



TOWN OF HINGHAM
BOARD OF HEALTH
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July 16, 2020

To: Hingham Zoning Board of Appeals (ZBA)
From: Hingham Board of Health
Re: 302-304 Whiting Street

Dear Chairperson Maguire:

Introduction:

The Hingham Board of Health (BOH) has recently been made aware of a 40B project at 302-304 Whiting Street. While the majority of citizens of the Town, including all members of the BOH, feel strongly that there needs to be adequate affordable housing in Hingham, the BOH also has the duty to protect the current and future citizens of the Town from any ill-effects of new construction on the environment and the health of townspeople. In order to accomplish this, we feel it is necessary to adhere to the current town bylaws at all times. Nevertheless, we are aware that not all conditions can be met perfectly at all times.

Currently, the Town has an acceptable (but perhaps not desirable) number of 40B housing units as required by state bylaws. This fact gives the Town greater flexibility when it comes to approving or denying any 40B project. The BOH feels that it would be wise, and in the best interest of the Town, to encourage current and future 40B projects to abide by local bylaws as much as possible.

After review of the plans for the current 40B project at 302-304 Whiting Street, the BOH feels that this project has multiple issues relating to the health and safety of the neighbors and local community; excessive nitrogen loads, close proximity to neighboring wells, and no evidence of an adequate water supply are all of serious concern to the BOH. We hope you will take these issues, as described in this letter, seriously before making any final decisions on this project.

Project Scope:

The Hingham Board of Health (the "Board") has reviewed the comprehensive permit application filed on December 10, 2019 for two (2) proposed single-family dwellings at 302-304 Whiting Street. The applicant is seeking expedited permitting of its project under the state's chapter 40B statute. The Board is in possession of the following documents contained

in the application: Utility Plan for Proposed Dwellings 302-304 Whiting Street, dated 11/24/19; Proposed Subsurface Disposal System for 302 Whiting Street., dated 11/24/19 as revised 6/15/20; Proposed Subsurface Disposal System for 304 Whiting Street., dated 11/24/19 as revised 6/15/20; Response to Peer Review Comments, G. James, dated 2/10/20; and Site Plan for Proposed Dwellings 302-304 Whiting Street, dated 2/10/20 as revised 6/15/20.

The proposed project includes the division of a single lot owned by the Town of Hingham into two separate residential lots. The purpose for the division is to create two (2) distinct three-bedroom dwellings, rather than just a single dwelling on a single lot, for eventual sale to applicable purchasers. Both lots would be classified as 'affordable' through the state's Housing and Community Development requirements and maintained in perpetuity as part of Hingham's subsidized housing inventory. It should be mentioned that the proposed project would be unbuildable if held to the current lawful standards within the Town of Hingham, hence the plan to set aside our local standards through the 40B permitting process including the standard for the safe disposal of sanitary sewage. Our local sewage disposal regulations were recently updated on April 1st of this year - so it is the October 15, 1998 version of these regulations that the proposed project would be held to.

Water Supply:

The municipal water supply for the towns of Hingham, Hull and parts of North Cohasset presently comes from a single source aquifer located within the Weir River Watershed sub-basin. The proposed lots are to receive their water supply from the municipal Weir River Water System (the "Water System") owned by the Town of Hingham. Hingham's water supply is currently approaching its state registration limit of 3.51 million gallons per day. A few years ago the system withdrew 97% of this registered amount, the year before 99%. In October of 2016 the Massachusetts Department of Environmental Protection (MA-DEP) notified the Water System's prior owner that it needed to identify an additional supply source to supplement its registration allotment. It is unknown where the Town of Hingham is in the process of identifying potential new source options as requested by the MA-DEP. Regardless, the Board has not seen the required documentation indicating whether the Weir River Water System has the ability and the capacity to supply water to this project.

State Title 5 Nitrogen Loading Standards:

Ingestion of drinking water with excessive nitrates/nitrites (nitrogen) may cause death due to methemoglobinemia (blue baby syndrome) in infants, and has been linked to deaths diagnosed as Sudden Instant Death Syndrome, fetal and birth defects, and miscarriages. Protecting drinking water sources from excessive nitrogen contamination is a core responsibility for any Board of Health. Unlike bacterial pathogens or toxic heavy metals, the treatment process for a municipal or private home's water supply cannot readily remove excessive nitrogen from its groundwater source. The only real protection our residents have against excessive nitrogen groundwater contamination is to limit its introduction.

State Title 5 regulations 310 CMR 15.215 identify nitrogen loading standards applicable to the Weir River Watershed sub-basin which is the source of drinking water for the Weir River Water System. This includes a state-designated Zone II nitrogen sensitive protective area that

encircles the Water System's production wells. In septic system permitting, any residential property across the state within a Zone II is required to possess enough land area to adequately diffuse/disperse a proportionate amount of urea nitrogen that's generated from the inhabitants of the dwelling, specifically, the number of bedrooms within the dwelling. The required dispersal area by state regulation is for the property to have at least 10,000 sq.ft. of land area per bedroom. Because Hingham's water supply comes from a sole-source aquifer and is highly susceptible to cross contamination as well as other factors, the local Hingham standard requires at least 12,500 sq.ft. of land area per bedroom.

Unlike a hard boundary or a setback from a defined feature on the surface, a Zone II boundary is for groundwater. Where the proximal groundwater beneath the entire project property (contributing to our drinking water) would be expected to migrate toward the abutting stream bed, a more realistic Zone II boundary should have extended to this stream bed and encompassed the entire property. But it does not. For some reason the state-drawn Zone II map is not environmentally accurate and splits the property. Nevertheless, a large portion of the project property is located within the Zone II protection area. It has long been the Board's policy to consider the entire property nitrogen sensitive in situations where any part of a Zone II is within the lot. This was the crux of the discussion that member Shilts provided to the ZBA in March during a prior hearing that also included a related discussion about the regulatory construct of credit land aggregation. In the interim, the Board has discussed the issue of partial Zone II protective areas within a lot with MA-DEP. MA-DEP agreed with the Board's general reasoning and reading of the regulation but differed on how it permits their own large-scale septic system projects. The practice of MA-DEP has been to look at the location of the septic system's soil absorption system as being within or outside of the state's Zone II boundary. MA-DEP agreed that the state regulation needs to be re-examined and re-written to reflect a clearer comprehensive position, one way or the other. In the meantime the Board has agreed to use the MA-DEP practice in addressing lots that have a split Zone II for projects being held to state regulation, including 40B projects.

In January of 2018, the Board provided the ZBA with its policy regarding lots located within our Water System's Zone II, or within the Weir River Watershed sub-basin but outside of Zone II, or those peripheral areas in Hingham that are totally outside of the Weir River Watershed sub-basin. For projects using in-ground septic systems utilizing the 40B comprehensive permitting process, the Board requests that the ZBA impose the local 12,500 sq.ft. per bedroom requirement when the project is located within Hingham's Zone II and the state's 10,000 sq.ft. per bedroom requirement when the property is within the Weir River Watershed sub-basin but outside of Zone II (or designated area served by private wells). The Board suggests the ZBA use its judgment whether any land area per bedroom requirement is needed when the project is located outside of the Weir River Watershed sub-basin (or designated area served by private wells) depending on the circumstances. As far as the 302 - 304 Whiting Street project is concerned, about one-third of the property is located within Zone II and the entirety of both septic system soil absorptions areas are within the Weir River Watershed sub-basin. Therefore it is the Board's policy that the ZBA could modify the town-wide local supplementary septic regulatory requirement, Section VI-8, regarding nitrogen sensitive areas from the stated 12,500 sq.ft. of land area per bedroom minimum to only a

10,000 sq.ft. of land area per bedroom minimum. This has been the Board’s consistent policy for all 40B projects and remains so with our new regulations.

Nitrogen Load Calculations:

The Board conducted nitrogen load calculations for the proposed project using the following information and coefficients.

302 Whiting St:

• Total Lot Area:	25,700	s.f.
• Total Number of Bedrooms:	3	
• Total Lawn Area:	17,540	s.f.
• Total Natural Area:	21,590	s.f.
• Total Paved Area	3,230	s.f.
• Total Roof Surface Area:	880	s.f.
• <i>Av. Annual Precipitation:</i>	<i>48.00</i>	<i>inches/year</i>
• <i>Lawn Fertilization Rate:</i>	<i>3.00</i>	<i>pounds/1,000s.f./year</i>
• <i>Amount of Fertilizer Reaching Groundwater:</i>	<i>0.25</i>	<i>% of total</i>
• <i>Infiltration Rate Lawn/ Natural Area:</i>	<i>0.45</i>	<i>% of total</i>
• <i>Nitrogen Concentration T5 Wastewater:</i>	<i>35.00</i>	<i>mg/l</i>
• <i>Nitrogen Concentration Recharge (pervious):</i>	<i>1.50</i>	<i>mg/l</i>
• <i>Nitrogen Concentration Recharge (impervious):</i>	<i>0.75</i>	<i>mg/l</i>
• Title 5 Recharge:	1,249.05	l/d
• Roof Area Recharge:	244.66	l/d
• Paved Surfaces Recharge:	898.03	l/d
• Natural Area Recharge:	3,015.27	l/d
• (Total Recharge)	5,407.01	l/d
• Title 5 Nitrogen Additions:	43,716.75	mg/d
• Roof Area Nitrogen Additions:	183.50	mg/d
• Pavement Area Nitrogen Additions:	1,347.04	mg/d
• Lawn Area Nitrogen Additions:	16,362.66	mg/d
• (Total Nitrogen Additions)	61,609.95	mg/d
Resulting Nitrate Concentration:	11.39	mg/l

304 Whiting St:

• Total Lot Area:	15,692	s.f.
• Total Number of Bedrooms:	3	
• Total Lawn Area:	14,312	s.f.
• Total Natural Area:	14,312	s.f.
• Total Paved Area	500	s.f.
• Total Roof Surface Area:	880	s.f.
• <i>Av. Annual Precipitation:</i>	<i>48.00</i>	<i>inches/year</i>
• <i>Lawn Fertilization Rate:</i>	<i>3.00</i>	<i>pounds/1,000s.f./year</i>
• <i>Amount of Fertilizer Reaching Groundwater:</i>	<i>0.25</i>	<i>% of total</i>
• <i>Infiltration Rate Lawn/ Natural Area:</i>	<i>0.45</i>	<i>% of total</i>
• <i>Nitrogen Concentration T5 Wastewater:</i>	<i>35.00</i>	<i>mg/l</i>

• Nitrogen Concentration Recharge (pervious):	1.50	mg/l
• Nitrogen Concentration Recharge (impervious):	0.75	mg/l
• Title 5 Recharge:	1,249.05	l/d
• Roof Area Recharge:	244.66	l/d
• Paved Surfaces Recharge:	139.01	l/d
• Natural Area Recharge:	1,998.82	l/d
• (Total Recharge)	3,631.55	l/d
• Title 5 Nitrogen Additions:	43,716.75	mg/d
• Roof Area Nitrogen Additions:	183.50	mg/d
• Pavement Area Nitrogen Additions:	208.52	mg/d
• Lawn Area Nitrogen Additions:	13,351.33	mg/d
• (Total Nitrogen Additions)	57,460.10	mg/d
Resulting Nitrate Concentration:	15.82	mg/l

Generally, no property in Hingham should have nitrate concentration that exceeds 10.00mg/l. The nitrate loading calculations for both parcels demonstrate that the proposed project, in its current design configuration, will contaminate the surrounding groundwater with excessive nitrogen. This includes more than a 50% increase nitrate load at 304 Whiting St. The two lots represent examples of putting too much development and too many people on too little land. This is unacceptable. Nitrogen load contamination to this level could seriously endanger the health and welfare of Hingham residents with private wells living next to the proposed project.

Private Water Supply Protection:

In addition to the Board’s interest in protecting our town’s municipal water supply and its dependent watershed, the Board also has concern over the neighboring properties to the project parcel that use private wells as a source of their drinking water supply. In fact, most of the homes along this stretch of Whiting St. rely on private wells. Of particular concern is the abutting property at 300 Whiting St. that has its existing water supply-well that will be less than 125 feet from the proposed septic system at 302 Whiting St. and about 140 feet from the proposed septic system at 304 Whiting St. The Hingham setback standard between a septic system and potable well is 250 feet. Recently conducted public hearings on all of the town’s local septic regulations resulted in new regulations promulgated on April 1st that includes the appropriate foot setback previously mentioned. Compounding the potential problem is that the 300 Whiting St. setback is itself only about 125 feet from its own septic system to its well water supply. The nitrogen load risk to the private well at 300 Whiting St. would be triple (3x) what is considered safe if the proposed project were constructed as currently designed. Surely, the need for affordable housing in Hingham should not imperil the long-term health of the family that resides at 300 Whiting St.

Not that long ago, the Board worked through a different multi-dwelling project that had similar private water supply setback issues and strong neighborhood concerns. Because the proposal came to the Board early on, the project’s overall health and safety implications were identified early only and the neighbors became well-informed. Everyone worked together to find acceptable solutions. It’s unfortunate that this 40B project, like some others we’ve seen recently, chose to bypass the Board of Health’s open public forum in hopes of pushing their

proposal past non-experts in the complex realm of septic system design and groundwater protection. For instance, it's unknown if the homeowner of 300 Whiting St. has been asked if they would be willing to accept municipal water that could eliminate the existing risk that their own septic system poses to their health. And it's unknown if the project's design engineer was ever asked to prioritize the setback between the project's septic systems and the abutting neighbor's private well, or engage in a discussion about potential denitrification mitigation. The Board feels strongly that there are reciprocal aspects to affordable housing and the health of the community. There is an outcome here that could benefit all. Hopefully through additional dialog and informed discussion it will become clearer.

Massachusetts Case Law:

Numerous examples in Massachusetts case law describe the expertise, responsibilities and importance of local board's of health involvement in the 40B process. Case law also clearly identifies the primacy of public health protection over the social-economic goal of affordable housing. In Holliston v. Housing Appeals Committee (2011) it says: "*the HAC may still uphold denial of the permit as 'reasonable and consistent with local needs' if the community's need for low or moderate income housing is outweighed by valid planning objections to the proposal based on considerations such as **health**, site, design, and the need to preserve open space*" (**emphasis added**). Tortorella v. Board of Health of Bourne (1995) describes the supremacy of the local BoH to enact local health standards to best protect their citizens. In Goldberg v. Board of Granby (2005) this appreciation of a local board of health's "*experience, technical competence, and specialized knowledge of the [local] agency*" is further codified.

The Board also recognizes our own responsibility to identify and explain the health-related concerns of our local community before imposing any limitation on a developer's right to develop its property, including a 40B developer. Again in Holliston v. Housing Appeals Committee (2011) it says: "*[the BoH has] the burden, proving, first that there is a valid health, safety, environmental, design, open space or other Local Concern which, supports the denial, and then, that such Local Concern outweighs the Housing Need*". Further, "Local Concern" is defined in Massachusetts regulation 760 CMR as: "*the **need to protect the health or safety of the occupants of proposed housing or of the residents of the city or town, to protect the natural environment, to promote better site and building design in relation to the surroundings, or to preserve open spaces***" (**emphasis added**).

In Reynolds v. Town of Stow ZBA (2015), it says: "*The judge's **finding that the [septic] system would contaminate the groundwater such that unacceptable levels of nitrogen would reach an abutter's well demonstrates that compliance with the State standards, which SEHC contends are applicable and the judge found to be applicable, are insufficient to protect the groundwater from being contaminated by the proposed project***". The decision goes on to conclude: "*We [MA appellate court] conclude that the plaintiff has identified **an important local health issue, maintaining clean groundwater servicing local private wells, that is not adequately protected by compliance with applicable State standards***" (**emphasis added**).

Conclusion:

The Hingham Board of Health insists that the Zoning Board of Appeals hold the applicant to every state Title 5 regulatory standard, and to the local Hingham Supplemental Septic

Regulations section IV-9, section V-5, section VI-6, and section VI-8 (modified from 12,500 to 10,000 s.f. of land area per bedroom), and to a water supply commitment letter.

The Board remains a resource to the ZBA regarding this application and any other health and safety concern affecting the visitors, residents and businesses of Hingham.

HINGHAM BOARD OF HEALTH

Peter Bickford, Chairman

Elizabeth Eldredge, M.D.

Kirk Shilts, D.C.