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March 5, 2026

Margus Laan, AICP
Director of Planning & Economic Development
Town of Plymouth
80 Main Street
Terryville, CT 06786

RE: **30 South Street – Garden Apartments**
Wetlands Review
WMC Reference No.: 26013.00

Dear Mr. Laan:

We are writing in response to a letter from WMC Consulting Engineers dated February 17, 2026, for the above-referenced project. Our response immediately follows each of the items and is reproduced in *italics font*.

General

1) Please provide consistency and resolve the discrepancies between actual wetlands onsite, the proposed disturbance, and the area created on the plans and documents indicated below:

   a. IWWC Application indicates 2,495 s.f. (0.057 ac.) Wetlands Disturbed 1,158 s.f. Wetlands Created 2,642 s.f.

      Benesch Response: See sheet C1.3 Wetlands Mitigation Enlargement Plan for clarification of areas. 2,475 sf indicates the total existing wetlands on site, 1,158 sf denotes total wetlands being disturbed (not including wetlands enhancement), 2,585 sf of wetlands are to be created, 1,470 sf of the existing wetlands to remain are to be enhanced.

   b. REMA Wetland Assessment indicates 2,475 s.f. (0.057 ac).

      Benesch Response: See sheet C1.3 Wetlands Mitigation Enlargement Plan, wetlands area takeoffs have been revised to match REMA Wetland Assessment.

   c. REMA Mitigation Report (Planting Zones) – Zone B Existing 1,470 s.f. + Created 2,585 s.f.

      Benesch Response: See response for comment 1a, all wetlands area take-off have been revised to match REMA plans and reports.

   d. Update the Site Plans and Erosion Control Narratives to indicate the wetlands onsite, the area proposed to be disturbed, and the area created.

Benesch Response: Sheet C1.2 Erosion Control Notes has been revised to reflect the wetlands area take offs in the Erosion and Sedimentation Control Narrative (Part G). Sheet C1.3 shows all locations of existing wetlands, wetlands disturbance, wetlands enhancement, and wetlands creation.

2) According to the Meeting Minutes of 6/4/25, wetland creation and erosion control bond amounts appear to have been agreed upon but the approval did not pass. We recommend the design engineer and soil scientist prepare estimates with quantities for the Commission to review. The wetlands estimate should include the 3-year monitoring period and assume some vegetation loss/replacement.

   Benesch Response: Benesch will work with the Town of Plymouth to obtain an agreed upon bond for wetland creation and erosion control.

3) The proposed access road is cutting through the wetlands. Incorporate the grading and landscaping depicted on the wetland enhancement plan schematic, produced by REMA dated May 7, 2025, into the site grading and landscaping plan set. It is suggested that this be enlarged and added to a detail sheet with the necessary landscaping and maintenance requirements.

   Benesch Response: The proposed grading is now shown on sheet C1.3 Wetlands Mitigation Enlargement Plan. Grading has been revised to reflect the previous Benesch design which is shown on the REMA plans.

4) Existing Conditions Survey

   a. Resolve the discrepancy between the graphic scale depicted vs. scale on the sheet border.

      Benesch Response: The correct scale has now been added to the Existing Conditions Survey.

   b. Correct the spelling of "Parcel" where the lot area is summarized.

      Benesch Response: "Parcel" is now spelt correctly on the Existing Conditions Survey.

   c. Identify the property owner on the survey.

      Benesch Response: The property owner, "Green Line Home Builders LLC" is now included on the Existing Conditions Survey.

5) Dewatering will be an important aspect of the earth moving necessary to rough grade the site. Provide additional details/locations of anticipated dewatering measures that will be utilized to pump or receive pumped groundwater.

   Benesch Response: See sheet C1.0 Demolition & Erosion Control Plan, location of proposed dewatering have been included on the plan. See sheet C1.1, a detail for the "Dewatering Straw Bale Basin" has been added to the plan.

6) We recommend weekly erosion control reports be conducted by a third-party consultant with reports submitted to the Town for review.

   Benesch Response: CT DEEP requires this if total site disturbance is greater than five (5) acres. This project will disturb approximately 2 acres. Third-party weekly inspections are very expensive and

typically required for project that exceed CT DEEP thresholds. We recommend the contractor perform weekly inspections and submit to the town. Additionally, the site will always be available for inspections by the town. See 'Inspection Note' on sheet C1.2 Erosion Control Notes, under the 'Temporary E&S Maintenance Measures' table.

7) Define the maintenance responsibilities of the rain gardens post construction.

Benesch Response: See sheet C3.0, Grading & Drainage Plan, the Stormwater Management Maintenance Measure Table describes the long-term maintenance schedule for the proposed infiltration basin.

a. It should also be noted and specified on the Operations and Maintenance Plan that the rain gardens are not to be used as snow storage areas.

Benesch Response: A note has been added to sheet C3.0, Grading & Drainage Plan, specifying that, "Stormwater management areas are not to be used for snow storage."

Site Plan Review

8) The proposed cut slope south of the proposed building is approximately 38-feet-high and requires a 13-foot cut at the toe of the slope. We recommend a reverse bench 6-8-foot wide and one foot in depth between the 765 and 770 contours to aid in the stabilization and establishment of the slope. It is recommended that additional slope drains be incorporated to limit groundwater from leaching out of the slope that may cause erosion or make it difficult to mow and maintain.

Benesch Response: To limit the grading of the proposed slope, a 3.5ft +/- retaining wall has been added to the rear of the buildings. The retaining wall is to have a perforated underdrain which will be connected to the dry-well system. Additionally, the pipes connecting the dry-wells together are to be perforated, installed in a stone trench wrapped in filter fabric, this will function to remove subsurface water hydrostatically and is to be connected to the proposed underground detention system. Additionally, an underdrain has been added half way up the slope south of the proposed building to further alleviate the subsurface hydraulic grade line of the water table and prevent seepage.

9) Label rain gardens on the plans to match their reference in the drainage report.

Benesch Response: The rain gardens have been removed and replaced with a single above ground infiltration basin and an underground detention system. All labels on the Grading & Drainage Plan and within the stormwater report are now matching.

10) The General Sequencing of the site development is of concern if the rain gardens are to be utilized as temporary sediment traps during construction. As indicated in the *Connecticut Guidelines for Soil Erosion and Sediment Control*, temporary sediment structures should not be located in the proposed locations of permanent stormwater BMPs, (i.e., infiltration structures), *unless no other options exist.* The plans, as presented, do not adequately address how the stormwater during construction will be handled since those areas rely so heavily on infiltration; and would be required to both handle sediment and to attenuate peak flows offsite. It appears the plans need further design measures incorporated or a more detailed sequence plan.

Benesch Response: The stormwater management areas are no longer proposed to manage on-site sediment during construction. A temporary sediment trap has been added to the northwest corner of the site with a sediment forebay for easier maintenance.

a. We note that it is generally preferred to limit or not direct stormwater to rain gardens or bioretention facilities until the contributing watershed is fairly established or there is a defined sediment forebay that can be cleaned after every storm event. Note 11 of the Construction Sequence indicates the sediment traps won't be converted to rain gardens until the site is stabilized. Stabilization of a site can take months, depending on the planting season.

   Benesch Response: Since the temporary sediment trap is no longer proposed within stormwater management areas the construction sequence has been revised. The temporary sediment trap is located at the proposed outlet of the underground detention system, so the TST will now be able to remain in place until the site is fully stabilized.

b. Provide temporary sediment trap size calculations and ensure the basin grading provides the required volume.

   Benesch Response: Temporary sediment trap sizing is now included on sheet C1.0. See temporary sediment trap sizing. (Approx. 2.15 acres contributing = 134 CY x 2.15 Ac = 288.1 CY or 7,779 CF)

c. Given the runoff and erosion concerns, we recommend a temporary diversion swale be constructed along the north boundary (Mr. Pare's property) during construction. The diversion swale can potentially be directed to a main sediment basin.

   Benesch Response: A temporary diversion swale is now called for along the northern property border. The swale is called for at the bottom of the proposed fill, contractor is to locate the temporary diversion swale to catch all flow contributing from construction area as stated in the temporary diversion swale callout.

d. Should infiltration remain the primary stormwater management method onsite, we suggest consideration be given to constructing a separate, temporary, sediment basin or detention facility lower on the site in the "L" that can also be designed with a sediment forebay. This would reduce the load in the current sediment trap areas and allow these areas to be established more quickly to provide the infiltration capabilities they are meant for. This temporary basin would be removed at the end of the project and the ground restored to natural conditions. A temporary access way would need to be provided around the western rain gardens.

   Benesch Response: A temporary sediment trap is now located in the "L" of the property, northwest corner, to capture all flow derived from construction activities. No rain gardens are proposed on-site and access will only need to be provided for cleaning of the outlet protection of the riprap spillway post construction. During construction, an excavator or tracked equipment will easily be able to access the temporary sediment trap for periodic maintenance.

11) Nine (9) test pits were conducted on April 4, 2025. In general, mottling appears to be between 2-3 feet below existing grades. That raises significant concerns with the construction of the rain gardens as the depths noted are not relative to the bottom of any of the proposed infiltration structures. The rain gardens do not appear to be sized or account for any seasonally consistent groundwater that may be flowing out of the wetland area or deep cuts. The design engineer should clarify how the flow of groundwater from the

wetland pocket into the rain gardens is accounted for in the calculations and demonstrate the infiltration rate will be greater than the inflow rate.

Benesch Response: The system has been revised to show both the infiltration basin and the underground detention system to be 1ft above existing grade, this will maintain a minimum of 36" above seasonal high ground water. The wetlands are modeled as a grass area, so we are accounting for all flow entering the wetlands to enter the proposed stormwater management system. All overland flow that is discharged from the wetlands will enter an area drain and be conveyed to Infiltration Basin #1. Subsurface groundwater flow is not modeled in the system for the following reasons.

1. *During rain events, groundwater flows will be significantly after any peak event and the system will be able to manage these flows due to the nature of design.*

2. *The amount of groundwater flow is insignificant to surface flow generated by design storms.*

We note the following:

a. Per the *Stormwater Quality Manual*, test pits should extend to a minimum depth of three-feet-below the 'proposed grades' of any infiltration facility. We typically recommend four feet in the event bedrock is present.

   Benesch Response: The nine (9) test pits that were observed range between 4-5 feet in depth. In no case was ledge observed, therefore we can confirm no ledge will be present at least five (5) feet below the infiltration systems.

b. The *Stormwater Quality Manual* indicates infiltration systems are not recommended in areas with natural slopes greater than ten percent and are noted to cause seepage and slope failure with slopes greater than 15 percent. We note the slopes onsite approach the 15 percent threshold where DEEP suggests consultation with them. The proposed slopes downgradient of RG-1 are RG-3 are steep 2H:1V or 3H:1V fill slopes, respectively.

   Benesch Response: Infiltration Basin #1 is located within the cul-de-sac in front of the proposed building, we are not concerned about slope stability in this location due to compaction for the roadway and material weight compressing the surrounding grade. Underground Detention System #1 is located approximately 8ft away from the slope at finished grade, the bottom of the system is set at 742.00' which is located over 27ft away from the 742 contour, allowing groundwater to dissipate and migrate downward. Any remaining groundwater, if seepage occurs through the proposed slope, will be collected by the perforated under-drain located at the base of the proposed slope.

c. The toe of the slope south of the proposed building units requires a cut of 13 feet behind the units. The three (3) proposed drywells at the toe of slope are directed to RG-1 via perforated pipe. The pipe collection system (in addition to the building foundation drains) will constantly convey groundwater into this long, narrow, and shallow structure. The concern is that once this structure is inundated, it will overflow down the steep, unprotected, slope and then inundate RG-0. These structures are not designed to accommodate both natural groundwater flow and surface flow during large, storm events. We have concerns water will seep through the steep slop downgradient faster than it infiltrates into the ground. A riprap channel is recommended to convey emergency overflow down to RG-0.

Benesch Response: The three (3) drywells connected by perforated pipe are now discharging into Underground Detention System #1, removing the concern of potential washout of the slope.

d. RG-0 is shown to require a four-foot-cut along the southern side with the nears test pits 5, 6, & 7 indicating mottling at depths of 31, 24, and 36 inches, respectively. This data indicates the structure will be excavated into groundwater and will lose any ability to infiltrate water. Furthermore, the underlying stone layers and proposed underdrain would also be in groundwater.

Benesch Response: All proposed stormwater management areas (Infiltration Basin #1 and Underground Detention System #1) are to be installed at a minimum of 1ft above the existing grade. Over excavation of the topsoil and organics is to be performed and suitable soils are to be placed to reach proposed grade.

e. RG-3 accepts runoff from a portion of the entrance road and the overflow from the wetlands. The south-side bottom of the structure requires a two-foot-cut into existing grade. Test pit #3 indicates mottling is located at a depth of 31 inches (2.5 feet). According to the detail shown on Sheet C5.2, the base stone layers will be within the groundwater table and lose its calculated capacity and infiltration ability. We also have concerns that water could seep through the steep slope downgradient faster than it infiltrates into the ground. The design engineer should ensure this does not occur and that the resultant seepage will not penetrate the fill berm and travel directly toward Mr. Pare's property to the north.

Benesch Response: Both the underground detention system and the above ground infiltration basin are now set 1ft above existing grade to ensure that no groundwater seeps into the system and no storage is provided or modeled within the groundwater table.

f. We recommend raising the elevation of FE-2.0 above the bottom of RG-2 such that the outlet is not under a tailwater condition when the water reaches the outlet elevation.

Benesch Response: Due to the pipe cover requirements, we are not able to raise the culvert end (in the infiltration basin) to an elevation that would prevent tailwater. Additionally, by placing the culvert end at the bottom of the basin, we are removing any chance of washout on the slope. The hydraulic model for the system has been run to account for tailwater scenarios during a 25-year storm event.

g. There are no sediment forebays associated with the rain gardens that provided separate WQV from the structure. These rain gardens are a single structure and are expected to both provide water quality improvement and stormwater attenuation. During large, storm events, the sediments will just get suspended and washed down to each successive structure, again inundating the lowest structure being RG-0.

Benesch Response: The revised design now utilizes Infiltration Basin #1 as a sediment forebay for Underground Detention System #1. Due to the horizontal geometry of the site, it does not make sense to isolate a portion of the flow to Infiltration Basin #1 into a sediment forebay. Underground Detention System #1 is to also have an isolator row installed to ensure any suspended solid are trapped prior to discharging down hill to FE-1.0. A majority of accumulated sediment in the driveway will be collected within 2ft sumps of all catch basins, leaving the only potential siltation to occur from the individual unit driveways and the cul-de-sac (most of which will be trapped in the riprap spillways at each leakoff).

h. A maintenance access route should be provided to RG-0 and RG-1 where a small dump struck and/or small excavator can access the structures to clean or repair areas of erosion.

Benesch Response: RG-0 and RG-1 have been removed from the proposed design. Access will be provided during construction and no vehicular access will be required to maintain FE-1.0 and it's associated outlet protection.

i. We recommend all containment berms be widened to a minimum width of six feet.

Benesch Response: All above ground ponds / rain gardens have been removed except for Infiltration Basin #1 (previously Rain Garden 2 [RG-2]). Infiltration Basin #1 has the entire driveway as a containment berm and a proposed overflow at 748.00, the 100-year storm elevation is 747.84, as long as maintenance is performed, this outfall will likely never see any discharge.

12) We recommend these rain gardens be designed more in conformance with bioretention or infiltration basins per the *Stormwater Quality Manual*. Bioretention areas typically have some plantings to further filter stormwater, provide nutrient absorption, stabilization, and habitat. The proposed rain gardens are construction with limited surface topsoil and no underlying filter media other than fine, graded stone and crushed, stone layers. The stone layers under the initial six-inch topsoil layer do not provide filtering abilities to effectively remove pollutants and are acting more as stormwater storage layers. We recommend 24- to 36-inch filter media as specified in the *Stormwater Quality Manual*.

Benesch Response: The rain gardens have been removed from the project and replaced with a single infiltration basin (and underground detention system) which is designed with the "Stormwater Pond" description of the CT DEEP Stormwater Quality Manual.

13) Rain Garden Area Detail on Sheet C5.2

a. Remove the six-inch depth call out for the three-quarter-inch Washed Drain Rock since the depths vary as noted in the adjacent table. Confirm all elevations.

Benesch Response: Rain Garden Detail has been removed and replaced with Infiltration Basin 1 (detail).

b. RG-0 Comments – EL C 722.5 is above the bottom EL B of 722.

Benesch Response: Rain Garden Detail has been removed and replaced with Infiltration Basin 1 (detail, sheet C5.2).

i. We note EL B and EL D are the same 722.0 elevation and EL E is only down to 721.0.

Benesch Response: Rain Garden Detail has been removed and replaced with Infiltration Basin 1 (detail, sheet C5.2).

c. RG-2 Comments – Confirm bottom stone layer is supposed to be three-feet-deep, as this is greater than all other rain gardens.

Benesch Response: Rain Garden Detail has been removed and replaced with Infiltration Basin 1 (detail, sheet C5.2).

d. RG-3 Comments – EL B should be 746.0, not 741.0. Update EL D and ELE, accordingly.

Benesch Response: Rain Garden Detail has been removed and replaced with Infiltration Basin 1 (detail, sheet C5.2).

14) We recommend a site cross section be provided for all the rain gardens and grading enlargements to better define elevations. This will aid in depicting the true separation between the bottom of the structures and restrictive layers or groundwater. Additional test pits should be conducted at the deepest cuts of any infiltration basin. Additional oversight during construction may be required to ensure adequate separating distances are achieved.

Benesch Response: A cross section has been provided on sheet C5.2 Site Details to better depict the bottom of the pond, separation to groundwater, and existing vs. proposed grades for Infiltration Basin 1.

15) We recommend the building foundation drains be connected to multiple discharge locations or structures and not just one, single 'tee' location.

Benesch Response: Building footing and sub-slab drainage are now provided two separate outlets. One located on the northwest corner of the building to "Tee" into the proposed pipe and another located at the southwest corner of the building tying into DMH-1.13.

16) Please clarify how the roof leaders are tied into the drainage. Again, we recommend multiple discharge locations.

Benesch Response: Roof drainage is to be collected via gutters, all gutters will flow to a downspout and be converted to piped flow via the Roof Leader Boot Connection detail shown on sheet C5.2 Site Details. These connection will be routed to convey all flow to DMH-1.6 where a 12" HDPE pipe will discharge flow to CCB-1.5 and eventually to Infiltration Basin 1.

17) FE-0.0 is shown to have an invert of 718.0 and a riprap apron. The riprap apron is designed to be level over the full length; however, the end of the riprap is shown down to elevation 716.0. Revise the outfall location accordingly to accommodate the riprap apron's design.

Benesch Response: Sheet C3.0 Grading and Drainage Plan, has been revised to reflect the grading for FE-1.0 (FE-0.0 has been removed). Additionally, modified riprap will be placed on the newly graded slope downstream of the proposed outlet protection. (riprap apron)

18) OCS-2.3 indicates a TF elevation of 469.9 but is closer to the 748 contour. Revise accordingly.

Benesch Response: OCS-2.3 has been removed from the project.

19) Clarify the size yard drain inlet required at YE-3.3.

Benesch Response: The detail on sheet C5.2 Site Details, Concrete Area Drain, specifies that the inlet is to be a 30"x30" concrete area drain (frame size) and specifies that an 18" diameter grade is to be provided.

20) We recommend 15-inch minimum pipe size be used for any drainage systems under the roadway and main infrastructure. Ensure manufacturer minimum pipe cover requirements are met with specifying the use of HDPE under roadways.

Benesch Response: All pipes located under the proposed driveways have been upsized to 15" HDPE. We are proposing ADS N-12 HDPE piping, which require one (1) foot of cover per discussions with ADS staff. We are providing a minimum of two (2) feet of cover over all pipes.

21) We'd suggest consideration be given to constructing a retaining wall or terrace wall system in lieu of the 38-foot steep slope in an effort to gain more usable land space. This could potentially assist to improve turning radii in the cul-de-sac, provide more efficient vehicular access/egress to individual units, and soften the slopes to the north, where feasible; which may in return gain more usable space for infiltration facilities and better access for maintenance.

Benesch Response: A retaining wall has been provided on the southern side of the proposed building to provide additional usable space for each tenant. Additionally, a retaining wall has been provided on the northern portion of the property to ensure feasibility of the proposed grading and adequate separation from the residential abutting property. (This will also provide room for the temporary diversion swale during construction.)

22) The applicant should elaborate on the intention and functional use of the recreational areas depicted. We note the majority of the areas shown are hazardous, steep slopes and are not recommended or suitable for recreation.

Benesch Response: Per Plymouth CT Zoning Regulations, recreation area does not have a specific definition for the stated requirement of 15% recreation area for Garden Apartments. There is no requirement for maximum slope or use of recreation. To provide additional recreational uses for this site, we have added a compacted soil walking trail, this walking trail is to meander around the existing trees and follow natural grade. The sloped area in the northwest corner of the parcel can be used for winter recreation (ie sledding) and the added walking trail provides use for spring-fall recreational activities.

23) Correct '756' contours are associated with the entrance drive between the 575 and 759 contours.

Benesch Response: The contour has been revised to reflect the correct grade.

24) The grading plan should show proposed spot grades at the corners of the building, along with FFE at each entrance location.

Benesch Response: Spot grades have been added to the four corners of the building and each door location.

25) Propex Armormax 75 EC B1 is called out to be used as a final stabilization method for the steep slopes; however, temporary controls are not specified. Further clarification is required.

Benesch Response: We are recommending utilization of Propex Armormax 75 EC B1 for all slope stabilization, if the contractor is un-willing to install said product or approved equal, as a first step after installation of erosion controls, a detail is provided on sheet C1.1 Erosion Control Details for temporary slope stabilization. See, "Slope Stabilization using Erosion Control Blanket (ECB)".

26) Update the Erosion Control Narrative on Sheet C1.2 to indicate the correct number of units being proposed.

Benesch Response: The Erosion Control Narrative has been revised to reflect the correct number of units.

27) We note the proposed driveway are shown to be nine-feet-wide, where the Zoning Regulations require a ten foot minimum width.

Benesch Response: The driveway widths have been revised to now show 10ft width.

28) We recommend an ADA accessible route to the sidewalk without having to utilize the access road. Consideration should be given to a more central handicap parking spot.

Benesch Response: An ADA accessible route has been added from the ADA parking stall to the driveway of each residential unit.

29) The grading plan depicts a six-inch rise in the center parking space from edge of stripe to center of stall. ADA requirements are two percent or less, and regular stalls should be limited to five percent. Revise grading accordingly.

Benesch Response: The spot grades for the ADA parking stall have been revised to remove the incorrect spot grade previously shown in the middle of the parking stall.

30) The cul-de-sac design has been laid out to accommodate the turning radius for the Town's fire truck. We note the tight fit as shown by the turning template and metal guide rail located on the outside radius of the stockade fence on the inside radius leave very little room for error. We note the tight fit at entrance curb radii, as well. Consider increasing radii at both locations.

Benesch Response: Due to the conservative nature of Auto-Turn (Autodesk software) and utilizing a large ladder truck, we are confident that most fire trucks will be able to maneuver the site.

Stormwater Management Report

31) Indicate the total site area and wetland area in the general introduction to the project.

Benesch Response: In section 1-1.1 General Information, a new bulleted list has been added to the end of the section "Parcel Information" stating, total area of the parcel, existing wetlands on site, wetlands to be created, and total wetlands after construction.

32) Update Section 3.1 to account for the correct number of structures depicted on the plans.

Benesch Response: Section 3-3.1 Compliance with Performance Criteria, has been revised to reflect the correct amount of each type of drainage structure.

33) Section 3.1.2 should reference the *"2000" CTDOT Drainage Manual.*

Benesch Response: Section 3-3.1.2 Compliance with State Criteria has been revised to reference the 2000 ConnDOT Drainage Manual.

34) Ensure the correct Appendices are referenced in the report.

Benesch Response: All appendices referenced in the report have been revised to reflect the correct information.

35) Consider adding page numbers for the Appendices in the Table of Contents to help in navigating the 348-page report.

Benesch Response: Page numbers have been added to the appendices.

36) Stormwater calculations should be updated to meet Standard 2 of the *Stormwater Quality Manual*, which indicates the two-year post development peak flow rates should be reduced to 50 percent of the pre-development rate.

Benesch Response: Total site peak flow reduction now meet Standard 2 of the 2024 CT DEEP Stormwater Quality Manual by reducing the 2-year post-development peak flow by 60%.

37) We note the NOAA Rainfall Data and NRCS Soil Data are from a different project that appears to be in West Hartford. Update report accordingly.

Benesch Response: The values used for the Hydrologic and Hydraulic Analysis were correct. The appendix has been revised to include the correct information that was used in both models.

38) Stormwater calculations need further attention in evaluating peak flows offsite:

a. Based on the Water Quality Volume Computations provided, it would appear adequate volume is provided cumulatively onsite. However, we request the calculations be broken down further to both clarify and demonstrate what each infiltration structure actually provides based on its individual associated watershed and volume based on contours.

Benesch Response: The new stormwater management approach utilizes above ground and below ground management areas which are interconnected. All stormwater that will be collected on-site will be provided with the adequate amount of volume between these two systems. Most flow will enter the aboveground Infiltration Basin 1 prior to discharging into Underground Detention System 1, functioning as a pre-treatment for the underground system.

- *Required WQV = 3,105 cubic feet*
- *WQV Provided = 3,459 cubic feet*

b. The drainage calculations indicate the design engineer is using 1.02 inches/hour, which would be an infiltration rate for Hydrologic Soil Group A, whereas the soils identified onsite are Group B. Table 10-2 indicates a design infiltration rate of 0.52 inches/hour for Loam Type B soils and 0.27 inches/hour for Silt Loam. Update calculations accordingly.

Benesch Response: The location of proposed infiltration range from Sandy Loam to Loamy Sand, an infiltration rate of 0.52 inches per hour is now being used for both Infiltration Basin 1 and Underground Detention System 1.

c. The HydroCAD storage model for each rain garden assumes storage within the stone layers directly beneath the topsoil layer. This presents concern and would not be applicable when the rain garden

surface and respective bottom crushed stone layers will exist within the groundwater table. The storage calculated would not be achieved, nor would the infiltration rate being assumed. The design layout or elevations should be revised accordingly.

Benesch Response: The model has been revised to no longer reflect subsurface stone being used. The bottom of Infiltration Basin 1 is approximately 1ft above the existing grade, the bottom of Underground Detention System 1 is approximately 1ft above the existing grade. Clean fill will be used in these area to raise the elevation to finished grade.

d. There is a fair amount of engineering judgement and subjectivity when it comes to determining time of concentration (Tc) calculations. With that said, we offer the following comments and concerns:

   i. Drainage calculations shown time of concentrations (Tc) of 6.9 and 7.7 minutes for each of the two existing watersheds, both exceeding three acres. We recommend that for grassy, brush or wooded areas of this size that a minimum of ten (10) minutes be used for design purposes and further expanded upon below.

   Benesch Response: Where applicable, a sheet flow time was adjusted to account for "woods, light-underbrush", the TOC still resulted in being lower than 10 minutes so a minimum of 10 minutes was used in the model.

   ii. The calculations to drive the existing Tc indicate the surface coefficients of the uppermost reaches of the watershed to be manicured lawn, indicative by using an 'n' value of 0.15. WMC has not been to the site but based on aerial photographs and those provided in REMA reports, while steep, that area appears to be densely wooded or underbrush land coverage adjacent to the neighboring development. We note 'n' values for such land coverage are 0.80 and 0.40, respectively. Utilizing these values and breaking up the 100-foot sheet-flow distance by the distinct slope differences yields a Tc of greater than ten minutes from south to north, offsite. This is a critical element in establishing the requirement for reducing peak flows offsite.

   Benesch Response: See response above, a minimum of 10 minutes was used for these areas of off-site flow.

   iii. By producing a faster Tc during the existing conditions, the peak flows generated yield a higher target to match for post construction conditions. By increasing to travel time, to a reasonable degree, the onsite attenuation requirements increase as the storms produce larger rainfall volumes. Considering the concerns expressed by owners downgradient, a more conservative design appears to be warranted for this site.

   Benesch Response: The on-site stormwater attenuation has been adjusted to match said time of concentration conditions. Storm discharges to the northern abutter have been significantly reduced for every storm, and total site peak flow has been reduced across the board. (including a 60% reduction for the 2-year storm event)

e. Provide hydraulic grade line and capacity analysis of the roadway catch basins.

Benesch Response: See appendix C, hydraulic grade line can be analyzed vs. top of frame elevations located in the table.

f. Provide outlet protection calculations.

Benesch Response: See sheet C5.2 Site Details, the computation for outlet protection sizing is located within the Rip Rap Outlet Protection detail. This detail is also included in the Stormwater Management Report appendices.

g. Provide a stage/storage summary of the individual rain gardens for the design storm events with inflow, outflow, storage, and elevations.

Benesch Response: The storage table is now included in the hydrologic analysis in appendix B.

h. Proposed watershed P1-6 depicts a flow path directing the watershed to South Street and appears to be intercepted by the access road construction. This additional flow to South Street does not appear to be accounted for in any calculation. Clarification is required.

Benesch Response: Two additional catch basins have been provided at the driveway entrance abutting South Street. All flow that will enter the driveway is now being collected and conveyed to the on-site stormwater management system. (Infiltration Basin 1 and Underground Detention System 1)

Please feel free to call (860-494-4359) or email me at wwalter@benesch.com with any questions.

Respectfully Submitted,

Alfred Benesch & Company

William G. Walter, PE, LEED AP
Project Manager

cc: File: 0725-500103.01