

Date January 15, 2021
To Weston Conservation Commission
From Mark S. Bartlett, PE
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Project Proposed Residential Development, 518 and 540 South Avenue
Weston, MA, Middlesex County
Subject Revised Peer Review of Stormwater Management, First Submission

Professional Services Corporation, PC (PSC) reviewed the “Proposed Residential Development, 518 South Avenue, Weston, MA, Middlesex County on behalf of the Weston Conservation Commission. Whereas our prior review memo concerned Applicant submittals dated June 15, 2020, this review covers the latest submittals dated through October 30, 2020. Our review has focused on Project drainage and stormwater management. We first provide an Executive Summary of our findings, followed by a Project Overview including a listing of submittals reviewed and references, followed by our detailed Stormwater Review which begins on page 8.

EXECUTIVE SUMMARY

The proposed Project stormwater management design when viewed at a cursory level appear to be comprehensive, and the Site Plans and Stormwater Report are presented as compliant with the Massachusetts Department of Environmental Protection Stormwater Handbook (SWH). However, our review of these submittals in detail has found that additional field testing and engineering work are required to correct the submittals to comply with state and local standards, and standards of accepted engineering practice. Review of the Stormwater Design, the Stormwater Report and the hydrology calculations has resulted in over twenty-five review comments which can be grouped into six (6) categories of deficiencies. These six deficiency categories are summarized below with highlights of the most significant flaws within each category:

ES1. Submittal Errors, and Needs for Additional Design and Details:

- (a) Design modifications are required to improve access for future maintenance at the four subsurface recharge systems (see comment 7.)



- (b) Several setbacks stated in the SWH for porous pavement are violated. (See comment 20.)
- (c) The design of the infiltration systems within the garage and within 10 ft. of the exterior wall of the garage are governed by “248 CMR: 10.00 Uniform State Plumbing Code”, and the Applicant must submit a revised design in compliance with “248 CMR: 10.00 Uniform State Plumbing Code.” (Alternatively, the Applicant could provide documentation establishing that the provisions of “248 CMR: 10.00 Uniform State Plumbing Code” do not apply.) Also, the relationship between garage floor elevation and elevations of the two infiltration systems needs to be better defined; and design modifications are required to improve access for future maintenance. (See comments 2, 3 & 7.)
- (d) The setback of Subsurface Recharge Area 4 (under the garage) from the wastewater treatment facility effluent disposal area is 35-feet. The SWH does not specify a setback specific to a treated effluent disposal area, but it does require infiltration systems to be located at least 50-feet from septic system absorption fields. The Applicant should defend the adequacy of the proposed 35-foot setback given the noted interaction between the effluent disposal and stormwater recharge as reported in their mounding analysis (see comment 6).
- (e) The proposed grades of several retaining walls need to be modified to prevent stormwater originating from upgradient offsite areas from flowing onto the porous pavement; and wall designs must be submitted to prove that they can withstand saturated subsurface conditions and prevent breakout of stormwater intended to be recharged to the subsurface via porous pavement. (See comments 4 & 5).
- (f) Foundation drains placed near or below the proposed garage subsurface recharge areas (as noted in Applicant’s wastewater mounding analysis) will reduce the effectiveness of nearby subsurface infiltration systems. If underdrains are proposed to manage groundwater levels and/or mounding effects of stormwater recharge combined with wastewater treatment effluent disposal area(s) then the Applicant needs to add the underdrain designs to the Grading & Drainage Plan and Detail Sheets, and revise the HydroCAD hydrologic model to evaluate the reduction of exfiltration to groundwater, and identify estimated runoff flows and volumes via underdrain(s) toward wetland resource areas. (See comment 22).



- (g) The stormwater report incorrectly states that the Site is not categorized as a LUHPPL. The Project Site is classified as a “Land Use with Higher Potential Pollutant Loads” (LUHPPL, per SWH V.1: C.1: p.14) because there will be a “*parking lot with high-intensity-uses (1000 vehicle trips per day or more)*”. (See comment 26).

ES2. Needs for Additional Field Testing to Support BMP Designs: The Project creates about 3.6 acres of impervious area within a relatively small development footprint, and the stormwater management strategy relies heavily on infiltration of stormwater to preserve pre-existing site hydrology. Five stormwater BMPs¹ are proposed to detain and infiltrate stormwater. Four are subsurface recharge facilities (two located in the north, two located under the parking garage), and the fifth involves six (6) zones of porous pavement. The total length of these zones combined is about 1,165-feet, and widths vary from 14 to 20-feet. Given the Project reliance on infiltration, and the variability of infiltration rates across the site, significantly more field testing is warranted by both the Massachusetts SWH and by accepted engineering practice to adequately document and confirm soil types, saturated hydraulic conductivity rates (i.e., infiltration rates), depth to ESHGW², and depth to bedrock under these important infiltration BMPs. Additional field testing (observation pits and infiltration tests) should be witnessed by a qualified Town representative, and all results need to be shown on the two Grading & Drainage Plans (Sheets C-6 and C-7). (See comments 9 through 13.)

ES3. Porous Pavement Design Issues: There are several issues to resolve with the proposed porous pavement design, and these can be listed in summary form as follows:

- (a) The proposed porous pavement section is not the same as the detailed section that is recommended within the Massachusetts SWH³ (see comment 15).
- (b) Porous paving should not receive stormwater run-on (see comments 4 and 16).
- (c) Two test holes DTH-5 & DTH-6 (by MetroWest Engineering) document questionable soil conditions in the southwest section of porous pavement (ref. area 5aP). In October 2020 Sanborn Head conducted four additional soils evaluations at other sections of the porous pavement route. Sanborn Head’s test SH -TP-308 also in this southwest corner area (ref. areas 5aP & 5bP) was not deep enough to evaluate soil

¹ Best Management Practice

² Estimated Seasonal High Ground Water

³ See Volume 2, Chapter 2, page 119.



conditions under the porous pavement (e.g., the test pit was excavated to elevation 224, which is above the proposed bottom of porous pavement recharge stone, which is elevation 222.7). This is one example. Additional soil evaluation test pits are warranted for other porous pavement areas. Moreover, additional infiltration testing is needed for several of the porous pavement areas because the Applicant is using the Dynamic Field method⁴ which requires determinations of the saturated hydraulic conductivity for infiltration practices such as porous pavement. In short, five (5) additional soil evaluation test pits and nine (9) additional Guelph Permeameter tests are recommended for the porous pavement. These are discussed in comment 13.

- (d) One of the four tests noted in (c) above, found ESHGW to be about 4-feet above the proposed finished grade of the porous pavement. (See comment 19).
- (e) A boring in the southwest sector of porous pavement encountered refusal at elevation 228.5, about the same grade as proposed porous pavement in this area. The SWH requires porous pavement to have 2-ft separation from bedrock. (See comment 19).
- (f) The porous pavement design violates several setback requirements stated in the Massachusetts SWH for porous pavement, and these include: Less than 50-feet from Septic Effluent Disposal (in this case, Effluent Disposal Area), less than 100-feet from Surface Waters, less than 20-feet from building foundations, and less than 10-feet from property lines. (See comment 20).

ES4. Needs for a Comprehensive Stormwater Mounding Analysis: For the purpose of a complete Stormwater Management Report, the applicant needs to provide a comprehensive mounding analysis for the Site stormwater recharge systems. This analysis needs to factor in all four subsurface stormwater recharge areas, all porous pavement recharge areas, and include the average effluent disposal rate from the wastewater treatment facility. Moreover, the analysis should include mounding with and without foundation underdrains (noted in the Hydrogeologic Evaluation Report for the foundation footing of the 4-5 story building). Also, the depth of the site aquifer should be established by one or more soil borings with the depth of the aquifer set at refusal, if encountered, or at the elevation where the boring is terminated; and, given upward

⁴ See Massachusetts Stormwater Handbook, Vol.3, Ch.1



trends in rainfall extremes, we recommend inputs include at least the 25-year storm event, and preferably the 100-year 24-hour storm event. (See comment 21).

ES5. O&M Plan Deficiencies: Porous pavement is prone to clogging. Therefore, aggressive maintenance with jet washing and vacuum street sweepers is required. The Applicant's O&M plan has addressed many appropriate procedures for porous pavement however the Applicant needs to include a few additional advisories. (See comment 23.)

ES6. Construction Period Precautions: Construction staging, construction practices, and erosion and sediment control must all be taken into consideration when using infiltration practices and porous pavements. The Site Plans (e.g., Erosion Control Sheets) need to be revised to specify additional precautions to protect porous pavement and subsurface recharge areas. (See comment 24.)

This review memo also discusses project compliance with Massachusetts' ten Stormwater Management Standards, and reviews project compliance with Town of Weston stormwater rules as will be applicable to the project unless waived by the Weston ZBA or waived by a Commonwealth authority such as the Housing Appeals Committee (HAC). There are about ten additional comments that concern these issues. Basically, full compliance with state and local standards cannot be confirmed until the underlying errors noted above have been fully addressed. (End of Executive Summary).

PROJECT OVERVIEW

Hanover RS Limited Partnership (Applicant) proposes a residential development that includes 200 apartment units, a clubhouse, and amenities, and a wastewater treatment facility with an associated subsurface effluent disposal system. The project Site will combine and adapt and reuse two residential lots: A 9.5 acre site that contains a single family home and former tennis court (518 South Avenue) and a 0.94 acre site that also contains a single family home (540 South Avenue). Together, these are hereinafter referred to as the Site. The proposed residential units will be within one large multi-part building that will be predominantly a 4-story structure with some 3-story and 5-story parts. In addition, there will be a 4.5 story parking garage connected to this residential building. The top level of parking will be exposed (no roof is provided). Other improvements include a courtyard enclosed by the residential building, some exterior patio areas, approximately 1,160 linear feet of main access road serving the building from entrance at 540 South Avenue (standard 24' wide pavement), and approximately 1,290 linear feet of emergency access road with separate connection at 518 South Avenue, and



Memorandum
January 15, 2021
Page 6

most of this way (1,165-feet) is proposed to be porous pavement with road width varying from 14' to 20'. Main access way drainage, and the first 125-feet of the emergency access drive will be collected by standard curb and gutter systems. A total of nine (9) deep sump catch basins⁵ are proposed with numerous connecting drain lines (12" and 15" HDPE) , drain manholes, and five (5) water quality treatment units that ultimately discharge to one of the subsurface infiltration systems. The drainage system for the parking lot is not clearly outlined, but it appears that the building roof drainage and the top level parking lot drainage will be routed to two subsurface infiltration systems located under the lowest level of the parking garage, and this recharge area will be preceded by one (1) water quality treatment unit.

The proposed Project has been submitted to the Weston Conservation Commission with a Notice of Intent in accordance with Massachusetts 310 CMR 10.00: The Wetlands Protection Act Regulations. The Project will require approval of the Weston Zoning Board of Appeals under the state's Comprehensive Permit (MGL Ch. 40B) process. In addition to Conservation Commission approval, this project would normally require a Special Permit from the Zoning Board of Appeals for the proposed multi-family use, Site Plan Approval by the Planning Board under Town of Weston Rules and Regulations for Site Plan Approval, and a Stormwater Permit from the Town's Stormwater Permit Authority (SWPA)⁶ under Weston Stormwater & Erosion Control Regulations.

Submittals Reviewed

- A. "Hanover Weston – Weston, MA, Site Development Plans" prepared by Tetra Tech for Hanover R.S. Limited Partnership, Comprehensive Permit Plans for a proposed project on South Street, Weston, MA, dated June 15, 2020 for NOI application, and June 21, 2020 for Comprehensive Permit application, and revised plans dated October 30, 2020. The Tetra Tech Site Plans include 18 sheets (including one Existing Conditions plan by MetroWest Engineering dated April 10, 2019).
- B. Notice of Intent for the Hanover Weston project, dated June 30, 2020, as submitted to the Weston Conservation Commission, submitted by Hanover R.S. Limited Partnership .
- C. "Stormwater Management Report, 518 South Avenue (Route 30), Weston, MA" submitted to Town of Weston Conservation Commission, prepared for Hanover R.S.

⁵ An area drain located off the southeast building corner is also presumed to be a deep sump catch basin. The Applicant will need to clarify this on the plans.

⁶ The SWPA consist of (5) five members, four that are permanently the Town Engineer, the Town Planner, the Conservation Administrator, and the Public Health Director, and one (1) member that is a Town resident appointed by the Board of Selectmen.



Limited Partnership, prepared by Tetra Tech Inc., dated June 15, 2020, and the revised report dated October 30, 2020. The stormwater report includes supplemental sections:

- Appendix A - MassDEP Stormwater Checklist
 - Appendix B - HydroCAD Reports
 - Appendix C - Groundwater Recharge Calculations
 - Appendix D – Water Quality Calculations
 - Appendix E – Level Spreader Calculations
 - Appendix F – Long Term Pollution Prevention and Stormwater O&M Plan
 - Appendix G – Supporting Documents
 - i. Illicit Discharge Statement
 - ii. StormCAD Pipe Sizing Review
 - iii. NRCS Soils Reports
 - iv. Stormwater Infiltration Data Report, by Sanborn Head, August 2, 2019; and updated Stormwater Infiltration Data Report, October 28, 2020
- D. Hydrogeologic Evaluation Report (for project site), March 19, 2020
- E. Hydrogeologic Evaluation Report Approval, MassDEP letter, June 16, 2020
- F. Tetra Tech letter to Weston Conservation Commission, September 11, 2020, with enclosures: Revised Grading and Drainage Sheets C-6 and C-7, revised Erosion and Sediment Control Sheets C-10 and C-11, and Snow Storage Site Plan by GWH Landscape Architects dated June 21, 2019.
- G. Patrick C. Garner letter to Weston Conservation Commission, September 18, 2020
- H. Tetra Tech letter to Weston Conservation Commission, October 30, 2020
- I. Hanover Company letter to Weston Conservation Commission, October 30, 2020
- J. Tetra Tech letter to Weston Conservation Commission, November 25, 2020

References

- A. Weston Conservation Commission 25-Foot No-Disturb Zone Policy, approved May 14, 1998, amended October 19, 2010 and February 2, 2016



Memorandum
January 15, 2021
Page 8

- B. Article XXVII Stormwater and Erosion Control By-Law.
- C. Town of Weston Town of Weston Stormwater & Erosion Control Regulations, May 23, 2019 (SECR).
- D. Weston Planning Board Land Subdivision Rules and Regulations, Weston, Massachusetts (PBRR)
- E. Town of Weston Rules and Regulations for Site Plan Approval, November 19, 1991, as authorized under Section XI of the Zoning By-Law.
- F. Massachusetts Wetlands Protection Act (MGL c. 30, §§ 61 through 62H).
- G. 310 CMR 10.00: Wetlands Protection Act Regulations.
- H. Stormwater Handbook, Massachusetts Department of Environmental Protection. (SWH)

STORMWATER REVIEW

The Proposed Project is subject to the Massachusetts Wetlands Protection Act (MGL c. 30, §§ 61 through 62H) and subject to Article XXVII, Town of Weston Stormwater and Erosion Control By-Law and associated regulations (unless waived by the ZBA). Compliance with Massachusetts DEP Stormwater Management Standards (310 CMR 10.05(6) (k)) and with the Massachusetts Stormwater Handbook (SWH) is required.

This peer review also checks project compliance with Weston's Stormwater and Erosion Control By-Law, and with applicable drainage / stormwater provisions of Weston's Site Plan and Land Subdivision Rules and Regulations as typically referenced during local Site Plan or Special Permit approvals. Such Town stormwater requirements will be applicable unless waived through the Weston ZBA or a Commonwealth authority such as the Housing Appeals Committee (HAC).

Comments on the Proposed Project Stormwater Design:

The project plans, NOI narrative and Stormwater Report present the Project and a strategy for management of stormwater generated by increased impervious area from new buildings' roofs, driveways, and the outdoor top deck of a multistory parking garage. The project presents an increase in impervious area of 4.23-acres⁷ over the existing condition which has two single family house lots that are predominantly undeveloped woodland (0.21 acres of impervious).

⁷ The NOI narrative states the increase in impervious area as 3.6 acres, giving credit for the 0.63 acres of proposed porous pavement. However, the Massachusetts Stormwater Policy considers porous pavement to be an impervious surface for purposes of calculating Required Water Quality Volume and Required Recharge Volume.



The stormwater management strategy relies heavily on infiltration of stormwater to preserve pre-existing site hydrology. Five key stormwater BMPs are proposed to detain and infiltrate site stormwater (after pre-treatment) and to facilitate stormwater runoff from the site to be less than or equal to the existing hydrology. Four of these BMPs are subsurface recharge facilities: Two are located in the north part of the site, and two are located under the parking garage (lowest floor level). The fifth BMP involves an emergency access drive that is to be constructed as porous pavement. The porous paved way is proposed to be about 1,165-feet long: It is 14 to 20-feet wide, and it will vary in elevation from a high point of 233 (at start in the southwest corner) to a low elevation of 217 in the northeast section. A substantial portion of the porous pavement is sloped therefore it's design has been appropriately divided into six (6) separate recharge zones with a level stone base. Additional field work is required to confirm that the design of these infiltration BMPs will be based on adequate field data (e.g., depth to ESHGW and depth to bedrock, including a sufficient number of measurements of saturated hydraulic conductivity to support the ground-water recharge design).

The comments which follow address the adequacy of the Stormwater Design, the Stormwater Report and the hydrology calculations, and these comments are organized under the following six subheadings:

- Submittal Errors, and Needs for Additional Design and Details
- Needs for Additional Field Testing to Support BMP Designs
- Porous Pavement Design Issues
- Needs for a Comprehensive Stormwater Mounding Analysis
- O&M Plan Deficiencies, and
- Construction Period Precautions.

Submittal Errors and Needs for Additional Design and Details

1. Sub-catchment 4Sa is listed as 100% roof area, which may be a conservative assumption given that there is a courtyard (10,823 square feet) included in this area. The landscape plans indicate patios, pool and plantings at this courtyard. The Applicant needs to explain how drainage from this courtyard will be collected and routed separately from the roof runoff in sub-catchment 4Sa. In addition, the Applicant needs to revise the Grading and Drainage Plans to show proposed piping for the garage runoff areas, and provide a schematic to explain the routing of stormwater from all roof areas and all parking garage levels to the pretreatment BMP. (Also see comment 2).



The garage includes proposed stormwater facilities to collect, treat, and infiltrate stormwater runoff and underdrain facilities for control of groundwater. The design, installation, and operation of these systems within the garage and within 10 ft. of the exterior wall of the garage are governed by “248 CMR: 10.00 Uniform State Plumbing Code” which provides that storm water drains shall be subject to 248 CMR 10.00 (248 CMR 10.01 (2) (b))). “Plumbing includes the work and/or practice, materials and fixtures used in the installation, removal, maintenance, extension and alteration of a plumbing system...in connection with any...storm drainage facilities...within or adjacent to any building, structure...” In our opinion, the design of the garage stormwater and underdrain facilities must be performed by a Massachusetts Plumbing or Mechanical Professional Engineer and the stormwater management and underdrain facilities must comply with “248 CMR: 10.00 Uniform State Plumbing Code”. The aforesaid notwithstanding, we have provided comments on the design of storm drainage facilities within the garage as submitted.

2. Submit a revised design for the garage stormwater and underdrain facilities in compliance with “248 CMR: 10.00 Uniform State Plumbing Code.” Alternatively, provide documentation establishing that the provisions of “248 CMR: 10.00 Uniform State Plumbing Code” do not apply.
3. The garage floor elevation above Subsurface Recharge Area #3 needs to be specified, and the transition from floor elevation above Area #3 to the floor above Area #4 (listed as FFE 222.50) needs to be explained or detailed by the Applicant. Also, details need to be provided to explain how drag-in water and snow melt from the covered garage levels will be collected, treated and disposed.
4. The large block retaining wall detail on Detail Sheet C-14 needs to be modified to show and call for a cap of sufficient height above the retained grade to prevent stormwater from upgradient offsite areas flowing onto the porous pavement, such as in the southwest area of the Site.
5. The design of retaining walls that border porous pavement must withstand occasional saturated subsurface conditions, and prevent short-circuiting of stormwater intended to be recharged to the subsurface (and not be released as surface flow). We concur with the Applicant’s notes for the large block gravity retaining wall on Detail Sheet C-14 that call for a waterproof barrier and for retaining walls to be designed by a Massachusetts Registered Structural Engineer. However, in addition to the existing notes, we recommend that the large block gravity wall detail be modified to illustrate installation of an appropriate durable membrane to direct infiltration vertically and prevent lateral



movement (through wall) from the adjacent porous pavement storage stone. The detail should also specify the type and thickness of the membrane; and the membrane should extend to sufficient depth to prevent break-out at slope areas adjacent to the wall.

6. The setback of the eastern end of Subsurface Recharge Area 4 (under the garage) from the wastewater treatment facility effluent disposal area is 35-feet. Although the SWH does not specify a setback specific to a treated effluent disposal area, it does require infiltration systems to be located at least 50-feet from septic system absorption fields. The Applicant should defend the adequacy of the 35-foot setback given the interaction between effluent disposal and stormwater recharge reported in the mounding analysis.
7. The Applicant needs to revise the plan to include additional access manholes to inspect and maintain the four Subsurface Stormwater Recharge Areas, and we recommend the following:
 - a. For Subsurface Stormwater Recharge Areas #1 and #2, we suggest that one 4-foot diameter manhole be located at one end of each chamber, and at the opposite end provide a 6-inch diameter clean-out brought to grade finished with a road box. Also, each chamber row needs to have at least one 6-inch inspection port in the middle of the row.
 - b. For Subsurface Stormwater Recharge Areas #3 and #4 as located under the garage floor, we suggest that one 4-foot diameter manhole be located at one end of each long chamber row (there are 12 of these long rows), and at the opposite end of each long row place a 6-inch diameter clean-out access brought to grade finished with a road box. And, for the ten shorter chamber rows, we suggest placement of a 6-inch clean-out brought to grade, finished with a road box at each end. Also, each long chamber row needs to have at least one 6-inch inspection port in the middle of the row. (Also see comment 2).
8. The Underground Injection Control Regulations, 310 CMR 27.00, require registration of certain infiltration best management practices, e.g., all dry wells, infiltration trenches, subsurface structures, and leaching catch basins must be registered.⁸ The Applicant needs to advise on their plan to comply with this UIC policy.

⁸ For information on the UIC program and its application to infiltration BMPs, see http://www.epa.gov/npdes/pubs/sw_class_v_wells_fs.pdf. See also <http://www.mass.gov/eea/agencies/massdep/water/drinking/shallow-injection-well-closure-q-and-a-summary-for-the-.html>.



Needs for Additional Field Testing to Support BMP Designs

9. The infiltration rate selected for Subsurface Recharge Area #1 is based on Sanborn Head's Guelph permeameter method test at location SH-TP-205 at the south end of the proposed recharge area. The test was conducted at elevation $227\pm$, about 3-feet above the proposed bottom elevation of this recharge area (224). Given that this important test was 3-feet above the elevation of the bottom of the proposed recharge area (infiltration tests should be conducted at the proposed system bottom elevation), and given the large size of the recharge area shown on the plans (5 chamber rows, each about 86-feet long), we recommend that the Applicant excavate a second test pit and obtain a second permeameter test at the other end of the proposed recharge zone to (1) confirm the first infiltration result, and (2) if found to be different, 50% of the lowest value of the two tests should be used in accordance with the Massachusetts Stormwater Policy. This additional test location will help to confirm that ESHGW and bedrock will not be a concern for this system. Additional field testing (observation pits, infiltration tests) should be witnessed by a qualified Town representative.
10. The infiltration rate selected for Subsurface Recharge Area #2 is based on Sanborn Head's Guelph permeameter method test at location SH-TP-207 at the south end of the proposed recharge area. The test was conducted at elevation $224\pm$, about 3.5-feet above the proposed bottom elevation of this recharge area (220.5). Given that this important test was about 3.5-feet above the elevation at the bottom of the proposed recharge area (infiltration tests should be conducted at the proposed system bottom elevation), and given the large size of the recharge area shown on the plans (4 chamber rows, each about 105-feet long), we recommend that the Applicant excavate a second test pit and obtain a second permeameter test at the other end of the proposed recharge zone to (1) confirm the first infiltration result, and (2) if found to be different, 50% of the lowest value of the two tests should be used in accordance with the Massachusetts Stormwater Policy. This additional test location will help to confirm that ESHGW and bedrock will not be a concern for this system. Additional field testing (observation pits and infiltration tests) should be witnessed by a qualified Town representative.
11. The infiltration rate selected for Subsurface Recharge Area #4 is based on Sanborn Head's Guelph permeameter method test at location SH-TP-201 at the middle of the south wing of this U-shaped recharge area. The test was conducted at elevation $214\pm$, about 2-feet below the proposed bottom elevation of this recharge area (216); and the proposed recharge area base elevation (216) is close to the existing ground elevation



(218) in the southeast corner. Two other more recent test pits SH-TP-305 & SH-TP-306 were excavated in the east end and north side of this proposed recharge area. TP-305 at the north side was excavated to elevation 215, 1-foot below the proposed system base; and this depth is inadequate to properly evaluate soils conditions under the system. However, TP-306 at the east end was excavated to adequate depth (elevation 209.5), and there were no signs of ESHGW or rock. Therefore, a few recommendations follow from these observed results:

- a. Because site grades vary by seven feet across this recharge area from 218 at the low end to 225 at the high end, the Applicant needs to add specifications to the Site Plans to require the removal of top and sub-soils below this system, and require the use of Title-5 sand for replacing unsuitable soils and for raising grades under the recharge system and areas the sides of the recharge systems.
 - b. Given the location of recharge area #4 under a garage floor, and given the size of recharge area #4, which will have 191 chambers arrayed in a large U-shape configuration of rows, we recommend that the Applicant excavate a second deeper test pit on the north side, and obtain a second permeameter test at this north wing, to (1) confirm the first infiltration result, and (2) if found to be different, 50% of the lowest value of the two tests should be used in accordance with the Massachusetts Stormwater Policy. The recommended deeper test pit will help confirm that ESHGW and bedrock will not be a concern in the north wing. Additional field testing (observation pits and infiltration tests) should be witnessed by a qualified Town representative.
12. Subsurface Recharge Area #3 is the mirror image on plan view of recharge area #4, however existing grades are moderated, varying from 232 to 236: Two test pits (SH-TP-203 & SH-TP-304) were excavated in the south wing and north wing respectively of the U-shaped area. TP-203 was excavated to elevation 225, 3.5-feet above the proposed bottom of recharge system (elevation 221.5); and TP-304 was excavated to elevation 219.5 which is only 2-ft below the proposed system base. Also, a boring SH-3/SH3-A which was drilled near the northeast corner of this proposed Recharge Area #3, at surface elevation 234, and refusal was encountered at a depth of only 6.6-feet⁹. Given the location of recharge area #3 under a garage floor, given the large system size identical to that of recharge area #4 (191 chambers), given the nearby refusal (boring SH-3/SH-3A), and given that the two soils evaluation test pits are either too high (TP-

⁹ Five (5) other borings on site encountered refusal at depths varying from 7.5' to 19.5'



203) or not deep enough (TP-304), we recommend additional test pits to confirm soils types and to check for ESHGW and rock, and these should be excavated to 4-feet below the proposed system base elevation. In addition, because there are no reported infiltration tests for this system, we recommend two (2) Guelph Permeameter tests at the bottom of the proposed recharge area, one within each major wing of the area.

These recommended tests will provide adequate basis for design (and also help confirm the infiltration results for area #4). The Applicant should use 50% of the lowest value of the two tests in accordance with the Massachusetts Stormwater Policy. Additional field testing (observation pits and infiltration tests) should be witnessed by a qualified Town representative.

13. In reviewing all available soil evaluation test pits, it appears that a total of ten (10) test pits¹⁰ have been conducted within the proposed porous pavement route, and there are five (5) other test pits¹¹ that are nearby, typically north or west of the porous pavement. Some of these test pits and infiltration tests are informative, however, in our opinion the applicant needs to perform additional field tests, and Guelph Permeameter tests for the porous pavement to confirm that subsurface conditions are consistent, and to have field documented saturated hydraulic conductivity measurement for each of the six (6) proposed porous pavement recharge areas. These field tests should confirm that ESHGW levels and bedrock, if present, are adequately below the base storage stone level at each of the six porous pavement zones. Additional field testing should be witnessed by a qualified Town representative. The recommended additional tests are:

<u>Porous Pavement Recharge Zone</u>	<u>Base Stone Elevation</u>	<u>Recommended Tests</u>
5aP – 125 l.f. at southwest corner	227.7	1 additional/deeper soil evaluation and 1 GP test
5bP – 105 l.f. south of building	227.7	1 deeper soil evaluation & 1 GP test
5cP – 75 l.f. adjacent to courtyard	219.7	1 additional soil evaluation & 1 GP test
5dP – 515 l.f. along east side	216.7	3-GP tests about 100-ft apart from start of zone to locus of SH-TP-102 ¹²
5eP – 245 l.f. northeast area	215.7	1 additional soil evaluation & 2 GP tests
5fP - 75 l.f. final length	215.7	1 soil evaluation & 1 GP test

¹⁰ DTH 5, 6, 7 8, SH: TP-308, TP-2, TP-307, TP-102, TP-303 and TP-302

¹¹ SH: TP-105, TP-104, TP-1, TP-103, and TP-101

¹² Existing GP test: The elevation of this test needs to be reported. If it is at or below 216.7 then it would be useful.



GP = Guelph Permeameter test, at proposed base stone elevation

14. All new test pits or borings or infiltration tests that are completed within or near any proposed recharge area or along the porous pavement need to be clearly shown along with those already shown on the Grading and Drainage Sheets C-6 and C-7. In addition, we recommend that for each subsurface recharge area, and for points along the porous pavement where tests have been conducted, the Applicant list the ESHGW and refusal elevations that has been determined at such locations.

Porous Pavement Design Issues

15. The proposed porous pavement section does not agree with the section recommended within Massachusetts' SWH Vol.2, Ch.2, page 119, that is based on UNHSC¹³ Design Specifications. The Applicant needs to defend their alternative approach.
16. Porous paving should not receive stormwater from other drainage areas (especially areas that are not fully stabilized). The Applicant needs to address retaining wall areas, see comment 4, where stormwater will run-on to the porous pavement.
17. There are six (6) sloped porous pavement areas that are designed such that the storage bed bottoms are kept level to provide the same effective storage as would exist for a flat location. This will require placement of additional stone depth to compensate for the surface slope. The Applicant needs to add a typical detail to the design plans to illustrate stone base construction, detail the transitions between zones with differing base stone elevations, and specify materials for these six proposed porous pavement recharge areas.
18. Porous pavement zone 5fP needs a note added to Sheet C-6 to call out the proposed base stone elevation at its intersection with South Avenue.
19. Four (4) deep test holes by MetroWest Engineering are located in the southwest section of proposed porous pavement; and Sanborn Head has recently excavated one (1) additional test pit SH-TP-308 in this same area. As noted in comment 13, several sections of porous pavement design are not supported by on-site testing. This lack of critical field test data needs to be corrected. Nevertheless, regarding the southwest corner of pavement, the existing five test results are noted along with specific recommendations:

¹³ University of New Hampshire Stormwater Center, which has conducted extensive research into the effectiveness and precautions for, and the design of porous pavement



- a. DTH-5 and DTH-6 are located in a porous pavement area in the southwest corner of the site. Both test pits were 10-feet deep to elevation 228.7± . ESHGW was determined to be elevation 235.5 at DTH-5 and elevation 234.7 at DTH-6 which are levels about 4-feet above the proposed finished grades of the porous pavement in these areas (230.5 to 231.5). Also, boring SH-6 which was drilled at elevation 236 in this area encountered refusal at a depth of 7.5-feet (elevation 228.5) which is about the elevation of porous pavement in that area. The Applicant needs to address these findings relative to the feasibility of porous pavement in this section of the site, and discuss the potential rock removal and dewatering impacts that could result from excavating and grading to a level that is lower than ESHGW elevation. Also, more site investigation is warranted. The new test pit SH-TP-308 excavated to elevation 224 is 1.3-feet higher than the proposed base stone elevation of 221.7. The latest test pit is helpful in finding no rock, but not deep enough to document soil conditions and to evaluate for ESHGW and rock further below the proposed porous pavement base. A deeper test pit should be excavated to at least 4-feet below the proposed system base elevation. Any additional field testing (observation pits and infiltration tests) should be witnessed by a qualified Town representative.

20. Regarding setback requirements stated in Massachusetts' SWH for porous pavement:

- a. 50-feet from Septic Effluent Disposal (in this case, Effluent Disposal Area)¹⁴: The Applicant needs to address the hydraulic significance and impacts of proposing porous pavement above or within 50-feet of the effluent disposal areas at the Site, and propose an alternative solution. The design capacity of the effluent disposal area will be affected, and the storage and recharge capacity of the porous pavement in such area will be reduced. Whether one is designing a septic system disposal field or a wastewater treatment facility effluent disposal field, good design practice calls for ground surfaces above effluent disposal areas to be sloped (typically 2% minimum) so that stormwater flows off and away from such fields. Moreover, porous pavement is not the hydrological equivalent to natural soil structure with grass cover: Porous pavement is far more transmissive, whereas natural soils will retain stormwater better, and promote surface runoff when sloped. In our opinion, placement of porous



pavement above or near an effluent disposal area is inappropriate and not good engineering practice.

- b. 100-feet from Surface Waters: The Site Plans indicated that the first 135-feet of porous pavement (measured from the South Avenue exit) are located within 100-ft of the surface waters of the intermittent stream, as measured from TOB1 to TOB8; and some portion of the porous pavement continues within 100-feet of the stream for another 45-linear feet (from TOB8 to TOB9). The Applicant should address this porous pavement setback requirement of the Mass SWH.

Also, because the Wetlands Protection Act Regulations define Surface Waters as including “wetlands”¹⁵, which are the jurisdiction of the Weston Conservation Commission, the Commission could view the porous pavement as significantly violating this 100-foot setback requirement: The first 750-feet of pavement are located within the 100-ft wetlands buffer zone. The Applicant should present their justification to the Commission for using porous pavement in this zone.

- c. 20-feet from building foundations: The Applicant may need to modify the plans to protect the building foundation at the southwest area of the Site where about 80-feet of porous pavement violate this setback rule, and there is another setback issue for about 20-linear feet at the southeast corner of the 5 story building foundation. Information about the building foundation is unavailable.
- d. 10-feet from building slabs: This does not appear to be an issue at this Site.
- e. 10-feet from property lines: This setback is violated at 3 locations, (1) 300-feet along the westerly side of the emergency access road off South Avenue, (2) 175-feet along the southwest property line, and (3) 290-feet along the southeast property. The Applicant needs address these setback violations.

Needs for a Comprehensive Stormwater Mounding Analysis

21. The Applicant’s Hydrogeologic Evaluation Report (Figure 9) provides a cross-section view of a mounded high groundwater condition that approaches the top elevation of Subsurface Infiltration Area #3, which is the higher of the two recharge systems

¹⁵ Under 310 CMR 10.04 of the Wetlands Protection Act Regulations, Surface Waters are defined as: “All waters other than groundwaters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters and vernal pools.” (underline added)



proposed below the garage floor¹⁶. Extrapolating from what is shown on Figure 9, it appears that Subsurface Infiltration Area #4 could be inundated by 6-feet of ground water. These mounded conditions will significantly reduce the effectiveness of these systems' recharge (in fact, once a mounded condition reaches the base of an infiltration area, the rate of recharge is typically reduced by an order of magnitude). Given these indications, a separate and thorough mounding analysis must be prepared and submitted with the Applicant's Stormwater Management Report. For the purpose of a complete Stormwater Management Report, the applicant needs to provide a comprehensive mounding analysis for the Site stormwater recharge systems that factors in all of the following:

- a. All four subsurface stormwater recharge areas
 - b. All porous pavement recharge areas
 - c. Analysis of mounding with and without the foundation underdrains noted in the Hydrogeologic Evaluation Report for the foundation footing of the 4-5 story building. (Hydrogeologic Evaluation Report Figures 7 & 9).
 - d. The average effluent disposal rate from the wastewater treatment facility,
 - e. The depth of the aquifer should be established by one or more soil borings with the depth of the aquifer set at refusal, if encountered, or at the elevation where the boring is terminated, and,
 - f. Given upward trends in rainfall extremes, we recommend that inputs include at least the 25-year storm event, and preferably the 100-year 24-hour storm event.
22. As a follow up to the engineering work noted above, if foundation drains are placed near or below the proposed garage subsurface recharge areas, this will reduce the effectiveness of these BMPs to recharge to groundwater and control peak flow and runoff volumes. Therefore, if any underdrains are required to manage groundwater levels and/or mounding effects of stormwater recharge combined with wastewater treatment effluent disposal area(s) then the Applicant needs to do the following additional work:

¹⁶ In addition, Mounding Analysis figures in Hydrogeologic Evaluation Report Appendix F seem to indicate, in one case, that mounded groundwater elevation will exceed the top of Recharge Systems #3 and #4 by 19-feet. This would be extreme and would result in total temporary failure of these systems and represent a significant structural issue due to hydraulic pressure below the garage floor concrete slabs.



- a. revise the HydroCAD hydrologic model to include the underdrains and then: (1) evaluate the reduction of exfiltration to groundwater, and (2) to identify estimated runoff flows and volumes via the underdrains toward wetland resource areas;
- b. quantify the reduction in recharge caused by the underdrains' drawdown of stormwater from the garage subsurface recharge areas and if necessary to meet recharge requirements, compensate by directing underdrain flow to additional infiltration facilities capable of recharging intercepted runoff from the garage subsurface recharge areas; and
- c. Site Plans need to be revised to show the locations of all underdrain designs on the Grading & Drainage Plan and on the associated Detail Sheets, including underdrain system invert elevations, underdrain outlet elevations, and underdrain trench construction including proposed backfill.

O&M Plan Deficiencies

23. Because porous pavement is prone to clogging, aggressive maintenance with jet washing and vacuum street sweepers is required. The Applicant's O&M plan has addressed many of the appropriate procedures for care of porous pavement. In addition to what is already proposed, the Applicant needs to revise the post-construction stormwater operation and maintenance plan to include the following additional advisories for porous pavement:
- a. Clean the porous pavement surface monthly using a combination of jet washing and vacuum street sweeping (modification of "vacuum sweeping" only in the current O&M plan).
 - b. Keep landscaped areas well maintained to prevent soil from being transported onto the pavement.
 - c. Regularly monitor the paving surface to make sure it drains properly after storms.
 - d. Attach rollers or rubber blades to the bottoms of snowplows to prevent them from damaging the porous pavement.
 - e. Also, for proper maintenance, the Massachusetts SWH recommends posting signs identifying porous pavement areas. (Also see comment 27.)



Construction Period Precautions

24. Construction staging, means & methods, and erosion and sediment control must all be taken into consideration when using infiltration practices and porous pavements. The Site Plans (e.g., Erosion Control Sheets) need to be revised to specify the following precautions for the porous pavement areas and the four subsurface recharge areas:

- a. Prevent the compaction of underlying soil at these infiltration practices
- b. Prevent contamination of stone subbase with sediment and fines
- c. Prevent tracking of sediment onto porous pavement
- d. Prevent drainage of sediment laden waters onto porous surfaces or into constructed infiltration beds

And in addition, because site contractors often seek to utilize infiltration basin areas as a temporary stormwater detention basins during construction:

- e. The Applicant needs to add a note to the Site Plans for infiltration basin areas that specifies procedures if such areas are used as temporary drainage management basins during construction. For example, one approach is that excavation to finished grade should not be completed until site construction is completed. Then, any accumulated siltation is removed along with the final 1-foot of excavation to the final subgrade where drainage stone is to be placed.

Massachusetts Stormwater Management Standards:

This section of the review memo discusses project compliance with Massachusetts' ten Stormwater Management Standards. The Applicant's Stormwater Management Report includes an evaluation of compliance with the Stormwater Management Standards as presented in the Massachusetts Stormwater Handbook (SWH). Our view of the Project's compliance with Stormwater Management Standards are addressed for each standard below:

Standard 1: No New Untreated Discharges or Erosion to Wetlands. Compliance with this standard has been partially demonstrated. However our concerns regarding additional field tests, design and construction period controls need to be addressed in order to be sure that uncontrolled releases or erosion potential does not exist, (see comments 9 through 13, 16, 17, 20, 22 & 24).



Memorandum
January 15, 2021
Page 21

Standard 2: Peak Rate Attenuation. Compliance with this standard has been partially demonstrated in that the current design proposal complies with Standard 2 and the current post-development peak flows do not exceed the pre-development runoff rates. However, several concerns have been raised in the prior sections of this letter with requests for additional site testing design inputs, which depending on results could lead to revised design of the five infiltration BMPs. These issues must be addressed first followed by a recheck of the HydroCAD model if it is revised to match any design revisions.

Standard 3: Stormwater Recharge. The intent of Standard 3 is to ensure that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions. Compliance with this standard has been generally demonstrated. However, the following still needs to be addressed:

25. In order to determine compliance with Standard 3, the analysis should address the following:
 - a. The Applicant needs to demonstrate that all five of the subsurface infiltration BMPs proposed are designed based on complete data obtained from the recommended additional on-site soil evaluations to confirm soil morphology that will identify (a) ESHGW, and (b) the appropriate hydraulic conductivity (in this case, 1/2 the minimum measured Guelph permeameter rate) of soil underlying the sites where infiltration systems are proposed. It is critically important that the Applicant conduct the recommended additional field testing, witnessed by a qualified Town representative, to provide adequate information for the design of all five key infiltration systems, see related comments 9 through 13, and comments 21 and 22.
 - b. The volume intercepted by any building or garage underdrains need to be quantified, including discharge released to wetlands, and if necessary additional infiltration should be provided sufficient to accommodate volume intercepted.

Standard 4: Water Quality. The Stormwater Report and design plans demonstrate that stormwater runoff from all paved areas will be collected and directed through adequate pre-treatment and contained infiltration. The Stormwater Report and design plans generally demonstrate compliance with Standard 4, however we defer on issuing an opinion on full compliance with this Standard until the other issues noted above have been addressed.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs). The stormwater report incorrectly states that the Site is not categorized as a LUHPPL. The Project Site is classified as a "Land Use with Higher Potential Pollutant Loads" (LUHPPL, per SWH V.1: C.1:



p.14) because there will be a “*parking lot with high-intensity-uses (1000 vehicle trips per day or more)*”¹⁷. This area also meets the definition of a “Hotspot” under the Weston Stormwater Regulations (see SECR definitions Appendix A).

26. Although it appears that the Stormwater Management Report adequately provides design and supporting calculations consistent with LUHPPL and Weston Stormwater Hotspot requirements, we recommend that the Applicant revise the Stormwater Management Report to formally address compliance with each of the special LUHPPL requirements (e.g., demonstrate 44% TSS removal as pre-treatment for infiltration, demonstrate that pre-treatment treatment trains includes an “*oil grit separator, sand filter, filtering bioretention area or equivalent*”, confirm for this Standard that the required water quality volume (Standard 4) equals 1-inch times the total impervious area of the post-development site), and identify source controls to limit introduction of contaminants in runoff. A source control relating to traffic would be a prohibition on road salt.

27. The Massachusetts SWH classifies porous pavement as unsuitable for LUHPPL areas (see p.118, V.2.Ch.2) however, since the proposed area is only for emergency access, the use might be considered acceptable as long as there are adequate provisions to prevent day to day use of the porous pavement route by residents exiting the parking garage. The Applicant needs to discuss with Town of Weston emergency services their preferences for installing an emergency access gate at both entrances to this proposed emergency access way.

Standard 6: Critical Areas. The Project Site does not fall within a Critical Area and compliance with this standard is not required.

Standard 7: Redevelopment Project. The Site is entirely altered and there is a substantial increase in impervious area, therefore the entire site development must be categorized as a new development, and full compliance with the Massachusetts Stormwater Policy is required (see SWH: V.1, C.1, item 2 under Standard 7, p.23). Compliance with Standard 7 is not relevant.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls: The Applicant has provided plans and instructions for erosion and sedimentation in the Site Development Plans (see sheets C-10, C-11 and C-17). However, we have recommended some additions to Sheet C-17 (see comment 24), and we also recommend the following:

¹⁷ See Vanasse Associates traffic impact report for the project



28. Revise Sheet C-17 to add a note calling for the use of erosion control netting on all new or disturbed sloped areas until vegetation is established and slopes are stabilized.

The Stormwater Management Report correctly states that the Project will result in the disturbance of greater than one (1) acre of land and requires coverage under the U.S. EPA National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities (CGP). The Applicant has indicated that prior to commencement of earth disturbing activities, a project-specific Storm Water Pollution Prevention Plan (SWPPP) will be prepared, and a Notice of Intent will be submitted to the EPA. However, as noted in comment 29 below, a SWPPP must be submitted along with a signed copy of EPA's NOI and approval letter as part of a Town of Weston Stormwater Management Permit (SWP) application. The Town's Stormwater & Erosion Control Regulations (SECR) allow a SWPPP that meets requirements of the NPDES General Permit to be equivalent to the Erosion and Sediment Control Plan that is required as part of their SWP application. Therefore:

29. We recommend that the Applicant prepare a SWPPP now, and submit it with a completed SWP as required by the Town's Stormwater & Erosion Control Regulations. The SWPPP is a document that can always be updated in the future should contractor means and methods change from those proposed by the engineer.

The Applicant has also indicated in the Checklist for Stormwater Report that a Construction Period Pollution Prevention and Erosion and Sedimentation Control has not been included in the Stormwater Report but will be submitted before land disturbance begins. However, because of the Town's SECR noted above, we have recommended this be addressed now (see comment 29 above).

Standard 9: Operation and Maintenance Plan. A long-term Pollution Prevention and Stormwater Operation and Maintenance Plan (O&M) has been submitted as part of the Stormwater Management Report (Appendix F). This plan needs to be amended as follows:

30. The O&M Plan needs to include recommendations for the level spreader that receives overflow from the infiltration systems prior to release to the wetlands.
31. The O&M Plan needs to include the additional recommendations for porous pavement as noted above in comment 23.

Standard 10: Prohibition of Illicit Discharges. An Illicit Discharge Compliance Statement has been submitted, and this Standard has been met.



Status of the Proposed Project per Town Stormwater Rules:

As noted in the first part of this letter, this peer review checks project compliance Weston's Stormwater and Erosion Control By-Law, and with applicable drainage / stormwater provisions of Weston's Site Plan and Land Subdivision Rules and Regulations as typically referenced during local Site Plan or Special Permit approvals. Town stormwater requirements will be applicable unless waived by the Weston ZBA or by a Commonwealth authority (e.g., HAC).

Weston Stormwater Regulations (SECR):

The Applicant's submittal does not include an evaluation of compliance with the Weston Stormwater Management Rules and Regulations. In our review, we have found several points of non-compliance with Weston SECR and an associated need for Applicant Response.

32. The Applicant may need to file for a Major Permit per Section IV.2, and a Major Stormwater Management Permit application needs to meet the requirements stated in the Town's 2-page application checklist. In reviewing the requirements of this, we find that the Applicant's existing submittals will probably meet all submittal requirements except for the following deficiencies:

- a. *"Locations of all existing bodies of water"*: The Applicant needs to show the intermittent stream in its entirety past intermittent stream flag TOB11 to a point parallel to the southern extent of the Project Site. Currently the intermittent stream is only partially shown on the Site Plans (see Sheet C-2).
- b. *"All components of existing septic systems"*: For this the Applicant needs to show any septic systems on two other abutting lots, one owned by Nardone and one owned by Butera, and note septic system setbacks to proposed infiltration systems #1 and #2 in the north part of the Site.
- c. *"Locations of all soil testing including test pits/deep holes, boring, and perc tests"*: For this we recommend that the Applicant show all test locations on both the Existing Conditions Plan and the Grading and Drainage Plans within the Site Plans. (See comment 14.)



- d. *“Show the foundation drain. Foundation drain is not to be connected to an infiltration system for stormwater”*: See comment 22.
 - e. *“An Erosion and Sediment Control Report shall be prepared in conformance with the Design Standards contained in Section 7.B”*. See comment 29.
33. The Applicant’s submittals will probably meet all of the Design Standards stated in Section 6.0 of the Towns SECR regulations, except for the following:
- a. SECR Section 6.A.2.e. – *“Non-typical curve numbers (CN) will be as follows”*:
 - i. *CN 80 must be used for porous pavement* - the Applicant has used 98 per the Massachusetts SWH and this would need to be discussed with the Town Stormwater Permitting Authority.
 - ii. *“The curve numbers that are applicable for Woods in Poor Condition....shall be used for new landscaped areas, based on the applicable Hydrologic Soil Group...”*: In the Applicant’s case, it appears that the CN value of 45 would be required for new landscaped areas and the HydroCAD model should be revised accordingly.
 - b. SECR Section 6.A.2.ii.c. – *“Unsuitable material is to be removed and replaced with suitable granular material for a distance of 2-ft. horizontally in all directions from the infiltration system; at a minimum, the A and B horizons shall be removed. The excavation for the infiltration system is to extend into the C-layer a minimum of 6-inches.”* See comment 11.a.
 - c. SECR Section 6.A.2.ii.d. – *“Systems must be designed so that inspection and maintenance can be readily performed. All infiltration systems are to have inspection ports. The inspection ports are to be installed to finish grade.”* See comment 7.
 - d. SECR Section 6.A.2.ii.f. – *“Foundation drains will not be allowed to connect to infiltration systems that were designed for stormwater.”* See comment 22. It is not known how the Town’s Stormwater Permitting Authority would interpret the foundation drain that is proposed by the Applicant in their Hydrogeologic Evaluation Report and if it would be considered “connected” to the subsurface recharge areas under the garage floor. Our opinion is that any underdrains that would influence the mounding of groundwater should be considered “connected” hydraulically.



- e. SECR Section 6.A.2.ii.g. – *“A cleanout with a sump or other structure with a minimum 2-ft. sump will be installed before all new infiltration systems.”* See comment 7. It is not known how the Town’s Stormwater Permitting Authority would rule on this however we have recommended access manholes as noted in comment 7, and such manholes could easily have a 2-foot sump specified.
- f. SECR Section 6.B. – *“Approval of an Erosion and Sediment Control Plan by the SWPA is required prior to any site altering activity.”* See comment 29.

Planning Board Rules and Regulations as Applicable for Stormwater (PBRR):

The Applicant’s submittals do not include an evaluation of compliance with Weston Planning Board Rules and Regulations regarding stormwater and drainage. The most applicable sections of the PBRR are ARTICLE IV. DESIGN STANDARDS, Section 4.19 Drainage; ARTICLE V. CONSTRUCTION STANDARDS, Section 5.09 Drains, Catch Basins, etc. In our review of the foregoing sections, we have found that the Applicant’s submittals would be in compliance.

Town of Weston Rules and Regulations for Site Plan Approval

The Applicant’s submittals do not include an evaluation of compliance with Weston’s Rules and Regulations for Site Plan Approval regarding stormwater and drainage issues. Our review of the applicable sections of these rules (for stormwater and drainage) finds that the Applicant’s submittals would be in general compliance, with the following exception:

- 34. Subsection 4.05 NATURAL SITE CHARACTERISTICS states: *“The plans shall show location of water resources including ponds, lakes, brooks, intermittent streams, vernal ponds, streams, flood plains and all proposed changes to these features.”* For this the Applicant needs to show the intermittent stream in its entirety, past intermittent stream flag TOB11 to a point parallel to the southern extent of the Project Site. Currently the intermittent stream is only partially shown on the Site Plans (see Sheet C-2). See comment 32a.