

FCWSA WATER PLANNING DOCUMENT

The Fauquier County Water and Sanitation Authority, as the largest provider of central water services to properties within Fauquier County, is dependent on groundwater as its sole water source as per County policy restricting surface-water reservoirs. It is also the policy of the County to focus growth in and around Service Districts. These policies provide fundamental and inherent realities which need to be both recognized and understood in order to effectively plan for the current and future water service demands of the Authority's water customers.

First, the location of any particular subsurface public water supply is determined by the area's underlying geologic formation which dictates the volume as well as the natural quality of the water resource. In Fauquier these geologic formations are composed of water-bearing fractures in otherwise solid bedrock where vast quantities of water are stored though not all are economically accessible and some are tainted by natural contaminants such as arsenic and radium. . Secondly, the quantity of water that can be extracted from these formations by a water-supply well is also limited by the potential to do harm to neighboring public or private wells by lowering their water levels as well as the natural ability of the geologic formation to be replenished ("recharged") annually by precipitation. Water managers often define this as the "sustainable yield.", The sustainable yield is controlled by the ambient climate, hydrogeological conditions, and well locations and estimated by a scientifically designed long-term pumping test that is designed to determine the volume of water that may be withdrawn from a particular well without removing more water than the aquifer can replenish through natural recharge and without limiting anyone else's existing right to withdraw water. Thirdly the quality of water available from any particular subsurface public water supply is determined by the presence/absence of natural and anthropogenic contaminants as verified by laboratory analysis of the water samples collected during the long-term pumping test and during regularly scheduled compliance monitoring once a well is in production. It needs to be understood that the water quantity and quality data derived from the initial drilling of a potential public water supply well is only useful for determining whether or not the well is a reasonable candidate for a long-term pumping test and worth the risk of the additional fiscal investment to conduct one. Only a long-term pumping test makes it possible to assess the *potential* sustainable yield of a well. Estimations of the sustainable yield of a potential public water supply is a critical component for its responsible management. However, even these "long-term" tests cannot fully account for all the current and future vulnerabilities of the well due to natural or anthropogenic contaminants, land-use changes, or extremes in weather. While no one can determine how long a particular well will produce a useful quantity of water, siting it away from known or suspected sources of contaminants and other wells and pumping it within the context and range of the aquifer's natural recharge capabilities will help to extend and maintain its useful life. It is highly unlikely that a properly designed and sited individual well or well field in

Fauquier County could pump more water than the aquifer could sustain through natural recharge. However as water service demands increase the wells within a given aquifer can be over-pumped thereby lowering water levels and limiting the capacity of individual wells to access water-bearing fractures or capture discharge to streams which typically shortens their useful lives. Thus the amount of water that is available from aquifers in Fauquier is a result of an often complex combination of many natural and man-made factors. These factors can limit the accessibility of the water as well as the quality of the water. Consequently our ability to accurately assess the “sustainable” yield today and in the future must be considered in this context. Alternatively, having identified and proven wells in reserve, that have already been demonstrated to be viable public water supplies, provides the fundamental component needed for the design and administration of both long-term and area-wide water management.

The Authority funds the expenses associated with the creation and delivery of its water service capacity through the one-time assessment of the Water Availability Fees it charges each new applicant for the provision of its water services. These fees are calculated to pay for the design and construction of the necessary well, well house, well appurtenances, distribution infrastructure and any water storage and/or filtration facilities required for the provision of central/public water services to the applicant’s property. In exchange for payment of the Water Availability Fee, the applicant secures the right to use a specified volume of the Authority’s existing water service capacity, which the Authority subsequently assigns to the applicant’s parcel of land. The Water Availability Fee is not calculated to include the “speculative or wildcatting costs” for the creation of water capacity, nor is the applicant being required to pay for something which may or may not exist, or that has yet to be created. Typically such costs are more properly funded by the local governing municipality, as an investment in the availability of an essential public service (i.e. a public water supply), than by the service provider itself. Moreover, as the quality of local water supplies degrade over time (since a well’s water quantity rarely increases and its water quality rarely improves) and the costs for the treatment and filtration for public water services increase, it becomes increasingly unlikely that the service provider would become able to fund any extensive source exploration expenses.

Should the local governing body be unwilling to fund the expenses associated with the identification and location of viable public water supplies and the service provider be unable to do so, the burden then falls solely upon the development community itself. Since there is no financial incentive to develop a water supply beyond the immediate need of a particular subdivision or project, it is unlikely that the municipality or service provider will acquire the water capacity necessary for any long-term and/or area-wide provision and/or management of the area’s local water resources. Subsequently, as water services are then developed on an “ad hoc” basis (subdivision by subdivision), the municipality and/or service provider surrenders any opportunity to effect a proactive provision of the area’s water resources and are forced to

react to circumstances solely as they evolve. In effect, this forfeits any possible benefits derived from either economies of scale, or the ability to direct growth proactively. Alternatively, an investment today that insures the future availability of public water supplies for tomorrow is both prudent and responsible. It not only provides the local governing municipality and utility service provider the ability to direct and assist growth in a manner that maximizes benefits to future residents, but also helps to insure the security of current services, improving service reliability while increasing the efficiency and safety of existing water systems. For reasons such as these, the Authority is taking this opportunity to encourage the County's assistance in funding the expenses associated with both the drilling and long-term pump testing of public water source exploration and is looking forward to receiving the mutual benefits such an investment will provide.

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