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GROUND-WATER DATA ON CERTAIN AREAS IN
BALTIMORE COUNTY, MARYLAND

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Prepared at the request of the
Baltimore County Planning Commission

57-98
March 1951

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This memorandum was prepared in response to a request from the Baltimore County Planning Commission for information on the availability of ground water in 23 areas in Baltimore County. The memorandum is based on studies being made in cooperation between the United States Geological Survey and the Maryland Department of Geology, Mines and Water Resources.

The areas in question have been numbered on the attached map.

In Baltimore County ground water occurs in two basically different types of rocks. The area north and west of the Baltimore & Ohio Railroad tracks is underlain essentially by hard, dense crystalline rocks and the area to the south and east by unconsolidated sand, gravel, and clay. In the crystalline rocks ground water occurs in the fractures and weathered parts. These zones of higher porosity become narrower and less numerous with depth and, in general, it is not practicable to drill wells deeper than about 300 feet. The yield of a well in crystalline rocks depends primarily on the size and number of water-bearing fractures or weathered zones penetrated. It is possible that a well drilled in these rocks may not encounter such zones and may thus be unsuccessful.

In the area underlain by sand, gravel, and clay, ground water occurs in the pore spaces between the grains of the material. Thus wells that penetrate relatively thick layers of sand or gravel yield an adequate quantity of water

for most uses. In these sediments completely unsuccessful wells are not common.

Areas 1-4, 15 and 16 are underlain by crystalline rocks (schist and granite). The available records show the wells to range in depth from 50 to 587 feet and to have an average depth of about 100 feet. The highest yield reported was 30 gallons a minute from a well about 100 feet deep. Though some wells were unsuccessful the average yield in these areas appears to be about 10 gallons a minute.

In areas 5 to 12 the valleys are underlain by limestone. In the limestone, water occurs in solution openings and, as these openings generally are much larger than fractures in the insoluble crystalline rocks, wells drilled in the limestone generally have higher yields. Available records show that wells in these areas range in depth from 100 to 250 feet. The yield of one well drilled in the limestone is reported to be 90 gallons a minute; the average yield of wells in the limestone is about 30 gallons a minute.

Areas 13 and 14 are underlain by limestone that has been intruded by granite-pegmatite dikes. Records indicate that the wells in these areas range in depth from 47 to 275 feet. One well is reported to yield 80 gallons a minute. The other reported yields range from 2 to 15 gallons a minute.

The exact topographic position of the wells in areas 1 to ¹⁶~~17~~ is not known. It is possible that somewhat higher yields may be obtained by locating wells near streams that may supply additional recharge. In general, broad shallow valleys are better than ridges as sites for wells.

Area 17 is chiefly underlain by hard quartzite; a part of the area, however, is underlain by limestone. Records of wells in this area are not available but records of wells in similar areas elsewhere indicate that the yields of wells ending in limestone generally are about 30 gallons a minute; the average yield of wells ending in the quartzite, however, probably would be considerably less.

Areas 18 and 19 are underlain chiefly by crystalline rocks (gabbro and granite) which at places are covered by relatively thin unconsolidated deposits of sand, gravel, and clay. Most of the wells in these areas are drilled through the unconsolidated deposits and obtain water from the crystalline rocks. Records show the wells range from 37 to 270 feet in depth. One well is reported to yield 75 gallons a minute and the others 1 to 12 gallons a minute.

Areas 21 and 22 are immediately underlain by unconsolidated deposits of sand, gravel, and clay which range from about 50 to 150 feet thick. Wells in these areas generally yield about 1 to 25 gallons a minute but in some places the yields may be higher.

The unconsolidated deposits thicken toward the southeast and in areas 20 and 23 are about 250 and 350 feet thick, respectively. The yields of wells in these areas depend largely on their construction and development. It is estimated that yields of as much as a few hundred gallons a minute may be obtained from properly constructed wells in some parts of these areas. The water is under artesian pressure and rises in wells above the level at which it is encountered.