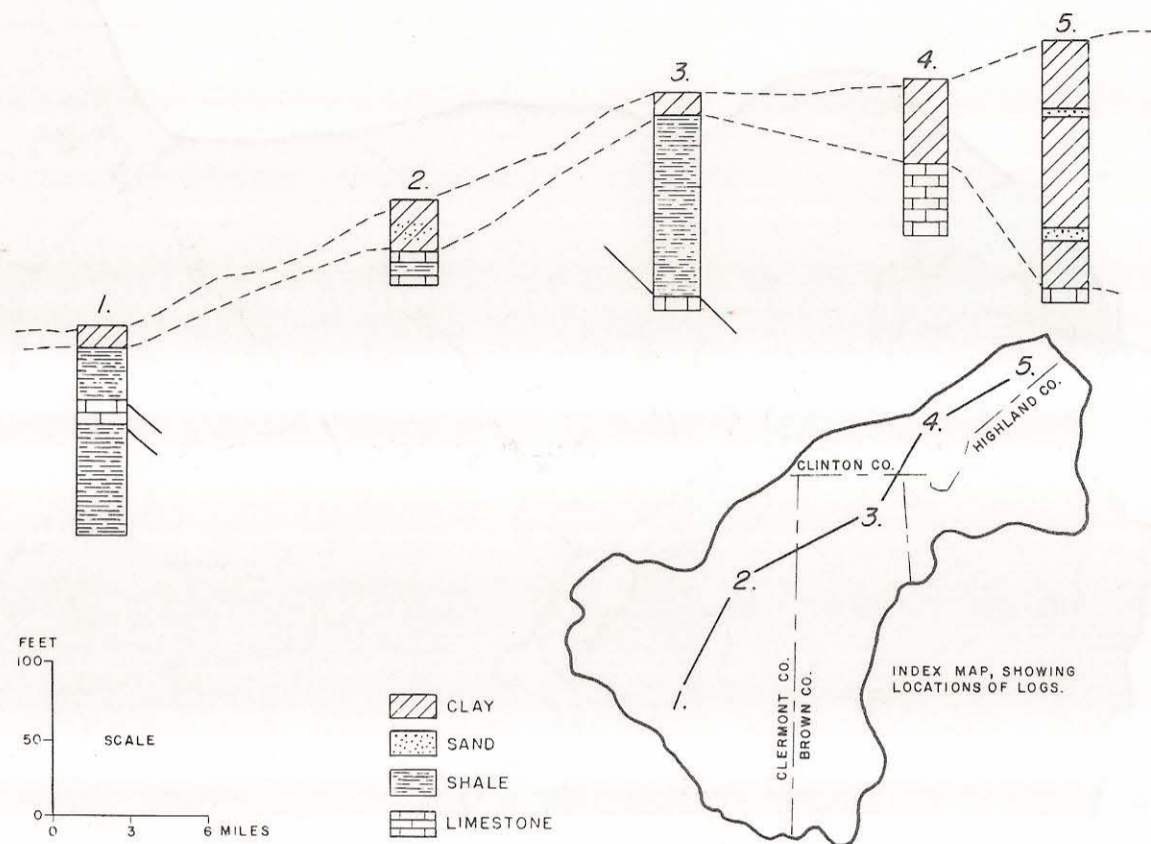


OHIO WATER PLAN INVENTORY  
1960  
**EAST FORK OF  
LITTLE MIAMI RIVER BASIN**  
**UNDERGROUND WATER RESOURCES**

Prepared by ALFRED C. WALKER, Geologist,  
Ohio Division of Water



GRAPHIC LOGS, SHOWING THE GENERAL GEOLOGY OF THE BASIN AREA.



FILE INDEX  
K-4

The rocks that make up the earth's surface contain numerous openings or voids. The quantity of water that the rocks will yield to wells is controlled principally by the number, size and shape of these openings, and the degree to which they are interconnected.

Shale is a dense rock and is a poor source of underground water. Limestone may be a good water source, depending upon the joints and fractures it contains. Sand and gravel deposits are the least dense and thus the most important sources of underground water.

The principal rock units in the basin and their water-bearing properties are shown in the following table.

GENERALIZED STRATIGRAPHIC SEQUENCE OF THE ROCKS  
IN EAST FORK OF THE LITTLE MIAMI RIVER BASIN

System or Series	Group or Formation	Character of Material	Water-bearing Characteristics
Quaternary	Recent	Alluvial deposits on flood plains of major stream valleys	Generally a poor water source because deposits are thin and impermeable.
	Pleistocene	Interbedded sands and gravels deposited as outwash by glacial meltwaters.	Quantity of water available depends on thickness of material and source of recharge. Where conditions are good, large supplies may be obtained.
		Till, largely clay, with buried sand or gravel beds in places.	Farm and domestic supplies available from sand and gravel lenses. Poor supplies where clay predominates or where deposits are thin.
Silurian	Niagaran	Massive to thin-bedded limestones and dolomites with some dense, calcareous shale beds.	Adequate supplies for farm, domestic and possibly small industrial needs. Water is hard.
	Clinton	Massive to irregularly-bedded limestone.	
Ordovician	Richmond and Maysville	Interbedded soft shales and thin, hard limestones.	Poor source of water. Water, where present, occurs in top few feet of strata. May be high in iron, sulfur and hardness.

Records of approximately 700 water wells in the basin are on file at the Ohio Division of Water. Locations of a number of typical wells are indicated on the availability of underground-water map.

Glacial deposits of clay, sand and gravel cover the entire basin area. These deposits range in thickness from a thin veneer to as much as 100 feet. The average drift thickness is 30 feet. Bedrock beneath these deposits consists largely of Ordovician shales with thin limestone layers. In the extreme northeastern part of the area, limestones and dolomites of Silurian age are present above the shales.

Glacial drift in the northeast will supply domestic, and occasionally small industrial, water needs. Sand and gravel deposits along the lower reaches of East Fork offer possibilities for industrial yields. However, the major part of the basin is covered with relatively thin clay till which contains very little water. Small supplies may be obtained from localized sand and gravel lenses in the till. Little or no water is available to wells drilled into the underlying Ordovician shale and limestone.

The log of a well serving the village of New Vienna is given below.

	Thickness (ft.)	Depth (ft.)
Red clay	8	8
Sand with silt	19	27
Gravel	5	32
Sand with some gravel	5	37
Sand and gravel	8	45
Coarse gravel	6	51
Water level: 13 ft. below surface		
Well diameter: 12 inches		
Capacity: 125 gallons per minute		

Because of unfavorable geologic conditions, particularly in the central and southern parts of the basin, many of the farm and domestic supplies are obtained from dug wells and cisterns rather than drilled wells.

A county operated water system, serving Batavia, Pierce and Union Townships, Clermont County, is supplied by wells drilled into sand and gravel adjacent to the Ohio River.

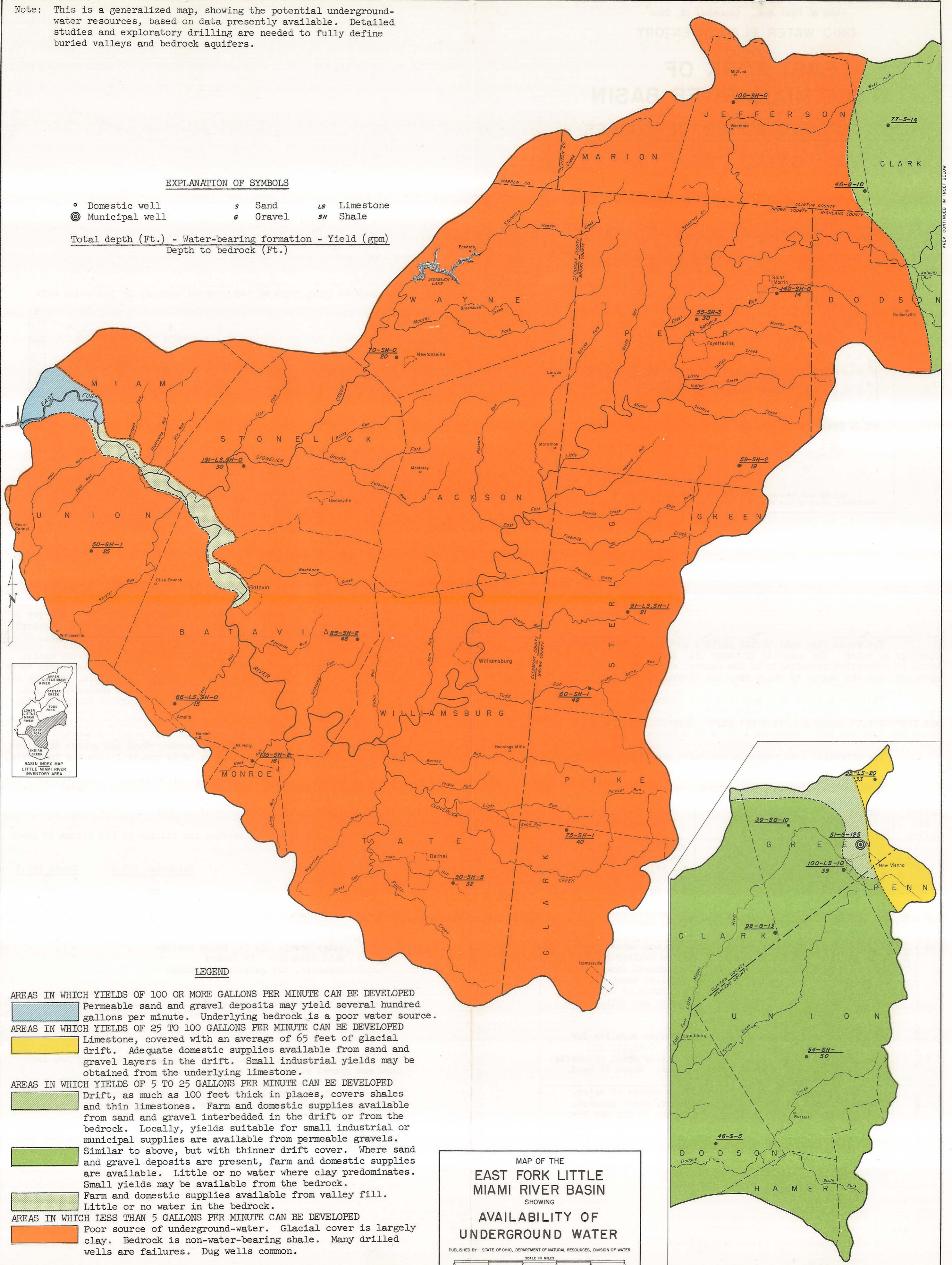
Such a system is necessary because of the extremely limited quantities of ground water available in these areas.

Underground water from all sources in the basin is generally hard and may contain objectionable amounts of iron. Some of the bedrock wells produce water that is high in hydrogen sulfide.

Note: This is a generalized map, showing the potential underground-water resources, based on data presently available. Detailed studies and exploratory drilling are needed to fully define buried valleys and bedrock aquifers.

EXPLANATION OF SYMBOLS

- Domestic well
  - ⊙ Municipal well
  - s Sand
  - g Gravel
  - LS Limestone
  - SH Shale
- Total depth (Ft.) - Water-bearing formation - Yield (gpm)  
 Depth to bedrock (Ft.)



LEGEND

- AREAS IN WHICH YIELDS OF 100 OR MORE GALLONS PER MINUTE CAN BE DEVELOPED  
 Permeable sand and gravel deposits may yield several hundred gallons per minute. Underlying bedrock is a poor water source.
- AREAS IN WHICH YIELDS OF 25 TO 100 GALLONS PER MINUTE CAN BE DEVELOPED  
 Limestone, covered with an average of 65 feet of glacial drift. Adequate domestic supplies available from sand and gravel layers in the drift. Small industrial yields may be obtained from the underlying limestone.
- AREAS IN WHICH YIELDS OF 5 TO 25 GALLONS PER MINUTE CAN BE DEVELOPED  
 Drift, as much as 100 feet thick in places, covers shales and thin limestones. Farm and domestic supplies available from sand and gravel interbedded in the drift or from the bedrock. Locally, yields suitable for small industrial or municipal supplies are available from permeable gravels.
- Similar to above, but with thinner drift cover. Where sand and gravel deposits are present, farm and domestic supplies are available. Little or no water where clay predominates. Small yields may be available from the bedrock.
- Farm and domestic supplies available from valley fill. Little or no water in the bedrock.
- AREAS IN WHICH LESS THAN 5 GALLONS PER MINUTE CAN BE DEVELOPED  
 Poor source of underground-water. Glacial cover is largely clay. Bedrock is non-water-bearing shale. Many drilled wells are failures. Dug wells common.

MAP OF THE  
**EAST FORK LITTLE MIAMI RIVER BASIN**  
 SHOWING  
**AVAILABILITY OF UNDERGROUND WATER**  
 PUBLISHED BY - STATE OF OHIO, DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER  
 SCALE IN MILES

AREA CONTINUED IN INSET BELOW