



February 23, 2015

Wenham Zoning Board of Appeals
Wenham Town Hall
138 Main Street
Wenham, MA 01938

Wenham Conservation Commission
Wenham Town Hall
138 Main Street
Wenham, MA 01938

**Re: Maple Woods - 62 Maple Street
Engineering Review
Wenham, Massachusetts**

Dear Members of the Zoning Board and Conservation Commission:

Tetra Tech (TT) has been retained by Hill Law and the neighbors and abutters to the above-referenced residential project, and is pleased to submit our review of documents related to the project, generally referred to as Maple Woods. The objective of our services was to review plans and supporting documentation provided by the applicant and other reviewers and provide initial comments on the completeness and general suitability of the design and the Project's potential impact to public health, safety and the environment.

1.0 Comments on Reliability/Completeness of Information

The following comments identify areas where information provided may not be sufficient to result in an adequately informed conclusion. Suitable and reliable foundational information is an absolute necessity in determining if the proposed project can be constructed and operated in a manner that meets applicable performance standards and expectations. Our comments are provided below.

1. No professional endorsement – None of the Plans or documents submitted include a stamp from a Professional Engineer or Land Surveyor licensed in the Commonwealth of Massachusetts. Without such endorsement it is impossible to establish the reliability of information provided. We recommend the applicant be required to provide appropriate professional endorsements on any plans submitted in support of the application.
2. Uncertain datum reference – Plans provided do not include an adequate datum reference. Note 8 on sheet 2 of 4 indicates “elevations are reported to be based on the American Vertical Datum of 1988”. Use of the term “reported to be” suggests a level of uncertainty in the information provided. Clear and reliable datum references are needed to compare vertical information across data sources. The ability to compare information on groundwater elevations from other sources is dependent on reliable datum reference. We recommend the applicant be required to provide any additional survey required to confirm the datum reference.

3. Reference to plans not included in the submission – Plans provided direct the reader to lighting and septic system plans not included in the submittal. Detailed septic system design information is required to determine if wastewater generated at the site can be safely discharged to groundwater. We also recommend the applicant be required to provide floor plans and calculations clearly establishing how project wastewater flows were calculated.
4. No soil or groundwater information provided for Septic System – Plans provided suggest several test pits and percolation tests were performed on the site in the area of the proposed septic system yet no test pit or percolation test logs have been provided. This information is critical in establishing if underlying soils and groundwater conditions are suitable to safely discharge wastewater generated from the project. Without test pit and percolation test data there is no way to determine if the size and elevation of the system as shown will meet design requirements of 310 CMR 15.00 (Title V). Given how close the proposed subsurface soil absorption system is to the proposed building and stormwater recharge system any required changes will likely impact the layout/location of other site improvements. Without reliable and complete test pit and percolation test information it is impossible to conclude that the measures provided are adequate. We recommend the applicant be required to provide detailed design of the proposed soil absorption system and document the foundational information used in the design (test pits and percolation tests) for both the primary and reserve disposal areas.
5. Incomplete groundwater information for stormwater recharge system - Information on several of the test pits shown was provided on Sheet 6 of the Notice of Intent submission, however the information provided is labelled as “Unofficial” and does not indicate seasonal high groundwater clearly. These test pits are critical in determining if adequate separation exists to groundwater (from the bottom of the stormwater infiltration system), if there is a potential for groundwater mounding to impact the adjacent wastewater soil absorption system and that adequate measures are proposed to mitigate for lost groundwater recharge due to the large amount of new impervious area. Without reliable and complete test pit and percolation test information it is impossible to conclude that the measures provided are adequate. We recommend the applicant be required to submit all test pit and percolation test logs and provide the appropriate certification of their completeness and reliability.

2.0 Comments on Potential Risks to Public Health or Safety

The following comments identify areas where significant questions remain related to potential risks to public health or safety. Most of our concerns relate to information needed to conclude if the Project can be constructed and operated without risk to public health or safety that has not been provided by the Applicant. Our comments related to potential risks to public health and safety presented by the Project are provided below.

6. It is unclear if adequate space has been provided to maneuver the emergency vehicle required to fight a fire at a building that exceeds 40 feet in some places. Through access is not provided for emergency vehicles around the perimeter of the apartment building, and no

turnaround is provided. These issues clearly represent a risk to public health and safety. We recommend the applicant be required to provide plans showing maneuvering aisles needed to accommodate an emergency vehicle suitable to fight a fire at a wood structure of the height proposed.

7. No information has been provided supporting the suitability of the proposed wastewater disposal system. Given the constrained location of the soil absorption system and its proximity to the proposed stormwater recharge system a significant potential exists for the discharge of under-treated wastewater which could pose a risk to the health of residents and nearby public water supplies. We recommend that applicant be required to provide design plans and supporting data proving the ability to satisfy state and local system design criteria.
8. The Project is only providing a single means of access/egress. The potential exists for the single access to be blocked limiting the ability of first responders to access the site. We recommend the applicant be required to provide secondary means of accessing the site.
9. No area has been designated for snow storage. Given the proposed density of development and the proximity of the proposed property lines to buildings and other site improvements there is little room provided for the storage/disposal of snow significantly increasing the likelihood that emergency access and general safe site circulation could be impaired by piled snow. This is a particular concern for the area around the building which barely has enough room for fire access (see comment 5). We recommend the applicant be required to designate a snow storage area and demonstrate the suitability of the area provided.

3.0 General Comments

The following comments identify areas where we have general comments on project design. Most of our concerns relate to proposed property line and its proximity to proposed improvements leaving little or no room for adequate maintenance or modification of the site to address potential future issues that are unforeseen at the time of review.

10. It is unclear as to how or why the applicant intends to use the Waterloo Biofilter Secondary Treatment System referenced in the letter from C.G. Johnson Engineering, Inc.. However, it is important to note that this system has Provisional Use Approval only and, as indicated in its approval letter from MassDEP, the approval has been granted to “determine if the Technology is capable of consistently meeting the concentration limits for total nitrogen (TN) of 25 milligrams per liter”. We recommend the applicant be required to provide specific details of how the Waterloo components will be used in the proposed wastewater disposal system in addition to the detailed wastewater disposal design information discussed in earlier comments.
11. The limits of development extend beyond the primary parcel property line. We recommend the applicant confirm required control of all of the land required for the development of the project and that the affected subject parcels have been adequately referenced in any public



notice requirement or other application submittal requirement. Certification should be provided indicating that compliance with existing zoning is maintained for any impacted lots (abutting the project site).

12. The proposed stormwater recharge system is located within 2 feet of the proposed property line leaving little or no room to repair or maintain system without accessing the adjacent property or allowing any room in the event that changes in either the wastewater disposal system or groundwater recharges system cause a modification in the horizontal extent of the system.
13. Parking is proposed at one space per unit which is significantly lower than we would expect for an “over 55” age restricted facility. Given the facility is not within reasonable walking distance from public transportation and has few on-site amenities, at a minimum each household would be expected to have one car. This leaves no room for visitors, building staff/workers, or additional vehicles. We recommend the applicant be required to provide additional spaces and a justification for the proposed amount. Typically projects of this type will provide 1.5 spaces per unit to accommodate the range of uses expected at the site.
14. Given the volume of water being introduced in a relatively constrained footprint a significant risk exists for ground water mounding that may impact the performance of absorption systems (stormwater and wastewater). We recommend the applicant provide a mounding analysis as part of the wastewater soil absorption system and stormwater recharge system design to verify required separation from mounded groundwater is provided.

We appreciate the opportunity to provide these services and look forward to continuing to work with you. Please contact us if you have any questions or require additional information.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'S.P. Reardon'.

Sean P. Reardon, P.E.
Vice President

Cc: Daniel C. Hill