

Emilie Cademartori
Director of Planning & Conservation
Town of Lynnfield
55 Summer Street
Lynnfield, MA 01940

March 6, 2024

Re: The Regency at Lynnfield
1301 Main Street – Civil Engineering Peer Review #1

Dear Ms. Cademartori,

On behalf of the Town of Lynnfield, TEC, Inc. (TEC) reviewed documents as part of a civil and traffic engineering and stormwater management peer review for the proposed 66-unit residential development. On the behalf of Sagamore Spring Real Estate Trust (the “Owner”), Toll Bros., Inc. (the “Applicant”) submitted the following documents which TEC reviewed for conformance with Town of Lynnfield Zoning Bylaw, Stormwater Management Bylaw, Tree Preservation Bylaw, as well as conformance with the Massachusetts Stormwater Handbook and generally accepted industry standards:

- *Site Development Plans for The Regency at Lynnfield Senior Housing Development Located at 1301 Main Street, Lynnfield, Massachusetts*; prepared by The Morin-Cameron Group, Inc.; dated November 30, 2023
- *Technical Narrative & Stormwater Management Report*; prepared by The Morin-Cameron Group, Inc.; dated November 30, 2023
- Planning Board Special Permit Application Form; prepared by The Morin-Cameron Group, Inc; dated November 30, 2023
- Lynnfield Fire Department Comment Letter; prepared by Lynnfield Fire Department; dated January 30, 2024
- *The Regency at Lynnfield* Comment Letter; prepared by Ipswich River Watershed Association; dated December 19, 2023
- *The Regency at Lynnfield* Comment Letter; prepared by Ipswich River Watershed Association; dated January 30, 2024
- *Traffic Assessment – The Regency at Lynnfield Senior Housing Development, 1301 Main Street, Lynnfield, Massachusetts*; prepared by McMahan Associates (A Bowman Company); dated December 12, 2023

Upon review of the documents and plans, TEC has compiled the following comments for the Board’s consideration:

Local Zoning Bylaws and Regulations

1. Section 375-17.3.B.5 of the Lynnfield Special Permit Rules and Regulations, abutters within 300’ of the proposed project must be notified as part of the application and hearing process. In review of the Special Permit application, TEC did not see any abutter information in regard to abutters in the Town of Peabody which the project directly abuts. TEC defers to the Board.

2. Section 6.2.5 of the Lynnfield Zoning Bylaws indicates signage requirements for Elderly Housing Developments, of which the proposed signage appears to not be in compliance with. The narrative indicates a variance from the Zoning Board of Appeals is being sought for the signage, TEC defers to the Board.
3. The off-street parking requirements for an Elderly Housing District (EH) per Zoning Bylaw Section 6.3.4 appear to be met. Off-street parking space calculations for the clubhouse utilize parking requirements for retail stores, showrooms, consumer and professional establishments, offices, banks, restaurants, theaters, and other places of amusement or assembly at 1 space per 180 square feet of floor area. TEC defers to the Board for parking requirements for the clubhouse.
4. Section 6.4.4 of the Lynnfield Zoning Bylaws indicates that (2) 5' sidewalks are required for Elderly Housing Developments. The narrative indicates a variance from the Zoning Board of Appeals is being sought for the roadway cross section, TEC defers to the Board.
5. Section 6.6.1 and 6.6.7 of the Lynnfield Zoning Bylaws indicates that all respective uses and all uses accessory thereto shall be conducted wholly within a completely enclosed building. TEC defers to the Board whether the proposed pool falls within this requirement, and if a waiver or variance is required.
6. The property is located within the Lynnfield Groundwater Protection Overlay District. According to calculations as presented on Sheet C-4, the project will result in impervious surface greater than 15%. Per Section 9.3.8 of the Lynnfield Zoning Bylaws, this requires a Special Permit through the Zoning Board of Appeals. TEC is unsure whether this permit has been applied for as it is not listed in the project narrative among other required permits. TEC defers to the Board.
7. TEC assumes solid waste disposal will be handled via curbside pickup. A dumpster location with appropriate screening should be added for the proposed clubhouse per Section 10.6.2.7 of the Lynnfield Zoning Bylaws.
8. Section 375-17.4.D of the Lynnfield Planning Board Special Permit Rules and Regulations indicates the locus should include abutting land uses and zoning districts.
9. Section 375-17.4.J of the Lynnfield Planning Board Special Permit Rules and Regulations indicates the plans should include all existing structures within 200' of the property lines.
10. Section 375-17.4.O of the Lynnfield Planning Board Special Permit Rules and Regulations indicates the plans should include proposed snow storage areas.
11. Section 375-17.4.S of the Lynnfield Planning Board Special Permit Rules and Regulations indicates the plans should include sufficient data to determine compliance with ADA regulations. ADA/AAB compliant accessible curb ramps should be shown and indicated at all locations at roadway crossings and at the end of the loading aisle adjacent to the proposed ADA parking space at the proposed clubhouse. TEC recommend spot grades be added for the ADA parking and curb ramps throughout the site. TEC defers to the Board on whether formal crosswalks are necessary within the development.

12. Landscaping plans are included to show compliance with Section 225-5 of the Lynnfield Tree Preservation Bylaw. TEC notes there is proposed tree removal in the front, side, and rear Tree Borders of the site. The calculations indicate a total of 786 caliper inches are proposed to be removed from the Tree Borders and 1,300 caliper inches are proposed for mitigation. The calculations however note that trees located in the Tree Border adjacent to the existing golf course are not included in the calculations, the applicant should clarify why these trees are excluded. TEC also defers to the Board whether the plantings meant for mitigation are intended to be planted within the Tree Borders or through the site in general, as the majority of plantings counted towards mitigation appear to be located in the interior of the site along proposed roadways. It appears the landscape plans propose planting of both Honey Locust and American Elm which do not appear to be listed on the approved shade and evergreen tree list dated February 2024. TEC is unsure if a Tree Permit has been subsequently applied for.

Site Plan and General Civil Engineering Comments:

13. In general, TEC believes the plan set is well constructed and provides good detail.
14. The plans should be revised to indicate the Interim Wellhead Protection Area in the southwest corner of the property, and indicate the entire site is located within a Zone II of a public water supply.
15. The Applicant should provide a plan sheet depicting the sight triangles to and from proposed Road A and identify areas to restrict vegetation, signage, and off-street parking to maintain AASHTO minimum recommendations. Notes should indicate: "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." All permanent and temporary signs should be located outside the sight line triangles.
16. In review of existing conditions of the cul-de-sac of Friendship Lane, it appears a drainage catch basin inlet and electrical utility structure are located in the vicinity of the proposed emergency access roadway. The plans should be revised to incorporate these items to ensure these structures will not be affected by the proposed design. If possible, the access roadway should be designed to avoid the existing drainage catch basin inlet.
17. A typical roadway cross section detail should be provided.
18. Proposed curb radii should be indicated throughout the site.
19. The plans should indicate the proposed accessible parking space at the proposed clubhouse is "van accessible" with proper signage. A detail is provided however no callouts are indicated on the layout plans. The sign details shown on Sheet C-22 should be revised to indicate the accessible parking sign be mounted 7 feet above finished grade as per the MUTCD, unless a "van accessible" sign is mounted below, in which case 5 feet above finished grade is acceptable.
20. Proposed CB6, CB36, and CB37 appear to be located at the potential landings of curb ramps, the plans should be revised to shift the proposed catch basin inlets away from the ramps.

21. TEC recommends stop signs (R-1) and stop bars be added at all roadway intersections throughout the proposed development.
22. The stop bar detail shown on Sheet C-21 should be revised to indicate the bar placement 4 feet behind the crosswalk rather than 2 feet, as recommended in the current Manual on Uniform Traffic Control Devices (MUTCD).
23. The sign summary table on sheet C-22 should also indicate ADA signage.
24. Signs for the project are shown on Sheets C-5, LS-6, and LS-7, however there appear to be inconsistencies in the sign legends and locations. The Applicant should clarify which signs are to be used and their locations.
25. The plans should be revised to indicate street signage locations and details compliant with Lynnfield DPW standards.
26. Pedestrian fencing should be proposed along the proposed bioretention areas in close proximity to roadways and sidewalks, and bioretention areas with significant depths, for pedestrian safety.
27. Per the Lynnfield Fire Department (LFD) comment letter (dated January 30, 2024), Applicant shall provide a fire truck turning analysis with the specifications in the LFD Access Guidelines. In addition, Applicant should provide a diagram of the fire apparatus used in the truck turning analysis along with proposed locations for hydrants. The letter mentions a proposed hydrant at Friendship Lane, however it does not appear one is shown on the plans. The closest hydrant to Friendship Lane is located at the intersection of Road A2 and Road E, just under 100' from the Friendship Lane cul-de-sac. The letter also mentions the requirement for a fire hydrant every 500 feet, which it does not appear the plans as presented comply with the requirement. TEC defers to the Fire Department for approval of final hydrant locations.
28. The driveway apron detail does not show curb returns as indicated on the site plans.
29. The driveway apron detail indicates a 5' sidewalk. The sidewalk detail indicates a 4' sidewalk. As previously noted, the zoning bylaws require sidewalks to be 5' wide. The layout plans do not indicate a sidewalk width, however scale to 5' width. The applicant should clarify and revise plans as necessary.
30. TEC recommends the sidewalk be extended to units #1 and #66.
31. It appears some screening is proposed along the common property line with the existing golf course. The applicant should consider whether additional landscaping, screening, fencing, etc. should be proposed to mitigate the possibility of unintended trespass to and from areas of the golf course in close proximity to homes. TEC defers to the Board.
32. Sheet C1 indicates that existing stone drains within the driving range are proposed to be removed. The existing stone drain appears to extend beyond the proposed perimeter sedimentation controls and into the 25' buffer and BVW. Detail on the removal and restoration of these areas should be provided. Perimeter controls should be proposed in these areas for resource area protection until the area is stabilized.

33. Details on the water main installation in relation to the existing perennial stream crossing on Main Street should be provided. The stream crossing is not indicated on the water main profile.
34. Detail for SMH22 on sheet C23 appears to be mislabeled as SMH20.
35. TEC recommends inline cleanouts be added within sewer manholes #7 and #22.
36. It appears that a 10'+/- cut with proposed retaining wall is proposed approximately 50' south of wetland flag A124. A 6'+/- cut is proposed for bioretention area #5 approximately 60' from wetland flag A135. A 5'+/- cut is proposed for bioretention area #7 approximately 70' from wetland flag A153. No soil evaluation test pits were observed to have been performed in these areas indicating estimated ground water levels. The applicant should address whether such cuts, and the retaining wall sub drain, will have negative impacts on the groundwater table and/or adjacent wetlands.
37. TEC defers to the Board of Health and MassDEP in regard to the subsurface sewerage system design.
38. TEC defers to Lynnfield DPW, fire, and water for adequacy of water system design.

General Stormwater Comments:

39. TEC recommends the drainage plans be revised to indicate sediment forebays in bioretention areas #4, 6, 7, and 8 along with berm elevations and square footage. The sediment forebay detail indicates loam, seed, and erosion control netting, however the bioretention areas are proposed with stone mulch per the detail, the applicant should verify if this is correct.
40. The bioretention cross section detail indicates stone mulch for final surface material, however the notes indicate loam and seed, and landscape plans also indicate seed mix to be applied to bioretention areas. The plans should be revised for consistency.
41. The bioretention cross section detail indicates 18" of soil media. The Massachusetts Stormwater BMP Handbook indicates a minimum of 24" of soil media is required for typical proper water quality treatment, and 30" is required for treatment within nitrogen sensitive areas. The detail should be revised.
42. TEC recommends the bioretention area detail be revised to incorporate notation regarding the possible presence of unsuitable fill material within the footprint of the infiltration BMP. If fill material is present, the material should be removed and replaced with suitable clean, free draining material to the natural underlying subsoil.
43. TEC recommends the addition of monitoring wells to bioretention areas as well as underdrains/draw down devices (normally closed) in the event the bioretention areas fail to infiltrate as designed.
44. A typical emergency spillway detail should be provided for the bioretention areas. TEC recommends rip rap spillways be extended to the toe of constructed slopes to avoid potential erosion.

45. Typical bioretention ponding depths are 6"-12" per the MA Stormwater BMP handbook. Bioretention areas should typically not exceed 18"-24" of ponding depth. 6 of the 9 proposed bioretention areas exceed ponding depths of 12", and 4 of 9 exceed ponding depths of 24".
46. Multiple bioretention areas are designed with significant embankment heights, with bioretention areas # 1, 3, 6, and 7 having embankments greater than 6' in height (#3 is designed over 10'). Embankments greater than 6' in height are considered jurisdictional to the state office of dam safety as small dams. TEC would recommend berm heights be reduced to no greater than 6'. A berm detail should be provided with anti-seep construction methods to ensure prevention of seepage and breakout and many are constructed in fill. As reduction in berm heights will affect the stormwater model of the bioretention areas, TEC recommends the applicant incorporate the volume of the soil media voids to the HydroCAD model.
47. TEC recommend adding applicable soil log information and ESHGW elevations to individual bioretention area details for ease of confirmed proper offset to groundwater and infiltration rates. Proper separation to groundwater should be from the bottom of the soil media and not top of stone mulch. As noted prior, the majority of bioretention areas lack sufficient soil evaluation in close proximity to their currently designed footprints.
48. The bioretention area #1 detail indicates a bottom elevation of 94.0, whereas the outlet control section indicates 94.50.
49. The bioretention area #6 detail indicates a bottom elevation of 165.0, whereas the outlet control section indicates 166.0.
50. The bioretention area #6 detail does not indicate a spillway, however indicates spot grades on the berm of 172.10. The HydroCAD model indicates a spillway is modeled at this elevation. If this area is intended to be used as a spillway, proper stabilization with rip rap should be indicated, however this area also appears to spill over into the proposed sidewalk and roadway. TEC would recommend a separate overflow outlet be incorporated (grate above outlet control structure with properly sized outlet pipe) rather than a spillway to avoid potential flow into pedestrian and vehicular travel ways.
51. The bioretention area #8 detail indicates a bottom elevation of 177.0, whereas the outlet control section indicates 175.0.
52. For all bioretention areas, the outlet control structures are designed with grates at the rim elevation, however these grates are not included in the HydroCAD model. For bioretention areas #1, 2, 3, and 7 the peak elevation during the 100-year storm is greater than that of the outlet control structure grate therefore they should be added or the elevation raised.
53. Per the MA Stormwater BMP Handbook, bioretention areas should be designed with a minimum of 3" of freeboard. Bioretention areas # 2, 7, and 8 are designed with freeboards of less than 3" (#8 with less than 1").
54. Infiltration best management practices (BMPs) should be set 10 feet away from any building foundation if the infiltration BMP is downslope from the foundation. The proposed bioretention area #4 appears to be less than 10 feet from proposed unit 18.

55. TEC recommends the roof drain discharge to the proposed bioretention area #4 be relocated to discharge directly to the bioretention area rather than the sediment forebay as this roof runoff is considered clean and not included in the sediment forebay sizing calculations.
56. Watershed maps provided within the drainage report are not clear and difficult to read, full size electronic copies should be submitted for review following any revisions.
57. Although the plans typically do a good job of avoiding backflow conditions within drainage trunk lines and structures, TEC recommends the connection of CB27 to DMH14, CB29 to DMH16, CB19 to CB18, and the location of WQU1 be slightly adjusted to remove the potential for backflow conditions.
58. Although the Contech CDS water quality unit is able to accept multiple inlet pipes, the applicant should confirm with Contech that the layouts/ orientations of WQUs 4 and 5 are feasible.
59. The construction detail for the Contech CDS unit indicates “WQU2”. TEC believes this is a typical detail and does not indicate specifics regarding the separate water quality units. The detail should be revised to delete WQU2 notation or individual details of all proposed CDS units should be provided.
60. Although significant subsurface exploration appears to have been performed on site (53 test pits), the majority appear to be in relation to the subsurface sewerage disposal system and only proposed bioretention area #4 appears to have had test pits performed within the footprint of the BMP. Proposed bioretention area #3 had testing done within 50’ of the footprint of the BMP and proposed bioretention area #2 had testing done within 100’ of the footprint of the BMP. No testing was performed within 100’ of the footprint of bioretention areas #1, 5, 6, 7, 8, or 9. The lack of test pits and soil evaluation in close proximity to the proposed BMP locations makes it difficult to determine compliance with stormwater design standards for separation to groundwater, infiltration rate of soils (Rawls), or the necessity for groundwater mounding analysis.
61. A groundwater mounding analysis will be a requirement for the design and permitting of the subsurface sewerage disposal system. The analysis should be used to determine the mounding effect the system has on bioretention area #1 due to the relatively close proximity to the proposed system and the size of the system (9,900 GPD). TEC recommends this be done during the stormwater review if feasible.
62. The narrative indicates the homes will be constructed with basements which the homeowners will have the option of finishing. Some homes are located in very close proximity to the proposed infiltration BMPs/ bioretention areas, and the associated basements will likely be as deep or deeper than the BMPs. This could cause issues with groundwater breakout into foundations, or if foundation drains are to be installed, this could result in intercepting and daylighting of water intended to be recharged into the ground from the bioretention areas.
63. The HydroCAD model utilizes NRCC rainfall data for the 2-, 10-, and 100-year storm events. TEC would recommend the rainfall intensity in the model be revised to NOAA Atlas 14 which typically estimates greater intensity rainfall than the NRCC, however TEC defers to the Board. This would also match the expected revisions to the Massachusetts Stormwater Standards expected to be released in 2024.

64. Pipe conveyance calculations utilize the 100-year rainfall, however TEC recommends this also be adjusted to incorporate the NOAA Atlas 14 rainfall data. TEC defers to the Board.

MassDEP Stormwater Standards and Lynnfield Stormwater Bylaw Comments

65. Standard 1 (Untreated discharges): *No new stormwater conveyance may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth.*

The plans as designed appear to meet Standard 1 as all stormwater will be conveyed through adequate water quality BMPs and properly sized energy/velocity dissipation BMPs prior to discharge to waters of the Commonwealth. Energy/velocity dissipation device sizing should be confirmed following any revisions to the stormwater model based on comments herein. See Standard 4 for additional comments regarding water quality.

66. Standard 2 (Peak rate control and flood prevention): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for land subject to coastal storm flowage.*

The current model appears to meet Standard 2 as post-development peak discharge rates do not exceed pre-development discharge rates, and TEC generally agrees with the methodology and analysis submitted. As previously noted, TEC recommends NOAA Atlas 14 rainfall data be utilized for the analysis model and the design adjusted accordingly. The stormwater checklist should be revised to indicate that calculations are provided to show that peak discharge rates do not increase.

67. Standard 3 (Recharge to Ground water): *Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from the pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts's Stormwater Handbook.*

Calculations provided indicate the required recharge volume is provided through the use of the proposed bioretention areas. As previously noted, due to lack of soil evaluation in close proximity to the majority of BMPs, it is difficult to confirm adequate separation to groundwater, whether mounding analysis is necessary, and if the correct Rawls rate is utilized in the model and for drawdown calculations. TEC notes that it is expected that the 2024 Massachusetts Stormwater Standards updates will include required recharge volume depth to be revised to 1" for all soil types except for HSG D. If feasible, TEC would recommend the stormwater design be revised to incorporate the expected change of required recharge volume depth (see Standard 4), however TEC defers to the Board.

68. Standard 4 (Water Quality): *Stormwater management systems must be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).*

Under the Massachusetts Stormwater Standards, 80% TSS removal is required. Under the local stormwater bylaws however, a 90% TSS removal rate is required, along with 60% phosphorus (TP) removal. It appears the site likely meets the 90% removal rate as indicated on the various TSS removal worksheets, however TEC offers the following comments:

- a. The stormwater report should be revised to include calculations for a weighted average site wide TSS removal percentage in line with calculations indicated in the Massachusetts Stormwater Handbook Volume 3, as well as phosphorus removal rates per the bylaw.
 - b. Alternatively, per the local bylaws the 90% TSS removal and 60% TP removal can also be accomplished by retaining the 1" water quality volume depth on site (infiltrated). TEC notes that it is expected that the 2024 Massachusetts Stormwater Standards updates will include required TSS removal to be revised to 90% and include provisions for 60% TP removal as well. If the design was revised to incorporate the retention and infiltration of the 1" water quality volume, this would achieve both Standards 3 and 4 of the 2024 Massachusetts Stormwater Standards expected revisions and the local bylaw.
 - c. Additional information should be provided for the Contech CDS units to confirm TSS removal credit taken on the TSS removal worksheets. If these units are also used for TP removal to comply with the local bylaw, information regarding removal rates should also be provided.
 - d. Water quality volume may need to be converted to water quality flow rate per the Massachusetts Stormwater Handbook Volume 3 to show compliance with proprietary BMP sizing.
 - e. As noted prior, soil media depth should be increased in order to be credited with TSS and removals rates as utilized on the TSS removal worksheets as well as TP removal.
 - f. Either the deep sump hooded catch basin or the sediment forebay should be removed from the TSS removal worksheets for bioretention areas #4, 6, 7, and 8 as the bioretention area 90% TSS removal credit includes a pretreatment device per the MA Stormwater BMP Handbook. Both devices would still qualify for use in calculation of the 44% required pretreatment and therefore would still meet Standard 6 for pretreatment.
69. Standard 5 (Higher Potential Pollutant Loads): *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.*

Not applicable – the proposed land use is not considered a LUHPPL.

70. Standard 6 (Critical Areas): *Stormwater discharges to a Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or any other critical area require the use of the specific source control and pollution prevention measures and the specific stormwater best management practices determined by the Department to be suitable for managing discharges to such area, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters or Special Resource Waters shall be set back from the receiving water and receive the highest and best practical method of treatment. A "stormwater discharge," as defined*

in 314 CMR 3.04(2)(a)1. or (b), to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to Zone I or Zone A are prohibited unless essential to the operation of the public water supply.

The proposed project is located within both an IWPA and Zone II of a public water supply well. This requires a 1" water quality volume depth and 44% pretreatment prior to groundwater recharge. Both requirements appear to be met, however additional information is required per comments in Standard 4 in regard to proprietary BMPs.

71. Standard 7 (Redevelopment). *A redevelopment project is required to meet Standards 1-6 only to the maximum extent practicable. Remaining standards shall be met, and the project shall improve existing conditions.*

Not applicable – the proposed project does not qualify as a redevelopment project.

72. Standard 8 (Erosion, Sediment Control): *A plan to control construction-related impacts, including erosion sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan), must be developed, and implemented.*

The applicant has included a construction period pollution prevention plans and erosion and sedimentation control plans which appear to meet Standard 8, however TEC offers the following comments:

- a. The project will disturb much greater than 1 acre therefore coverage under the EPA construction General Permit and the development of a SWPPP is required. TEC recommends a condition of any potential approval that a copy of the SWPPP be provided prior to construction.
- b. It appears the site plans indicate all clearing and grubbing is proposed at the same time. Is construction phasing for earth disturbance proposed? The narrative indicates an estimated construction time of 5 years. If all trees are cleared at once, it would result in approximately 16 acres of wooded area being disturbed simultaneously. Stripping loam in just the existing grassed driving range area will result in over 6 acres of disturbance alone. Section 320-20.B.1 and 320-20.B.2 prioritize minimizing disturbance and sequencing activities to minimize simultaneous areas of disturbance. TEC would recommend phasing plans be implemented to reduce the total disturbance area at a single time. TEC would also recommend intermediate erosion and sedimentation controls on slopes to better protect resource areas from stormwater pollution during construction in areas where construction period watersheds have the likelihood of achieving concentrated flows.
- c. The provided erosion control plans indicate sediment basin locations, however no outlet information (type, location, etc.) is provided. It also appears that the majority of sediment basins are proposed in locations of permanent infiltration BMPs, which should typically be avoided. If it is not feasible, details should be included on how these areas will be restored following their use as sediment basins to ensure no negative impacts on the infiltrative capacity of the soils (sediment basin bottom elevation higher than permanent BMP bottom elevation, sediment removal, tilling, scarification, soil amendments, etc.).
- d. TEC recommends the sediment basins be revised to incorporate standards as set forth in the Massachusetts Erosion and Sediment Control guidelines including but not limited to volume, dewatering, outlets, spillways, maintenance, etc.

- e. The Construction Phase BMP Plan indicates seeding within both 21 day and 14 day period of area where construction activity ceases. The Lynnfield Stormwater Bylaw Section 320-20.B.3 indicates 14 days.
- f. The Construction Phase BMP Plan should be revised to incorporate applicable information from the Lynnfield Stormwater Bylaw Section 320-22, 320-24, and 320-25.
- g. Recommend adding limit of clearing demarcation to the erosion control/ site preparation plans.
- h. Proposed soil stockpile locations should be added to the erosion control/ site preparation plans.
- i. Recommend adding notation or callouts for installation of inlet protection of newly installed catch basins/ inlets as the site is constructed.
- j. TEC recommends a combination of a silt fence and silt sock in all areas within 100' of the on-site wetlands.
- k. Off-site perimeter sedimentation controls should be added for site work in relation to the emergency access road to Friendship Lane.
- l. Off-site perimeter sedimentation controls should be added for work in relation to the water main extension on Main Street and through the golf course.
- m. TEC recommends erosion control blankets, jute netting, or hydroseed with tackifier be implemented for stabilization of steep (3:1) slopes at least within 100' of resource areas if not across the entirety of the site.
- n. TEC recommends addition of the construction phase best management practices notes from the stormwater report to the erosion control plans including but not limited to construction phasing, BMP inspection and maintenance, stabilization, etc.

73. Standard 9 (Operation and Maintenance): *A long-term operation and maintenance plan must be developed and implemented to ensure that stormwater management systems function as designed.*

The applicant has included a Stormwater Operation and Maintenance Plan which appears to meet Standard 9, however TEC offers the following comments:

- a. The O&M Plan should include all items as listed under Standard 4 of the Stormwater checklist.
- b. The O&M Plan should include the signature of the owner per the Lynnfield Stormwater Bylaw Section 320-21.A.2.G.
- c. The O&M Plan should include all items indicated in the Lynnfield Stormwater Bylaw Sections 320-21.C, D, G, H, and I.

74. Standard 10 (Illicit Discharges): *All illicit discharges to the stormwater management system are prohibited.*

The Operation and Maintenance plan addresses illicit discharges and a signed illicit discharge compliance statement is included in the stormwater report therefore it appears Standard 10 is met.

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1301 Main Street – Civil Engineering Peer Review #1
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Please do not hesitate to contact us directly if you have any questions concerning our peer review. Thank you for your consideration.

Sincerely,
TEC, Inc.
“*The Engineering Corporation*”

A handwritten signature in blue ink, appearing to read "P. C. Engle".

Peter C. Engle, PE
Worcester Regional Project Manager
774.402.0229