Exhibit #69

March 6, 2023

RECEIVED
07 2023
LAND USE DEPARTMENT

Ms. Juliet Hodge
Planner Town of Ledyard,
Ledyard, CT., 06339

Re: Avery Brook Homes LLC at 94 – 100 Stoddard's Wharf Road, Ledyard

At present there is a great volume of information provided to describe the impact that this proposal could have on the wetlands and watercourse that extend onto the northern limits of Lots, #6, 7 & 8 as well as the wetlands in close association with the site.

The Feb. 3rd, 2023, Effluent Renovation Analysis presents several concerns.

1. Appendix A within the recently supplied effluent renovation analysis by McDonald, Gray Sharp, and Sac. was illegible.

ABH – in the project conceptual design on Pg3 states that there proposing twenty-six lots on 9.21 acres. Each lot projected to have one drilled bedrock cased well, I subsurface sewage disposal system. Pg8 - 1 subsurface Leach field, Pg 9 - 1 effluent plume between Leach field discharge and ground water, and Pgs. 3 and 15 – one, 24' X 36', 3-bedroom house. Lot sizes range 0.19 to 0.42 acres.

2. ABH – States on Pg.3 that they observed **"a significant volume of earth materials have been removed"** from the 9.21-acre site. **"In some places to a depth of 25'."** **"Much of the site is underlain by sand and gravel."** The 8-22-2022 Ian Cole summary indicated that 47.1% of the site were composed of Agawam fine sandy soil with an additional 15.4% of the site on Hinckley loamy sand soil. That is to say **a large portion of this site has high soil permeability with high percolation test rates (generally > 5 minutes/inch).** Both soils are characterized as having high soil permeabilities and were observed to the **"deep depth to groundwater."** The wetlands and water course groundwater baseflow will be largely recharged from the areas of high infiltration rates. The majority of the proposed home sites are situated on these high permeability soils. So,

transference of nutrients, minerals, bacteria and viruses may not be restricted by these types of soil.

3. Baseline water chemical analysis from the wells **was not performed** as part of ABH Renovation study. The scope of the report was limited to **theoretical** Nitrogenous (NH4 – NH3 – NO2 – NO3), Effluent Plume Travel time and Ground water exposure to virus contamination. **Phosphorous renovation was not addressed in this report.**

4. Does the proposed site of a subsurface wastewater absorption system (SWAS) have sufficient land area to accept the size of the system necessary to meet the requirements of the CT/DPH? LLHD, Nov. 9th 2022 recommends that "**Due to the density of the proposed subdivision**, it is noted that a public water supply would be preferable means of supplying water to the community."

5. Does the soil-ground water regime in which the SWAS is proposed to be located have sufficient renovative capacity to bring the pretreated wastewater into compliance with the required ground water quality standards of the CT/DPH before it reaches a point of concern, such as: a potable water supply well, wetland, surface water body or the applicant's property boundary?

6. Do the soils in which the proposed subsurface wastewater absorption system (SWAS) are to be installed must have sufficient hydraulic capacity, to transmit the pretreated wastewater for a sufficient distance to permit renovation of the wastewater to drinking water quality before it reaches the closest point of concern? The high soil permeabilities of this site were observed to the "**deep depth to groundwater.**"

7. Wetland soils along the property boundaries have notable pockets of excessively well drained Hinckley loamy sands. These deep sands and gravels have rapid permeability and high infiltration rates. The wetlands baseflow will be recharged from the natural high infiltration rates as stormwater runoff freely drains back into the underlying sandy soil. **These mapping units occur in areas where material was previously mined.** Exhibit #26 Revised Soil Scientist Report 12-6-22.

8. Table in Appendix C "Ground Water Monitoring" indicates that on 5 occasions in December 22 and January 23, 15 test holes were opened in an effort to determine the distance from the water in the pipe to the top of the pipe. Six of the fifteen wells, notably 103-107 and 109 were dry. **Were these test wells on Agawam and/or Hinkley high permeability soils**? Limiting the ground water flow to test wells to the East and Northeast does not accurately reflect ground water flow of the entire proposed subdivision.

8. Ground water contours in Appendix A do not extend over the entire property. Appendix A seems to indicate data taken in January is from 4 monitoring sites.

9. What are the preconstruction Calcium, Magnesium, Nitrogen, Phosphorous and Potassium inputs to the surface and ground water?

Cole 8-22-2022 report articulates a partial input of these nutrients. The report indicates that "Areas to be seeded will be prepared by spreading ground limestone equivalent to 50 percent calcium plus magnesium oxide applied at a rate of 100 pounds per 1,000 square feet. (100lbs/1000 sq ft = 40,118 Lbs./9.21 Acres) Fertilizer (10-10-10) is to be applied at a rate of 15 pounds per 1,000 square feet 15 lbs. / 1000 sq.ft. = 6,017 Lbs. of N.P.K./ 9.21 acre) All areas shall then be seeded with a seeding mix of Creeping Red Fescue applied at a rate of 20 pounds per acre, Kentucky Bluegrass applied at a rate of 20 pounds per acre and Perennial Ryegrass applied at a rate of 5 pounds per acre, for a total application of 45 pounds per acre. After the seeding, the area seeded shall be stabilized with hay mulch applied at a rate of 2 bales per 1,000 square feet, and anchored immediately after spreading by tracking. In ***the alternative, disturbed areas may be hydroseeded using a hydroseed mix containing similar cultivars***. Seeding shall only occur between April 1 and June 15 and August 15 and October 1." From "Lot Development-\Avery Brook Homes, LLC\Wetlands\Narrative.docx

9. Based on LLHD comments of 9 Nov., 22 (in Exhibit #5) on the GEI water utilization document, (Exhibit # 7), the **Net** water demand based on CT Public Health Code is **7.25 gpm**, not 4.0 gpm as assumed in the GEI report. LLHD goes on to state that the proposed subdivision is at least partially surrounded by undeveloped watershed area, **(wetlands water course) which if allowed, would serve to replenish the aquifer supplying water to the wells.**

In Connecticut the 75 ft protective radius around a well must be completely on the property that the well serves. This allows neighbors to fully use their property.

10. Further to this area of concern, the CT Public Health Code Section 19-13-B103-B104 "regulations and Technical Standards for Subsurface Sewage Disposal systems", Design Flow for Residential Buildings at **150 Gallons per Day per Bedroom**. For 26, 3-bedroom households, the combined long-term average withdrawal for the subdivision would be 11,700 gpd.

11. In view of this large growth of wetland area plants, one asks, what levels of nitrogen and phosphorus from the groundwater are presently contributing to this wetland plant growth that largely surround this 9.21-acre property?

The environmental levels of nitrogen and phosphorus constitute the **baseline nitrate and phosphate concentrations in the groundwater source** prior to the project. This baseline information is necessary for any conceptual calculations to simulate reality. U.S. Geological Survey (USGS) defined concentrations of nitrate in groundwater exceeding 2 mg/L or even exceeding 3 mg/L as the levels indicating human impact on aquifer water quality (Madison and Burnett, 1985, Mueller et.al., 1995)

Bear in mind that any the Nitrate-nitrogen concentrations in ground water above 3.0 mg/l indicate that previous land use may have adversely impacted ground water quality.

12. The reason this is mentioned is because the client ABH states in the Overview that they observed that a significant volume of earth was removed from the 9.21-acre site. **"In some places excavation occurred to a depth of 25'." And "Much of the subject site is underlain by sand and gravel."**

This outside sand and gravel were brought in from somewhere. What did it contain?

The 9.21-acre site has been idle for several decades after its post agriculture abandonment. It is now bordered by three wetland resources positioned in the low-lying lands to the north and east with the third, Billings-Avery Pond is located off-site to the north. Mr. Ian Cole, December 2022, indicated that the "Billings Avery Brook's forested wetland fringe (Photo 4) encroaches onto the northern limits of Lots, #6, 7 & 8."

13. In view of this large growth of wetland area plants, one asks, what levels of nitrogen and phosphorus from the groundwater are presently contributing to this wetland plant growth that largely surround this 9.21-acre property? The environmental levels of nitrogen and phosphorus constitute a baseline that is necessary for any conceptual calculations simulating further nutrient contributions from the proposed subdivision.

As this activity was part of a Septic System Effluent Renovation study, it is indeed a sad oversite that the level of Nitrates, Phosphates, the cation exchange capacity pH and alkalinity of the present ground water were not determine. This data could have provided a base line for these factors in the ground water. **Without a base line any data on the nutrient – chemical carrying capacity of the ground water is without basis.**

The Connecticut DPH recommends testing of groundwater in an agricultural area, for the presence of Nitrate-nitrogen, as it occurs naturally in groundwater at or below concentrations of 1.0 mg/l, which is well below the level of concern for drinking water safety.

U.S. Geological Survey (USGS) defined concentrations of nitrate in groundwater exceeding 2 mg/L as the levels indicating human impact on aquifer water quality (Madison and Burnett, 1985, Mueller et.al., 1995)

Bear in mind that a large portion of this land was removed and replaced to a depth of 25'. Nitrate-nitrogen concentrations in ground water above 3.0 mg/l indicate that previous land use may have adversely impacted ground water quality, The U.S. Geological Survey (USGS) .

Sincerely,

Paul Maugle
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