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March 7, 2018

Sherre Greenbaum, Chair
Wayland Conservation Commission
41 Cochituate Road
Wayland, MA 01778

RE: 24 School Street, Wayland 40B Application

Dear Ms. Greenbaum:

The abutter George Bernard retained me to review the Groundwater Mounding Report prepared by Creative Land & Water Engineering, LLC (CLWE) dated February 28, 2018 and revised March 1, 2018. My comments are as follows:

Hydrogeologic Setting: The Groundwater Mounding Report does not take into account the regional hydrogeologic setting. As presented in my earlier comment letter (October 2, 2017) this site is within a portion of the Sudbury River watershed where artificially-low groundwater levels have been identified by the United States Geological Survey (USGS). The USGS model demonstrates how current water levels (and associated stream flows) have been lowered as a result of the pumping of numerous public supply wells throughout the watershed. The Massachusetts Sustainable Water Initiative (SWMI) coordinated by MADEP seeks to minimize pumping and restore natural water levels and associated stream flows through increased water conservation and stormwater infiltration. If these efforts are successful higher groundwater levels could be expected in this area in the future. Sustainable development plans should take this into account by utilizing the highest, long-term estimates of groundwater levels.

Mounding Duration: The duration of the mounding model is stated as 0.6 days. However, the two design storms that were modeled (2-year and 100-year) are both 24-hour duration events. The rationale for this shorter modeling time should be explained and included in the report.

Aquifer Thickness: This dimension refers to the vertical thickness of the groundwater system. The mounding model is very sensitive to this variable with smaller aquifer thickness values yielding a higher mounding height. The CLWE report indicates that an aquifer thickness of 13.9 feet is used for the modeling of the stormwater infiltration system but in the revised run 15.9 feet is reported. For the mounding analysis of the wastewater system the report indicates an aquifer thickness of 19.74 feet was used in the model.

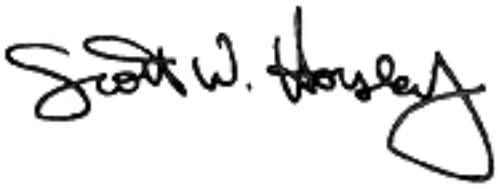
However, smaller values for "depth of aquifer" are shown in the Calculation Sheets for MW-1 (13.2 feet) and MW-2 (8.4 feet). The report also indicates that "finer till material" was observed at the bottom of MW-3. This type of material is not considered an aquifer due to its relatively low permeability and should be subtracted from the aquifer thickness values.

Water Table Elevations: To assess the impacts of mounding on proposed structures (including the stormwater infiltration system and the wastewater disposal system) pre-development, maximum groundwater levels/elevations must be ascertained. The groundwater mounding analysis utilized recent measured water levels rather than the "Estimated Design Groundwater" levels from the test pits previously reported on the Existing Conditions Site Plan prepared by Metrowest Engineering, Inc. (May 23, 2017). These earlier test pits were conducted by Brian Nelson, Soil Evaluator for Metrowest Engineering and are based upon redox features (mottling) observed in the soils. This is a standard and accepted method to estimate high groundwater levels.

The elevation values used in the mounding analysis were 156.6 and 158.84 (from the January 2018 measurements). The earlier data for "Estimated Design Groundwater" from the test pits are as follows: DTH-1 (159.87), DTH-2 (159.23), DTH-6 (161.87), DTH-8 (161.53), DTH-11 (161.0), and DTH-12 (161.0). These test pit values are 1-3 feet higher than those values used in the modeling. January water levels are

typically not the highest. The Estimated High Groundwater Levels represent a better estimate of seasonal (Spring) water table conditions and would provide a more conservative analysis.

Please contact me directly with any questions that you might have.



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