OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER
1562 W. First Ave, Columbus 12, Ohio

OHIO WATER PLAN INVENTORY

1960

MAHONING RIVER BASIN

(Middle portion)

UNDERGROUND WATER RESOURCES

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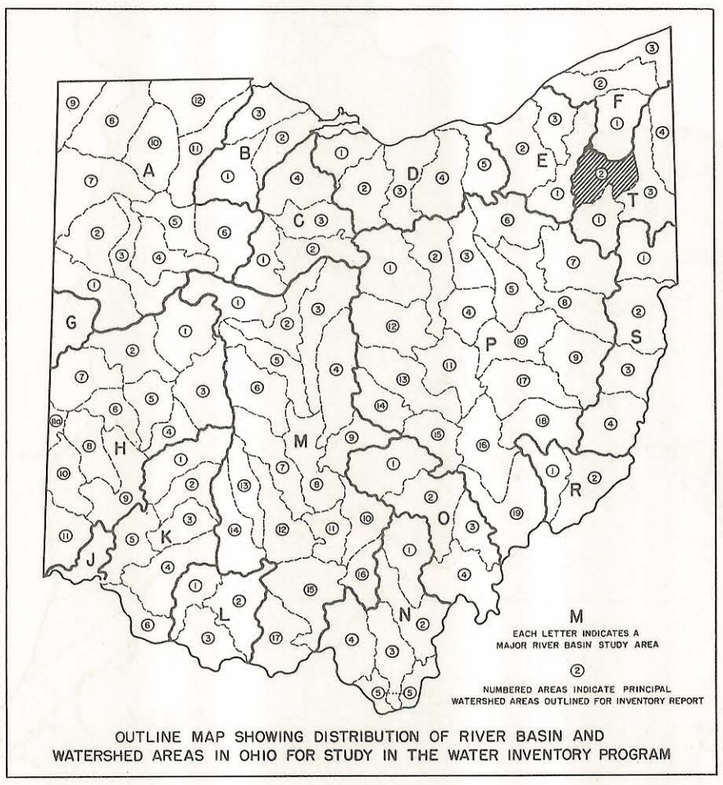
Ohio Division of Water



OUTLINE MAP SHOWING DISTRIBUTION OF RIVER BASIN AND WATERSHED AREAS IN OHIO FOR STUDY IN THE WATER INVENTORY PROGRAM

Water occurs beneath the earth's surface in pores, solution cavities, joints and bedding planes in the bedrock, and in spaces between the particles in silt, sand and gravel. Wide variations in quality and quantity of ground water, depending on local geological conditions occur from well to well. Records of approximately 3,000 water wells in this basin are on file at the Ohio Division of Water. The locations of selected wells are shown on this map.

The middle portion of the Mahoning River basin is an area of thick glacial drift overlaying massive sandstones and preglacial valleys in which are deep deposits of glacial sand and clay with interbedded lenses of gravel. The largest yields are from the Berea sandstone, from depths ranging up to 350 feet, and from the gravel deposits in the buried valleys at depths up to 150 feet. Few wells in either type of formation yield over 100 gallons per minute but yields of 50 gallons per minute are common.

A large area in the central part of the basin is occupied by the Ravenna Ordinance Depot, and this area has been thoroughly prospected for water. The remainder of the basin is largely rural and while many wells have been drilled, only small areas have been completely tested.

Domestic supplies generally are adequate. They are usually developed from the first aquifer encountered in any locality. In the Trumbull County portion of the basin this is either sandstone, or is a sand or gravel lens above the bedrock surface. In the Mahoning County portion of the basin the sandy clay till yields small quantities of water to large diameter dug wells. In Portage County the sandstone layers in the Cuyahoga formation supply a large percentage of the farm and domestic wells.

GENERALIZED STRATIGRAPHIC SEQUENCE OF THE ROCKS
IN THE MIDDLE MAHONING RIVER BASIN

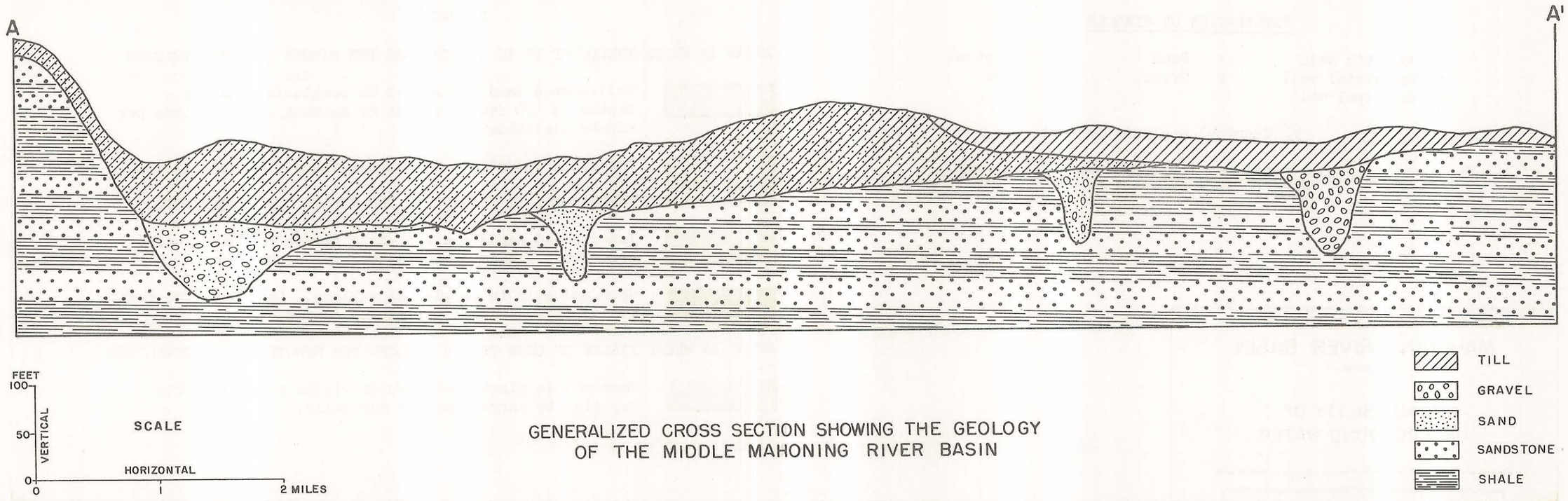
System or Series		Group or Formation	Character of Material	Water-bearing Characteristics
Quaternary	Recent		Alluvium. Silt with thin lenses of fine sand and gravel.	Not favorable for water supply.
	Pleistocene		Clay containing little or no sand or gravel.	Yields of less than 5 gallons per minute to large diameter dug wells.
			Sand and silt with interbedded lenses of gravel.	Where gravels are thick and the overlying materials are permeable, yields to 100 gallons per minute.
Pennsylvanian		Allegheny	Variable sequence of sandstone and shale, latter predominant.	Yields of from 5 to 40 gallons per minute from the sandstone.
		Pottsville	Variable sequence of sandstone and shale, former predominant.	Yields 5 to 125 gallons per minute.
Mississippian		Cuyahoga	Shale with sandstone layers.	Yields 5 to 10 gallons per minute.
		Berea	Sandstone containing oil in north part of the basin.	Yields 25 to 125 gallons per minute in northeastern part of the basin. In Mahoning County yields saline water.
			Thin bedded white sandstone. 5 to 20 feet thick.	Yields 5 to 75 gallons per minute.

The log of a well near Windham, Portage County indicates that there are several water-bearing horizons in that area:

Material	Thickness (feet)	Depth (feet)	
Sandy clay	16	0 - 16	
Sandstone	64	16 - 80	Water at 40 - 45
Gray shale	13	80 - 93	Water at 80
Brown shale	30	93 - 123	
Sandstone	28	123 - 151	Water at 144 - 151

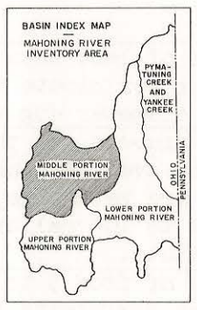
The village of Garretsville is the only municipality within the basin using ground water. The following partial analysis of the water from one of the municipal wells is typical of the area comprising the northern part of the basin.

Well Number	C-1
Water-bearing formation	Berea sandstone
	Parts per million
Iron (Fe)	.01
Chloride (Cl)	192.
Dissolved solids	784.
Total Hardness	716.
pH	7.7



GENERALIZED CROSS SECTION SHOWING THE GEOLOGY
OF THE MIDDLE MAHONING RIVER BASIN

Note: This is a generalized map, showing the potential underground-water resources, based on data presently available. Detailed studies and exploratory drilling are necessary to precisely evaluate the water-bearing characteristics of the glacial and bedrock aquifers.



EXPLANATION OF SYMBOLS

- • Domestic well
- ◉ Industrial well
- ◎ Municipal well

s Sand
g Gravel
ss Sandstone
sh Shale

C/2 Chemical analysis in text.

Total depth (Ft.) - Water-bearing formation - Yield (gpm)
Depth to bedrock (Ft.)

LEGEND

AREAS IN WHICH YIELDS OF 25 TO 100 GALLONS PER MINUTE CAN BE DEVELOPED

Well-sorted sand and gravel in preglacial valleys. Depths to 150 feet. Yields of as much as 50 gallons per minute available.

Permeable sandstones may supply industrial quantities.

AREAS IN WHICH YIELDS OF 5 TO 25 GALLONS PER MINUTE CAN BE DEVELOPED

Interbedded sandstone and shale strata beneath glacial deposits. Yields of 20 gallons per minute common.

Sand and silt in preglacial valleys. Depths to 150 feet. Yields of 10 gallons per minute common.

AREAS IN WHICH YIELDS OF LESS THAN 5 GALLONS PER MINUTE CAN BE DEVELOPED

Impermeable glacial till which yields small domestic supplies to large diameter dug wells.

MAP OF THE MIDDLE PORTION OF THE
MAHONING RIVER BASIN
SHOWING
AVAILABILITY OF UNDERGROUND WATER

PUBLISHED BY — STATE OF OHIO, DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER

SCALE IN MILES
0 1 2 3 4 5