

June 5, 2019

To: James Hart, Esq.
Fairfax County Planning Commission

Re: Special Exception Application for Assisted Living Facility, Hunter Mill Road

Dear Commissioner Hart,

I am the applicant for the Special Exception proposing an Assisted Living Facility on Hunter Mill Road in Oakton. Katie Antonucci forwarded some questions you had about the proposed septic system and I thought it would be helpful to provide the answers.

First, I want to thank you for your 16 years of community service as a Planning Commissioner. I served as a Commissioner in Fairfax County for the County Goals Commission (which established the Comprehensive Plan) and as a County Condemnation Commissioner, so I am familiar with the long evenings and dedicated service that goes into such endeavors.

Before I address the specific questions, I wanted to address the significant misinformation and misconceptions that have been circulated regarding the proposed septic system for this use. I thought it would be helpful to provide an overview of the proposed system and how technology has advanced septic systems over the years. I would also encourage you to speak to representatives of the Fairfax County Department of Health as they too have been working diligently to dispel the misinformation that has been circulated regarding this application and the proposed septic system.

A traditional septic system takes the sewage waste, places it into a holding tank to allow the solids to settle and then discharges the remaining liquid into a drainfield, where the residual water percolates through the earth before it reaches the aquifer. Generally, microbes in the soil will clean the effluent before it reaches the groundwater. The length of time it takes the effluent in a drainfield to reach the aquifer is typically 5-20 years depending on the geology of the aquifer. These basic, conventional systems are used by up to 35,000 households in Fairfax County, including those proximate to the application property, and more than 40% of all residential development throughout the United States. These systems are typically characterized as Level I treatment systems. The quality standards for the various treatment systems have been established by the EPA, are regulated by the State of Virginia, and are administered by the Fairfax County Department of Health.

The proposed system goes substantially beyond Level 1 traditional systems by treating the effluent to Level 3 standards. What this means is that the proposed system will employ additional processes to treat the effluent, such as aeration and recirculation, and additional treatment with fixed film media. As a result, 90-95% of all contaminants in the effluent will be removed before it is discharged into the drainfield. In addition, modern technology allows for the installation of controls that dose the effluent throughout the drainfield at specific times. Recent studies have shown that effluent distributed evenly over the entire drainfield in small doses, over the course of 24 hours per day, enhances the removal of all contaminants. Just like the limited zones and times that are used to program landscaping irrigation, we can similarly program zones and times to dose a drainfield with effluent to optimize performance. This allows for a much more even dispersal of the effluent and allows more time for the microbes in the soil to do their work. By employing this kind of drip irrigation system, the result is that the proposed

septic system will produce an effluent that is as clean or cleaner after final treatment by the soil in comparison to what is discharged from public sewer treatment systems. This is perhaps one of the greatest misconceptions in the community. In addition, it ensures that future use of the reserve drainfield is unlikely.

Another misconception that has been widely circulated is that a proposed community of 70 rooms will produce an excessive load of medications in the groundwater. This is simply not true. Currently, there is no empirical evidence to support this allegation, and there are no health department regulations at the National, State or County levels that address this issue because there is no established method to measure for them. What I can say is that studies appear to demonstrate that on-site soil-based treatment systems dissipate chemicals BETTER than systems that might be connected to public sewer because the microbes in the soil, or *the biota*, do a much better job of dissipating and cleaning any chemicals that may be present within the effluent.

Despite the treatment efficacy that the proposed system will achieve the community continues to voice concerns with the proposed on-site system. As a result of these concerns and as a demonstration of good faith, we have voluntarily chosen to take extraordinary measures above and beyond the typical requirements to obtain certification to install an on-site sewage system of this type and size on the application property. All these measures have been memorialized as proposed development conditions submitted with the special exception application:

- We are installing 3 monitoring wells surrounding our drainfield which will be tested on a regular basis with reports to both the State and County Departments of Health to detect the presence of

- Fecal Coliform,
- Chlorides, and
- Total Nitrogen.

-We are installing a remote monitoring system for the controls of the septic system – just as commercial fire alarms are monitored by a third party in Fairfax County, we will voluntarily do the same for the septic system controls.

-We are providing emergency generator back up for the electronic components of the septic system.

-We have already conducted a Preliminary Engineering Report (PER) for the proposed system, which is a State Design Requirement that typically would not be performed until Site Plan. The good news is that our soil has been confirmed by the Health Department to be exceptionally suited for a septic system given the proposed loading.

-We have agreed to send all commercial laundry off-site to minimize the septic system load – the only laundry that will be done on-site will be for the residents' clothing using typical household laundry machines. There will be no commercial laundry on-site.

Turning now to your specific questions:

Is there already a fecal coliform problem in this stream? She refers to both Difficult Run and Angelico Branch, I assume they are connected.

The fecal coliform levels that pre-exist are due to the antiquated Level 1 treatment systems that serve existing housing in this community as well as the large equestrian facilities near the Angelico Branch and Difficult Run stream valleys.

Does a large facility like this affect fecal coliform levels in any way?

No. The proposed system will treat to Level 3 standards and to ensure we do not add to any fecal coliform load that may presently exist, we are installing monitoring wells adjacent to the drainfield that will take measurements on a regular basis to verify system performance. If fecal coliform bacteria appear in the monitoring wells, we are prepared to add a disinfection system to mitigate it.

What is the cause of the fecal coliform problem, too many houses on septic?

The fecal coliform levels that pre-exist are most likely due to the antiquated Level 1 treatment systems that serve existing housing in this community as well as the large equestrian facilities near the Angelico Branch and Difficult Run stream valleys. Level 1 treatment systems or “conventional septic systems” do not reduce fecal coliform or Nitrogen very well in the septic tank. Nitrogen from the septic tank flows into the drainfield, where natural processes convert it to Nitrate. Nitrate is very mobile in soil and therefore results in Nitrate-Nitrogen being discharged into streams. Our system will remove 85% of the Nitrogen before it enters the drainfield.

Is there some sort of objective measurement of too much development or too many drainfields which relates to fecal coliform levels? Or related to distance from an RPA or stream?

No. There is no objective measurement of too much development or too many drainfields, which relate to fecal coliform levels or related distance to an RPA or stream. Virginia Department of Health Regulations incorporate the Chesapeake Bay Regulations by direct reference. So, if the Bay regulations ever change, that change would also be enforced by the Health Department without requiring a change in health regulations. If this project was not in a Chesapeake Bay Act County, the required set back would be 50 feet from the stream. In Chesapeake Bay Act Counties, the requirement is for the septic field to be located outside of the RPA. Our septic reserve area is located outside of the RPA, as required.

The treatment system proposed (TL-3) will remove 90% – 95% of the fecal coliform before it enters the drainfield, where a conventional septic tank will only remove 20% - 30% of fecal coliform before it enters the drainfield.

It is a fundamental human right to have access to drinking water and a method for the disposal of waste. This is why these systems are permissible and regulated at the (USEPA) and State level. The technology of today’s alternative systems are vastly different than the older systems everyone is familiar with. In fact, one of the system manufacturers we are considering for the proposed system installation recently installed a similar system for a hospital.

If there is fecal coliform in a stream, does that or whatever is causing it affect the nearby wells?

No. The health of the stream is related to surface water and shallow groundwater that are generally discharged into the stream. Wells are significantly deeper in order to access the aquifer. By way of example, the well of the property immediately to the North of the application property is 300 feet deep and is cased to 186 feet deep. So any water that would enter the well would have to be deeper than 186 feet.

Is the depth of the well a consideration also?

No. The depth of the well is irrelevant. The type of well and the depth of well casing is what determines separation distances between wells and drainfields. The proximity of a drainfield to existing or new wells depends on the length of the casing installed. Drainfields must be least 50 feet from wells with at least 50 feet of casing or 100 feet from any well with less than 50 feet of casing by State regulations. The Fairfax County Code is more restrictive, as it requires drainfields to be 100 feet from any well. The proposed drainfield meets the more restrictive Fairfax County requirement.

I assume the medical facility also would be on well water? Have we done that before, and is there any testing of that?

Though classified as a “medical care facility” for purposes of the Zoning Ordinance, this is not a medical care facility. It is just like all the other Assisted Living facilities that operate in Fairfax County. It is a residential community that aids with the daily living needs of seniors, who can no longer provide for themselves.

In addition, this facility will not be on a well. It will be on public water, which exists in Hunter Mill Road today.

Thank you again for your inquiry into our application and we are available to answer any other questions you might have.

Respectfully,

A handwritten signature in blue ink, appearing to read 'David L. Orr', with a stylized flourish at the end.

David L. Orr