Board of Health

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MEMORANDUM

TO: **Sherborn Zoning Board of Appeals, ZBA**

FROM: **Daryl Beardsley and Julie Dreyfus, Sherborn Board of Health (BoH)**

DATE: **May 21, 2024**

RE: **Farm Road Homes 40B – BoH Comments and Recommendations (incomplete due to receipt of Peer Reviewer report at 7 pm last night)**

The following constitutes an update regarding the status of several key septic issues pertaining to the Farm Road Homes 40B project. Please note that final Peer Reviewer comments regarding the project were received last night and have not been fully evaluated by the BoH. Without knowing whether the hearing will be closed this evening, the following addresses a variety of outstanding issues as thoroughly as time permits.

Correction to Peer Review Report

In Tetra Tech's letter report of May 20, 2024 regarding Farm Road Homes, it is stated under Item #58 that "SeptiTech has an allowed loading of 660 GPD/acre with a total nitrogen of <19mg/l using the requirements of 310 CMR 15.217." The corrections are provided by the Provisional Use Approval for the proposed SeptiTech STAAR 13.5 system, the relevant excerpt of which is shown below:

Modified Provisional Approval – Rev. May 22, 2014, Renewal November 20, 2017, Mod. April 26, 2024
Technology: SeptiTech – Nitrogen Reducing Page **10** of **17**

Effluent Limits and Monitoring Requirements for Systems 2,000 to 10,000 GPD.

2. If the System is installed to serve new construction in an area that is subject to the Nitrogen Loading Limitations of 310 CMR 15.214 and the facility does not meet with the Nitrogen Loading Limitations pursuant to the aggregation provisions of 310 CMR 15.216, the System shall not be designed to receive and shall not receive more than 440 gallons of design flow per day per acre (gpda), except an increase in the flow rate per acre is allowed up to a design flow up to 550 gpda provided that the facility meets a TN effluent limit of 25 mg/l or less.

   The System Owner shall repair, replace, modify or take any other action as required by the Department or the local approving authority, if the Department or the local approving authority determines that the System is not capable of meeting the total nitrogen concentration limits in the effluent.

The Farm Road Homes system is limited to 550 gpda and to a treatment efficacy assumption of 25 mg/l of TN. Only some systems that are less than 2,000 GPD in flow volume are permitted to design flow up to 660 gpda and to assume that TN will be 19 mg/l.

The Septic System Capacity is Maximized for the Site

Project	**Title 5**
Site Conventional Acres = 14	Title 5 Acres = 15.246
Plan has 76 Bedrooms @ 110 GPD	Design Effluent at 8,360 GPD
4 Bedrooms per Acre (440 GPD)	Standard Effluent at 6,708 GPD
5 Bedrooms per Acre (550 GPD)	A/I Allowed Effluent at 8,385 GPD

Room count and bedroom count will be an important factor for this project. The septic design flow currently proposed does not permit the addition of even one bedroom, because Title 5 regulations for systems in nitrogen sensitive areas result in the effluent volume restrictions noted in the table above.

Request 3rd Party to Witness In-situ Soils and Conditions at Time of SAS Installation

In order to resolve Farm Road Homes' soil type discrepancies previously discussed by the BoH at meetings and in writing, the BoH recommends that a Certified Soil Evaluator, acting as a neutral third party, be present at the next point of soil type validation in the Disposal Works Permit process. Per 310 CMR 15.020 Disposal System Construction Permits, "In the event it is discovered during installation of the system that site conditions differ from those contained in the site evaluation and/or the approved design plans, the originally issued Disposal System Construction Permit is void, installation shall stop, and the applicant shall reapply for a new Disposal System Construction Permit."

For each Disposal Works Permit, the Health Agent conducts septic inspections during construction, including when the leaching area has been excavated, prior to the installation of leaching trenches. An agreement can be devised whereby the Health Agent, the Engineer, and a qualified neutral third party confirm or correct the soil types in the SAS area as the installation proceeds. If site conditions differ from what has been designed for on the permit, construction is to stop, and a new permit must be submitted to the Sherborn Board of Health.

There may be extra steps necessary to work around an already disturbed area to ensure that naturally deposited soils are being evaluated.

Recommendation Regarding Nitrogen Loading Analysis for Farm Road Homes

This is a large project for Sherborn, with effluent discharged into a concentrated area, in part because site conditions (e.g., depth to bedrock, etc.) are not favorable for distributing soil absorption systems. Other densely developed areas in Sherborn include the downtown area and The Fields at Sherborn. Wells in the downtown area have shown elevated nitrogen levels over the last 30 years, with the highest single reading being 9.88 mg/l in 2017 (but having since reduced, unconfirmed as due to activity changes). As for the Fields at Sherborn, although its septic system has only recently received full build-out flows, its regularly monitored PWS has already shown a rise in nitrogen levels. The levels can be expected to increase over time as the filtering sites within the soil column are used up.

Per its 2-26-2024 Memorandum to the ZBA, the BoH indicated its willingness to accept the Applicant's "Hydrogeologic Evaluations Report", which included preliminary prediction of down-gradient water quality impacts (i.e., nitrogen loading analysis serves as a proxy for other septic contaminants), in lieu of an EHIR. Since then, the BoH has:

- reviewed information provided by the Applicant, including original information and that revised/amended per requests for clarification, correction, and transparency;
- compared the current nitrogen loading analysis to analytical methods utilized for The Fields at Sherborn; and
- considered input on the subject as provided by various knowledgeable persons at ZBA hearings, to the Land Development webpages, and at BoH meetings.

Per its 3-20-2024 Memorandum to the ZBA, it was noted that the BoH voted 3:0 on March 18, 2024 to:

> *Recommend to the ZBA that a third party carry out the analyses of hydraulic conductivity, groundwater mounding, and nitrogen loading calculations.*

As of this date, the BoH does not yet have confidence in the nitrogen loading analysis as presented. Thus, **the BoH continues to advocate for**:

- an independent third-party performing the nitrogen loading analysis;
- using existing data, including data recorded by the Health Agent during subsurface investigations; and
- the use of a well-vetted method for the analysis (such as ModFlow), which might alleviate the need for the third-party suggested above.

Water Supply Design and Development

The BoH recommends that a Public Water Supply (PWS) be implemented for the project, in the spirit of the intent of PWS regulations. Issues in support of that position have been provided via prior memoranda and slide decks.

If private water supply wells are pursued, the BoH has the following recommendations:

- Since there are no State regulations for private wells, Sherborn's well regulations are to be followed.
- As with all other new development in Town, a viable water supply shall be demonstrated before proceeding with other aspects of site development (or those other aspects are undertaken at the Applicant's risk).
- Extended, simultaneous pump testing of all wells is the wisest course of action to demonstrate adequate supply.[1] Such an effort is clearly in the interest of future residents of the Project. Pump tests conducted on one well at a time can give an inflated estimate of water availability, especially if their supplies (e.g., bedrock fractures) are interconnected (i.e., one or more is drawing from the same subsurface reserves). Guidance about how to conduct the pump testing and monitoring has been provided for other projects and on page 10 of the BoH's 2-26-2024 memorandum about this project.
- Due to the scale of this project, pump testing of 5 days is recommended and care in selecting the reinfiltration methods and sites for the withdrawn water is strongly advised. For example, the future septic absorption system areas have been demonstrated as having more overburden soil than elsewhere on site, plus this might serve as a reasonable test of their ability to receive effluent.

Management of Shared Private Water Supplies

Through experience with PWSs shared by residences (rather than commercial or municipal enterprises), MassDEP enacted requirements for financial and managerial mechanism to avoid difficulties in proper operation and maintenance that it observed. Private wells that are shared by residences are likely to encounter similar difficulties. Thus, the BoH offers the following recommendations for the Comprehensive Permit.

- Consult MassDEP's PWS guidance for structuring co-ownership and management of shared wells. Small and very small PWS requirements and guidance are based on MassDEP's solutions to issues associated with shared well systems, such as establishing funds and a method for applying those funds in a timely manner to inevitable maintenance, repairs, testing needs, etc.

- To strengthen the reliability of water supplies within the project, require the use of asset management planning tools for small water systems. The EPA and MassDEP offer options to select from at https://www.mass.gov/doc/guidelines-for-public-water-systems-chapter-11-capacity-development-0/download (see Section 11.4.3.1).

[1] The use of multiple private wells for projects that would otherwise fall under PWS regulations is relatively new in Sherborn. As such, regulations have not yet caught up with this emerging practice. Prior projects to use this approach include Abbey Road and 59 North Main Street. Simultaneous pump testing was performed at Abbey Road (except for well 5, which was installed under different circumstances) and at 59 North Main Street; 59 North Main Street also included monitoring of nearby wells during the pump testing. The populations served (i.e. volumes to be drawn) at these projects were significantly smaller than this project.

Management of the Shared Septic System

The BoH recommends that provisions for shared ownership and management of the septic system should be similar to those for the shared water supplies.

Purpose of the 2021 Soil Testing Plan is Unclear

A copy of a 2021 soil testing plan for the site was received at the evening of 5-20-2024. Cursory review against the most recent site plan set revealed several potential discrepancies. It is unclear what information the BoH is to focus on in the 2021 plan.