

Horsley Witten Group

Sustainable Environmental Solutions

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April 8, 2015

Emilie Cademartori
Town of Wenham
Zoning Board of Appeals
Wenham Town Hall
2nd Floor
138 Main Street
Wenham, Massachusetts 01938

RE: Peer Review for Maple Woods Wastewater Treatment System
Comprehensive Permit Application

Dear Ms. Cademartori and Board Members:

The Horsley Witten Group, Inc. (HW) is pleased to provide the Wenham Zoning Board of Appeals (ZBA) with this peer review of the Maple Woods subsurface wastewater disposal system in conjunction with the Comprehensive Site Plan submission located at 62 Maple Street in Wenham, Massachusetts. The proposed Chapter 40B residential development is located on approximately 3.5 acres of undeveloped woodlands. The Applicant proposes a new age-restricted residential community with 60 one-bedroom homes located within one three-story building.

The following documents and plans were reviewed by HW:

- Application for Disposal System Construction Permit, prepared by C.G. Johnson Engineering, Inc.;
- Soil Suitability Assessment for Onsite Sewage Disposal, prepared by C.G. Johnson Engineering, Inc., dated May 28, 2014, June 4, 2014 and July 23, 2014;
- MA DEP Renewal of Approval for General Use: Waterloo Biofilter™; dated November 1, 2012;
- MA DEP Standard Conditions for Secondary Treatment Units Certified for General Use dated February 19, 2013;
- Proposed Onsite Wastewater Treatment and Disposal System Plans, prepared by C.G. Johnson Engineering, Inc., dated March 12, 2015 including;
 - Site Plan, Sheet 1 of 6
 - System Profile, Sheet 2 of 6
 - Details & Notes, Sheet 3 of 6
 - Pump Chamber to Waterloo Biofilter™ Design, Sheet 4 of 6
 - Waterloo Biofilter™ & Recirculation Design, Sheet 5 of 6
 - Waterloo Biofilter™ & Pressure Distribution Design, Sheet 6 of 6

Based on the materials submitted and reviewed to date, HW provides the following comments and recommendations on the proposed wastewater system.

Wastewater Treatment System Review

The treatment system consists of a two compartment 20,000 gallon septic tank, 10,000 gallon pump chamber, Waterloo Biofilter™ model UG6600 gpd secondary treatment unit and a pressure dosed leaching field with a four-zone distribution valve.

1. The Waterloo Biofilter™ secondary technology is approved by the Massachusetts Department of Environmental Protection (DEP) and is allowed for use under a General Use certification.
2. HW recommends the applicant provide a note on the plan referencing the Waterloo Biofilter™ General Use Approval and the Standard Conditions for Secondary Treatment Units, to ensure that all of the requirements and conditions of the approval are met.
3. The fire access road shown on Sheet 1 is located close to the eastern edge of the Waterloo Biofilter™ tank, and it is not clear if this tank has been designed to handle the load from emergency vehicles. HW recommends that for additional protection, a set of bollards are placed next to the tank to avoid vehicles driving over it or the tank should be specified to handle H-20 loads.
4. On Sheet 1 of the Site Plan, the Waterloo tank is labeled as S-3; however, it appears it should be labeled as S-7 per the Key. HW recommends that the Applicant clarify the labeling.
5. Test pit T-9 shows standing water at 52-inches below grade and soil mottling observed at elevation 63.3. The observed mottling is 8.7 feet higher than the assumed Estimated Seasonal High Groundwater (ESHGW) elevation used for the design. After discussing these findings with Gregory Bernard, the Wenham Health Agent, it was determined that the water table observed in TP-9 is not representative of seasonal high groundwater.
6. In the groundwater mounding calculations on sheet 2, the Applicant uses a Specific Yield (Sy) of 0.25 and duration of infiltration period (time) of 90 days, which meets MassDEP requirements. However, in our opinion a longer time period and lower specific yield would better represent a steady state condition. Additionally, the Applicant assumes a saturated thickness depth equal to elevation 40.8, (a total aquifer thickness of 13.8 feet), which is described as elevations in the wetlands. The test pit data does not show the loamy fine sand or loamy medium sand material extending beyond elevation 46.7. HW recommends conducting a soil boring in the location of the leaching field to verify the saturated thickness of the loamy fine sand and loamy medium sand material.
7. The redundant off/low alarm and timer on float elevations shown in the 10,000 gallon pump chamber detail on Sheet 4 are set 2-inches apart. With the floats set this close, the turbulence in the tank may cause float chatter. We recommend that the inlet tee to the 10,000 gallon pump chamber is extended below the redundant/off float elevation to minimize turbulence.

8. The effluent dosing pumps are shown in the Waterloo Biofilter™ tank with access from a 24-inch diameter manhole cover. HW recommends that these pumps are provided with slide rails for easy removal, as the Myer's ME150 pumps weigh 70 – 80 lbs each. Additionally, the applicant should confirm that the 24-inch diameter manhole provides adequate access to remove the pumps.
9. HW recommends providing check valves and gate valves on the discharge piping from the 10,000 gallon pump chamber shown on Sheet 4. All valves should be accessible from the access manhole cover.
10. HW recommends that the Applicant verify the manifold sizing calculations for the pressure dosed leaching field shown on Sheet 6. The length of the manifold segments (L) is shown as 1-foot in the calculations; however, the spacing appears to be 5-feet as shown on the site plan and leaching field zone detail.

Conclusion

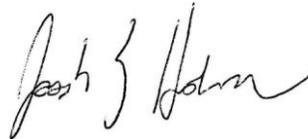
HW recommends that the Wenham ZBA and/or the Wenham Board of Health require the Applicant to provide a written response to these comments to be considered during your decision process. The Applicant is advised that provision of these comments does not relieve him/her of the responsibility to comply with all Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Carter Bernardo at 857-263-8193 (jbernarado@horsleywitten.com) if you have any questions regarding this review.

Sincerely,

HORSLEY WITTEN GROUP, INC.



Janet Carter Bernardo, P.E., LEED AP
Senior Project Manager



Joe Henderson, P.E.
Project Engineer

Cc: Meridian Associates