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February 2, 2018

Ms. Emily Wentworth, Senior Planner/Zoning Administrator  
Hingham Zoning Board of Appeals  
Town Hall  
210 Central Street  
Hingham, MA 02043

**Re: Engineering Peer Review  
Comprehensive Permit Plan known as “River Stone”  
Viking Lane and Ward Street, Hingham MA  
Assessors Map 124, Lots 70-75 & Lot 26  
Applicant: River Stone, LLC**

Dear Ms. Wentworth:

This letter is in response to questions and comments in a review letter dated January 18, 2018 from Patrick G. Brennan, P.E. of Amory Engineer, P.C. for the above referenced project.

Enclosed herewith are the following:

- Four (4) copies of the report entitled “Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.
- Eight (8) sets Plans entitled “Comprehensive Permit Plan known as River Stone” prepared by McKenzie Engineering Group, Inc. (MEG) with the latest revision date of February 2, 2018.

Responses by McKenzie Engineering Group, Inc. (MEG) correspond to the outline of the review letter and are in *italics*.

### **Comments**

The following six comments from our January 9, 2018 letter are restated in plain text, followed by the current status of each in **bold text**:

1. The list of requested waivers in the application materials includes many ‘general waivers’ from various regulations. The waivers should explain the exact regulation from which relief is being requested so that the Board fully understands the implications of each requested waiver. **Not addressed to date.**
2. Updated plans to include the following:
  - a. Grading and drainage plan – **Received, see technical comments below.**
  - b. Utilities plan – **Received, see technical comments below.**

- c. Landscaping plan – **No landscaping plan received to date.**
  - d. Construction details – **Received, see technical comments below.**
  - e. Exterior lighting plan with photometrics. **No lighting plan received to date.**
3. Stormwater management report and drainage calculations. **Received, see technical comments below.**
  4. Soil information including test pits logs. We note that some test pit logs and locations are included in the Preliminary Hydrologic Analysis received today. However, there are none located within the footprint of the detention basin and many of the subsurface infiltration systems shown on the plan set received today. **See technical comments below.**
  5. Documentation to demonstrate that adequate water supply is available for domestic use and fire protection. We note that two fire hydrants are shown on the plan set received today and suggest the Applicant consult with the Fire Department about the location and number of hydrants. **Not addressed to date.**
  6. Sizing calculations for the septic soil absorption system to demonstrate that there is sufficient area for the system and required reserve area. **Not addressed to date.**
    - *Responses to the above were provided in correspondence to the Zoning Board of Appeals dated January 23, 2018.*

### **Technical Comments**

#### General/Roadway Comments

1. There are proposed retaining walls shown on the plan which will be greater than four feet in height. Walls over four feet in height require a building permit and design by a registered structural engineer. Details of retaining wall design should be shown on the plans. A railing or an alternative protective barrier should be included on the top of the walls. A guardrail should be provided along the wall adjacent to Road B.
  - *Comment noted. A modular block gravity retaining wall detail has been added to the plans. The proposed retaining wall with safety railing will be designed by a registered structural engineer in conjunction with the development of final construction plans.*
2. We note that the proposed retaining wall between Units 24-26 on the subject site and 64 Ward Street will be up to fifteen feet high and it is shown about five feet from the property line. The wall would retain the earth between the wall and the 64 Ward Street property line. We question whether this wall could be constructed without encroachment onto the 64 Ward Street property. We note that a wall of this height will present visual (on site) and safety (64 Ward Street) concerns.
  - *Comment noted. A modular block gravity retaining wall detail has been added to the plans. The proposed retaining wall with safety railing will be designed by a registered structural engineer in conjunction with the development of final construction plans.*
3. Sidewalks are shown at four feet wide and are adjacent to the Cape Cod berm. To enhance public safety the sidewalks should be five-feet wide and they should be separated from the travel way with something more than a Cape Cod berm. We are in agreement with Mr. Jeffrey S. Dirk, P.E.<sup>1</sup> that a vertical curb or grass strip of sufficient width should be provided.
  - *Comment noted. The plans have been revised to provide a 2-foot grass strip between the proposed Cape Cod berm and the proposed sidewalk.*
4. We also agree with Mr. Dirk that a sidewalk should be provided along Viking Lane between Road B and Ward Street.
  - *Comment noted. Plans have have been revised accordingly.*

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<sup>1</sup>See Vanasse & Associates. Inc. January 4, 2018 letter to Ms. Emily Wentworth

5. We concur with Mr. Dirk's comment that the roadway widths should be a minimum of 24-feet in accordance with MassDOT standards.
  - Comment noted. We strongly believe that a 20-foot-wide roadway with 1-foot Cape Cod berms on either side can adequately accommodate the subdivision.
  - ***“Internal to the Project site, circulating roads and drive aisles should be a minimum of 24-feet in width for two-way travel and a minimum of 20-feet in width for one-way travel, or as required to accommodate truck access and fire truck turning maneuvers”<sup>1</sup>. MEG submitted two (2) truck turning plans (TT1 and TT2) which illustrate that the Hingham Fire Department (Ladder) truck and a Single Unit (SU) truck can adequately negotiate the site.***
6. There are six, presumably visitor, parking spaces shown on the south side of Road B over the septic leaching area. The sidewalk passes through these spaces which would require a pedestrian to step into Road B if a vehicle is parked in any of those spaces.
  - *Comment noted. The plans have been revised to provide a minimum of 21 feet from the far edge of the sidewalk to the far edge of the parking space and they have been label with a “V”.*
7. Roadway profiles are shown on Sheet C-3. However, the profiles show only the existing and proposed centerline grade of the roads. The profiles should show sewer, drain and water utilities (including sewer and drain structure rim and invert elevations). This information is required to verify that the proposed utilities may be installed without conflict.
  - *Comment noted. The profiles have been revised to show proposed utilities with sewer and drain structure rim and invert elevations.*
8. We note that the Applicant has request waivers from ZBL Section IV-A to reduce the required front, side and rear setbacks to fifteen feet. However, at the rear of each unit is what is labeled as a proposed 'deck or patio.' If these will be decks (structures) then the setback would be as little as eight feet on Units 2-4, 6-9 and 18-21.
  - *Comment noted. A revised waiver list under will be submitted at a later date.*
9. We note that the Applicant has requested a blanket waiver from ZBL Section IV-E.1.m, which requires roadways in multi-family developments to comply with the Planning Board Rules and Regulations Adopted Under the Subdivision Control Law (R&R). The Applicant has also requested a blanket waiver from the R&R. As noted above, waiver requests should identify each particular regulation for which the development will not comply. We believe that it is extremely important to identify where the project will not comply with Section 4 – Design Standards and Section 5 – Specifications for Construction of Required Improvements of the R&R. This is required to determine if the design complies with generally accepted public safety requirements and good engineering practice.
  - *Comment noted. A revised waiver list will be submitted at a later date.*

#### Drainage and Utilities

1. Drainage pipe sizing calculations should be provided along with rim and invert elevations for manholes and catch basins.
  - *Comment noted. Calculations are provided in Appendix D of the Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.*

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<sup>1</sup>See Vanasse & Associates. Inc. January 4, 2018 letter to Ms. Emily Wentworth

2. Figures 1-4 are missing from the Preliminary Hydrologic Analysis.
  - *Comment noted. Figures 1-4 are provided in the Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.*
3. Some test pit data has been provided. However, the information indicates varying seasonal high groundwater levels throughout the site. Because of the varying groundwater levels, additional test holes are required at each of the proposed infiltration systems to verify that adequate separation from groundwater will be provided and that soils are suitable for infiltration. Test holes should be witnessed by an agent of the Town.
  - *Comment noted. 28 test pits have been performed throughout the site and the results are consistent with a soil texture of gravelly sand. We believe there is sufficient soil data to support the design as proposed. Test pits have been excavated in close proximity to the subsurface infiltration systems and the highest observed groundwater elevation at those locations were used to establish the 4-foot separation to groundwater. Additional location specific soil testing will be performed in conjunction with the development of final construction plans.*
4. Comparing proposed grading to the HydroCAD model in the Preliminary Hydrologic Analysis, portions of subsurface infiltration systems (SSI's) P5, P6 and P15 will be above ground. SSI's P3, P7, P11 and P16 would have very limited cover and SSI P11 is located under the hammerhead turnaround which will be subject to traffic loading. As noted above, test holes are required at each of the eighteen SSI's to verify seasonal high groundwater elevation. We suspect that many of the SSI's will need to be redesigned based on groundwater and cover constraints.
  - *Comment noted. The site has been re-graded to provide sufficient cover over the subsurface infiltration systems. Test pits have been excavated in close proximity to the subsurface infiltration systems and the highest observed groundwater elevation at those locations were used to establish the 4-foot separation to groundwater. Additional location specific soil testing will be performed in conjunction with the development of final construction plans.*
  - *Ponds P5 and P6 have been removed and the roof drains will outfall to pond D-2.*
5. SSI P12 is modeled with 24 Cultec R-330XLHD chambers, yet only 22 chambers are shown on the plan.
  - *Comment noted. The plans and post HydroCAD analysis have been revised accordingly.*
6. Invert elevations should be shown for the roof drain piping, especially for the piping for Units 1-4, 6-9 and 25-28, to verify that there is adequate pitch to convey the roof runoff through the piping to the SSI's.
  - *Comment noted. The plans have been revised accordingly to include invert elevations for the roof drain piping.*
7. The infiltration rates used for depressions D-3 and D-4 should be modeled in inches per hour (in/hr) and not cubic feet per second (cfs). We note that the infiltration rates used for depressions D-1 and D-2 are modeled in in/hr.
  - *Comment noted. The infiltration rates for depressions D-3 and D-4 have been re-modeled in inches per hour (in/hr). A revised post HydroCAD analysis is provided in Appendix B of the Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.*

8. All four of the depressions are modeled with a 24-foot long by 3-foot breadth broad- crested weir. These should be modeled with weirs that reflect the actual geometry of the depressions.
  - *Comment noted. All four depressions have been re-modeled as infiltration depressions without a broad-crested weir. A revised post HydroCAD analysis is provided in Appendix B of the Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.*
9. The storage in depression D-2 does not appear to be correct as there is an El. 57 contour shown on the plan and the storage in the model starts at El. 58.
  - *Comment noted. The grading for depression D-2 has been revised and the storage has been modeled using the revised elevations. A revised post HydroCAD is provided in Appendix B of the Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.*
10. The outlets for depression D-4 are modeled at the wrong elevations.
  - *Comment noted. Depression D-4 has been remodeled using the correct elevations. A revised post HydroCAD analysis has been revised accordingly and is provided in Appendix B of the Preliminary Hydrologic Analysis for Comprehensive Plan for River Stone” prepared by McKenzie Engineering Group, Inc., (MEG) with the latest revision date of February 2, 2018.*
11. A detail should be provided for the existing (or proposed) outlet control structure for the detention basin so that we may verify that it is modeled correctly.
  - *Comment noted. An outlet control structure detail has been added to the plans.*
12. The Detention Basin Section on Sheet C-6 shows a sediment forebay. However, there is no sediment forebay defined on the grading plan, Sheet C-2.
  - *Comment noted. Two sediment forebays have been added to the plans.*
13. To more clearly show that a foot of freeboard will be provided in the detention basin during a 100-year storm event, the El. 62 contour should wrap around the north and east sides of the basin.
  - *Comment noted. The detention basin grading has been revised accordingly.*
14. All flared end sections and headwalls should be equipped with trash racks.
  - *Comment noted. A note has been added to Sheet C-6.*
15. Components of the proposed septic system, including tanks and the soil absorption system are shown under proposed roadways. Information should be provided to document that the components are designed for loading as required by the Fire Department apparatus.
  - *Comment noted. The septic system will consist of 4-inch schedule 40 PVC pipe embedded in 2 feet by 2 feet crushed stone trenches with a minimum depth of cover of 2.5 feet which is sufficient to provide H-20 loading.*
16. Full septic system design information will be required to verify compliance with Title 5 (310 CMR 15) and to determine where the project will not comply with the Hingham Board of Health Supplementary Rules and Regulations for the Disposal of Sanitary Sewage.
  - *Comment noted. Full septic system design plans will be submitted in conjunction with the development of final construction plans.*
17. Erosion controls are detailed on Sheet C-10. The locations of erosion control barriers and the construction entrance should be shown in plan.
  - *Comment noted. The locations of the erosion control barrier and the construction entrance has been added to Sheet C-2.*

18. The Hydrant Detail on Sheet C-9 specifies C-900 PVC pipe. Ductile iron pipe should be specified as noted elsewhere on the plans.

- *Comment noted. Detail has been revised accordingly.*

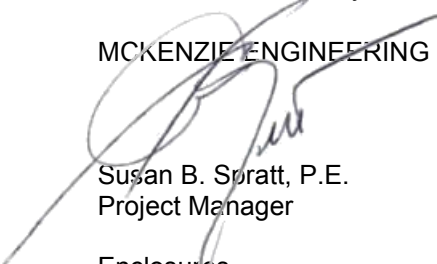
19. All water supply references to the Hingham Water Department or DPW should be changed to the Aquarion Water Company.

- *Comment noted. Plans have been revised accordingly.*

We believe that the revisions to the plans and the additional information as noted above adequately address the comments from Amory Engineers, P.C..

Please contact me at your convenience if you have any questions or require additional information.

MCKENZIE ENGINEERING GROUP, INC.



Susan B. Spratt, P.E.  
Project Manager

Enclosures

cc: River Stone, LLC