● Soil & Wetland Studies
● Ecology ● Application Reviews
● Listed Species Surveys ● GPS
● Environmental Planning & Management
● Ecological Restoration & Habitat Mitigation
● Expert Testimony ● Permitting

December 10, 2024

VIA E-MAIL

Town of Salisbury
Planning & Zoning Commission
Attn.: Dr. Michael Klemens, Chairman
27 Main Street
Salisbury, CT 06068

RE: **REVIEW OF REVISED PLANS**
#2024-0257 / Wake Robin LLC & Ms. Serena Granberry (ARADEV LLC) / 104 & 106 Sharon Road & 53 Wells Hill Road / Special Permit (Section 213.5) / Map 47 / Lot 2 & 2-1 / DOR: 08/05/2024

REMA Job No.: 24-2744-SLS4

Dear Dr. Klemens:

At the request of the intervener, REMA ECOLOGICAL SERVICES, LLC (REMA), has conducted a review of the revised plans, through December 9th, 2024, that have been submitted by the applicant's engineering consultants (i.e., SLR).

Before we provide a summary of our findings, we wish to clarify and qualify our expertise in reviewing stormwater management plans and designs in view of not only CT DEEP's 2024 Stormwater Quality Manual ("the Manual), but also with the great body of scientific research available to inform the field of stormwater management and the protection of water quality, both surface and groundwater[1]. The apparent confusion by the applicant's experts is that since

[1] For example, research conducted by the Center for Watershed Protection, and the University of New Hampshire's Stormwater Center.

we are not CT Registered Professional Engineers (P.E.), we cannot review stormwater management designs and reports.

A review of the Manual reveals that while licensed professional engineers and licensed landscape architects are those who must *design* stormwater management practices, nowhere in the Manual is there a reference to these professionals as being the only ones that can *review* these practices. For example, in the Soil Evaluation Guidance section of the Manual, it calls out a "CT Registered Professional Engineer" as a "qualified professional," but in the same section a "Certified Soil Scientist" is also called out as a "qualified professional." We must point out that the expertise that REMA brings to the table beyond just the review of the stormwater management system is our understanding and analysis of how these systems work to attenuate pollutants in runoff, and of the potential impacts to the environment.

As a result of this misunderstanding, SLR has not specifically responded to our concerns regarding the stormwater management system, but rather opted to just respond to Artel Engineering Group's (Artel) review report. In doing so, SLR has responded to many of our concerns, but not all, as we will point out.

The following summarize our findings:

1. The revised plans have eliminated Water Quality Basin 130, although a depression and yard drain are now its place, and increased the size of Water Quality Basin 120, to accommodate all of the roof runoff from the cottages. This was due to the fact that the seasonal groundwater would have likely interfered with the performance of this basin. Water Quality Basin 120 has been redesigned to raise its bottom above the underlying bedrock. However, based on Test Pit #12, bedrock is still approximately 2.5 feet below the basin, not the 3 feet minimum per the Manual.

2. Detention Basin 210 has also been redesigned raising the bottom by an additional foot to elevation 815.0 feet. However, based on Test Pit #2, the basin would be 1.5 feet or less above bedrock. A notation on the plans call for the excavation[2] of bedrock below any of the basins to provide for the 3 foot minimum separation, per the Manual, and replaced with ASTM C-33 washed sand. We should note that the ASTM C-33 specifications are wide, ranging from fine sand to gravel. Since this material is to

[2] Would not blasting be required?

promote infiltration but also filtration (for water quality), more uniform naturally occurring materials should be specified. In our opinion, the redesign for Detention Basin 210 is *suboptimal* or even *marginal* for water quality purposes.

3. In response to Comment 12 by Artel, SLR will incorporate 6 to 8 inches of rounded river stone or cobble over the surface of the bottoms of each of the "surface infiltration systems," that is the water quality basins, now referred to as rain gardens, and the two detention basins. First, this is contrary to any design description or recommendation in the Manual. Rain gardens, as the name suggests, are to be vegetated. In fact, they are "bioretention" systems that rely on vegetation and media to perform for water quality control. Neither vegetation nor the requisite media are proposed or seen in Sheet SD-5 of the revised plans.

   The Manual describes rain gardens and bioretention basins as "vegetated systems" that "remove pollutants via variety of physical, chemical, and biological processes," including "uptake by vegetation." In large part, the runoff renovation capabilities of bioretention basins and infiltration basins are due to not only the vegetation but also to the organics in the topsoil which promote denitrification, converting nitrogen and releasing it back to the atmosphere as nitrogen gas. The removal of vegetation and topsoil will greatly compromise the effectiveness of these BMPs to attenuate and sequester runoff constituents, especially the dissolved fraction of nutrients, as well as metals[3], which are toxic to the environment.

In our November 27th, 2024 review report, under Section 1.5 (page 8), we commented on the fate of the additional volume of runoff to be generated to Analysis Point B, due to the significant increase in both watershed size and impervious surfaces. Our concern had to do with what happens at the discharge point of this runoff, which is combined with runoff from Sharon Road and adjacent properties, since it discharges to Wononskopomuc Lake. SLR has not responded to this concern, which still stands.

In their plan redesign, SLR has attempted to address many of the concerns voiced both by Artel and REMA. However, many of their solutions still do not meet the 2024 Stormwater Manual's guidelines, criteria, recommendations and/or requirements. Therefore, our professional

[3] It is well established that depending on the pH of runoff a high proportion of toxic metals in stormwater runoff is in soluble form. This includes metals such as cadmium, cromium, copper, nickel, zinc, and lead.

opinion still stands that the proposed development is reasonably likely to have the effect of unreasonably polluting surface and groundwater quality, both on-site and off-site.

Please feel free to contact us if you have any questions.

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

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