**January 25, 2021**

**Town of North Haven**
**Inland Wetlands Commission**
**Memorial Town Hall**
**18 Church St.**
**North Haven, Conn.06473**

**RE: Inland Wetlands Application # 120-06**
**The Slate School-5100 Ridge Road**

Dear Commission Members;

On behalf of the residential property owners that adjoin this site, Loureiro Engineering Associates Inc. (LEA) has been requested to review this application as it relates to the requirements of the Wetlands Regulations and related considerations. We have reviewed the original application, the Wetland Scientist Report, the Revised Drainage Report (12/10/20) and the revised set of Plans (12/10/20). On the basis of that review, we want to call the following matters to your attention in your consideration of this application.

1. Wetlands Application-the wetland application form, under the item entitled "ANSWER ALL QUESTIONS APPLICABLE TO THE PROPERTY OR WRITE N/A", second item, requires applicant to indicate if the site lies within the Aquifer protection zone (must be shown on certified plan); there is no response provided but other documents submitted in support of the application allude to it being in the Zone. Review of aquifer protection mapping indicates that the site is in the Aquifer Protection Zone and therefore subject to the applicable provisions of the Aquifer Protection Regulations. Further, the Aquifer zone limits as they relate to this property are not shown as required. The application is incomplete in this regard.

Secondly, review of the plans indicates that while the location and amount of upland review activity have been shown, the creation of a new discharge to the wetlands for the new stormwater discharge has neither been identified or depicted on the plans as a regulated activity. The discharge of stormwater to a wetland or upland review area is a regulated activity above and beyond the disturbance and construction activity that must be disclosed, reviewed and permitted. So the application is incomplete in this regard.

Thirdly, as expressed by the town staff in their review comments, an alternative analysis needs be prepared that provides a basis for proposing the regulated activities. In particular, it should address why this location, why not other locations( such as the other Slate School Campus in town,

other locations in town, locations in other towns), possible modifications to the scope of the project to eliminate regulated activities associated with critical infrastructure, particularly stormwater and sewage, from being located in the upland review area and impacting nearby wetlands and use of other means to manage stormwater and sewage that do not require activities in the upland review area that could impact wetlands. Such an analysis is fundamental to the decision making process on this application.

2. Soils Erosion-The project requires that almost 83% of the site will be disturbed to accommodate the buildings, site improvements and infrastructure. The impervious surfaces will be nearly tripled and over 40 mature trees and shrubs will be removed. The site soils are mapped and listed as having high readability potential and existing site slopes are nearly 15 %. Given the substantial area and volume of earthwork required there is concern for potential wetland impact from erosion and sedimentation both during construction and operation as the wetlands are immediately downgradient of the site. There needs to be a far more proactive erosion and sediment control plan for this site that recognizes this condition and minimizes disturbance at all times and also provides several layers of management within and adjacent to all disturbed areas, including redundant erosion controls.

3.Sewage Disposal System-QVHD has indicated that to be compliant with the health code, two separate systems are required for the two buildings, if the applicant is going to comply with this requirement, the plans would have to be revised significantly; if they are going to pursue some alternative, they need to be transparent about it. In either event, QVHD needs to review and permit the systems(s). Until the applicant states their intentions, it is impossible to review or comment further.

The relationship between the sewage disposal system and the level spreader are also a matter of concern as to impact to the wetlands. The sewage system is located approximately 40' distant and up gradient of the level spreader and the level spreader is located approximately 30' from the wetland. As the bottom of the spreader basin is at the existing ground surface, and as there's 36" of silt loam beneath it, stormwater will likely infiltrate into this soils and the level spreader will act as a defacto infiltration measure. The health code SSDS technical standards require 75' separation from the SSDS to an infiltration system at a commercial site.

There is also the potential for unrenovated sewage effluent to migrate to the level spreader , mix with either ground or surface water and be discharged to the nearby wetlands with unknown impacts. Nitrogen, phosphorous and pathogens are of particular concern. The potential for this to occur should be evaluated using the modelling techniques in the 2006 DEEP guidance document for large scale sewage systems. In case there is any question about the applicability of the techniques, the publication (Sect 1-p.2 of 12) reads as follows: "While this document is directed toward design, construction, operation and maintenance of large scale OWRS having design flows of greater than 5,000 gpd, including associated wastewater collection systems, the underlying principles involved apply to all on-site system, regardless of size."

4. Stormwater Management-As indicated on the revised plans and drainage report, the project includes two drainage systems, both of which discharge to a level spread at the west property line

(and town line), just up-gradient of wetlands. One system uses Stormtech chambers for detention storage and presumably for infiltration. The other uses an open detention/retention basin. There are several concerns with system design that could impact wetlands.

•As applicable to the chambers and basin, test pit data indicates approx. 30" of silt loam underlain by hardpan (noted as a restrictive layer) throughout the site. Depth to mottling, groundwater and ledge are indicated as N/A for all test pits (not sure what this means) and perc tests of silt loam is 10-20 MPI. No perc test appears to have been performed within the footprints of the infiltration chambers or basin and the report is silent on undisturbed soil samples and permeability testing which is the protocol recommended in the Conn. Stormwater Design Manual.

•The drainage report indicates that the Water Quality Volume (WQV) for each system is treated prior to discharge but is silent on infiltration of the Groundwater Recharge Volume (GRV). requirements.

•The report indicates that the WQV treatment is achieved at the Stormtech chambers with an isolator row and an up-gradient in-line CDS (HydraFlow Model Node DET- 120). Treatment of WQV appears okay but the report is silent on infiltration.

•The report indicates that the WQV treatment at the basin (HydraFlow Model Node DET- 110) is achieved via retention of the WQV which enables vegetation filtering of the first flush and bio-uptake. The stormwater manual requires that a permanent pool be maintained to treat the WQV; however, this basin has a 6" underdrain that discharges though the outlet control structure to the outlet pipe, indicating that the basin will drain completely. This configuration is similar to a dry detention basin, which, per the stormwater manual, is not suitable for water quality treatment.

We appreciate the opportunity to present the neighbors' concerns to you and trust that you will give them the consideration that they deserve.

Sincerely,

**LOUREIRO ENGINEERING ASSOCIATES, INC.**

Clinton S. Brown II PE AICP
Director