

February 12, 2021

Jenny Raitt, Director, Department of Planning and Community Development

Town of Arlington
50 Pleasant Street
Arlington, MA 02476

**Re: Thorndike Place - Arlington, MA
Comprehensive Permit Civil / Wetland Peer Review #2**

Dear Ms. Raitt:

BETA Group, Inc. (BETA) has completed its third peer review of the environmental, civil and stormwater related elements of the site plans and supporting engineering documents for the above-referenced project, based on the following materials:

- **Response to Peer review Comments – Stormwater Management** letter dated January 22, 2021. Note that responses were not provided to all comments in our November 20, 2020 letter. The responses focused primarily on stormwater comments.
- **Thorndike Place Comprehensive Permit** stamped plans Dorothy Road, Arlington MA – Sheets C-100, C-101, C-105, C-200 and C-203 - dated March 13, 2020, revised January 21, 2021 prepared by BCS Group;
- **Thorndike Place Stormwater Report**, Dorothy Road, Arlington MA, dated November 2020, revised January 2021, prepared by BCS Group;
- **Wetland Delineation Memorandum and Wetland Delineation Field Data Forms**, prepared by BSC Group, dated October 19, 2020, Revised January 18, 2020;
- FEMA Flood Insurance Study, Middlesex County, Revised June 6, 2016;
- Town of Arlington Zoning Bylaw with Amendments through April 2016;
- Town of Arlington Wetland Protection Bylaw, Article 8 and Regulations for Wetland Protection, June 4, 2015;
- MassDEP Stormwater Management Standards (SMS);

GENERAL

BETA Group was retained to perform a civil / site / stormwater design peer review of the Comprehensive Permit application for the proposed Thorndike Place 40B housing project. Part of this review includes an overall analysis of the existing site to confirm its suitability for the proposed project. Stormwater calculations have been provided and proposed utilities are shown on the site plans.

BETA conducted a detailed site evaluation on November 12, 2020 to verify the data provided in the supplemental materials provided by BSC. The visit included confirmation of wetland boundaries, previously identified isolated wetland areas, review of wildlife habitat, and examination of the site for evidence of potential wetland conditions underlying fill material.

BETA provided comments to the Zoning Board in a letter dated November 20, 2020. This letter provides follow-up review of supplemental information submitted by the Applicant on January 21, 2021. Our follow-up comments are denoted as BETA 1. We have also noted those comments where no response was received.

EXISTING CONDITIONS

The project site includes multiple parcels that total approximately 17.7-acres of land located between Dorothy Road, Burch Street, and the Concord Turnpike (Route 2) in Arlington, Mass. Dorothy Road and Burch Street are both residential neighborhood streets featuring predominantly single-family houses. The site is essentially undeveloped woodland area that has been a location for the dumping of earthen fill and assorted debris throughout the years. Site topography generally slopes southerly towards the Concord Turnpike.

A review of the current FEMA Flood Insurance Study for Middlesex County indicates that a majority of the site is located within the mapped 100-year flood plain Zone AE (Elev. 6.8) and that almost all of the site is located within the 500-year flood plain Zone X.

PROPOSED PROJECT

The proposed project includes the construction of a 176-unit 4-story residential apartment building along with associated access driveways, parking areas, utilities, infrastructure, and stormwater management system.

2015 Comprehensive Permit Application

A Comprehensive Permit Application was originally submitted for the proposed Thorndike Place project by the Applicant in 2015. Nover-Armstrong Associates (N-A) conducted a detailed peer review of the application package and issued a peer review letter dated August 10, 2015. Their review letter contained eighteen (18) comments regarding the site plans and application package. The following comments from the 2015 N-A review letter related to civil/site design remain applicable:

15. Eight boring locations are shown on the Existing Conditions Plan C-1 with surface elevations and depths to groundwater noted. Dated and detailed boring logs are not provided on the plans or in the Application making it difficult to evaluate whether the depth of the groundwater observed represents the seasonal high groundwater elevation. The depth to groundwater is presumed to have been measured the day the borings were advanced and may not represent the actual high ground water elevation.

16. Excavated test holes witnessed by a MassDEP Soil Evaluator are necessary to definitively identify the Site's soil types and whether the conceptual project design is generally appropriate for the Site. Boring logs document encountered type soils on the Project Site which help evaluate what types of BMPs would be feasible for the stormwater management system.

Recommendation: The results of any soil borings or test pits done on the project site should be submitted for review. Determination of the seasonal high groundwater elevation is necessary to confirm that the proposed stormwater BMPs are suitable as shown.

BETA 1: Data for three test pits has been provided. Groundwater elevations are shown as varying from -0.5' to 3.0'. The infiltration system designs reflect these groundwater elevations. Two feet of separation to groundwater is provided for Infiltration basin 1. Infiltration Basin 3 should be raised 0.2 feet to provide a full 2-foot separation. Given the variation in groundwater elevation indicated by the test pits, it is suggested that groundwater be confirmed prior to construction. This should be done during seasonal high groundwater conditions.

2020 Comprehensive Permit Application

The following are new comments based on our review of the revised Comprehensive Permit submittal from November 2020 and supplemental information submitted in January 2021:

SITE PLANS

New Comment 1. The Applicant has submitted select plans in response to previous comments. A full set of plans should be submitted to the Board reflecting all changes since the November 2020 submission.

New Comment 2. Based on discussions at the February 4, 2021 working session meeting it appears that the project design may be revised that include.

- Modifications to the building roof line along Dorothy Road and Littlejohn Street.
- Modification to the proposed surface parking on the west side to reduce the overall footprint.

Recommendation: Revised plans and calculations should be submitted to reflect these changes.

New Comment 3. The stormwater design for the trench drain at the drop-off area in front of the building (Subcatchment 4S) assumes that no runoff bypasses the drain and enters Dorothy Road. The calculated runoff for the 100-year storm is 1.3 cfs.

Recommendation: Calculations should be provided to confirm that the proposed trench drain grate has the capacity to accept this runoff without bypass to Dorothy Road. Alternatively, consideration could be given to revising the driveway grading so that it does not flow to Dorothy Road.

1. The proposed erosion control barrier is shown on the Site Preparation plan only.

Recommendation: The applicant should also show the erosion control barrier on the Layout, Grading and Utility Plans.

Applicant's Response 1/21/2021: Response: The erosion control barriers have been added to the Layout, Grading, and Utility Plans. The revised Grading & Drainage Plan is enclosed. The other plans will be submitted under separate cover.

BETA 1: Propose Erosion Controls have been shown on the January 21, 2021 Grading and Drainage Plans.

Recommendation: A complete plan set should be submitted to confirm that this is followed through on all relevant plan sheets. Also, additional erosion controls should be shown for the proposed compensatory flood storage. It is understood that the proposed compensatory storage will be revised to avoid the 25 foot No Disturb Zone of the adjacent wetland.

2. A 15-ft wide pervious paver emergency access drive is shown looping around the rear of the main site building.

Recommendation: The Applicant should confirm that the access drive can accommodate an emergency vehicle (fire truck) turning around the southeast corner of the site building.

BETA 1: No response received

3. Existing Conditions Plan - The applicant should add a professional surveyor's stamp.

Recommendation: Provide Existing Conditions Plan stamped by a MA Professional Land Surveyor.

BETA 1: No response received

4. General – The applicant proposes to provide stormwater detention/retention on the building roof. The applicant should provide design plans/calcs of the proposed building roof (when developed) for review by an architect and/or structural engineer.

Applicant's Response 1/21/2021: Runoff calculations have been revised to include discharge from the roof detention system in all storms analyzed. This overflow will be at a controlled rate and will flow into the underground infiltration system in the parking lot west of the building. The detailed design of the rooftop detention will be provided as the architectural and plumbing construction plans are developed. In addition, approximately 9,000 square feet of the southeast corner of the building roof will discharge directly to the surface through a roof drain. Please see the enclosed, revised Stormwater Report for additional information and calculations.

BETA 1: The drainage calculations have been revised to include discharge from the roof detention system based on a 4" grate and an 18" diameter connection to Infiltration Basin 1. The calculations indicate a storage depth of 6" – 7" during the 100-year storm.

Recommendation: Additional detail should be provided to confirm the outlet configuration and actual available storage on the roof. Also, maintenance of the outlet needs to be addressed. A single outlet for the roof runoff increases the potential for clogging and failure of the system. The Applicant should also confirm if potential changes to the roofline along Dorothy Road and Littlejohn Street will impact the available roof storage volume.

BETA 1: Calculations have been provided for sizing rip-rap outlet protection at the SE roof discharge and the overflow from Infiltration basin 1. The calculations are acceptable.

Recommendation: The dimensions of the aprons should be labeled on the plans and a detail provided.

5. The applicant proposed a subsurface "Stormtrap" infiltration chamber system on the west side of the project site. The proposed system is located directly on top of an existing 14-inch sewer line. This presents a potential issue regarding accessing the existing sewer line for future maintenance or repair requirements.

Recommendation: The Applicant should confirm with the Arlington Public Works and/or Sewer Department that the proposed location of the infiltration system is acceptable.

Applicant's 1/21/2021 Response: The system in question has been relocated south of the sewer line to allow Town access should it be needed. Please refer to the enclosed revised Grading & Drainage Plan.

BETA 1: The proposed subsurface infiltration system has been redesigned to avoid the existing sanitary sewer line. Groundwater mounding analysis indicates that the ground water mound will extend beyond the sewer line. However, based on test pit data the sewer is currently below the groundwater table so this should not have a negative impact. Comment resolved.

6. Grading and Drainage Plan – The proposed 15-inch drainpipe from OCS-1 to FES-1 has minimal cover. **Recommendation:** The applicant should revise the proposed grading in this area to provide adequate cover over the proposed drain.

Applicant's 1/21/2021 response: This pipe has been reduced in size to 12-inch HDPE and the grading as proposed provides sufficient cover. Please see the enclosed revised Grading & Drainage Plan.

BETA 1: The system has been redesigned and the pipe as proposed has adequate cover. Comment resolved.

7. Grading and Drainage Plan – The applicant proposes an entrance door to the garage level on the east side of the building, the proposed finished grade elevation is 2.83. The seasonal high groundwater elevation of the site development area is presumed to be around elev. 3.0 based on past soil borings. **Recommendation:** The applicant should confirm the seasonal high groundwater elevation in this area and provide appropriate mitigative measures if necessary, to prevent surface water from entering the garage through the doorway.

BETA 1: No response received. However additional test pit data was submitted indicating groundwater elevations at 0.2 feet in the vicinity of the garage opening. As previously noted, groundwater elevations should be confirmed prior to construction.

8. Areas for trash collection and snow storage are not identified on the site plan.

Recommendation: The Applicant should identify potential areas for trash collection and snow storage on the site plan to confirm that these will not conflict with other site elements.

BETA 1: No response received.

9. Civil and Landscape Details (sheet 1) – The applicant has provided a Silt fence with Haybales erosion control barrier detail.

Recommendation: The applicant should utilize an 18-inch diameter compost filled silt sock with silt fence in lieu of staked haybales for erosion control measures.

Applicant's 1/21/2021 Response: The perimeter erosion controls have been revised as recommended and are shown on the enclosed revised Site Preparation Plan and Grading & Drainage Plan. A detail of the 18-inch diameter compost-filled silt sock with silt fence has been added to the enclosed Civil and Landscape Details (Sheet C-200).

BETA 1: Revisions are acceptable. Comment resolved.

10. The applicant should provide a detail of the proposed Outlet Control Structures #1 and #2. Also, the applicant should review OCS-2 as it appears that the structure is too shallow to be constructed as shown.

Applicant's 1/21/2021 Response: The revised stormwater management system only includes one outlet control structure (OCS, previously designated at OCS-2), as shown on the revised Grading & Drainage Plan. This structure is a 6-foot diameter manhole with an outlet pipe higher than the inlet pipe. A detail has been added to the enclosed Civil & Landscape Details Sheet C-203.

BETA 1: The drainage system design has been revised. A detail of OCS-1 is provided. It is suggested that the detail on Sheet C-203 be revised to more accurately depict that the invert of the 12" outlet pipe is at the top of the 30" inlet. The function of OCS-1 is not clear as the drainage calculations show no discharge from infiltration basin 3 during the 100-year storm.

11. Recommend the applicant adjust the location of the proposed pedestrian ramp on the west side of the site building so that it is located within the proposed crosswalk crossing the site access drive.

BETA 1: No response received

12. Recommend the applicant confirm that any footing of the proposed retaining wall near the driveway garage entrance will not conflict with the existing drainage pipe located in the same area.

Applicant's 1/21/2021 Response: The garage ramp retaining wall and associated grading have been revised to eliminate any potential conflict with the existing drainage pipe and is shown on the revised Grading & Drainage Plan.

BETA 1: The retaining wall has been shortened to avoid impacting the existing drain. To accomplish this the slope of the driveway has been increased from about 5% to about 8%. No further comment.

FLOOD PLAIN

13. A portion of the proposed project design requires filling within the 100-year flood plain. Compensatory storage is required on a 1:1 (per foot) basis by the Mass Wetlands Protection Act (310 CMR 10.57) and on a 2:1 basis by the Arlington Wetlands Bylaw.

The applicant has provided compensatory flood plain storage calculations in the stormwater report (Sec. 2.12) and has designated an upland area on the site plan southeast of the proposed building for compensatory storage. In addition, the southeast courtyard area is labeled "Open Space / Flood Storage".

Recommendation: The Applicant should provide a plan graphic showing the existing flood plain area being altered by the proposed building / site development, currently the building hatch is obscuring the flood plain limits. The proposed compensatory flood storage volume calculations and designated flood storage volume area appear consistent.

BETA 1: No response received. We understand that the compensatory floodplain storage will be revised to avoid impact to the 25 foot No Disturb zone of the adjacent wetland.

STORMWATER MANAGEMENT

14. The Applicant should provide onsite soil exploration / test pit data for review, specifically within the footprints of the two proposed subsurface infiltration chamber systems. The test pit data is required at a minimum to determine the seasonal high groundwater elevations within the project limits.

Applicant's 1/21/2021 Response: In November 2020, BSC performed three soil test pits on site. The results of these test pits confirmed the soils mapping and previously performed borings with regard to seasonal high groundwater. Locations of the test pits are shown on the enclosed revised Grading & Drainage Plan. Test pit logs are included in Appendix D and more detailed information is provided in Section 1.02 of the revised Stormwater Report.

BETA 1: Data for three test pits has been provided. Groundwater elevations are shown as varying from -0.5' to 3.0'. The infiltration system designs reflect these groundwater elevations. Two feet of separation to groundwater is provided for Infiltration basin 1. Infiltration Basin 3 should be raised 0.2 feet to provide a full 2-foot separation. Given the variation in groundwater elevation indicated by the test pits, it is suggested that groundwater be confirmed prior to construction. This should be done during seasonal high groundwater conditions.

15. The proposed site building roof will be designed to provide stormwater detention, with a roof drain connection to the proposed subsurface infiltration chamber system #1 located west of the building. The HydroCAD model included with the Stormwater Report shows zero runoff leaving the roof area for all storms up to and including the 100-year design storm. Discussions with the applicant indicate the disposition of this retained stormwater has not yet been finalized. Until the disposition of the retained rooftop stormwater is known, its effects on the proposed stormwater BMPs cannot be evaluated.

Applicant's 1/21/2021 Response: Runoff calculations have been revised to include discharge from the roof detention system in all storms analyzed. This overflow will be at a controlled rate and will flow into the underground infiltration system in the parking lot west of the building. The detailed design of the rooftop detention will be provided as the architectural and plumbing construction plans are developed. In addition, approximately 9,000 square feet of the southeast corner of the building roof will discharge directly to the surface through roof a roof drain. Please see the enclosed, revised Stormwater Report for additional information and calculations.

BETA 1: See response to Comment 4. Additional information should be provided as the architectural plans are developed to confirm that the roof detention will function as shown in the calculations.

16. The proposed infiltration chamber system #1 receives stormwater from a proposed CB located between the site access drive and proposed parking area west of the site building. The rim elevation of this CB is 8.0. The results of the HydroCAD model indicate that the 50-yr flood elevation within the infiltration system is elev. 8.28. This flood elevation will cause stormwater to surcharge out of the CB grate and overflow down the access driveway to the lower garage level.

Recommendation: The Applicant should reevaluate the proposed infiltration chamber system #1 to provide adequate stormwater capacity so that there is no onsite surface surcharge for any of the proposed design storms.

Applicant's 1/21/2021 Response: The infiltration system has been revised, both in footprint and storage volume and the area around the catch basin regraded (rim elevation 8.84) so that no surcharge will occur. Please refer to the enclosed revised Grading & Drainage Plan.

BETA 1: The proposed grading has been revised on the 1/21/2021 Grading & Drainage plan so that the CB rim is above the 100-year water surface elevation in infiltration basin 1. Comment resolved.

17. The proposed infiltration chamber system #2 located near the southwest corner of the site building receives stormwater from a proposed trench drain located across the access driveway to the lower garage level. The rim elevation of the proposed trench drain is 4.1. The results of the HydroCAD model indicate that the 2-yr flood elevation within the infiltration chamber system is elev. 8.40. This is not possible. The applicant is currently reevaluating the design of Infiltration Chamber System #2.

Applicant's 1/21/2021 response: he proposed system has been resized and the area around the trench drain regraded so that no surcharge will occur.

BETA 1: The rim elevation of the driveway trench drain has been revised to be 0.18 feet above the 100-year water surface elevation in Infiltration basin 3 to avoid surcharging to the driveway surface. However, the infiltration basin bottom should be raised 0.2 feet to provide the required 2-foot separation to groundwater. This may require adjustment of the trench drain rim elevation.

18. The applicant should provide groundwater mounding calculations as the two proposed infiltration chamber systems are designed to provide peak rate mitigation and appear to be within 4-ft of estimated seasonal high groundwater.

Applicant's 1/21/2021 Response: A groundwater mounding analysis of the underground recharge system has been performed and is included in Section 6.05 of the Stormwater Report. The analysis shows that the groundwater mound is less than the provided separation to groundwater.

BETA 1: A mounding analysis has been provided for Infiltration Basin 1. The mounding analysis adequately represents anticipated conditions. The expected vertical extent of the mound will be below the bottom elevation of the basin. The expected horizontal extent of the mound dissipates before it reaches any adjacent existing foundations.

19. The HydroCAD model included in the stormwater report analyzes the proposed stormwater BMPs over a 24-hr time period.

Recommendation: The applicant should increase the analysis time period to 72 hours to allow the BMPs to demonstrate their drain down capacity after the storm event concludes.

Applicant's 1/21/2021 Response: The analysis time period has been extended to 72-hours as requested. In addition, a drawdown calculation in accordance with Volume 3, Chapter 1 of the Massachusetts Stormwater Handbook has been performed demonstrating that the infiltration system will drain within 72-hours. This information is included in Section 6.02 of the accompanying Stormwater Report.

BETA 1: The drawdown calculations have been provided and are acceptable. Comment resolved.

20. MassDEP Stormwater Standard #10 – The applicant should provide a signed Illicit Discharge Compliance statement.

Applicant's 1/21/2021 Response: An illicit discharge compliance statement has been included in Section 6.06 of the Stormwater Report and will be signed by the Applicant prior to issuance of permits.

BETA 1: The Illicit Discharge Statement has been provided. Comment resolved.

UTILITIES

21. The applicant proposes some drain manholes (DMH-2, 3) requiring shallow installations. For these applications the applicant should confirm the frame/cover height (standard 8-in, shallow 4-in) and that adequate cover exists over the inlet/outlet pipes for constructability.

BETA 1: No response received

22. The Utility Plans show the proposed utility services from the project site to the existing municipal/gas/electric utilities in Dorothy Road.

Recommendation: We recommend the Applicant coordinate with the Arlington Public Works Department and local utility companies regarding all proposed site utility connections to the public utilities in Dorothy Road to confirm compliance with applicable construction standards.

BETA 1: No response received.

23. The existing survey shows an existing drain line in Dorothy Road that runs in front of the project site. The Utility Plan shows three proposed sewer service lines from the building to the existing municipal sewer in Dorothy Road that cross the drain line.

Recommendation: The Applicant should confirm the proposed sewer services as shown do not conflict with the existing drain line.

BETA 1: No response received.

CONSTRUCTION

New Comment 1. It is suggested that prior to construction, the Applicant prepare a Construction Management Plan (CMP) for review and approval by the Board. The CMP will provide documentation of various construction related activities. The CMP should include:

- Project Description and outline of primary construction tasks
- Project Schedule including hours of operation, duration of primary construction tasks and estimated completion date
- Project logistics including staging areas, truck routes, laydown areas, contractor parking and traffic management
- Site Management including noise mitigation, dust control and security
- Public Safety and Coordination including contact information and site inspections

New Comment 2. The Long Term Pollution Prevention & Operations and Maintenance Plan should include requirements for inspection and cleaning of trench drains and the roof stormwater outlet to ensure these are functional prior to significant rain events.

New Comment 3. The Long Term Pollution Prevention & Operations and Maintenance Plan should include provisions for maintenance and cleaning of compensatory flood storage areas to ensure these remain functional.

24. Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan – Section 3.10.4 Equipment/Vehicle Maintenance and Fueling Areas:

Recommendation: BETA recommends adding a provision prohibiting refueling of vehicles or equipment within 100-feet of any onsite resource area.

Applicant's 1/21/2021 Response: A prohibition on refueling and maintenance has been added in Section 3.10.5 of the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan as recommended.

BETA 1: Information provided. Comment resolved.

25. Recommend the applicant add a provision to the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan that "Dorothy Road shall be swept clean on a daily basis of any soils tracked onto it from the project site".

Applicant's 1/21/2021 response: A daily sweeping requirement has been added in Section 3.10.1 of the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan as recommended.

BETA 1: Information provided. Comment resolved.

26. As part of a Construction Management Plan the applicant should develop a map of approved haul routes for trucks traveling to/from the project site during construction as the immediate site vicinity is comprised of narrow residential streets.

RESOURCE AREAS

BETA provides the following comments based on the Applicant's January 2021 revised site plans and submittals. The revised plans dated January 21, 2021 included reestablished isolated wetlands, located in the northeast corner for the site. These wetlands were delineated and approved by the Commission during a 2006 ANRAD filing. Section 21 of the Arlington Wetlands Bylaw defines and protects vegetated wetlands both bordering and isolated¹. Under Section 25 of the Bylaw additional protection is provided to all wetlands with an Adjacent Upland Resource Area (AURA) to resource areas as defined in Section 2, A)1 through 4². The AURA designates and defines the following zones of protection; 25-foot No-Disturbance Zone and 25 to 100-foot Restricted Zone. The Bylaw maintains no work is allowed within the 25 foot No Disturb zone; no disturbance is allowed within 50 feet of a resource area; limited activities only are allowed within 50 to 75 feet of the resource area; and mitigation must be provided for any disturbances of the 50 to 100 feet area of the AURA.

Given the location and proximity of the reestablished isolated wetlands the proposed Compensatory Flood Storage Area is now located within AURA No Disturbed Zone and Restrictive Zone. In addition, the site's proposed playground area is also located within the AURA Restricted Zone associated with the reestablished isolated wetlands.

During the February 4, 2021 working session meeting the Applicant discussed moving the playground outside of the Restricted Zone as well as moving the Compensatory Flood Storage outside of the No Disturbed Zone to comply with the Bylaw. The plans should be revised showing the new locations of these elements, playground and Compensatory flood area. Section 24 of the Bylaw ensures protection of vegetation within resources by requiring in-kind replacement as part of an "Application for Removal" that all applicants are required to submit as part of a Notice of Intent filing³.

According to Section 23 of the Bylaw the proposed Compensatory Flood Storage Area shall provide a minimum ratio of 2:1 cubic feet of compensatory flood storage⁴. The compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project.

¹ Section 21, B (1) Vegetated Wetlands are freshwater wetlands, including both bordering vegetated wetlands (i.e. bordering on freshwater bodies,) and isolated vegetated wetlands which do not border on any permanent water body.

² Section 2, A Areas subject to protection under the Bylaw and the regulations: (1) Any marsh, freshwater wetland, vernal pool, wet meadow, bog, or swamp.

³ Section 24, E Applicant for Removal. For all projects, the application for vegetation removal shall be submitted as part of the applicant for permit or Notice of Intent as described by the Bylaw and these regulations.

⁴ Section 23, D states The Commission may permit activity on land subject to flooding provided it shall not result in 1) Flood damage due to filling,...; 2) Adverse effect on public and private water supply or groundwater supply,...3) An adverse effect on the capacity of said area to prevent pollution of the groundwater,... Any such activity shall provide compensatory flood storage for all flood storage volume that will be lost at each elevation. Compensatory flood storage shall be at a 2:1 ratio, minimum, for each unit volume of flood storage lost at each elevation.

RECOMMENDED CONDITIONS

1. The Applicant shall provide a Compensatory Flood Storage Mitigation Plan for the proposed compensatory flood storage area to mitigate the negative environmental impacts associated with vegetation removal and grading to create this new flood storage area. The goal of the Compensatory Flood Storage Mitigation Plan is to provide a temporary storage area for floodwater as well as provide important wildlife habitat functions including important food source, shelter, migratory or overwintering areas, and breeding areas for wildlife. This flood storage area shall rectify the current adverse impact of the floodplain by providing a better replacement resource area. The Mitigation Plan shall provide the following:
 - a. A minimum ratio of 2:1 cubic feet of compensatory flood storage of a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project.
 - b. With at least a 3-year monitoring schedule with a 100% survival rate.
 - c. Only native non-cultivar species shall be planted on the site.
 - d. Plants shall be installed and maintained in accordance with standards of the American Association of Nurserymen (AAN).
 - e. A monitoring report shall be submitted annually in June for the three-year monitoring period. The report shall include the health of the new plantings and the success of the invasive plant management. The report shall include photo documentation and yearly recommendations for future success.
2. As stated in Section 24, A of the Bylaw, an adequate quantity of vegetation must be maintained so that resource areas protected by the Bylaw can provide the resource area values protected by the Bylaw. Section 24, B further states no vegetation in a resource area protected by the Bylaw shall be damaged, extensively pruned, or removed without written approval by the Commission and in-kind replacement. Given the extent of vegetation proposed to be removed within a resource area (BLSF) and AURA the Applicant shall provide a Landscape Plan as described in Section 24 and should include the elements described in the guidance provided in Section 24 E as follows:
 - a. Narrative describing existing conditions, proposed plantings, list of existing and proposed species, size of existing species and proposed species, quantity plants before and after revegetation and the rational the removal and maintenance plan.
 - b. Affirmation of the Revegetation Activities, all plans must be accompanied by written testimony and scale diagram from a certified arborist or wetland scientist or landscape architect. The document must include at a minimum the necessity of vegetation removal, surface area to be removed, quantity of individual plants by species.
 - c. Planting Plan – drawn to scale, properly identified resource area and buffer zone and the project site, location of replacement species, comply with (AAN), erosion controls, estimated tree canopies after 15 years of growth, name, sizes and locations of trees to be planted, and total area of SF of the area shaded by the canopies.
 - d. Existing species list,

- e. Replacement species list,
 - f. Rational for Removal,
 - g. Maintenance Plan.
 - h. The Plan shall include monitoring reports submitted annually in June for a three-year monitoring period. The reports shall include photo documentation, the health of new plantings and any mitigation. This report can be combined and submitted with the ISMP report.
3. The Applicant shall submit an Invasive Species Management Plan for work in the AURA and other resource areas. The Plan shall identify the location of invasive species management, species and quantities of invasive plants to be managed, and methods of removal and control of each species. Monitoring Reports shall be submitted to the ZBA detailing any invasive species and recommendations for control and removal. The invasive species specialist shall evaluate the restoration areas for evidence of colonization by invasive species during prescribed monitoring site visits. Monitoring Reports submitted to the ZBA shall include a listing of any invasive species, and recommendations for control/removal.
 4. No work activities are authorized nor shall occur within the 25-foot No Disturb Zone of Isolated or Bordering Vegetated Wetlands on the Site.

CONCLUSIONS

It is our understanding that there will be further revisions to the project including both site and building design. BETA's recommendations for additional information presented in this comment letter could be included as Conditions of Approval in the Comprehensive Permit with the understanding that all comments will need to be addressed to the satisfaction of the Board and the Town of Arlington before site development can begin. Any revisions that affect the design of the proposed stormwater system should be supported by revised analysis and calculations.

It is important to note that the seasonal high groundwater elevation, particularly in the location of the stormwater BMPs, needs to be confirmed prior to start of site development. BETA's review of the test pit data provided by the Applicant suggests that further evaluation of soil and groundwater conditions should be conducted and potentially witnessed by the Town and / or their representative.

BETA believes that there are opportunities to significantly improve the available open space and floodplain compensation mitigation area environment. A thoughtful mitigation and site restoration plan prepared by a skilled team of multi-disciplinary professionals along with meaningful short term and long-term monitoring is critical to environmental restoration success.

We recommend that conditions of approval associated with such mitigation and site restoration include the requirement that all mitigation and site restoration plans be reviewed and approved the ZBA and the Conservation Commission, at a minimum. BETA also recommends that recommended permit conditions presented in the Arlington Conservation Commission's February 1, 2021 Thorndike Place – Application for Comprehensive Permit Draft Recommended Permit Conditions letter be included as Conditions of Approval in the Comprehensive Permit.

Jenny Raitt, Director, Dept of Planning and Community Development

February 12, 2021

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If you have questions about any of these comments, please feel free to contact us.

Very truly yours,
BETA Group, Inc.



William P. McGrath, P.E.
Senior Associate



Marta Nover
Vice President

cc: Douglas W. Heim, Arlington Town Counsel
Emily Sullivan, Environmental Planner & Conservation Commission Agent