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Mr. Robert Scully
Environmental Engineering Program
Department of Public Health
450 Capital Avenue – MS#51SEW
P.O. Box 340308
Hartford, CT 06134

Re: Proposed Revisions to the Technical Standards for Subsurface Sewage Disposal Systems

Dear Mr. Scully:

I write to follow up on the discussion at the meeting of the Code Advisory Committee ("CAC") on July 31, 2014 regarding contemplated changes to the Technical Standards for Subsurface Sewage Disposal Systems (the "Technical Standards"). We understand that the proposed revisions are not set in stone at this time and that there will be another meeting of the CAC on September 16, 2014 to further discuss the proposed revisions, but as you suggested, I am offering my comments on the proposed revisions for your consideration in advance of that meeting. I further understand that the development of the revisions is an ongoing process. Accordingly, I may have additional comments going forward. My comments at this time are as follows:

1. The Department of Public Health ("DPH") is proposing revisions to the Technical Standards for Subsurface Sewage Disposal Systems that will have significant implications on the waters of the State, the health and welfare of the citizens of Connecticut and for a variety of stakeholders, including property owners, realtors, developers, home builders, affordable housing proponents, construction companies, health districts and sanitarians.

2. DPH is proposing these revisions without providing a technical, scientific, legal, or policy purpose for doing so.

3. The proposed changes reportedly are not designed to address any specific problem.

4. DPH is proposing fundamental revisions to the formula for calculating effective leaching area ("ELA"); this change will significantly decrease the rating of the present day high ELA rated systems. This in turn will increase the land area required to site a leaching system for a given property. This formula was empirically based on systems in the field

and has been successfully used for many years. The failure rate of septic systems in Connecticut is not statistically different than in other states.

5. The failure rate of the "newer" leaching systems, with high "internal surface area", is no greater than that of the more traditional technologies; in fact, based on discussions with installers and sanitarians, it appears to be lower. These systems have been in use in Connecticut for over twenty years; with an increasing reliance over the past seven.

6. It has been said that these systems are only in use in Connecticut. This is not true, these systems are being approved for use in other states as well.

7. Independent, third party testing has shown that these high rated systems are treating wastewater to the same level as the traditional technologies in a smaller footprint with less separation to the limiting zone.

8. The new technologies provide a viable solution to problems that could not be adequately addressed with conventional septic systems, including "community pollution problems" being addressed by decentralized wastewater management programs.

9. The new technologies allow landowners flexible options for meeting on-site wastewater treatment needs in compliance with the health code and protecting health and the environment, increasing property values and enhancing marketability.

10. The proposed revisions to the ELA formula will reduce the ratings for high ELA (greater than 10 ELA) systems. Using the DPH spreadsheet that applies the revised ELA formula, the ratings of the 40 high ELA systems, when gravity fed, will be reduced by an average of over 40%. The highest rated systems that are relied on for space limited sites will be reduced by over 70%. This means that two to three times the land area would be needed to site the same system.

11. Using the DPH spreadsheet for pressure dosed systems, the reductions are less dramatic, but these systems would require a dosing tank and a pumping system, increasing space requirements, adding expense and creating maintenance obligations for the property owner. There has been no documentation provided to support that this change is warranted or would make any material difference.

12. DPH is considering revisions that would allow the use of drip dispersal technology in Connecticut. We are supportive of the use of drip dispersal technology, but the proposed revisions would exempt drip dispersal from certain requirements that other time proven technologies would still need to meet. For example, drip dispersal systems would not be required to be designed by a Professional Engineer ("P.E."). Other types of pressure dosed systems should receive similar exemptions from DPH. P.E. designs or it will add a significant cost differential to these systems.

13. As described above, we are supportive of allowing the use of drip dispersal systems in Connecticut as this technology that has been proven outside of Connecticut. However, in

the same revisions to the Technical Standards, where the DPH is proposing to allow drip dispersal systems, they are also proposing to disallow the current use of the proven in Connecticut high ELA systems. This makes no engineering sense whatsoever; consider the following: as proposed by the DPH, drip dispersal systems in Connecticut will be sized to fit in the spaced allocated to a pipe and stone leaching system. Based on this criterion, a drip dispersal system serving a 3 bedroom house with a percolation rate of less than 10 minutes per inch, will have 329 orifices that are 0.07 inches in diameter. This equates to a total Biomat Filtration Area (BFA) and total Hydraulic Window (HW) of 0.0088 square feet; since with drip dispersal systems the BFA and HW are the same surface. Based on the wastewater design flow of a 3 bedroom house in the above referenced soils, and the above referenced 0.0088 square foot BFA and HW, the hydraulic load is 51,170 gallons per day per square foot. Again, since with drip dispersal systems the BFA and the HW are one and the same, this is the hydraulic load for both the BFA and HW. Based on the proposed DPH formula that would restrict the current use of the high ELA systems, we have similarly analyzed the most theoretically problematic system in the state, the Geomatrix GeoU 3921 ("3921"). With the 3921, on the same site as described above, the total HW is 24 square feet and the total BFA serving the HW is 517 square feet. This equates to a total hydraulic load to the BFA serving the HW of 0.75 gallons per day per square foot and the total hydraulic load to the HW is 16.18 gallons per day per square foot. This is a worst case scenario calculation; if the total BFA of the system were to be considered, these hydraulic loads to the 3921 would be reduced.

14. If the DPH has concern that the 3921 is overloading the HW, then they should be 2,132 times more concerned about the use of drip dispersal systems in Connecticut.

15. The 3921 has a BFA that is many times greater than the HW; with the drip dispersal system, it is the same surface. The BFA is where the organic matter is removed from the wastewater and metabolized over time. With respect to Long Term Acceptance Rate ("LTAR"), surface area is of critical importance; the formula is well-known and well-founded. At 0.75 gallons per day per square foot, the BFA of the 3921 falls well within accepted LTAR values. Once the organic matter is removed from the wastewater, you are left with a fluid that behaves like water.

16. The saturated hydraulic conductivity of the ASTM C 33 sand in the HW of the 3921 is many times greater than the hydraulic load that is being applied. Simply put, the DPH concerns behind the proposed revisions to the formula are not supported by science, engineering or field performance.

17. The above analysis and conclusions are not aimed at preventing the use of drip irrigation in Connecticut; but rather to illustrate the lack of science, logic and consistency in disallowing the current use of the high ELA systems in Connecticut, while at the same time allowing drip systems.

18. DPH is also proposing revisions that would increase the ratings of products that have an internal pipe by increasing the credited height from the pipe invert to ¾ the way up the pipe. DPH has not explained the basis of or necessity for this change. Changing the

rating without a technical reason, supporting tests or science is risky and could eliminate an unknown, built-in, safety factor. This is especially true since the ELA formula is empirically derived rather than based on concrete science. The simple reality is that when the liquid level in a leach field is ¾ of the way up a pipe it is or will soon be a problem. Whether or not the system is credited to the bottom or the top of the pipe, the infiltrative surface is still available. If this change is based on a study of liquid levels on these systems, relative to others, it would be helpful to know.

19. Increasing the rating for one reason, while reducing the ratings for another, without a well-articulated technical, scientific, legal or policy explanation simply does not make sense and on its face appears to be completely arbitrary and capricious.

20. DPH has the unusual authority to revise its Technical Standards without the need for a true adjudicatory process involving public notice, an opportunity for a formal public hearing, presentation and cross-examination of witnesses and the right to an appeal. Given the important property rights that are at stake, a formal rule-making process should be followed if the DPH intends to continue with the proposed revisions.

21. If these proposed changes are implemented in January, it will result in manufacturers changing their products to respond to the new rating system. DPH does not have the manpower to review all of the resulting new products or to grant exceptions in a timely manner. The proposed revisions, if implemented, will effectively bring the construction of new systems and the repair of failing systems to a standstill.

22. If these proposed changes are implemented, properties that have high ELA systems will cease to be fully compliant. Although the Health Code would not require the system to be immediately upgraded, future purchasers of this property will certainly discount the value of the property.

23. If the fullest extent of these proposed changes is implemented, some land that is presently buildable will cease to be so.

24. In this recession one bright spot is construction resulting from these high ELA systems.

This list is not all encompassing and the DPH position has been getting clearer with time. We will revise this as further information becomes available. I hope that this information is of assistance in making these important decisions.

Sincerely,

David Potts

Installer and Environmental Scientist