

Chessia Consulting Services LLC



September 11, 2017

Hon. Christopher E. Houston
Weston Board of Selectmen
PO Box 378
Weston, MA 02493

RE: Professional Engineering Services
Supplemental Design Review
104 Boston Post Road/Comprehensive Permit

Dear Chairman Houston and Members of the Board:

In response to your request and in accordance with my proposal dated August 15, 2017, Chessia Consulting Services, LLC has reviewed the above referenced project revisions relative to a Comprehensive Permit Application to the Weston Zoning Board of Appeals. In particular, I have reviewed the above referenced project for Compliance with Stormwater Regulations promulgated by DEP and the Town of Weston. I previously reviewed aspects of the conceptual wastewater disposal plan. There are no changes to the wastewater treatment and disposal system in the document received. In addition, the design was reviewed for conformance to general engineering design standards.

The data reviewed included the following information:

Plans Entitled:

- “Site Development Plans for Stony Brook Weston 104 Boston Post Road Weston, MA” dated March 28, 2017 consisting of 17 Sheets prepared by Allen & Major Associates, Inc. Sheets 1, C- 2A, C-3A, and D-5 were revised 6-15-17; Sheet C-5A was revised 7-28-17; and Sheets C-3B, C-5B and D-4 were revised 8-11-17. (Plans) Portions of the data reviewed were on the FTP site.
- “Stony Brook Weston 104 Boston Post Road Weston, MA” dated November 18, 2016 prepared by Allen & Major Associates, Inc. and SMOOK Architecture and Urban Design consisting of 17 sheets of plans.(Initial Submittal)

Supporting Data:

- “40B Residential Housing Development 104 Boston Post Road Weston, MA Drainage Report” issued April 18, 2017 last revised August 11, 2017, prepared by Allen & Major Associates, Inc. (Report)
- Miscellaneous correspondence including:
 - Nitsch Engineering review letter dated May 15, 2017.
 - Memo to ZBA from Town of Weston Engineering Department.

- City of Cambridge Supplemental Response to 104 Stony Brook LLC's G.L.c. 40B Comprehensive Permit Application for its Proposed Project at 104 Boston Post Road dated May 22, 2017.
- Conceptual Design Executive Summary for Proposed Wastewater Treatment and Evaporation Facilities 104 Stony Brook LLC Stony Brook Apartments 104 Boston Post Road Weston, Massachusetts 02439, prepared by Stantec Consulting Services, Inc.
- Comment letter from Karen Sebastian, LLC Landscape Architecture dated May 18, 2017.
- Allen & Major response letters dated May 16 and 18, 2017 to City of Cambridge Water Department and Weston Zoning Board of Appeals respectively, with attachments.
- Stormwater Bylaw/Regulations Waiver Request letter prepared by Allen & Major Associates, Inc. dated August 11, 2017.
- 8/8/2017 Clarification/Supplemental Information for waivers requested from local regulations regarding Offstreet Parking and Stormwater.
- Allen & Major response letter dated July 6, 2017 to Weston Zoning Board of Appeals response to Chessia Consulting Services peer review dated June 14, 2017. (Response)
- Letter from Stantec Consulting Services, Inc. dated July 14, 2017 regarding Public Safety Considerations for the Wastewater Treatment Facility and Evaporators.

There was an interim submission dated 7-28-17 that was not received by Chessia Consulting Services and has not been reviewed. I have viewed some of the data available on the Town's website as it is the latest complete plan set. It is assumed that there was also some correspondence associated with this filing that has not been included in the above list of data.

I have added new comments below my prior comments in underline type following either my supplemental comments in *italic type* or my initial comments where appropriate. As the only modifications relate to the stormwater system other comments in my initial review remain as they were not addressed. I have addressed waiver requests in the body of this letter under the appropriate sections.

I visited the periphery of the site (Boston Post Road and Sibley Road) on June 13, 2017 to observe existing conditions.

I note that the north arrow on the Cover Sheet of the Plans differs from the orientation on the other sheets. I have used the general plan sheet north for orientation as that appears to be correct based on a comparison of MassGIS mapping. As you know, the site is bordered on the northwest and the northeast by Boston Post Road and Sibley Road and is bordered on the southern side by the Stony Brook Reservoir. Stony Brook Reservoir is a Public Surface Water Supply for the City of Cambridge. Southwest and southeast of the locus is land owned by the City of Cambridge. Stony Brook flows through City of Cambridge property southeast of the site. North of the locus is the interchange of Route

95 and Route 20. There are two parcels between Sibley Road and the interchange that are developed with commercial uses. There were many cars parked along Sibley Road at the time of my site walk. These cars were employees or customers for the businesses located on Sibley Road. Cars were parked perpendicular to the curb for much of the roadway.

The site is currently developed with a professional building that is housed in a former house that has been identified as a historic structure in the Town. There is also a driveway and parking associated with the structure. The majority of the site is wooded with two high points one to the west and the other to the south of the existing building. Runoff would flow to Boston Post Road to the northwest, Sibley Road to the northeast and City of Cambridge property to the east, west and south. There are wetland resources including Bordering Vegetated Wetlands (BVW) and Riverfront to the southeast, and the reservoir with potentially other BVW to the south. MassGIS plans indicate that there are wetlands located along the brook that are not indicated on the plans. The plans do not identify if these wetland resource areas have been confirmed by the Conservation Commission. If not any change in the location of the resource areas could impact the proposed plans.

It is my understanding that the wetland resource areas have been approved but that there is an appeal related to historic mill complex provisions of the Riverfront Act.

No further comment required.

The site is identified as Charlton-Hollis-Rock outcrop complex and Hollis-Rock outcrop-Charlton complex soils with the developed portion identified as Udorthents-Urban land complex. The divide between Charlton-Hollis-Rock outcrop complex and Hollis-Rock outcrop-Charlton complex soils crosses the site in a northeast to southwest line with approximately 2/3 of the parcel consisting of the Hollis-Rock outcrop-Charlton complex soils. Predominantly Charlton soils are more permeable and have a greater depth to groundwater; these are identified on the south east side of the site. Predominantly Hollis soils are very shallow to ledge and have very slow permeability.

The data provided, to date, does not include any on-site test results as would and should be standard practice to determine soil suitability for both wastewater and stormwater disposal. In this case there is no municipal sewer available to the site. Soil testing should be performed to confirm soil conditions and identify groundwater elevations based on Soil Evaluation methods consistent with State DEP requirements

Some testing was performed; however the locations of the tests were in disturbed areas and they were only borings not soil evaluations as required under the DEP Handbook and WSR. Refusal (ledge) was encountered approximately two feet below grade at the locations tested. Soil testing data provided remains insufficient for the site.

Comment remains, it is now proposed to have a subsurface detention system only no recharge is proposed, however detention systems should also account for groundwater impacts if any connection to the system is proposed. The Board could include a condition to estimate groundwater flow if a connection is proposed.

The project proposes an apartment building with eight stories:

- Five stories of residential units;
- Two partially below grade garage stories;
- A wastewater treatment plant in a portion of the lower level garage.

No data on the wastewater treatment plant is included in the plans submitted, as that is not a permit the comprehensive permit would include; however, importantly to the proposed project, it is unclear how the wastewater treatment plant and associated vents, steam stacks, etc. would be *located* in the building and what impact the location of the plant would have on the proposed 150 residential units and their occupants as to noise, odor, moisture, vibration and pathogens that may be generated.

Not addressed, comment remains.

Not addressed, comment remains. A waiver from the Board of Health requirements has been requested as the system would exceed the size allowed for a septic system and a wastewater treatment plant would be required. No discharge of treated effluent to the ground or surface waters is proposed as the system would be designed to heat effluent for disposal to the air. It would still be a wastewater treatment plant in a Zone A to a surface water supply and within a residential building, neither of which would be allowed under state regulations for wastewater treatment plants. I recommend that the Board consider public safety aspects of this proposal in particular in the event of a system failure. A plan indication the location of the wastewater treatment plant within the building has been provided. It is proposed to be in the southern part of the building adjacent to the emergency access roadway. I have not been provided with any other details on the treatment plant. The Board should consider a condition that DEP document that the proposed project would be allowed in the Zone A of a surface water supply contrary to published guidance on the location of wastewater treatment plants. The Board should also condition that detailed contingency plans be developed for system failures, leaks, repair and replacement of components, etc.

The building would have a footprint, including parking garage and courtyard areas, of 46,034 square feet based on the data provided. The area proposed to be developed is approximately 1.7 acres of the 2.09 acre property. There is an exterior area around the building that would provide for the location of drainage pipes below the surface and for emergency access on the surface.

Comments:

The current revision only changes the stormwater management system from an infiltration system to a detention system. Some supporting data has been provided on other issues as addressed below:

General Review Criteria:

General Design Comments:

- I have reviewed the plans for general design issues based on the data provided.

Dep Stormwater Management Regulations/Town of Weston Stormwater Regulations:

- The Report asserts that the project would comply with both DEP Stormwater Standards and the Town of Weston Stormwater Bylaw and Stormwater Regulations (WSR). I have reviewed the data supplied by the Applicant for conformance with the DEP Stormwater Handbook, in particular Volumes 1 for general data on the Stormwater Standards and Volume 3 “Documenting Compliance with the Massachusetts Stormwater Standards”. Specific BMP’s were also reviewed in Volume 2 Chapter 2 for construction and maintenance requirements and Chapter 1 for systems to use in specific areas, specifically associated with Standard 6. I have used DEP’s 10 Standards as the basis for review. If the DEP Standards do not apply due to work being performed outside of a jurisdictional area (Riverfront or Wetlands Buffer Zone) the Weston Regulations would also need to be waived for the project to proceed.

The current proposal states that the design complies with all DEP Regulations except for Standard 3 Recharge. Waivers from the Bylaw have been requested. The waiver request claims that the Bylaw is not applicable since the project is designed in compliance with the Massachusetts DEP Stormwater Regulations. As noted in my comments this is incorrect as there are aspects of the design that would not comply in addition to the listed non-compliance with recharge under Standard 3. The project does not propose a connection to the municipal system and there would be no oversight under the MS4 program of the National Pollution Discharge Elimination System (NPDES) by the EPA or DEP for the site under this program as specified in the 8-8-17 waiver request and the 7-6-17 response to my prior comments. The MS4 requirements are under a General Permit implemented and enforced by the Town, a private developer is typically required to comply with Town Bylaws that have been enacted for the Town to meet MS4 requirements. A NPDES Construction Permit will be required to be filed with the EPA; however that permit only addresses construction phase work. The local Bylaw would provide protection that is not otherwise provided under DEP as the site is proposed to be outside of DEP wetlands jurisdiction. DEP could regulate the stormwater discharge under 314 CMR 3.00; however, this is unlikely for discharges of the size proposed.

In summary, the proposed use is not an allowed use in a Zone A of a Public Surface Water Supply.

Not addressed comment remains refer to the DEP Handbook Volume 1 Table CA 2: Standard 6.

Not addressed comment remains refer to the DEP Handbook Volume 1 Table CA 2: Standard 6. The revised submittal does state that the design would not comply with Standard 3 Recharge but ignores requirements under Standard 6. As noted in the Response the site would not be subject to DEP review as it is outside of the jurisdiction and waiver of the Weston Bylaw would result in no oversight of

stormwater by the Town or the State unless conditioned otherwise in the Comprehensive Permit.

Wastewater Issues:

- Minimal data on wastewater disposal has been provided. As no municipal sewer service is available other means of disposal will be required. Based on submitted data, a Wastewater Treatment Plant with a combination of evaporators for air disposal of steam and undetermined off-site location for disposal of residual sludge and solids is proposed. Sludge and solids would be retained in on-site tankage for periodic pumping. I have listed appropriate data from Massachusetts regulations and guidance for wastewater treatment systems.

In summary, the proposed use is not an allowed use in a Zone A of a Public Surface Water Supply.

*Not addressed comment remains refer to 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply.*

Not addressed comment remains refer to 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply. The Board should consider a condition that DEP document that the proposed project would be allowed in the Zone A of a surface water supply contrary to published guidance on the location of wastewater treatment plants.

General Design Comments:

1. It is proposed to have a cut ledge face starting at the property line in several locations along the south west and southerly sides of the site. A construction easement or license from the abutting property owner (Book 1696 page 404, owned by the City of Cambridge according to the Plans) would be required to implement the plan or more likely locating the top of the ledge cut further into the site to provide construction space.

Not addressed comment remains.

Not addressed comment remains, the Board could consider a condition that a detail survey and design of the slope be provided, including location of significant trees that would be impacted by construction to demonstrate on work is performed beyond the property limits.

No information has been provided, to date, by the Applicant to document that the abutting property owner (the City of Cambridge or the municipal agency having custody and control) has agreed to provide such an easement or license.

Not addressed comment remains.

Not addressed comment remains, the Board could consider a condition that a detail survey and design of the slope be provided, including location of significant

trees that would be impacted by construction to demonstrate no work would be performed beyond the property limits.

Based on Natural Resource Conservation Service (NRCS) data soil could be from 12-65+ inches in depth. The plans only identify one area of exposed ledge at the westerly side of the Boston Post Road access drive to the existing building. The plans identify the survey as an “on-the-ground” survey so any other areas of exposed ledge would have been seen by the field crew and identified on the plans. The plans also indicate that the entire area proposed for the steep cut ledge face along the property line is wooded, which indicates the presence of soil over the ledge. During my visit to the periphery of the site I noted additional ledge that was not observed by the surveyor, but was obvious from the nearby street. This area is east of the existing building and along the south side of the pavement for the access and parking areas.

Not addressed comment remains.

Not addressed comment remains, the Board could consider a condition that a detail survey of ledge depth, in particular near the property limits be provided, and to demonstrate no work would be performed beyond the property limits.

No soil testing, as is standard engineering practice and a requirement of the Town of Weston Stormwater Regulations, has been performed. The ledge in the area below the soil may also be weathered and not suitable for a 4’ vertical to 1’ horizontal slope or other steep cut slopes proposed. Any existing soil over the ledge would not be stable at a 4’ vertical to 1’ horizontal slope, resulting in impacts over the property line. The data provided should document soil and ledge conditions at critical points based on on-site testing data. It is unclear how steep slope would be protected as a high steep created cut slope as proposed would be a safety hazard if not properly fenced. There is no room for a fence as the cut slope is at the property line. The area visible from the street is mostly wooded, except around the existing building, some areas are newer growth but many large mature trees exist on the site. The size and extent of the trees and undergrowth observed is not typical of an area with no soil over ledge.

The response indicates that some testing was performed and a location plan and boring logs were on the Town’s FTP site. I note that borings, not soil evaluations were performed. All testing was in the disturbed area of the existing driveway, two in areas of obvious prior excavation, one B-3 is in an area that appears to be close to natural grades. Refusal (ledge) was encountered approximately two feet below grade at the location(s) tested. Soil testing data provided remains insufficient for the site. Testing should be performed consistent with DEP Handbook and WSR requirements, which would include soil evaluations at the location and depth of proposed stormwater infiltrations systems.

Comment remains; I recommend that the Board not waive soil testing requirements for the project as listed in the Town of Weston Stormwater & Erosion Control Regulations. Although it is no longer proposed to provide infiltration, soil testing will identify ledge depth in areas of the site where stormwater systems are proposed and may identify areas with soils suitable for

infiltration. If suitable soils for infiltration are found the site should be designed to include infiltration. Testing should be performed prior to excavation of the site consistent with DEP and Town of Weston requirements.

2. Revised building plans and elevations based on the new footprint should be provided, including general plan and elevation views for the wastewater treatment plant and associated stacks, vents, etc. Although final design is not required at this stage, safety impacts from steam, odors, moisture and potential mold issues with a below grade wastewater treatment within a residential structure should be assessed, along with potential noise and vibration issues.

Not addressed comment remains, the location, depth of excavation, etc. for the wastewater treatment plant is a critical design feature.

Based on the data provided and reviewed on the Weston website there is a conflict between the parking and the wastewater treatment plant location that has not been clarified. It appears that the wastewater treatment plant would be in the southern part of the building on the lower parking level. Based on the plans the elevation of the floor is 104 for the lower level. The prior plan dated 7-28-17 includes a parking plan but proposed parking conflicts with the location of the wastewater treatment plant. This may have been addressed in other documentation but the data available to Chessia Consulting Services does not address this conflict. I recommend that the plans include more data on the wastewater treatment plant general component location, chimneys, elevations, etc. as it is a critical design feature. This data should be provided prior to approval as it affects public safety for the residents and is a crucial aspect of the project. The Board could include this as a condition for the project.

The building elevations should also address ventilation of the underground garage areas. It is unclear if there are openings at areas where grades are suitable. Collection of exhaust fumes within the garage would be a health issue for building occupants, if the garage is not properly vented.

Not addressed comment remains.

The Response indicates that the data has been provided to the Board but the data was not found on the website and was not in the hard copy data provided to Chessia Consulting Services. A sketch plan indicating the outline of the wastewater treatment plant location within the building has been provided.

3. Sheets C-3A and C-3B indicate a pipe labeled UD, identified as underdrain in the legend, around a portion of the building on the east, south and part of the west and north sides. Elevations of this pipe and the discharge location(s) should be identified together with quantification of the flow.

Not addressed comment remains, as noted, the depth of excavation for the wastewater treatment plant under the garages becomes more critical with the proposal to attempt to infiltrate water into the ledge. The bottom of the subsurface drainage system at the low end is EL 99.45, the lower garage floor is EL 104, and the wastewater treatment plant floor would need to be below the

bottom of the subsurface system in a confined ledge excavation that would likely fill with water.

Not addressed, the current design does not propose infiltration; however, groundwater would collect in the ledge excavation for the building foundation as noted above. The plans should identify where the UD pipes will discharge and quantify the flow. The Response indicates that this data will be provided later. It should be accepted that groundwater will need to be addressed and a discharge location determined. The plans identify UD pipes for groundwater but do not include a discharge location. The Board should include a condition that the design of any groundwater collection system be provided. In addition, it should be conditioned that any discharge not flow into Sibley Road or any public or private way or access drive.

Underdrains collect groundwater and would typically flow for several months in late winter-through spring depending on snow melt and rainfall conditions. No detail of the underdrain has been included in the plans. The plans do not detail a connection for the underdrain to the stormwater system and the elevations would not be suitable for connection to the stormwater system in some locations based on proposed site grading. Any and all discharge location(s) should be indicated. The underdrain should **not** discharge to Sibley Road, as presently shown on the plans, because groundwater discharge to Sibley Road would result in safety concerns with ice forming in the roadway as well as potential erosion of the steep slope at the low point in the east corner of the building.

Not addressed comment remains.

Not addressed the plans should identify the proposed discharge location of the underdrain. As noted this could be a safety issue as flow into Sibley Road would create an icing situation in the winter. It could be conditioned that groundwater discharge is not allowed to flow into any street and if connected to the stormwater system that it be quantified and added to the discharge rates.

If it is proposed to discharge groundwater to the wastewater treatment plant the flow calculations would need to account for the flow if it could be permitted as part of the plan design. If it is proposed to discharge groundwater to the stormwater system that flow should also be quantified. As noted above, the proposed elevations do not appear suitable to connect the underdrain to the stormwater system and pumping would be required.

Not addressed comment remains.

Not addressed comment remains, I recommend that the Board consider a condition the groundwater not be discharged to the wastewater treatment system.

4. No soil testing as required in the Weston Stormwater Regulations (page 4 3. d. iii. 5.) has been performed and I recommend that this requirement not be waived because many of the design assumptions rely on certain soil conditions. If differing conditions exist, the assumptions would not be valid and the design would not function as proposed. Soil testing could also impact the existing runoff calculations if soils differ from that assumed. Soil testing is standard practice to

develop site designs and should be required here. Determination of soil conditions for runoff, groundwater elevations and wastewater disposal in areas without access to a sanitary sewer system is typically a first step in evaluating the suitability of a site for development.

The response indicates that some testing was performed and a location plan and boring logs were on the Town's FTP site. I note that borings, not soil evaluations as required under the WSR were performed. The purpose of soil evaluations, rather than borings, is to observe the soil profile and visually identify conditions and soil characteristics. Soil testing establishes soil classifications and elevations together with evidence of groundwater, including visual observations of weeping, redox in the soil, etc. Borings establish soil conditions for other purposes such as foundation design, etc. All testing was in the existing driveway, two in areas of obvious prior excavation, one B-3 appears to be closer to unaltered natural grades. Refusal (ledge) was encountered approximately two feet below grade at the location(s) tested. Soil testing data provided remains insufficient to satisfy the local stormwater regulations. It is important not to waive this requirement because the ability of the site to infiltrate runoff and to identify existing groundwater elevations is based on existing soil conditions.

Comment remains; I recommend that the Board not waive soil testing requirements for the project as listed in the Town of Weston Stormwater & Erosion Control Regulations. Although it is no longer proposed to provide infiltration soil testing will identify ledge depth in areas of the site where stormwater systems are proposed and may identify areas with soils suitable for infiltration. Testing should be performed prior to excavation of the site consistent with DEP requirements.

5. It is proposed to install "NDS Tufftrack Grass Pavers" around the building to provide emergency access. The design has an 8.3% grade; the website data on the product specifies a 6% maximum grade for emergency vehicle use. The significance of this grade and the close proximity of the emergency access to the area should be evaluated by the Fire Department and the availability of equipment to fight a fire that occurs on the reservoir side of the building should be evaluated, both as to Town and mutual aid equipment. The Town may also want to have a professional fire expert provide a technical report on these issues.

Not addressed comment remains.

The Response indicates that the Fire Department has accepted the design, although the manufacturer does not recommend the provided slope for emergency access for the system proposed. The Board could condition that the plans be revised to be consistent with the NDS Tufftrack specifications for emergency use grades.

6. The depth of soil suitable for vegetation growth is only 1.5" and the website notes that full irrigation is required to maintain vegetation. As proposed, the design detail indicates crushed stone on compacted native soils. The native soils have not been determined except through published data. Depending on the soil used under the crushed stone at the slopes proposed, most rainfall will soak through the

1.5” of planting soil into the crushed stone and follow the compacted soils to the lowest point and then break out to the surface as a weep since the grading of this area is relatively steep and in most areas the grass pavers are confined between the ledge and building foundation. Creating a new point of water discharge would create soil instability issues on steep slopes or icing issues if discharge to a roadway area.

Not addressed comment remains. I note that the details for the grass pavers have not been changed to reflect the proposed design of the subsurface pipe stormwater system. More rainfall may flow through the paver system and then down into the stone around the subsurface pipe system. This flow would discharge through the subsurface system outlet pipe. In some cases there is a significant depth of soil between the subsurface pipe and stone system that may inhibit downward flow. The fill material between the subsurface system and the paver systems is not specified. The grass paver detail specifies “compact native soils” and the permeable concrete paver detail specifies “compact native materials” under the systems. Neither material would be present over the subsurface pipe system as the area would be fill. In some areas the cover over the pipe would be close to the base of the grass paver cross section and in other areas there is over 15 feet of between the top of the system and finish grades.

As currently designed, the stormwater detention system would be surrounded by an impervious barrier and only flow collected in inlets (catch basins or roof/yard drains would enter the system. My initial comment still applies; the design will result in weeps at low points where the grass pave system meets the roadway or a vegetated slope area. Flow would in some cases continue into the permeable paver system reservoir stone and weep at the junction of this system with the roadway. Refer to comment 7. below. The Response addresses the driveway pavers not the grass pave system.

7. The plans also specify Permeable Pavers for the upper garage access road and the lower access road leading to the perimeter grass paver system. The detail for these areas is **not** fully consistent with the DEP Handbook (Volume 2). The inconsistencies are: 1) choker course under sand bedding not reservoir course as indicated, 2) filter course (called subbase course) should be 12 inch minimum thickness and under choker course, 3) no filter blanket under filter course, 4) no reservoir course or subdrains under filter blanket. The reservoir course would be above the native materials. No soil testing to determine the suitability of the native materials has been performed.

Not addressed comment remains. Furthermore, the recent soil testing performed, while insufficient in scope, confirmed that the soils that have been tested are not suitable for the type of stormwater system because the bottom of the system would not be two feet above the existing bedrock in some locations.

Above comment on the cross section design has been addressed in the 7-28-17 plan set.

It appears that the intent is to infiltrate runoff through the joints of the pavers to a crushed stone reservoir and then a filter layer of bank gravel and then to native

materials. For the upper garage access native materials are likely to be ledge as this is the only area where some exposed ledge was surveyed. In addition, the upper access roadway is proposed to be in 7 to 9 feet of cut compared to existing grades. The lower access is in cuts of 0 to 3 feet. As designed the flow of runoff under the grass pave system would likely flow into the constructed subgrade of the pervious paver system and then weep out at Sibley Road. The DEP Handbook restricts use of this type of system in the Zone A for a surface water supply, within 20 feet of a cellar foundation, within 10 feet of a property line, for slopes over 5% (easterly drive only), in areas with high bedrock and the bottom should be below the frost line and be a minimum of two feet above seasonal high ground water.

Not addressed comment remains. As noted above, depending on the actual elevations and permeability of fill materials, more stormwater runoff may flow directly into the stone around the pipe and into the perforations, with the result that the ultimate discharge would be at the proposed outlet rather than weeping into Sibley Road. This would be an improvement relative to safety and icing concerns in Sibley Road. More data on soil conditions, backfill materials, compaction of underlying soils, etc. is required to determine how the system would function.

Infiltration is no longer proposed so my initial comment would apply. The design cross section, but not grading, was modified to comply with the DEP Handbook. As identified previously the slope would result in runoff flow in the stone and gravel weeping into Sibley Road creating a potential icing or frost heave condition. The detail has been revised, but the setbacks and other aspects have not been addressed based on the plans.

The combination of NDS Tufftrack Grass Pavers shown on Sheet D-2 and Permeable Precast Concrete Pavers shown on Sheet D-1 are not a viable design and could result in safety issues in Sibley Road due to water weeping into the street with icing in the winter.

Partially addressed, the revised design would likely result in more downward flow through the stone around the subsurface detention pipe and less weeping into Sibley Road. More detail on the depths and types of soil or other materials used under the system is required. In addition data on existing soil conditions, and compaction of soils should be specified.

As noted infiltration is no longer proposed and my initial comment would apply and has not been addressed. The design would result in runoff weeping into Sibley Road creating a potential icing or frost heave condition. It is proposed to heat the driveway to melt snow which would exacerbate this condition.

8. The proposed building would be as close as 3 feet from the right of way (property line) at Sibley Road. The top of the building would be EL 189 based on the first floor elevation and the building plans. The grades along Sibley Road at the street in front of the building vary from EL 92 at the east end of the building to EL 107 on the west side of the lower entrance. A mass of this height that close to the road, with the roadway on the north side of the building would have shading

impacts to Sibley Road with increased icing as the building will block Sibley Road from the sun in winter. This would result in more deicing chemicals being required in the roadway which would impact the water supply.

Not addressed comment remains.

Not addressed comment remains; the Response does not address this concern. As noted in this review the feasibility of infiltration in the pervious pavers and grass pave system is questionable given reported soil conditions and design data, and the designer recognizing this has not taken any infiltration credit in these systems.

9. Traffic will access the locus from Sibley Road and traffic on Sibley Road certainly will greatly increase as a result of the project and the location of the building will result in safety issues in this public way. Also, the impact of the steam generated at the locus by the proposed evaporation system should be evaluated to see if it will result in moisture falling on Sibley Road – and on Boston Post Road, creating dangerous (and often unexpected) icing on these ways in cold conditions, even if there is no precipitation, catching motorists (and any pedestrians outside of the building) off guard.

Not addressed comment remains.

Partially addressed; the Response indicates that the project would be under MassDOT jurisdiction. Based on my review Boston Post Road is a state numbered route but is not labeled as a State Highway on the plans, Sibley Road is a local Town owned roadway. The MassDOT may review traffic impacts associated with Boston Post Road and the interchange of Route 128 but would not review issues on Sibley Road. Data on the steam from the system has been provided. I recommend that data from other existing similar facilities be provided that demonstrates how the system work function similar conditions.

10. The plans do not indicate how garage runoff from melting snow and rainwater dripping or any wind-blown rain from open window areas or wall openings, would be collected and discharged. Discharge of flow from building floor drains is not allowed into an exterior separate storm sewer system under the plumbing code 248 CMR 10.00 Furthermore, 248 CMR 10.15 e specifies that parking garages are part of the sanitary sewer system. The load from the parking garages should be factored into the wastewater treatment plant flow calculations.

Not addressed comment remains.

The Response indicates that the floor drains will discharge to an oil-water separator and then to the private wastewater disposal system. The Board should include a condition that this flow be included in the design of the wastewater treatment and disposal system and approved by DEP. The response also states that the connection would be to a sewer system. A sewer system is not allowed in the Zone A for a surface water supply so this would not be allowed under state regulations. The Stantec response within the letter is that the garage flow will be collected in a tight tank for offsite removal. Under 314 CMR 18.05 (3) holding tanks (tight tanks) are not allowed in the Zone A of a surface water supply. It does not appear that either solution is viable under the Regulations. The Board of

Health would likely be required to approve the tight tank if proposed and would not be able to issue this permit due to the location of the tank.

Dep Stormwater Management Regulations/Town of Weston Stormwater Regulations:

The DEP Stormwater Management Regulations consist of ten standards. This section of the correspondence lists the standards and identifies whether the submittal complies, does not comply or if additional information is required to demonstrate compliance. The Weston Stormwater Regulations reference the DEP Regulations with specific variations that are identified within the DEP Standard where they vary. In addition, the WSR have specific data submittal requirements. Where data is incomplete under the WSR it is noted under the most appropriate DEP Standard. This project would require a Major Permit under the WSR.

Critically, this entire site is located in the Zone A of a Surface Water Supply and under the DEP Handbook Volume 1 Table CA 2: Standard 6, **no stormwater BMP's unless essential to operation of a public water supply system** would be allowed on this site.

Not addressed comment remains.

As noted a waiver from the Town of Weston Stormwater Bylaw has been requested. Although the Response claims that there would be state and federal oversight of the project under NPDES MS4 Regulations that is incorrect, the MS4 Regulations apply to the Town's stormwater system not this private development project. By working outside of the wetland buffer and riverfront area no filing with DEP would be required and there would be no DEP oversight of stormwater issues.

As a result, based upon DEP Handbook requirements since the proposed project is not one that is essential to a public water supply system, the proposed building and its stormwater management systems should **not** be constructed at this location.

*Not addressed comment remains. Volume 1 Table CA 2: Standard 6, which provides: **no stormwater BMP's unless essential to operation of a public water supply system** would be allowed on this site.*

As noted a waiver from the Town of Weston Stormwater Bylaw has been requested. Although the Response claims that there would be state and federal oversight of the project under NPDES MS4 Regulations that is incorrect, the MS4 Regulations apply to the Town's stormwater system not this private development project. By working outside of the wetland buffer and riverfront area no filing with DEP would be required and there would be no DEP oversight of stormwater issues.

There are no allowed BMP's at the locus as it is in the Zone A and therefore there the proposed stormwater system would not be allowed.

Not addressed comment remains. Refer to Volume 1 Table CA 2: Standard 6.

As noted a waiver from the Town of Weston Stormwater Bylaw has been requested. Although the Response claims that there would be state and federal oversight of the project under NPDES MS4 Regulations that is incorrect, the MS4 Regulations apply to

the Town's stormwater system not this private development project. By working outside of the wetland buffer and riverfront area no filing with DEP would be required and there would be no DEP oversight of stormwater issues.

The project has been reviewed below under each DEP standard for all issues, with emphasis where a particular BMP is listed as not allowed in the Zone A of a surface water supply. The WSR requires the Professional Engineer to Certify that the Stormwater Management Plan conforms to the WSR. As the use proposed would not be allowed under the WSR because it does not conform to DEP requirements, a Professional Engineer could not provide the required Certification.

Not addressed comment remains. As the WSR requires a Professional Engineers Certification and the DEP Standards would not allow the system in a Zone A, a Professional Engineer would not be able to ethically provide the Certification.

Not addressed comment remains. As the WSR requires a Professional Engineers Certification and the DEP Standards would not allow the system in a Zone A, a Professional Engineer would not be able to ethically provide the Certification.

Standard 1 – Untreated Stormwater

In sufficient data to satisfy Standard 1 has been provided.

To demonstrate compliance with Standard 1, it is required that a project shall treat runoff from impervious areas prior to discharge and to demonstrate that the proposed outlets would be stable and diffuse flow such that erosion does not occur at the outlet.

One new outlet is proposed. Other areas would flow overland to either Boston Post Road or Sibley Road.

Although outlet protection sizing data was found in the Report, the proposed discharge is to a paved driveway with sections at over a 12% slope, which would concentrate runoff discharged from the pipe. This remnant section of driveway is located at the east side of the site and intersects with Sibley Road approximately 20 feet west of the existing catch basin in Sibley Road. My site visit confirmed that sediment currently collects at the end of the driveway and a pipe outlet to this section of pavement would contribute to additional loading to the catch basin and treatment unit. This section of driveway serves no useful purpose but appears to be left to avoid work in the Riverfront. A detail of the outlet with complete grading, spot grades, etc. should be provided. This design would likely result in scour along the existing driveway, that is indicated to remain, and would impact the Town catch basin in Sibley Road.

This aspect of the design has been revised. It is now proposed to have a retaining wall tub constructed around a perforated outlet pipe contained within a stepped gabion wall. There is a detail on Sheet D-4 of the retaining wall. This wall as noted would form a tub to hold water up to the sill elevation of 99 along the southeast side of the tub. It is not good or standard practice to retain water behind a retaining wall like this as it imparts loads to the wall that could damage the wall, in particular in winter when the retained water freezes. At a minimum a Structural Engineer should certify the design. In

addition, the grading indicated at the bottom of the wall along the level sill is inconsistent with existing grades and no proposed grades are indicated. It appears that some rock fill is proposed along the wall but the details do not indicate any rock fill. The existing grades below the proposed system would direct flow from this outlet back into the remainder of the existing access road to the catch basin in Sibley Road.

Above comment remains; the same configuration for the outlet is proposed as discussed above. The revised plans list a bottom of wall elevation of EL 98 but grading is not indicated and would be required to implement the proposed grades.

The design should consider the requirements of the Weston Regulations relative to the Town's National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Permit (MS4) as discharge to the catch basin, and any increased sediment loading from erosion along the roadway could impact maintenance, etc. The catch basin in Sibley Road discharges to a surface water supply where water quality is critically important.

The revised design would reduce erosion and sedimentation compared to the initial submission but the model does not accurately reflect the flow of runoff from the site, or the impact of flow over the lip of the retaining wall. Typically a level overflow sill is placed even with final grades not a drop as proposed in this case. Overflow with a drop would increase the velocity of the water as it falls and could result in erosion or scour at the bottom of the wall.

The revised design would reduce erosion and sedimentation compared to the initial submission but the model does not accurately reflect the flow of runoff from the site, or the impact of flow over the lip of the retaining wall. Typically a level overflow sill is placed even with final grades not a drop as proposed in this case. Overflow with a drop would increase the velocity of the water as it falls and could result in erosion or scour at the bottom of the wall. In addition, runoff water that discharges from the level spreader would concentrate along the edge of the remainder of pavement on-site and flow into Sibley Road basin on the topography. As noted above there are also inconsistencies in proposed topography.

Standard 2 – Post Development Peak Discharge Rates

Data submitted to demonstrate that Standard 2 would be satisfied is insufficient to demonstrate compliance.

The revised plan does not satisfy Standard 2 because there are errors in the runoff model and assuming infiltration and groundwater separation in the calculations has not been supported by testing or other documentation.

The revised plan would still not comply with Standard 2 as there are errors in the model as noted below and the proposed BMP's would not be allowed in the Zone A of a Surface Water Supply.

Prior comments are addressed below.

Prior comments are addressed below.

Standard 2 requires an Applicant to demonstrate that the development does not result in an increase in the rate of runoff from the site and that the development will not result in flooding on or offsite. Evaluation of runoff is prepared for specific control points where runoff would concentrate or reach a specific resource area or existing stream or culvert. Under the WSR there are specific requirements for rainfall assumptions and a requirement to reduce both peak runoff rates and total runoff volume. Rainfall used in the stormwater model is consistent with Weston Regulations.

Existing Conditions:

It is unclear why in the existing case the flow to the existing Sibley Road catch basin is different than in the proposed case, in particular as the proposed case uses data reportedly prepared by the Town of Weston in 2014 and this condition would not have been altered in the pre-construction case. Other than the Sibley Road off site area there are a few inconsistencies with Subarea divides and the Time of Concentration maybe underestimated in area E3. A longer hydraulic time would occur flowing southerly from the saddle between high points as the initial section is much flatter. Other than the above issues the calculations are reasonable subject to confirmation of soil conditions.

The Existing Conditions model is not changed as noted above there were some minor issues with the model.

The Existing Conditions model is not changed as noted above there were some minor issues with the model; in particular the analysis of Sibley Road is not consistent with the proposed conditions analysis.

Proposed Conditions:

The revised plan now proposes to infiltrate a percentage of the runoff into the underlying ledge to reduce the peak runoff rates. The DEP Handbook Volume 3 Chapter 1 addresses determining compliance with the Stormwater Regulations. The proposed stormwater drainage design does not comply with Standard 2 for the following reasons:

This submittal reverts back to a subsurface detention system without infiltration. Some of the prior comments below do not apply to the revised design; I have added comments where appropriate.

- 1. The stormwater drainage system design proposes to provide both peak rate controls and recharge. For systems of this type a 4 foot vertical separation from groundwater is required or a mounding analysis performed that demonstrates that the mound does not reach the base of the system. Neither has been provided, the groundwater is labeled as TBD (to be determined). As this is a critical aspect of the design it should be determined prior to any Town approval. The design proposes to excavate the ledge to provide separation between the bottom of the system and the ledge. The elevation should be based on preconstruction elevations of the ledge consistent with Volume 3 of the Stormwater Handbook.
No longer applicable.*

2. *Recharge is based on the **native soil permeability**; refer to the DEP Handbook Volume 3 Chapter 1. Fill material is not suitable for determining infiltration rates. Ledge is **not** suitable for stormwater drainage infiltration purposes as it is not **soil**. The calculations should not include any infiltration component.*
No longer applicable.

3. *The latest proposal, to “over blast” the ledge (meaning that ledge will be blasted to create cracks and left in place) in the hope that runoff will drain out through the [over blasted] ledge to an unknown location, is not consistent with the regulations which require separation from ledge, standard engineering practice or common sense. Typically, ledge areas that have been blasted or excavated hold water. One only needs to go to an abandoned quarry to see how water is retained in these excavations. To base an entire project on this premise is irresponsible and should not be allowed, particularly in a sensitive location in the Zone A of a Public Surface Water Supply.*
No longer applicable.

4. *The data submitted indicates that it may not work as proposed and an alternative would have to be developed. It is important to understand where stormwater runoff will go and the impact of this discharge on the subject property and on area property owners and Sibley Road and the Cambridge Reservoir. The Town should not be expected to approve a plan that the design engineer has stated on page 7 of the Report that it may need to be redesigned as insufficient data is available. Soil testing can be performed at the required depth at this time. If ledge is present at the depth and location of the proposed system, clearly the site would not meet the requirements for infiltration.*
No longer applicable.

5. *The model routing is incorrect as outflow from the proposed subsurface pipe system would still flow into the remaining section of driveway and into Sibley Road based on the existing contours indicated on the grading plans. The model should be revised to reflect the site grades and assess the impact at the catch basin in Sibley Road.*
This comment would still apply as the outlet design is the same and flow would follow the remaining section of the paved driveway or along the edge based on the grading on the plans.

As noted under General Design Issues, no soil testing has been done, as is standard practice and required under the WSR and also under DEP requirements for specific Best Management Practices (BMP's) as described in Volume 2 of the Stormwater Handbook. This testing should be done.

As noted already above, some borings in the already altered area of the site were performed, but the required and necessary soil evaluations were not performed as required.

Refer to other comments on soil testing.

Stormwater runoff design is based on data from published soils reports and on-site testing. Published soil reports have been prepared using both mapping and excavation of test pits approximately 5 feet deep over the entire state. This data is used to classify soils into Hydrologic Soil Groups (HSG). HSG A soils are the most rapidly draining, typically sands, and HSG D soils are of very low permeability, typically dense silts and clay or wetland areas that are normally inundated with water. Soils are assigned a runoff curve number (CN) based on several factors including underlying soils capacity to absorb water (i.e. HSG A soils have a lower CN than HSG D other factors being the same) vegetative cover and the condition of the vegetation, A forest for example absorbs more rainfall than a maintained lawn. In this case the proposed design proposes to excavate nearly all native soil with the exception of the area within the Riverfront and small areas adjacent to Boston Post Road and Sibley Road. By removing all of the pervious soil, as proposed, to the underlying ledge which is considered nearly impervious, the HSG would be changed and the (CN) would be higher in the proposed reconstructed vegetated areas. A higher runoff coefficient means a higher runoff rate and greater runoff volume for a given area than that with a lower runoff coefficient. More runoff directed to the stormwater detention system and outlet pipe than assumed in the model would result in more outflow and potentially non-compliance with this standard. An increase in the CN would increase the runoff and the system should be designed to reflect the proposed conditions to demonstrate no increase in runoff. As presented this has not been demonstrated.

Not addressed comment remains. In addition, based on the summary data in the Report there is less area under proposed conditions than under existing conditions. Comparing the watershed plans, the proposed area would be slightly larger. This error should be corrected as it underestimates the proposed runoff.

Not addressed comment remains. In addition, based on the summary data in the Report there is less total area under proposed conditions than under existing conditions. Comparing the watershed plans, the proposed area should be slightly larger. This error should be corrected as it underestimates the proposed runoff. The Board could include a condition that the calculations be revised as noted in my initial comment.

The design of the permeable pavers would allow runoff to flow in the stone layers and bypass the catch basins. This flow would weep out at the interface of the pavers with Sibley Road pavement. The runoff model assumes all of the flow from these pavers will enter the catch basins.

Not addressed comment remains. As noted above more rainfall may flow into the stone around the subsurface pipe and discharge at the outlet depending on the construction details.

Not addressed comment remains. The proposed design now has an impermeable barrier around the subsurface detention system, no infiltration is proposed. Although the prior system would not function with infiltration based on depth to ledge, it would have directed some or all of the flow absorbed into the paver systems into the stone around the pipe and directed it to the stormwater outlet depending on other fill materials. This design will direct flow to Sibley Road in the soils under the pavers. Runoff water will collect at the low point at the access drives and seep into the gravel base at Sibley Road and overflow into the Sibley Road pavement creating both an icing condition and

potential roadway damage due to frost. The DEP Handbook detail for this type of system has a subdrain option for excess flow to be directed to a safe outlet. The plans do not include a subdrain.

As noted above under General Design Comments, in most frequently observed storms of less than one-two inches of rainfall, rain will soak into the stone under the grass paver units and follow along the stone interface between the stone and compacted fill, or ledge, to a point where it would weep out to the surface. In very small storms some may soak into the compacted soils and into the trench for the subsurface storm system or along the foundation for the building. Melting snow and frost would also soak into the stone area and follow along the interface between stone and compacted fill or ledge and weep out at the joint between pavement in Sibley road and the pavers.

The revised design may result in more surface flow going into the stone around the subsurface pipe detention system, depending on the specifics of fill below the grass pavers or permeable pavers in the location of the proposed system. This flow would flow into the pipe perforations and discharge at the proposed outlet. This could reduce weeping into Sibley Road compared to the prior design.

Not addressed comment remains. The proposed design now has an impermeable barrier around the subsurface detention system, no infiltration is proposed. Although the prior system would not function with infiltration based on depth to ledge, it would have directed any flow absorbed into the grass paver systems into the stone around the pipe and directed it to the stormwater outlet. This design will direct flow to Sibley Road in the soils under the pavers as it will flow into the base gravel under the driveway pavers and then to Sibley Road. Runoff water will collect at the low point at the access drive and seep into the gravel base at Sibley Road and overflow into the Sibley Road pavement creating both an icing condition and potential roadway damage due to frost. The DEP Handbook detail for this type of system has a subdrain option for excess flow to be directed to a safe outlet. The plans do not include a subdrain.

Depending on the back fill used for the subsurface system and storm sewer pipes, groundwater would follow the bottom of the pipe trench and breakout at the discharge point creating a new spring in the slope at the outlet pipe discharge. The National Corrugated Steel Pipe Association Installation Manual specifies permeable granular backfill under the pipe, in particular when placed in ledge, which would provide a conduit for water to follow. The proposed subsurface pipe detention system should be specified as leak proof, tested and certified as leak proof, or the volume of infiltration of groundwater included in the calculations.

The revised design specifies perforated pipes, which would collect groundwater and discharge it through the outlet. This would result in a more constant flow at the outlet. The volume of groundwater flowing into the system should be included in the calculations. A long term constant flow would impact vegetation and result in erosion on steep slopes as present at this location. This flow would end up in Sibley Road based on the site plan contours.

It is now proposed to have an impermeable barrier around the detention system pipe so there would not be groundwater flow into this system if properly constructed. I

recommend that the Board require inspection of the installation and testing/certification that it is water tight as proposed.

Groundwater that collects along the foundation would collect in the underdrain if located at sufficient depth to collect this water. The blasting required to install the foundation for the building would create a tub to hold groundwater and the discharge location for this groundwater should be accounted for in the analysis. Discharge to Sibley Road would result in icing with associated serious safety concerns, to motorists.

Not addressed comment remains.

The plans now propose the wastewater treatment plant to be located in the lower level garage, identified on the plans as EL 104. At this elevation the southeast corner of the building would be in fill. Any groundwater collected under the foundation would either be collected in the UD drains or weep out and flow into Sibley Road at the fill section of the foundation. The plans should clarify where groundwater associated with the foundation is to be discharged. The Board should consider a condition requiring final plan design and calculations for underdrains.

The proposed design relies on a subsurface corrugated metal pipe system with various connections from the roof area and two catch basins and a trench at the access driveways into the parking garages. It is unclear how the roof of the building, which is the major part of the runoff for the system, would connect to the underground pipe on the northerly side and part of the east and west sides of the building. No connections are located in these areas. It appears that the roof is pitched with a ridge at some locations. Design and sizing of this system is critical to the function of the system, as bypass of the roof system would flow directly into Sibley road excepting any runoff that may flow into the trench drain or catch basins. These structures are not sized for flow from the roof. Runoff that bypasses the system would not be controlled and would result in more flow to Sibley Road than listed in the Report.

Not addressed comment remains.

The response indicates that the roof drains have not been designed yet and therefore are not indicated. The Board could consider a condition that detailed design of the roof drains, including inlet and pipe flow capacity be provided to demonstrate that the proposed system will convey the 100 year storm, as proposed, to the subsurface detention system.

The proposed grading plan is incomplete and, at places, internally inconsistent. In particular, grades along the southeast side of the site at the edge of the emergency access way are incomplete; and, in the northwest corner, grading and subareas do not coincide.

There is now a wall proposed for part of this area with the outlet from the storm drainage outlet located in a tub surrounded by retaining walls. The grading is incomplete/inconsistent at the easterly corner of the system and along the southeast side of the pervious paver section. The proposed roadway grades do not tie back to existing grades in this area. In the northwest corner, grading and subareas do not coincide and more runoff would flow to Boston Post Road based on the grading.

Comment remains, the contours that can be read on the plan indicate a 1:1 or 1.5:1 slope which is not a stable slope next to the southerly access drive. There is an EL 97 contour

missing and an EL 96 contour missing in this area. It would not be feasible to construct the slopes as indicated without encroachment into the Riverfront Area.

Standard 3 – Recharge to Groundwater

Standard 3 is not satisfied.

Standard 3 requires recharge to groundwater and is not satisfied.

No recharge is proposed under the current proposal; this standard would not be satisfied. Insufficient testing to identify areas that may have suitable soils has not been performed.

The revised plan now proposes to infiltrate some of the runoff into the underlying ledge. The DEP Handbook Volume 3 Chapter 1 has an extensive section regarding how to determine a site's suitability for recharge. This design is not consistent with DEP requirements for the following reasons:

As no recharge is proposed the *italic type* comments below no longer apply to the revised submittal.

- 1. Recharge is based on the **native soil permeability**. Fill material is not suitable for determining infiltration rates. Ledge is not suitable for infiltration purposes as it is not **soil**. The calculations should not include any infiltration component.*
- 2. Ledge is considered impervious for purposes of recharge refer to the DEP Handbook. No recharge system shall be located in soils that infiltrate slower than 0.17 in./hr. Although the Report claims a rate of 0.045 in./hr., no evidence or testing data to justify this claim has been provided.*

In addition, the infiltration rate used is slower than allowed by DEP for infiltration areas. I note that this rate appears to be selected based on the required time for a system to drain. The calculations provided indicate that the system would drain out in 70.42 hours; however the recharge volume on page 2 of the calculations uses a different volume than page 1 of the calculations (1,629 cubic feet used in page 2 versus 2,438 cubic feet calculated on page 1). Using 2,348 results in over 100 hours to drain which would not comply with DEP Handbook Volume 3 Chapter 1.

- 3. The DEP Handbook includes a flow chart (Attached hereto as Exhibit A) for determining the suitability of soils on a site for recharge purposes. This chart has not been followed by the applicant through all required stages. **Soil** testing is required at specific locations and depths of the proposed stormwater drainage infiltration system. For a stormwater drainage system, such as the one proposed, soil tests for each 50 foot length of the proposed system is required. None of the borings are at the required locations and depths for the proposed system and no soil testing has been provided as required under the DEP handbook Volume 3 Chapter 1.*

Standard 3 requires recharge of runoff to compensate for the increase in impervious area.

No infiltration is proposed. The Report claims that it is not feasible to confirm groundwater and infiltration rates until after the site is regraded due to the proposed changes in topography. The design should be based on the conditions that exist on the site now. Soil testing to confirm groundwater and ledge levels as well as soil classifications for infiltration purposes is a basic element of project design. If there are suitable soils on-site for infiltration, these areas should be protected for that use.

Infiltration is now proposed, refer to comments above.

My initial comment above has not been addressed.

As emphasized above, none of these systems would be allowed in the Zone A of a surface water supply.

Not addressed, comment remains, none of these systems are allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Not addressed, comment remains, none of these systems are allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Standard 4 – 80% TSS Removal

Standard 4 is not satisfied.

Standard 4 is not satisfied.

Standard 4 requires that runoff be treated to 80% removal of TSS prior to discharge. This entire site is in the Zone A of a surface water supply and is considered a Critical Area and an Outstanding Resource Water (ORW). With the specific exception of stormwater discharges essential to the operation of a public water supply, no discharges are allowed.

Not addressed comment remains under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Not addressed comment remains under the DEP Handbook Volume 1 Table CA 2: Standard 6.

A listing of the treatment BMP's proposed and their removal rating follows.

Deep sump catch basins: Deep sump catch basins are credited with 25% removal subject to proper design and sizing. To meet the standard, catch basins should collect no more than 10,890 square feet (1/4 acre) of impervious area. Although roof runoff is considered clean, if the roof discharges directly to pavement that portion should be included in the tributary impervious area calculations. Based on the pavement area alone surface flow to the catch basins would be under the maximum 1/4 acre of impervious. Provided the roof does not flow over pavement to the catch basins these would comply with 25% TSS removal credit.

No further comment required.

Proprietary treatment unit: The Report indicates that a "Stormceptor 450i" treatment unit is proposed. More recent correspondence indicates that other options are being considered to remove phosphorus as the types of treatment proposed provide no filtration

or phosphorus removal. Based on a DEP review of proprietary treatment units “Regulatory Review of Non Rated Stormwater Treatment Practices” published in 2013 by DEP, the proposed unit should only be credited between 30% and 75%. It is required to document the effectiveness of the unit with appropriate testing. In this case part of the flow is from the trench drain which provides no TSS removal and the Stormceptor would be the only treatment unit. The DEP Water Quality Volume (WQV) to Flow Rate conversion calculations should be provided for this unit. Subject to proper sizing and details I recommend that the Stormceptor receive a credit of 30% removal based on DEP publications. The allowable removal for proprietary units is at the Commission’s discretion. Proprietary units are for pre-treatment; in this case it appears to be the main treatment device. The proposed use of the Stormceptor would not comply with DEP requirements.

*It is now proposed to use a “jellyfish” filter system, which is an insert in a manhole type structure that acts as a filter to treat runoff. I note that the design data available on-line recommends a head of 18”. The design would provide a 6 inch invert difference (head), rather than the recommended head of 18 inches. It is unclear that the proposed 6 inch head would be sufficient for proper operation. Volume 2 of the DEP Handbook includes data on proprietary media filters, the filter media in this case is the membrane system. DEP specifies that these systems are suitable for “pre-treatment” in this location as the site is in a critical area. Approval is subject to review under Volume 2 Chapter 4 of the DEP Handbook; however, and, as noted above **no** BMP’s are allowed in the Zone A; and, so, the proposed jellyfish filter system is still a system that would not be allowed in the Zone A under the DEP Handbook Volume 1 Table CA 2: Standard 6 and under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program..*

Above comment remains.

The calculations use 1” to determine Water Quality Volume as required both under WSR and for a Critical Area.

In this case there are two treatment trains one has catch basins then the proprietary unit, the other is just the proprietary unit and the proposed design would not meet the standard. *This standard possibly could be satisfied if the proposed stormwater drainage system were not in a Critical Area, a Zone A and a Land Use with Higher Potential Pollutant Load, but the proposed stormwater drainage system is in those area and, so, the proposed system is not allowed under Standard 6 or under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program.*

This standard possibly could be satisfied if the proposed stormwater drainage system were not in a Critical Area, a Zone A and a Land Use with Higher Potential Pollutant Load, but the proposed stormwater drainage system is in those area and, so, the proposed system is not allowed under Standard 6 or under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program.

Standard 5 – Higher Potential Pollutant Loads

Standard 5 is not satisfied.

Standard 5 is not satisfied.

The revised submittal recognizes that the project would be a Land Use with Higher Potential Pollution Loads (LUHPPL); however Standard 5 is not satisfied as a wastewater treatment plant is not allowed in a Zone A of a Surface Water Supply.

Standard 5 specifies uses that are considered a Land Use with Higher Potential Pollution Loads (LUHPPL). The project would be considered a Land Use with Higher Potential Pollution Loads (LUHPPL) as a **wastewater treatment facility** is proposed at the site. In addition, storage of sludge, etc. is listed in the wastewater treatment process description as part of the process. Storage of sludge is also considered a LUHPPL. A wastewater treatment plant is not allowed in the Zone A of a Surface Water Supply.

Not addressed comment remains refer to 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply.

Not addressed comment remains refer to 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply.

The project definitely is an LUHPPL and the Report erroneously states that the project is not a LUHPPL.

Not addressed comment remains that the project is a LUHPPL.

The revised submittal recognizes that the project would be a LUHPPL.

This Standard has not been met by the project and is not allowed in this location due to DEP requirements for protection of Public Surface Water Supplies.

Not addressed comment remains refer to 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply.

Not addressed comment remains refer to 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply the response ignores this critical fact.

Standard 6 – Protection of Critical Areas

Standard 6 is not satisfied.

Standard 6 requires specific protections and uses of specific BMP's in Critical Areas.

Based on a review of MassGIS data and information in the submittal and other supplied information, the entire locus is in a critical area, the Zone A of a Surface Water Supply. The Report erroneously states that the project does not discharge near a critical area.

Not addressed comment remains the entire locus is in the Zone A, a Critical Area and the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Not addressed, comment remains the entire locus is in the Zone A, a Critical Area, and the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6. The proposal avoids DEP review by staying outside of the Riverfront area but remains within the Zone A of a Surface Water Supply and Stormwater BMP's are not allowed in a Zone A.

DEP has determined that several of the proposed uses, a wastewater treatment plant and stormwater BMP's and stormwater discharges in particular, are prohibited in the Zone A of a Surface Water Supply. Under these criteria, approval of the project would be subject to appeal by the City of Cambridge, the owner of the water supply and adjacent land for impacts to the Zone A. DEP requires that Public Surface Water Suppliers shall protect the Zone A of their systems.

*Not addressed comment remains that the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6 and under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program.*

Not addressed comment remains that the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6 and under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program.

The entire project is in a critical area, the Zone A is located a distance of 400 feet from the surface water supply, which is identified by the State as both the reservoir and Stony Brook. The proposed discharge is clearly within 400 feet of the Stony Brook and the Reservoir.

*Not addressed comment remains that the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6 and under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program.*

Not addressed comment remains that the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6 and under 310 CMR 22.20B **no** new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program.

Standard 6 requires that **no stormwater BMP's** can be located in the Zone A.

Not addressed comment remains the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Not addressed comment remains the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Standard 6 cannot be met by the project due to risks of contamination to the Public Surface Water Supply, which will include stormwater contaminants and wastewater contaminants.

Not addressed comment remains the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Not addressed comment remains the project is not allowed under the DEP Handbook Volume 1 Table CA 2: Standard 6.

Standard 7 – Redevelopment Projects

Standard 7 is not applicable.

The site is not a redevelopment project. In order to be a redevelopment project there can be no increase in impervious area. This site has a substantial increase in impervious area. The site is also not a partial redevelopment project as no components of the existing development are proposed to remain except a small area of pavement from the proposed stormwater discharge to Sibley Road. This pavement should be removed as it will exacerbate erosion from the stormwater outlet. This pavement appears to remain not for any useful purpose but to avoid having to file with the Conservation Commission by staying out of the riverfront area. Although the overall project cannot meet DEP requirements, removal of pavement in the riverfront alone could be permitted as a restoration project.

The submittal recognizes that the project would not be a Redevelopment, but the project would not comply with other Standards as noted in this review. The “Site Categorization for Stormwater Regulations” has been revised in this latest submittal to claim that the project is only required to comply to the maximum extent practicable. As a “new” development full compliance is required.

Standard 8 – Erosion/Sediment Control

Standard 8 is not satisfied. WSR 5.0 C. 3. f. is not satisfied.

No additional data has been provided, this Standard and WSR 5.0 C. 3 would not be satisfied.

Although the Demolition and Erosion control plan has a revision date, the data required, in particular temporary stormwater runoff controls, etc. have not been added. The plan is essentially the same as initially submitted.

Standard 8 requires that an Erosion and Sedimentation Control plan shall be developed for the site.

In this case a NPDES SWPPP will be required, a draft SWPPP has not been submitted. The plans include a plan labeled “Demolition and Erosion Control Plan”. This plan may be a demolition plan and does indicate a row of silt fence and straw bales around the perimeter of the site but the plan does not meet the requirements under the DEP Handbook or of the WSR. Of particular importance is that temporary runoff controls are

not indicated. As the site is directly tributary to a surface water supply, this is a critical aspect of the design.

Not addressed, comment remains.

Comment remains, in addition to the above comment the proposed sediment barrier is within the limit of proposed construction and would impede construction of the proposed outlet.

The WSR also requires indication of locations where stormwater would discharge during construction. As much of the site naturally slopes to the Public Water Supply Reservoir, sediment discharged during construction would impact the catch basin in Sibley road and any excess sediment would flow to the reservoir. Any unforeseen circumstances, such as a hydraulic fluid leak, fuel spill, etc. would also potentially discharge to the reservoir.

Not addressed, comment remains.

Not addressed, comment remains.

Standard 9 – Operation and Maintenance Plan

Standard 9 would be satisfied if the use was allowed in a Zone A.

Standard 9 would be satisfied if the use was allowed in a Zone A.

Standard 9 would be satisfied if the use was allowed in a Zone A.

Standard 9 requires a plan for long term Operation and Maintenance (O&M) of stormwater BMP's.

An Operation and Maintenance Plan (O&M) was provided in the Report. The O&M is generally consistent with DEP requirements for long term maintenance; however, the stormwater system itself is not allowed in the Zone A, as emphasized above.

Standard 10 Illicit Discharge

Standard 10 is not satisfied.

Standard 10 is not satisfied.

Standard 10 requires a signed illicit discharge statement. An illicit discharge statement is included in the Report, but it has not been signed as required.

Not addressed, comment remains.

Not addressed, comment remains.

Wastewater Issues:

There is no public sewer system accessible to the site. 248 CMR 10.00 the Massachusetts Plumbing Code, which applies to all building construction including this project protects health and safety relative to sanitary waste disposal and potable water supply. The proposed wastewater treatment plant would not be allowed in a Zone A under current permitting requirements. There is no provision for an evaporative effluent disposal system so it would not be allowed at this time.

Not addressed comment remains refer to 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply.

Not addressed comment remains refer to 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply.

The project proposes a unique effluent discharge system, which would consist of using multiple gas fired evaporators to boil off the fluid portion of the effluent generated (up to 25,000 gallons per day at peak flows) and then discharge the fluid that results to the air as steam and collect remaining solids in tanks that then would be truck from the locus to a licensed disposal location. The wastewater would be treated prior to discharge by a Membrane Bioreactor (MBR) wastewater treatment plant. Under Definitions in 310 CMR 12.00 “Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharges” this would be a “Wastewater Treatment Plant”.

Not addressed comment remains.

The Response indicates that Mass DEP has determined that the proposed wastewater treatment plant is an allowed use, although their regulations prohibit wastewater treatment plants in the Zone A of a Surface Water Supply. The Board could require that DEP provide written justification for this deviation from their Regulations.

As noted in the Stantec “Conceptual Design Executive Summary for Proposed Wastewater Treatment and Evaporation Facilities dated May 12, 2017, the DEP “Guidelines for the Design, Construction, Operation and Maintenance of Small Sewage Treatment Facilities with land Disposal” (Guidelines) is the accepted guidance for construction of treatment plants of the size and type proposed for this project. Although the final effluent disposal is different than land disposal, the treatment plant should be constructed in compliance with the same criteria as a plant with land disposal of effluent.

Not addressed comment remains.

The Response indicates that Mass DEP has determined that the proposed wastewater treatment plant is an allowed use at this location, if this is the case it is not in compliance with the above Guidelines and it is unclear why DEP would issue such an approval.

Under 310 CMR 22.20B no new treatment or disposal works permitted under 310 CMR 3.00 Surface Water Discharge Program or 310 CMR 5.00 Groundwater Discharge Program will be allowed in the Zone A of a Public Surface Water Supply, so the proposed treatment system is not allowed.

Not addressed comment remains.

The Response indicates that Mass DEP has determined that the proposed wastewater treatment plant is an allowed use at this location, if this is the case it is not in compliance with the above Regulations and it is unclear why DEP would issue such an approval.

The proposed disposal system is a 'treatment works.' The proposed system does not appear to be permitted under either program specifically, but if it were allowed, then certainly the standard location and setback requirements for the Treatment Works aspect of the design should apply and they are not satisfied by the proposed system.

Not addressed comment remains.

The Response indicates that Mass DEP has determined that the proposed wastewater treatment plant is an allowed use at this location, if this is the case it is not in compliance with the above Regulations and Guidelines and it is unclear why DEP would issue such an approval.

A Treatment Works system may not be located in a Zone A as there is risk of contamination of the public water supply. In addition, there are potential health hazards to the occupants of the building to having a wastewater treatment plant inside of a residential building.

Not addressed comment remains.

The Response indicates that Mass DEP has determined that the proposed wastewater treatment plant is an allowed use at this location, if this is the case it is not in compliance with the above Regulations and Guidelines and it is unclear why DEP would issue such an approval.

Under the Guidelines a minimum 50 foot separation is required between a dwelling unit and the treatment plant. There would not be 50 foot of separation from a dwelling unit based on the plans provided. This should be 50 feet of horizontal separation, not vertical separation, but the project would not meet vertical separation either. There is also a required setback of 50 feet from a property line. As the location of the system is not indicated on any plans it is unclear if the treatment plant can meet this setback. The proposed building is closer than 50 feet to the property line, so that requirement cannot be satisfied.

Not addressed comment remains. (Guidelines Table 2 page 41.)

The Response indicates that Mass DEP has determined that the proposed wastewater treatment plant is an allowed use at this location, if this is the case it is not in compliance with the above Regulations and Guidelines and it is unclear why DEP would issue such an approval in particular for new construction and not a remediation to improve an existing facility.

The Guidelines also contain specific requirements for the treatment plant building itself including ventilation, chemical storage if necessary, floor drains, etc. It is my understanding that the proposed system would be below grade under the lower level parking area. The plans should identify preliminary features including chimneys for discharge of steam from the evaporators, ventilation, etc. Wastewater treatment plants frequently are a source of odors that should be a consideration in the design.

Not addressed comment remains. (Guidelines Required Submittals B and C)

The Response includes some descriptive data and a general location for the wastewater treatment system but no plans of even at a Preliminary level have been provided.

Even if the subterranean treatment plant were to be allowed (despite the fact that it does not satisfy the above itemized requirements), then the Town still should evaluate the impact of the proposed system on public safety generally. The Town should evaluate the following public safety impacts, which are separate and apart from whether the system could obtain a permit to allow it:

- What noise and vibrations would be generated by the treatment plant and how would they impact occupants of the building, including not just the plan itself, but the venting system, whether internal to the building or attached to the outside of the building?
- What type and level of odors would generated by the treatment plant, both within and outside of the building, and how would the odors impact the occupants of the building and occupants of nearby buildings?
- How would the steam generated by the treatment plant impact public safety? The impact on the following elements should be evaluated:
 - Locus sidewalks
 - Locus access points
 - Sibley Road
 - Boston Post Road vehicular conditions
 - Boston Post Road sidewalk conditions (in front of and on either side of 133 Boston Post Road)
 - The sidewalks and paving internal to the office park at 133 Boston Post Road
 - The gas station and convenience store located on Boston Post Road
 - All area driveways
 - The Route 95 interchange that connects to Boston Post Road
 - Route 95.
- What level of moisture, if any, will be generated by the treatment plant within the building for the occupants of the building?
- If there will be vents for the treatment plant that will run through the building, what level of heat will the vents generate and what impact will that heat have on the residential units during the cooling season, both comfort-wise and financially?

None of the above issues have been addressed, comments remain.

The Response includes some general description data on the operation of the system relative to the above bullet points, but no similar facilities are cited. No detailed operation or design data has been provided. I recommend that the Board require a list of similar facilities in operation, in particular in the Zone A of a Surface Water Supply with similar climatic and environmental conditions. It does not seem prudent for this very sensitive location to be the test site for this system.

I appreciate the opportunity to assist the Town of Weston on this project and hope that this information is sufficient for your needs. This report is for the Town of Weston Selectmen and land use agencies only and provides no engineering, planning or other advice that may be relied upon by any party or agency other than the Town of Weston. If you have any questions please do not hesitate to contact me.

Very truly yours,

John C. Chessia, P.E.
Chessia Consulting Services, LLC

JCC/jcc