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April 15, 2022

Ms. Jennifer Gannett
Assistant Town Administrator
8 Conway Street
South Deerfield, MA
Email: ata@town.deerfield.ma.us

**Subject: Civil/Environmental Engineering and Permitting Peer Review Services
Deerfield, Massachusetts**

Dear Ms. Gannett and Members of the Planning Board:

Wood Massachusetts, Inc., (Wood), has been retained by the Town of Deerfield (Town) to provide Peer Review Services to the Town of Deerfield Planning Board in their review of the Site Plan Review and Stormwater Applications for the construction of the North Main Street Park project (the Project) at 135 North Main Street in Deerfield, Massachusetts. This letter serves as a response to ProTerra's letter dated March 29, 2022, which is a response to Wood's original comment letter dated March 8, 2022. Wood reviewed the following documents in preparation of this letter:

- a) A set of drawings entitled, "Proposed Municipal Park & Fields, North Main Street, South Deerfield, MA," prepared by ProTerra Design Group, LLC, dated March 29, 2022.
- b) A letter and supporting documentation re: "Peer Review of North Main Street Park by Wood Massachusetts, Inc. Letter Dated 03-08-2022," prepared by ProTerra Design Goup, LLC, dated March 29, 2022.

Below is a summary of Wood's comments in regard to the provided documents:

Site Plan Review Application Comments:

1. Will screening be provided for the residential property to the south of the site (Judith Rathbone, 158-24), as required by Bylaw 5474?

ProTerra Response: In order to provide year-round screening along the southern property line with Parcel 158-24, the revised plans propose a row of 35 evergreen trees (4'-7' arborvitae). This will provide understory growth to supplement and densify the existing mature trees that exist along the property.

Wood Response: This comment has been satisfactorily addressed.

2. Please provide an additional explanation about the cut/fill quantities and how much of the existing soil will be reused and amended. How much soil will be imported to meet grades shown on proposed drawings? Since one of the reasons for raising the elevation of the site is the depth to groundwater, what will the new depth to groundwater be based on the proposed grades? A cut/fill diagram with quantities would be helpful when reviewing the drawings and Site Plan Review Application. Prior to construction the means and methods should be clarified, and the quantities further explained.

ProTerra Response: During multiple site investigations, seasonal high groundwater elevations were determined based upon redoximorphic features approximately 16-inches below existing grade and confirmed by observed groundwater measurements in monitoring wells. As a result of the high groundwater across the site and the limited available daylight elevations for the underdrain system at the playing fields, the project requires free draining, clean fill to be imported to raise the grade. Lowering the elevation of the fields further could result in the underdrain system

being located too close to the groundwater table and threaten free draining conditions that negatively impact the playing surface. Further drop or reduction of fill could impede field drainage when seasonal ground water is high.

The field consultant approximates 1,500 CY of existing material will be reused and amended for the construction of the playing fields. Per initial comments during Town meetings, the desire to reduce the amount of fill was investigated by two means:

- Reducing the crown and cross slope of the playing fields (1% to 0.75%)
- Providing a narrower playing field cross-section based on underdrain pipe

The revised plans show a reduced slope or crown on the playing fields from 1% to 0.75%. Also, the field consultant provided a reduced field section with smaller underdrain pipes for the large field. These changes reduced the point grades by 8"± and 4"± for the large and small fields, respectively. These two changes reduced the amount of import fill by approximately 2,250 CY.

A cut/fill diagram showing differences in existing and proposed grades is attached for reference. Because this will be a publicly bid project, means and methods will be outlined for construction prior to contractor bidding.

Wood Response: Wood acknowledges the estimate of existing material to be reused for the fields as well as the reduction of needed fill by reducing the slopes of the fields. Please provide quantity of fill to be imported to meet the proposed grades.

3. If we are correctly interpreting Bylaw 5481j to mean that the Applicant is only allowed to alter 40% of the site topography for commercial, industrial, or institutional uses, then the Applicant should be requesting a waiver for this bylaw since they are proposing to alter approximately 84% of the topography (7.41 acres are proposed to be disturbed).

ProTerra Response: Bylaw Section 5481j does not expressly list "municipal" uses as one of the uses restricting alteration up to 40% of the site topography. Section 5411 of the bylaw states "For a municipal, institutional, commercial, industrial, or multi-family structure...." and would similarly follow that the word municipal should be expressly iterated in Section 5481j if it was intended to apply to municipal facilities. Section 5481j does not reference municipal use but it does in other sections of the by-law that desired to regulate municipal projects. It is therefore our interpretation that this section of the Bylaw does not specifically apply to this municipal project.

Additionally, we view the existing site terrain as "altered" with 11" thick plowed A horizon that encompasses approximately 5.1± acres of the site. The A horizon restricts movement of water through the soil and differs substantially from the surrounding vegetated areas of forest.

Wood Response: Wood defers to the Town and project attorneys on interpretation of this bylaw.

4. On drawing sheet LS-3 of the landscape plans, eight (8) trees are noted to be planted with a caliper of 4", is this correct or will these trees be 2.5" diameter?

ProTerra Response: The 4-inch caliper trees noted are correct. These sized trees are required per Site Plan Review §5482.d to replace any existing trees 19-inches and larger removed for the project development. The Applicant is asking for a waiver to the 4-inch caliper tree requirement. See comment response #7.

Wood Response: It is Wood's understanding that while 4-inch caliper trees are noted on the current plans, the Applicant is requesting a waiver to allow these to be 2.5-inch caliper instead. No further comment necessary.

5. There appears to be a discrepancy in the Site Plan Review Narrative regarding how many trees and shrubs, and perennials and herbaceous species will be planted. In response to Bylaw 5471, the Applicant states that 175 trees and shrubs plus over 200 perennials and herbaceous species will be planted, and an additional 90 trees and shrubs are proposed along the western border. In response to Bylaw 5482d, the Applicant states that 250 trees and shrubs, and 400 perennials and herbaceous species will be planted. Please clarify the number of trees and shrubs to be planted and the number of perennials and herbaceous species to be planted.

ProTerra Response: During review by GZA (Town's consultant for Wetlands) for the Notice of Intent submittal, there was a slight reduction in the mitigation plantings at the Western part of the site to better adhere to DEP guidelines for replication. The following are the current planting counts:

- 136 Evergreen and Deciduous Trees
- 127 Shrubs

- 444 Ferns and Herbaceous Species Plantings

Wood Response: This comment has been satisfactorily addressed. ProTerra to update plans and application accordingly.

6. Please clarify how many trees with a diameter of 19" or greater are going to be removed. The Site Plan Review Narrative states six (6) trees under the response to Bylaw 5482c; however, on Drawing Sheet SR-1, eight (8) trees are noted to be removed with diameters 19" or greater. In addition, please clarify how many replacement trees will be planted to meet the replacement requirement of the 19" diameter trees. On drawing sheet LS-3, eight (8) trees are specified; however, the Site Plan Review Narrative states six (6) replacement trees will be planted.

ProTerra Response: Originally, the plans called for six (6) trees 19-inches or greater to be removed. Since the original submittal, two (2) additional large trees were identified to be removed by the Landscape Architect. Eight (8) trees 19-inches or greater will be removed for development of the site, and eight (8) 4-inch caliper trees are proposed to replace them, unless a waiver is granted.

Wood Response: This comment has been satisfactorily addressed. ProTerra to update Site Plan Narrative accordingly.

7. The Applicant is formally requesting a waiver of Bylaw 5482d. The Applicant is proposing to replace the removed trees with a 19" diameter or greater, with 2.5" diameter trees in lieu of the required 4" diameter trees.

ProTerra Response: The current plans call for the removed trees with a 19-inch diameter or greater to be replaced with a 4-inch caliper tree. The Applicant did request a waiver because the 4-inch caliper trees have a higher mortality rate, are harder to procure, and are more difficult to install and maintain.

Wood Response: No further comment necessary.

8. Applicant to confirm that although the bandshell, concession/bathroom, and pavilion are proposed to be completed under a different phase of construction, they are seeking approval for those features under this application submission as well.

ProTerra Response: The Applicant has identified amenities for future installation by others. They are not part of the initial phase of construction or budget. The Applicant would like for these locations to be approved, so they could install them at a later date once funding or public donations are available to complete the construction.

Wood Response: No further comment necessary.

9. Please provide additional information and detail on the erosion and sediment control plan (ES-1) required under Bylaw 5450l, regarding dust and silt control, during and after construction, temporary and permanent erosion control, and protection of water bodies.

ProTerra Response: Erosion control notes have been added to the plans providing directions for the contractor on temporary and permanent erosion controls at the project site. Because the total project disturbance area is above one acre, the contractor shall create a Stormwater Pollution Prevention Plan (SWPPP) and obtain coverage under the EPA's General Permit for Discharge from Construction Activities prior to starting construction. Specifications for erosion control and the SWPPP will be prepared for the public bid process for the selected contractor to complete.

Wood Response: This comment has been satisfactorily addressed.

10. Wood recommends making the height of the light poles clearer on the photometrics plan.

ProTerra Response: Light pole height has been added to the photometrics plan. A schematic light pole detail has been provided on the Detail Sheet (D-5) to illustrate.

Wood Response: This comment has been satisfactorily addressed.

Stormwater Comments:

11. Wetland Basin 1 (pond 3P) receives runoff from the parking lot rain garden and is therefore part of a treatment chain. These BMPs should be listed sequentially on the same TSS Removal Calculation Worksheet to more accurately model TSS removal.

ProTerra Response: The initial submittal didn't include the BMPs as a treatment train since 80% TSS would be achieved on its own within the constructed stormwater wetland. The rain garden has been added to the Wetland Basin

1 (Pond 3P) TSS worksheet. The treatment train is illustrating removal of approximately 98% of TSS. This value in practice will likely be between 80 and 98% and would meet the minimum TSS removal standard.

Wood Response: This comment has been satisfactorily addressed.

12. The constructed wetland south of the main athletic field, the stormwater detention area within the basketball court, and the constructed wetland basin south of the parking lot are all modelled in the HydroCAD analysis as one pond. Although each constructed wetland basin is connected to the detention area via pipe, we find it unlikely that these three components will function together as modelled. And with only a single outlet control structure in the eastern wetland basin, it is believed that any inflow from the rain garden will work to create a tailwater condition where runoff from the western wetland basin and the detention system will have difficulty flowing into the eastern wetland basin's outlet control structure. This could result in more runoff than anticipated flowing over the spillways and possibly breaching the basin's berms.

ProTerra Response: ProTerra reached out to the HydroCAD support team to discuss the modeling procedure of the three basins. Because the volumes of the three components are interconnected such that the water surface elevation will always be the same in each volume, it qualifies as a "level pool" and suitable to model as a single pond utilizing the dynamic-storage routing method. The connection between the two above grade basins and the underground storage has been modified to a manifold system with multiple connections points. A concrete box culvert, equivalent round culvert, or equivalent arch culvert will be installed with four 15-inch connecting pipes. This will allow stormwater to freely flow between the bottom of the above grade basins and into and out of the underground storage with minimal tailwater effects. See attached revised calculations.

Wood Response: Wood agrees that utilizing a 3'x3' box (or equivalent) culvert, as noted on the plans, will better facilitate the condition of a "level pool". Please show pipe segment U-F (4x 15" pipes) on the plans. Wood understands that final design of the manifold will not occur until the bidding/construction process; however, the pipes shall still be shown on the plans to properly illustrate the intent of the design.

13. The 15" pipe connections to the stormwater detention system require a manhole or a detail for their connections.

ProTerra Response: Because the project must go out for public bid, connect details and/or manholes would be included for submittal and review once the exact type of detention system is determined (steel, plastic, or concrete.) If the manifold system is a concrete box culvert, the pipe connections will be cored or blocked in during manufacturing. After speaking with a manufacturer for a metal manifold system, the pipe connections would most likely be welded at the factory prior to being shipped to the site.

Wood Response: This comment has been satisfactorily addressed.

14. The Stormwater Hydrology Report and Dry Swale detail note check dams every 50 feet; however, these are not shown in the plan view.

ProTerra Response: The check dams have been added to the plans and labeled on the Detailed Grading Plan (GR-2).

Wood Response: This comment has been satisfactorily addressed.

15. Within Standard 2 of the Checklist for Stormwater Report, the item "Runoff from all impervious areas at the site is not discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume" is checked off. Review of the drainage analysis seems to indicate that there are no infiltration BMPs proposed as part of this project. Please provide recharge volume calculations as indicated in the Stormwater Checklist.

ProTerra Response: Multiple site and field soil investigations were conducted to determine soil conditions at the site. The existing soils underlying the property are listed as NRCS Hydrologic Soil Group C/D. Groundwater is estimated to be 16"± below existing grade across the property. Site soils having dual hydrologic group C/D with those that have groundwater within 24" of grade will be considered undrained "D" group soils in accordance with NRCS guidance.

Infiltration testing of the site soils resulted in rates below (slower & more restrictive) the Massachusetts Stormwater Handbook threshold limit of 0.17 inches/hour for infiltration BMP's (Rules for Groundwater Recharge Table RR Vol 1 Ch 1 Page 8 & Recharge Requirements Vol 3 Ch 1 Page 6.) Therefore, infiltration BMPs are not proposed to treat stormwater runoff generated at the project site. An updated "Checklist for Stormwater Report" is attached. Pages 6 through 8 of the Checklist for Stormwater Report are missing from the Stormwater Hydrology Report.

In areas of fill around the small playing field, the walkways are proposed to be porous pavement/pavers. Although credit was not taken for infiltration in these areas, the stone void reservoir under the porous pavement walkways (~6,200 sf) will provide approximately 2,200± CF of storage to allow stormwater to infiltrate around the property. The field construction proposed will require the amendment of onsite soils to provide a composition suitable for the athletic playing fields. This will generally require blending the soils by adding sand in specific proportions with other soil amenities to increase infiltration. The target for the fields is to increase infiltration for root uptake and establish soils that infiltrate 30-40 % of the runoff generated. This will provide an improvement over existing runoff conditions where a thick 10" to 11" plowed layer of silty loam topsoil inhibits infiltration of runoff.

Wood Response: This comment has been satisfactorily addressed.

16. Pages 6 through 8 of the Checklist for Stormwater Report are missing from the Stormwater Hydrology Report.

ProTerra Response: The missing pages are attached for reference.

Wood Response: This comment has been satisfactorily addressed.

17. The Rain Garden detail on plan sheet D-4 indicates a 24" Nyloplast dome grate on an 8" inline drain with a 12" outlet. A 24" grate on an 8" drain creates a capacity restriction if flow calcs were based on the 24" drain; however, the Drainage Structure / Pipe Data table on sheet GR-1 as well as the HydroCAD indicates a 48" x 48" grate. Furthermore, the grate outlet is modelled incorrectly in the HydroCAD analysis. The model assumes a 48" orifice, when the open area of a 48" square grate is likely substantially less than that of a 48" orifice.

ProTerra Response: The detail and HydroCAD model have been updated to reflect the drainage structure and 48"x48" grate. The grate is modeled at 69% open area.

Wood Response: Wood acknowledges that the actual open area of the grate has been considered to be less than that of a 48"x48" opening by utilizing a 69% open area; however, it is unclear where this percentage is coming from. The grate type/model should be either specified on the plans or shown as a detail so the open area can be verified.

18. The Rain Garden detail indicates an underdrain. The plan view does not show the underdrain or it's invert into the outlet control structure. The detail also indicates 2-3" of planting/filter soil mix. Although a likely typo, this should be revised to 2-3' to be consistent with design standards.

ProTerra Response: The rain garden detail has been revised to show 2' of planting/filter soil mix and the underdrain added to the plan view.

Wood Response: This comment has been satisfactorily addressed.

19. The outlet control structures for Ponds 2P and 3P in the HydroCAD analysis indicate a 48"x48" horizontal grate. This grate is not shown/dimensioned on the details. Additionally, the grate outlet is modelled incorrectly in the HydroCAD analysis. The model assumes a 48"x48" orifice, when the open area of a 48" grate is likely substantially less than that of a 48" square orifice.

ProTerra Response: The HydroCAD model has been updated to reflect the effects of the grate on the pond outlet. The 48"x48" grate is modeled at 69% open area.

Wood Response: Wood acknowledges that the actual open area of the grate has been considered to be less than that of a 48"x48" opening by utilizing a 69% open area; however, it is unclear where this percentage is coming from. The grate type/model should be either specified on the plans or shown as a detail so the open area can be verified.

20. The outlet for Pond 1P also indicates a 48"x48" grate outlet. The structure shown on the plans is not consistent with that shown for the outlets at Ponds 2P & 3P. It appears that this may be the Stormceptor treatment unit, but the detail shows a 24" frame and cover. A 48"x48" grate may not be compatible with this product. Please clarify where the Stormceptor is to be located on the site plans and revise per comment. Additionally, the grate outlet is modelled incorrectly in the HydroCAD analysis. The model assumes a 48"x48" orifice, when the open area of a 48" grate is likely substantially less than that of a 48" square orifice.

ProTerra Response: The HydroCAD model has been updated to reflect the effects of the grate on the pond outlet. A 24"x24" grate shall be utilized for compatibility with the Stormceptor unit. The grate is modeled at 45% open area.

Wood Response: Wood acknowledges that the actual open area of the grate has been considered to be less than that of a 24"x24" opening by utilizing a 45% open area; however, it is unclear where this percentage is coming from. The grate type/model should be either specified on the plans or shown as a detail so the open area can be verified.

Additionally, the Stormceptor unit shall be labeled on the plans as it is not immediately clear where this is being proposed and is shown using the same symbol as a catch basin/yard drain.

21. The Multi-Stage Outlet Structure detail on Sheet D-10 appears to show the outlet grate at an angle. The detail should be revised to show a flat outlet grate. Additionally, the drain-down valve should be set slightly below the grate so the grate can be opened without issue for maintenance needs.

ProTerra Response: The Multi-Stage Outlet Structure detail has been revised accordingly.

Wood Response: This comment has been satisfactorily addressed.

22. The outlets for Ponds 4P & 5P indicate a 12" grate outlet; however, this grate is not included in the details. Additionally, the grate outlet is modelled incorrectly in the HydroCAD analysis. The model assumes a 12" orifice, when the open area of a 12" grate is likely substantially less than that of a 12" orifice.

ProTerra Response: The outlets for Ponds 4P and 5P are proposed as simple riser pipes. The top of the riser pipe will be a 12-inch diameter orifice with a StormRax trash rack over the top. We spoke with a supplier for the StormRax product and were informed that this style of trash rack will not hinder the flows entering the riser pipe; however, the supplier suggested that we model the top of the rack openings. The HydroCAD model has been updated to reflect the effects of the trash rack on the pond outlets. The trash rack is modeled at 47% open area.

Wood Response: Wood acknowledges that the actual open area of the grate has been considered to be less than that of a 12" diameter opening by utilizing a 47% open area. Was this percentage provided by the supplier? Please verify.

23. It is unclear what the pre-treatment mechanism is for the water quality swale. The stormwater report notes pea gravel diaphragms and/or a gravel verge. The plan view does not show either of these.

ProTerra Response: Gravel verge filtration and flow spreaders (3/D-1) are proposed as pre-treatment for the water quality swale and are intended to act as an open conveyance. The plan view has been updated to reflect these locations at the sidewalk pass-thru drains.

Wood Response: Please add a label(s) to the plan view for the added element.

24. Per Vol.2 Ch.2 of the Mass. Stormwater Handbook, dry swales are to dewater in 72 hours or less, a calculation was not provided showing this to be the case; however, the Dry Swale detail on sheet D-1 indicates an underdrain, but its location and inverts are not shown on the plan. Additionally, seasonal high groundwater is not to be within 2-4 feet of the swale bottom for dry swales. Given the shallow groundwater at the site, and if an underdrain is not proposed, a wet swale seems to be a more adequate BMP for this location.

ProTerra Response: The water quality swale nomenclature has been updated to "Wet Swale". The underdrain has also been removed from the detail on Sheet D-1.

Wood Response: Referencing the standard profile detail for a wet swale within Volume 2 Chapter 2 of the Mass. Stormwater Handbook, filter fabric and a gravel layer are also not needed for wet swales. The detail shall be updated accordingly.

25. There are no inverts/pipe data shown on the plans for the athletic field underdrains.

ProTerra Response: The water quality swale nomenclature has been updated to "Wet Swale". The underdrain has also been removed from the detail on Sheet D-1.

Wood Response: This comment has been satisfactorily addressed.

26. The athletic fields are graded as such where runoff will sheet flow to the field edges and adjacent area drains. It appears that if this is the case, then runoff will largely bypass the closed drainage system by running off between these drains.

ProTerra Response: The inlets are set lower than surrounding grades to allow for runoff to flow toward the low points along the edges of the fields into the inlets. Trench drains running along the entire length of the field were discouraged by the field consultant for clogging reasons.

Wood Response: The plans have not been revised to address this comment. Specifically, drains CC, DD, EE, V, Y, and Z are not at low points or within a channel and if the site were graded per plan, runoff would still bypass these drains.

If trench drains are discouraged, consider a swale or updates to surrounding grades to allow these drains to collect the runoff that they're modelled to collect.

27. Outlets from the parking island, rain garden, and wetland basin 1 all discharge via pipe and/or spillway to the farm ditch along the southern property line. Additionally, runoff from swale S-1 and the catch basins north of the site driveway discharge directly to the farm ditch/abutters property. This farm ditch should be modelled in the stormwater analysis to determine if it has the capacity to handle flows from proposed conditions without flooding onto the abutting property.

ProTerra Response: The ditch with regulated bank has been added to the HydroCAD model. See attached calculations.

Wood Response: Wood acknowledges that this ditch has been added to the stormwater analysis and is shown to convey flow up to the 100-year storm from the proposed site conditions. Please provide a source or backup to where the cross-section values were obtained from.

28. The spillway for the eastern portion of Pond 3P should be relocated to the western side of this basin to reduce proximity of the discharge to the abutting property.

ProTerra Response: The spillway has been adjusted accordingly and moved to discharge to the West away from the southern property line.

Wood Response: This comment has been satisfactorily addressed.

29. Per the Deerfield Stormwater Regulations, flow velocities are to be analyzed for the proposed development stormwater system. Please provide an analysis of flow velocities for pipe outlets including those discharging to the constructed farm ditch.

ProTerra Response: Flow velocities at pipe outlets, swales and the existing ditch with regulated bank are attached for the 10-year storm event. This design meets the Stormwater Regulations for the Town of Deerfield "7.0 Performance Standards: Stormwater Criteria" associated with Channel Protection (7.0.B.4) and Flood Protection (7.0.B.5).

Wood Response: This comment has been satisfactorily addressed.

30. Outlet protection should be shown in the plan view at all pipe discharge points to mitigate erosion effects.

ProTerra Response: ScourStop (or approved equal vegetation protection mats) transition mats are proposed and shown at the end of all pipe discharge points for the 10-year design storm event. Details are provided on the plans.

Wood Response: This comment has been satisfactorily addressed.

31. Inlets A, K, & Q have pipe covers ranging from approx. 0.53' to 0.65'. Additionally, inlet BB has a top of pipe higher than that of the inlet's grate. Given that mowing equipment is likely to be driven over these drain lines, it is recommended that pipe covers be increased at these inlets.

ProTerra Response: Grading and pipe inverts have been adjusted to provide additional cover.

Wood Response: This comment has been satisfactorily addressed.

32. Please provide more information on the underground detention system beneath the basketball court as shown in Detail 2 on Sheet D-10, including the pipe size, type of piping and inverts.

ProTerra Response: The underground storage system is shown generic in nature to allow for the public bidding of the project. As such, the design volume and bottom of storage elevation have been added to the detail to facilitate the site requirements.

Wood Response: Wood finds this practice to be reasonable; however, to ensure that the constructed system meets the design requirements, it is recommended that the awarded contractor submit a fully designed system for review/approval by a qualified engineer prior to construction.

33. Please provide more information for the french drain design, including, inverts, elevations, installation design.

ProTerra Response: The french drain design has been added to the Detailed Grading Plan (GR-2). Detail 3/D-10 provides installation design.

Wood Response: For clarity, Wood recommends changing the title of detail 3/D-10 to “French Drain Detail” in lieu of “Subdrain Detail”. Additionally, the 12” cover dimension should read 12” min. to ensure that the installed pipe is sloped correctly and not just following finished grade.

34. Please provide additional grading and/or spot grades within the drainage swale along the Michael D. & Gail M. Dupuis property line, specifically in the northern portion of the swale and along the property line. Confirm the swale grading and design will prevent a discharge onto the Dupuis Property.

ProTerra Response: Additional spot shots have been added to the plans along the Dupuis property to illustrate the depression/swale between the site and the abutter.

Wood Response: Spot grades were added to the swale along the Dupuis property line. While the stormwater analysis indicates a channel depth of 0.4 feet, some spot grades indicate a depth of less than 0.4 feet (209.59–209.41=0.18; 209.19–8.84=0.35; 209.07–208.75=0.32). Additionally, the stormwater analysis shows that this swale overflows for storms above the 10-yr storm. Section 7.B.5 of the Deerfield Stormwater Regulations indicates that “the post-development, peak discharge rate for the 100-yr, 24-hour return frequency storm event shall be controlled and conveyed to prevent extreme flooding and protect public safety”. This abutter has also expressed concern about flooding in this area; therefore, the swale should be revised to be able to convey the 100-yr storm without flooding.

Additional Comments:

35. Wood recommends that the use of fertilizer on the proposed playing fields be limited to the minimum amount and frequency necessary to maintain healthy turfgrass and should be applied according to manufacturer’s recommendations (these typically state applications should be made only when rain is not forecast for at least 48 hours). Wood also believes that responsible fertilizer use is not expected to harm the constructed wetlands; this should be considered part of their intended use. The constructed wetlands will have the beneficial function of removing excess nutrients and potential contaminants from playing field stormwater flows prior to their reaching the natural or replication wetlands and exiting the site.

ProTerra Response: Acknowledged. Fertilizer use and application need to be addressed as part of the operation and maintenance for the fields. It is anticipated that licensed applicators are used by the district and would follow that these fields would employ the same type of professional. We spoke with the field consultant and they can provide an additional service to the Town aimed at providing advocacy, grow in, and establishment services to monitor the newly installed natural turf.

Wood Response: This comment has been satisfactorily addressed.

36. Wood strongly recommends monitoring of invasive species during and immediately following construction to identify and eliminate occurrences of invasive plant species, at the very least the most noxious species. Efforts made early in the life of this project will be a big investment compared to efforts to remove the invasives later after they have become well-established and threaten to overtake the rain gardens or the field perimeters, which will be expensive and probably futile. Wood believes the worst offenders in this part of the state are likely to be Japanese knotweed, oriental bittersweet, and garlic mustard; however, monitoring for any plants on the state’s list is recommended.

ProTerra Response: Acknowledged. Site monitoring is required as part of the wetland mitigation and replication construction process. At least 75% of the surface of the replacement areas are to be reestablished with indigenous wetland plant species within two growing seasons. We would be amendable to the Conservation Commission creating a condition of approval documenting the requirement of this monitoring. It would make sense that the Town’s consultant, GZA, would be involved or consulted for this scope.

Wood Response: This comment has been satisfactorily addressed.

Wood would like to note that excluded from this peer review was the Notice of Intent (NOI), dated February 8, 2022, and the Traffic Impact and Access Study, dated December 13, 2021. The Landscaping Plan was reviewed in regard to stormwater and Site Plan Review Bylaw requirements only. Wood did not review the Landscaping Plan from an ecology standpoint, and will not be providing comments on the species, spacing, quantity, etc.

Wood remains available for continued evaluation of this project, and to discuss issues raised in this letter with the Town or their engineer. If there are any questions, or concerns, please do not hesitate to contact Andrew Vardakis at Andrew.vardakis@woodplc.com or (978) 392-5341.

Sincerely,

Wood Massachusetts, Inc.



Andrew Vardakis, P.E.
Associate Engineer



Olivia Crosby, P.E.
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