

Piedmont And Mountains Of North Carolina Are "Seriously Ill" With Water Supplies

EDITOR'S NOTE: This is the fifth in a series of articles prepared by the State Board of Water Commissioners for the purpose of familiarizing the people of North Carolina with their ground water resources.

THE PIEDMONT AND MOUNTAINS

Predictions concerning the success of individual wells in North Carolina's Piedmont and Mountain regions have been compared to the plight of the seriously ill man who asked his doctor for an opinion on his chances for survival and was told that a certain percentage usually survive, but that it was impossible to determine the chances of an individual patient.

This diagnosis very closely approximates the position of the average Piedmont or Mountain resident who decides to go underground for a supply of water. The experts can tell him what percentage of wells in his area have been successful and what percentage have been failures, but they will be very reluctant to predict the suc-

cess or failure of an individual well.

This reluctance is understandable when you consider that wells located only a few yards apart have a habit of varying considerably in the amount of water they will yield. One well in the Piedmont is known to produce more than 600 gallons per minute while many wells in the same general area yield less than a single gallon.

These relatively unpredictable conditions exist in varying degrees throughout that portion of the state west of the Piedmont - Coastal Plain fall line—a line that passes in a northeasterly direction from Richmond County on the South Carolina line to Northampton County on the Virginia line. Counties through which this line passes include Richmond, Moore, Harnett, Johnston, Wayne, Wilson, Nash, Edgecombe, Halifax and Northampton.

To understand why the condition exists it is necessary to know something of the geology of the area. Throughout the rolling Piedmont and Mountain regions the land surface is underlain by dense rocks, broken by crevices and covered by

a layer of soil and soft, decayed rock.

The rocks are extremely complex in character and occurrence, but for the layman's purpose two classifications are sufficient—massive granite-like rocks and bedded slate-like rocks. Many of these rocks have been deformed by earth movements, erosion and other forces of nature so that their beveled edges may be seen on the surface.

Underground reservoirs in this vast area consist of two contrasting types. The first is the clayey and sandy soil and weathered material which underlies the surface to depths ranging from a few feet to tens of feet. The second type of reservoir is the underlying bedrock.

In the soil and weathered rock water occurs between the individual mineral grains, but in the underlying bedrock it occurs only in fractures. These fractures generally are not evenly distributed and may be from an inch or two to several feet apart. Many are interconnected sufficiently to allow water to circulate through them.

The size and number of these fractures seem to decrease with depth. As a result most of the ground water in the Piedmont and Mountains is found at a depth of less than 150 feet—much of it in the upper 30 feet of bedrock.

After a rain, the water seeps down through the open spaces in the soil and weathered materials;

then enters the bedrock where its movement is governed by the size, shape and degree of interconnection of the fractures. The water doesn't usually move to great depth, but is shunted almost laterally by impermeable rocks to discharge points along the perennial streams.

Geologists agree that immense amounts of water are stored in the sub-surface reservoirs of the Piedmont and Mountain regions. There is similar agreement on the fact that rainfall is generally sufficient to provide adequate recharge to the reservoirs. Both of these facts are supported by the outflow of great quantities from springs and by the underground seepage of water into the springs.

Why, then, do some wells yield so little water?

One answer to this frequently asked question is the fact that rocks of the Piedmont and Mountains are such that they release water very slowly to wells. Many wells located in areas of abundant water cannot be pumped because the amount of water being withdrawn greatly exceeds the amount being yielded to the well by the surrounding rocks.

The difficult thing for many people to understand is why one well in this region can be so inadequate while another, 100 feet away, can be pumped at a rate of 75 or 100 gallons per minute. The answer, of course, lies in the size and shape of the underground reservoir at the precise spot at which it is penetrated.

The great variation in yield and the inability of the experts to predetermine the yield of a prospective well might seem to suggest that getting a good well in the Piedmont and Mountain region is simply a matter of luck. Certainly, luck is a major factor, especially when a single well is being considered. However, when many wells are under consideration there are certain known facts and probabilities that tend to clear up the picture.

For example, it is known that 60 per cent of the municipal and industrial wells in the Piedmont yield at least 18 gallons of water per minute, that 40 per cent of the wells yield at least 33 gallons a minute and that 20 per cent of the wells yield at least 54 gallons a minute. While such statistics are little consolation to a person interested only in his own well, they are, nevertheless, vital links in the chain of information that must be forged if the full potential of this state's ground water resources is to be beneficially exploited.

Many of the difficulties relating to the use of wells in the central and western Tar Heel counties can be traced to the selection of the well site. Most of the wells in this section of the state have been located for convenience. Therefore, most of them are found on hills where conditions for larger supplies of water are unfavorable. In general, there is a greater likelihood of developing a bountiful well in a draw or other low ground area where the soil is thick, than on a sharp hill where bare rock is exposed.

Another important consideration is the depth of the well. Since the water table usually lies in the zone of soft, decayed rock, shallow dug or bored wells can be developed a few feet below the water table in most places. Such wells are normally adequate for domestic supplies, but some of these may go dry when the water table is drawn down by an extended drought.

Larger supplies can be obtained from deeper drilled wells that draw water directly from fractures in the bedrock. The yield in these wells, however, does not increase in proportion to an increase in depth. Since most of the water-bearing fractures occur in a zone no deeper than 150 feet it is seldom economically wise to go below that depth if the yield is poor. Very rarely is there any justification for drilling below 300 feet.

For the most part the ground water

What Questions Vets Are Asking

Q. I am in college under the Korean GI Bill, and I have just about come to the end of my GI entitlement. If I run out of entitlement before the end of my semester, will I be allowed to continue my GI training?

A. If your GI entitlement runs out after you've passed the half way mark of your semester, you will be permitted to continue under the Korean GI Bill to the end of the semester. Otherwise, your GI training will end when your entitlement expires.

Q. I hold a World War II GI entitlement policy. When it reaches the end of its entitlement period, could I arrange to receive monthly payments for the rest of my life?

A. No. You may, however, choose

either a lump sum payment, or payments over a specified period ranging from three to 20 years.

Q. I am getting monthly disability compensation payments from VA which, I am told, are tax-exempt. If I save those payments and buy some property with them, would the property also be tax-exempt?

A. No. Tax exemption does not extend to any property you might buy with your compensation payments. The property would be subject to taxes.

While no offering can liquidate one's debt of gratitude to God, the fervent heart and willing hand are not unknown to nor unrewarded by Him.
—Mary Baker Eddy



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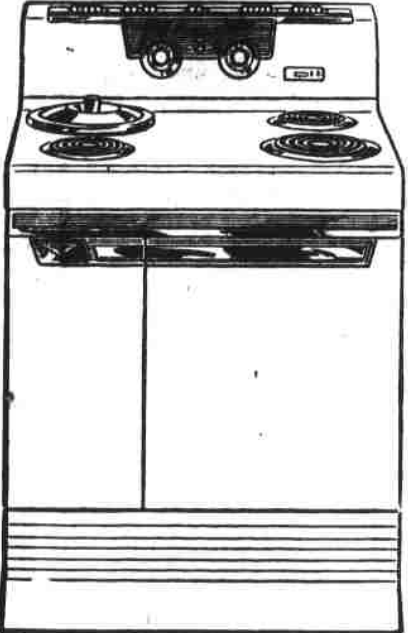
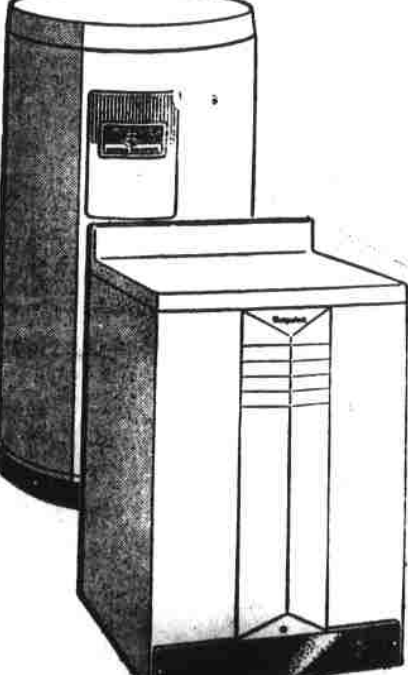
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