August 5, 2024

Ms. Kathleen Bradley-Colwell
Planning Division Director
Department of Economic and Community Development
City of Methuen
41 Pleasant St., Suite 217
Methuen, MA 01844

SUBJECT: Brookview Heights Subdivision
TEC Civil Engineering Peer Review

Dear Kathleen:

Greenman-Pedersen, Inc. (GPI) is in receipt of a peer review letter prepared by TEC dated April 4, 2024 containing comments related to their review of the above referenced project. TEC's comments, followed by our repones in **bold,** are as follows:

Waiver Requests

1. *Section 4.2.3.2 Dead Ends – Streets greater than 500' (Washington Street 1,300', Edgewater Drive 1,500') - TEC has provided recommendations within the Traffic Impact and Traffic Engineering Site Plan Review comments herein to address the proposed dead-end condition. See comment #32.*
   Our responses related to the dead-end street recommendations are within the Traffic Impact and Traffic Engineering Site Plan Review section.

2. *Section 5.3.1 Street and Roadways – General – 26' Pavement width required, 24' width proposed for Washington Street and 22' width proposed for Edgewater Drive – The applicant has not provided justification for the decreased street width.*
   The 24' width proposed for Washington Street is consistent with the width of the existing pavement within Washington Street south of Old Ferry Drive.

   Regarding Edgewater Drive, any roadway that caries less than 400 vehicles per day (vpd) is classified as a low-volume roadway. AASHTO and other design guidance documents cite lane widths of 9 feet with a 2-foot shoulder as appropriate for rural low-volume roadways. The proposed paved width of 22 feet for Edgewater Drive exceeds AASHTO recommendations. The reduction in pavement width has environmental benefit by reducing stormwater runoff and reducing the need for processed and manufactured materials (base gravels, asphalt, etc.). A sidewalk will be constructed along one side of Edgewater Drive to provide separation between vehicles and pedestrians.

3. *Section 5.3.7 Curbs and Berms – Sloped granite curbing required, bituminous concrete curbing proposed – TEC offers that bituminous concrete curbing may require additional maintenance for the municipality on public roads when compared to the required sloped granite curbing.*
   Comment acknowledged.

4. *Section 5.7.1 Sidewalk Location – 5' wide sidewalks along both sides required, sidewalk on only one side proposed – TEC understands that there are no sidewalks proposed on the extension of Washington Street. TEC has provided recommendations within the Traffic Impact and Traffic Engineering Site Plan Review comments herein to address this. See comments #30 and 31.*
   Our responses related to the comments related to sidewalks within Washington Street are within the Traffic Impact and Traffic Engineering Site Plan Review section.

Subdivision Rules and Regulations

5. *Pursuant to section 4.2.4.1 for maximum centerline slope, station 5+00 to 11+00 of Washington street exceeds the maximum allowable slope. The applicant has designed a portion of Washington Street at an 11.25% grade with driveways that will be very difficult to safely transition at Lots 1 through 4 and Lots 28 and 29. TEC recommends that the applicant review alternatives to comply with the requirement of the regulations.*
   Washington Street is currently a public way, and the proposed road grade matches the grade that is out there today. Compliance with the 8% maximum grade for new subdivision streets would require significant amounts of fill, large retaining walls within the public right-of-way down near Edgewater Drive to avoid impacting the wetlands on both sides of the road, and would render the land on either side of Washington Street inaccessible.

6. *Pursuant to section 4.7.1, the Community Development Board requires that trees be planted along all new streets at a specified interval. Applicant should update the submission in accordance with these requirements.*
   Street tree planting only applies to Edgewater Drive. On Sheet 2 we have added Construction Note 26 requiring the planting of trees along both sides of Edgewater Drive along in accordance with the requirements of sections 4.7.1 and 4.7.2.

7. *Pursuant to section 5.3.8, granite curb inlets shall be provided at all catch basin locations. Please verify if a waiver is being sought from this requirement.*
   A waiver is being sought to not provide granite curb inlets at all catch basin locations. This waiver has been added to the list on Sheet 2.

8. *Pursuant to section 5.7, TEC recommends that the applicant provides a sidewalk cross section to verify compliance with sidewalk base, pavement, and accessibility requirements specified.*
   The Edgewater Drive Cross-Section detail on Sheet 26 has been revised to specify the sidewalk base material, pavement thickness, and a maximum 2% cross-slope to meet ADA requirements.

Site Plan Review

9. *A fire truck turning plan should be provided to verify access is adequate for emergency vehicles. Approval of the fire truck turning plan should be provided by the Fire Department.*
   A fire truck turning exhibit has been prepared and forwarded to the Methuen Fire Department for their review and approval.

10. *TEC recommends that the applicant update the profile to identify crossing utilities and separation distances. The applicant should include protection requirements of the proposed sanitary line, if necessary.*
    We have revised the location of several utilities to provide a better layout and required horizontal separations. We are currently evaluating vertical separation distances and will provide that information on a subsequent update to the plans.

11. *On the Washington Street Plan and Profile Sheet 22 of 32 – revise the bar scale to match the noted scale.*
    The bar scale has been revised as requested.

12. *There appears to be several areas where the proposed water line conflicts with other structures, including CB-9, CB-7, CB-5, and CB-3.*
    We are currently evaluating any water line conflicts with other utilities and will make any necessary adjustments on a subsequent update to the plans.

13. *There are two trench sections provided in the details, on sheet 27 and 28. Revise the plans to indicate which utility these are specific to.*
    The trench section on Sheet 27 has been revised to say Standard Sewer Trench Section and the trench section on Sheet 28 has been revised to say Drain Trench Section.

14. *On the Pump Station Details Sheet 31 of 32 – The pump station detail is missing elevations for inverts, finish grade, and other structure elevations. Please provide this missing information. Additionally, the pipe routing shown on the detail does not appear to match the plan, please verify the intended routing and layout of the design.*
    The missing information on the pump station detail has been added to the plan and the pipe layout on the design plans revised to reflect what is intended.

15. *The proposed pump station requires review and approval by the Department of Public Works.*
    The applicant intends to have the pump station remain private with maintenance being the responsibility of the homeowner's association.

16. *The Washington Street and Edgewater Drive cross-sections show a 3' minimum cover on sewer lines. TEC recommends the minimum cover of sewer to be 5'.*
    Both cross-sections have been revised to specify a minimum cover of 5' for the sewer.

17. *There are several locations where the waterline is within the 10' separation requirement, specifically as a result of avoiding conflict with proposed catch basin structures.*
    The utility layout has been revised to provide the required 10' separation between the water and sewer.

18. *The profile does not include the proposed sewer force main. It is not clear if air/vacuum valves are required.*
    The locations for an air/vacuum valve manhole at the sewer force main high point and a cleanout manhole at the sewer force main low point have been added to the plan view on Sheet 21.

19. *Revise the locations of catch basins 14, 15, 16, 17 to be located at low point of road.*
    The locations of catch basins 14, 15, 16, and 17 have been corrected.

20. *The plans appear to be missing rim and invert information for the following structures: YD-1, YD-2, YD-3, DMH-11, DMH-14, and DMH-15. Please provide this information.*
    The missing rim and invert information along with some missing pipe size, length, and slope data, has been added to the plans.

21. *TEC recommends that the plans be updated to provide the following details: level spreader, pavement tie-in at sawcut locations, yard drains, guardrail, retaining wall, and overflow spillways.*
    These details have been added to the plans as requested.

Stormwater Management Review

22. *Applicant identifies that a portion of the project is located within a flood hazard zone AE. Please include the FIRM panel identified in section 2 of the stormwater management report and include this boundary on the existing conditions plan.*
    The boundary of flood hazard zone AE as shown on the FIRM panel has been added to the existing conditions plan as requested. A copy of the FIRMette is included in the revised stormwater management report.

23. *The above ground Infiltration Basin #1 (INF 1) 72-hour drawdown time calculation does not appear to be supported by test pits completed within the bounds of the basin. Please clarify.*
    Additional test pits were dug within the bounds of the Infiltration Basin #1 and identified loamy sand.

24. *Pursuant to Massachusetts Stormwater Handbook Chapter 3 table 2.3.3, the infiltration rates used for the infiltration basins do not meet the requirements for a sandy loam as identified in the provided test pits for each location. Instead, the applicant uses the recommended Rawls Rate for loamy sand. Please update the model and stormwater report accordingly.*
    The sandy loam that is mentioned is just for the SCS soil classification. The actual test pits encountered loamy sand at each location.

25. *Pursuant to Massachusetts Stormwater Handbook Chapter 3 regarding stormwater recharge and depth to the estimate seasonal high ground water table, it appears that Infiltration Basin #3 (INF-3) has a ESHWT within 4' of the bottom of the proposed infiltration basin, requiring a mounding analysis. Please provide a mounding analysis for INF-3.*
    A mounding analysis has been performed for INF-3 and is included in the revised stormwater management report.

26. *There is a discrepancy with the 12" orifice located at elevation 148.00' on the INF-1 outlet control device. The 12" orifice is modeled as a vertical orifice while the plans detail this orifice as a horizontal opening. Please clarify.*
    The 12" orifice has been updated to a horizontal orifice in the model.

27. *The HydroCAD model shows the grassed depression to have a Broad-Crested Rectangular Weir. The weir appears to be missing from the plan set. Please update the plans to include this.*
    The plans have been revised to show the overflow elevation of 145.5 for the grassed depression.

28. *The report identifies a first defense pre-treatment unit in treatment train A. It appears DMH-8 is intended to be a pretreatment device to align with the treatment train A. Please verify.*
    DMH-8 is intended to be a pretreatment unit (First Defense).

29. *Ownership of required maintenance for stormwater features shall be coordinated with the City and the Operations & Maintenance.*
    We have confirmed with the city that the roadway drainage system along with the outfalls and stormwater basins associated with that system will be maintained by the city. All other drainage facilities shown on the plans will be maintained by the homeowner's association. The O&M plan has been updated to identify who is responsible for each drainage system.

30. *Massachusetts DEP Stormwater Standards*
    a. *It appears that this project fully meets standards 1, 4, 8, 9, and 10 of the MADEP Stormwater Standards.*
    b. *It appears that this project is not applicable to standards 5, 6, and 7, including requirements for land use with high potential pollutant loads, Critical Areas, and redevelopment projects.*
    c. *Standard 2 – This standard requires that the proposed project does not increase the stormwater peak runoff rates from the existing conditions. The project has minor stormwater calculation revisions that will be required to verify that the project fully complies with this standard.*
    d. *Standard 3 – This standard requires that a specific volume of groundwater recharge is attained by the proposed development. The project exhibits several infiltration basins that require revisions to the infiltration rates to verify that this standard is fully met by the development.*

Traffic Impact and Traffic Engineering Site Plan Review

Based on the review of the Site Development Overview Plan, the subdivision includes 29 single family homes. TEC reviewed the Institute of Transportation Engineers the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, Land Use Code (LUC) 220 – Single-Family Detached Hosing. The proposed development is expected to generate 18 vehicle trips during weekday morning peak hour and 11 vehicle trips during weekday evening peak hour. This is an increase of one (1) vehicle every 2 minutes along Washington Street. Therefore, based on the minimal impact of the project, TEC concurs that a Transportation Impact Assessment (TIA) is not necessary as part of the project. However, TEC compiled the following traffic-related comments regarding the site plan:

31. *Although Washington Street does not have sidewalks along either side of the roadway, the Applicant should provide a sidewalk on at least one side of Washington Street.*
    This has been discussed with City staff and while the plans include the grading necessary to install sidewalks, no sidewalks are proposed along Washington Street at this time.

32. *The Washington Street Cross-Section detail on Sheet 26 should include sufficient details to show a minimum 5' wide sidewalk, excluding any curbing, and a full sidewalk platform with on the opposite side, both of which should be graded at less than 2%. TEC recommends detailed 1.5% to allow for construction tolerances. The maximum driveway grades should be shown in addition to the typical side slope grades.*
The Washington Street Cross-Section detail has been revised to depict a 5' wide sidewalk platform, exclusive of the curbing, on both sides of the street. The 2% slope shown is in accordance with Methuen's typical road section detail. Maximum driveway grades are not specified in the subdivision regulations.

33. *The Applicant should install signage to notify motorists about the dead end roadway condition on Washington Street, just north of Edgewater Drive. The applicant's team should discuss the end treatment for Washington Street, including any potential gates or parking restrictions with City staff. TEC recommends that any fixed objects be buffered from the end of the paved portion of the roadway given the potential for sliding vehicles on the proposed steep roadway grade approaching the dead end during winter conditions.*
We have revised the plans to include a "Pavement Ends" sign on Washington Street, just after the intersection with Edgewater Drive. We have also added a section of guardrail 8 feet beyond the end of pavement to prohibit vehicles from driving down the portion of Washington Street that will remain unimproved.

34. *Parking restrictions should be implemented on Washington Street north and south of Edgewater Drive, following the Manual on Uniform Traffic Control Device (MUTCD) guidelines, which state that no driver shall stand or park upon any street or highway within twenty (20) feet of an intersecting way, except alleys (Section 5-1 (i)). TEC recommends installation of "NO PARKING – ANY TIME" signs (MUTCD designation R7-1 with arrows).*
As requested, we have added "NO PARKING – ANY TIME" signs on both sides of Washington Street, north and south of Edgewater Drive.

35. *The Applicant should verify Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) at the Edgewater Drive intersection with Washington Street, considering the limited potential for a future extension of Washington Street to the north for any municipal conservation access opportunities near Hawkes Brook. Sight triangle areas should be shown on the Site Plans, along with a note indicating: "Signs, landscaping, and other features located within sight triangle areas shall be designed, installed, and maintained so as not to exceed 2.5 feet in height. Snow windrows located within sight triangle areas that exceed 3.5 feet in height or that would otherwise inhibit sight lines shall be promptly removed. The proposed side slope grading and layout of the consideration easement on Lot 5 (southeast corner of Washington Street / Edgewater Drive) should consider the maintenance needs related to the sight lines.*
The plans have been revised to include a stop sign and stop bar at the end of Edgewater Drive. Preliminary review of the grading at the northwest corner of Lot 5 suggests that adequate sightlines are provided. As part of a subsequent revision to these plans to address any remaining comments or conditions of approval, we will look at opportunities for pulling the cut slope on Lot 5 back even further to account for snow in that area.

36. *A marked stop line should be provided for vehicles exiting the Edgewater Drive approach to Washington Street.*
The plans have been revised to depict a painted stop bar on Edgewater Drive at the intersection with Washington Street.

37. *The Applicant's team should verify the sight line characteristics for the stopped condition for motorists on Old Ferry Street westbound where it meets Washington Street and confirm that AASHTO criteria can be satisfied given the introduction of new through traffic associated with the proposed subdivision.*
A stop sign and stop bar have been added at the end of Washington Street where it meets Old Ferry Drive. This section of Washington Street is not intended to be open to through traffic.

Sincerely,
GREENMAN-PEDERSEN, INC.

David R. Jordan, P.E., P.L.S., LEED AP
Vice President
Director of Project Delivery – Land Development

enclosure(s)

cc: Aaron Orso, DHB Homes