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Maureen O'Meara, Town Planner
Town of Cape Elizabeth
P.O. Box 6260
Cape Elizabeth, ME 04107

Dear Maureen:

I am willing to share my professional thoughts with you and the Town of Cape Elizabeth with regard to the proposed Zoning changes for 'Short Term Rental' in Chapter 19. I reviewed the proposed changes and had a discussion with you on January 17, 2012 concerning the Town issues and/or concerns regarding this matter.

Following is a summary of my objective comments regarding this topic:

Background on Subsurface Wastewater Disposal Design parameters as it relates to your issue:

1. Single Family dwellings, per the *State of Maine Subsurface Wastewater Disposal Rules* (SSWD Rules) and the Town of Cape Elizabeth's current septic ordinance, require a minimum design flow of 90 gallons per day (gpd) per bedroom. This design flow number of 90 gpd is based on data that establishes that the average American uses 45 gpd of water per day. As a result, the Division of Health Engineering (now DEH), when developing required design flows for the State of Maine SSWD Rules, used 90 gpd/bedroom for single family dwellings. The thinking was that this was reasonable and slightly conservative because in many homes the master bedroom is double occupied, and most families have children with private bedrooms or on occasion some shared bedrooms of children of the same sex and similar ages, etc.

2. The standard design parameters of the SSWD Rules allow for septic systems serving single family dwellings to have occasional "peaks" for events such as: family reunions, weddings, graduation parties, post funeral receptions, etc.). These are anticipated to be infrequent. The septic system relies on its internal reserve capacity to handle this occasional peak flow and returns back to normal flow without long term distress.

3. The ramifications of this issue, from a technical point of view, is that infrequent higher flows for short durations are not problematic to the health and safety of a septic system; **however, high flows for extended periods of time stress the septic system in the following ways**:

a. The detention time in the septic tank is reduced, so there is a higher wastewater 'strength' (i.e. higher biochemical oxygen demand and total suspended solids) when the wastewater finally reaches the disposal field.

b. The septic system will be continually saturated and become anaerobic over time, and an organic bio mat will begin to form at the soil/septic system interface. This organic bio mat will become more established, thus reducing the hydraulic permeability of the septic system, causing the system to become sluggish and move to failure if high use continues for an extended period of time.

Review Comments of the Cape Elizabeth Proposed Draft and Septic System Technical Concerns:

- It is my professional opinion that the draft Zoning language stating: "For the purpose of evaluating the adequacy of a subsurface disposal system, every 2 tenants shall be equivalent to 1 bedroom" is appropriate, and will adequately address septic system capacity for systems installed since the Maine SSSWD Rules were set forth in 1974.

- My analysis of the daytime guest parameter of the draft Zoning stating, "For each additional 4 guests, the subsurface waste disposal system shall be adequate to serve 1 additional bedroom" is difficult to objectively comment on from a technical standpoint. It is unclear, by the wording of the proposed draft, if it is the intention of this Zoning Ordinance to assure that the Cape Elizabeth Code Enforcement Officer, in his review of a proposed application for Short Term Rental for a Tenant, can determine those who propose to have daytime house guests. Will administration of the Ordinance include comparing the total design flow to the number of declared overnight tenants at 45 gpd and estimated daily number of house guests at 22.5 gals/day (i.e. 90 gpd / 4 = 22.5 gpd)? It is obvious that the house guest parameter will be difficult to administer from a permitting standpoint due to variability etc. That being said, it is my professional opinion that a projection of 22.5 gpd for a house guest (as defined) is excessively high for projected wastewater generation when compared to SSWD design code flow rates for the following: [(banquet dining hall (5 gpd per patron), cocktail lounge with limited food (13 gpd per patron), meeting hall (2 gpd per patron), health gym (10 gpd per patron), visitors center (5 gpd per patron)]. I feel that a proposed flow rate of 5 to 15 gpd (say 10+-) is a more appropriate design flow for a house guest depending on the nature of the household and the visit.

  (NOTE: Similar issues would apply to 'tenants' regarding the excessive wastewater flows generated from day house 'guests'. A rented dwelling with an occasional party, gathering, etc. which produces a large number of house guests would not necessarily be an issue for the septic system, in moderation. On the contrary, a highly occupied dwelling that is constantly used as a 'party house' or

similar nature with a large number of guests will have peak flows and cause problems as listed in #1-#3 itemized above).

In conclusion, I believe the 'Tenant' occupation parameters of the drafted CE zoning are reasonable within the State of Maine Subsurface Wastewater Disposal Rules and accepted septic science. It is my opinion that the proposed 'Guest' occupation parameters are too high, based on engineering and science. Obviously the higher design flow numbers would act as more of a deterrent for this activity, if that was the Town's intent, however, lower projection numbers for daily guest wastewater demands would be more in keeping with other established design flows. Having helped to draft the State of Maine SSWD Rules, and working as a Site Evaluator, often closely with Local Plumbing Inspectors, Code Enforcement Officers, Town Planners, etc., I have reservations as to the potential effectiveness of the permit administration and/or enforcement of the 'house guest' component. (It just looks difficult on face level to administer).

Miscellaneous Comments and Questions:

- Septic Systems permitted prior to July 1974 would have difficulties complying with this ordinance, and would be at risk if exposed to such intensive extensive high flows.

- From a practical standpoint, how does the CEO quantify and/or evaluate an application, whereby a proposed tenant declares that they will rent a 2-bedroom dwelling with a standard septic system of 180 gals/day for 20 days, and there will be one couple and a child. I use the following scenario as an example: on two Saturdays during that duration, four people are declared to be visiting (both sets of grandparents spend the day). Bruce Smith or authorized person, by applying the mathematical formula, would conclude the following:

Example: 3 tenants (people) @ 45pd = 135 gpd

4 daily house guests @ 22.5 = 90 gpd

TOTAL 225 gpd

For 18 days, the theoretical flow would be at 135 gpd, which is below the threshold. On 2 days, the theoretical flow would be 225 gpd, thus above the threshold. In my opinion, THIS EXAMPLE WOULD POTENTIALLY VIOLATE THE THRESHOLD SET BY THE PROPOSED ORDINANCE, BUT WOULD NOT NECESSARILY BE AN ISSUE WITH THE HEALTH AND SAFETY OF THE SYSTEM. (What would the CEO be expected to rule for this or similar scenarios, based on the Ordinance's intent?). If the town is interested in trying to write an ordinance that is perhaps more practical and/or 'administratively friendlier', it is my opinion that there

should be factored in some allowances for a short percentage of the time or duration that the design flow would exceed the septic capacity, and perhaps also an allowance for the percentage of the volume of the peak flow over the design flow, in order for this to be a more workable ordinance.

After subjecting various scenarios to the spirit of this draft ordinance, I feel the 'daily guest' component of the application needs some work in order to be practical/enforceable. Considering allowances for percentage of times that a flow can exceed the daily flow from the intended use and/or by establishing how much flow volume over the design flow is tolerable. (A continual small flow above the capacity can cause problems after an extensive period of time, and an excessive large flow for even a short duration can cause a problem).

- Would better wording for the statement: "For the purpose of evaluating the adequacy of a subsurface disposal system, every 2 tenants shall be equivalent to 1 bedroom" be to say: "For the purpose of evaluating the adequacy of a subsurface disposal system a 'tenant' shall have a design flow requirement of 45 gals/day?

- Would better wording for the statement: "For each additional 4 guests, the subsurface waste disposal system shall be adequate to serve 1 additional bedroom" be to say: "For the purpose of evaluating the adequacy of a subsurface disposal system, a 'house guest' shall have a design flow requirement of 22.5 gals/day. [SUGGEST REDUCING from 22.5 to 10+/- (see above narrative)].

- Do the Short Term Rental and Section 19 D 2 have a potential conflict?**:**

"Short Term Rental: A dwelling that is available for rent for transient occupancy by tenants for a period of less than 30 total days between May 1 to October 31 of each year with no more than 14 consecutive days in any month, excluding motels."

19 D2. Limit on rental frequency and intensity. The Short Term Rental shall not accommodate more than 12 tenants at any one time. From May 1 to October 31 of each year, a Short Term Rental shall not be rented more than 2 weeks in any one month.

Perhaps defining "Short Term Rental" and then further limiting the use per Section 19D2 is intended to first state what a short term rental is, and then place use restrictions per Section 19D2. (Please note that the issues with the septic

system over use would be the same for the period of October 31 through May 1 (winter time) although the activity probably does not occur as often.)

Per the current proposed draft, the most allowable use of a rental unit would be 2 weeks in use, and 2 weeks in restricted non-use mode. The required 2 week rest period would be advantageous for the septic system, if found to be practical for implementation. Similarly, it appears that a 1 week rental scenario would be 1 week in use, and the next week in required non-use mode and repeat sequence for compliance. Again the resting sequence would be advantageous for the septic system, if found to be practical.

- Do you want to better clarify that the evaluation of the adequacy of the septic system for 'daily guests' involves having an available adequate reserve septic system capacity in addition to the capacity supporting the overnight 'tenants' population? (Not real clear to me if this is the proposed intention?)

Please contact me if you have any question or matters for additional discussion.

Respectfully,

Albert Frick
AF/af

Licensed Site Evaluator

Certified Soil Scientist

Maine Association of Site Evaluators Technical Review Committee Chairman