February 20, 2024

Ms. Breeka Lí Goodlander, Agent
Town of Franklin Conservation Commission
355 East Central Street
Franklin, MA 02038

Re: Grove Street Residences – 121 Grove Street
MassDEP File No. 159-1286
Notice of Intent Peer Review

Dear Ms. Goodlander:

BETA Group, Inc. (BETA) has reviewed documents and plans for the project entitled ***Grove Street Residences,*** located at ***121 Grove Street*** in Franklin, Massachusetts. This letter is provided to present BETA's findings, comments and recommendations.

BASIS OF REVIEW

The following documents were received by BETA and will form the basis of the review:

- Notice of Intent entitled ***Notice of Intent, Grove Street Residences 121 Grove Street Franklin, Massachusetts***; prepared by Lucas Environmental, LLC; dated December 18, 2023.
- Plans (36 Sheets) entitled ***Grove Street Development 121 Grove Street – Franklin, MA***; prepared by RJ O'Connell & Associates, Inc.; dated December 18, 2023; stamped and signed by Brian P. Dundon, MA P.E. No. 41505. Including:
    - Existing Conditions Plan (1 Sheet) entitled ***Existing Conditions Site Plan 121 Grove Street Franklin Massachusetts***; prepared by Guerriere & Halnon, Inc.; dated May 20, 2022 and last revised November 9, 2023; stamped and signed by Robert E. Constantine II, MA P.L.S. No. 49611.
    - Landscape Plan (14 sheets) entitled ***Grove Street Residences Franklin, MA***; prepared by Michael D'Angelo Landscape Architecture LLC; dated December 18, 2023; stamped and signed by Michael D'Angelo, MA P.L.A No. 4006.
- ***Stormwater Management Report, Grove Street Residences, 121 Grove Street Franklin, Massachusetts***; prepared by RJ O'Connell & Associates, Inc.; dated December 18, 2023; stamped and signed by Brian P. Dundon, MA P.E. No. 41505.

Review by BETA included the above items along with the following, as applicable:

- Site Visit on February 1, 2024
- ***Massachusetts Wetlands Protection Act 310 CMR 10.00*** effective October 24, 2014
- ***Massachusetts Stormwater Handbook*** effective January 2, 2008 by MassDEP
- ***Stormwater Management Chapter 153 From the Code of the Town of Franklin,*** Adopted May 2, 2007
- ***Wetlands Protection Chapter 181 From the Code of the Town of Franklin,*** dated August 20, 1997
- ***Town of Franklin Best Development Practices Guidebook***, dated September 2016

SITE AND PROJECT DESCRIPTION

The Site is 31.44 acres and includes two (2) parcels along the western limit of Grove Street in Franklin, Massachusetts, further identified by the Franklin Assessor's Office as Assessor's Map 295, Lot 1 (121 Grove Street) and Map 294, Lot 7 (0 Grove Street). The Site is bound to the north and west by Franklin State Forest, to the east by Grove Street, and to the south by an electric transmission line right-of-way. A walking path associated with Franklin State Forest bisects the northern portion of the Site. Improvements located within the eastern portion of the Site along Grove Street include a single-family dwelling, accessory buildings, gravel and paved driveways, and lawn areas. The remainder of the Site consists of mixed hardwood uplands vegetated with species including Eastern white pine (*Pinus strobus*), American beech (*Fagus grandifolia*), and red oak (*Quercus rubra*); palustrine and emergent wetland complexes; and maintained fields. Topographic relief at the Site generally follows a west-to-east orientation.

Resource Areas Subject to Protection under the Massachusetts Wetlands Protection Act (M.G.L. ch.131 s.40) and its implementing regulations at 310 CMR 10.00 (collectively "the Act"), as well as the Town of Franklin Wetlands Protection Bylaw (Chapter 181) and its associated regulations (collectively "the Bylaw") are present at the Site and include:

- Inland Bank (to intermittent stream);
- Bordering Vegetated Wetland (BVW);
- Land Under Water (LUW); and
- Isolated Vegetated Wetland (IVW).

The boundaries of some onsite Resource Areas were previously confirmed by an Order of Resource Area Delineation (ORAD) issued under MassDEP File No. 159-1261 on April 6, 2023. Previously confirmed boundaries are as follows:

- The WFA and WFC Series BVW;
- The WFB Series BVW to the property line;
- The WFD Series IVW;
- The BF1 Series Bank to the property line;
- The BF2 Series Bank to the property line; and
- The BF3 Series Bank to the WFB Series BVW.

The ORAD confirms that the WFA and WFC Series delineate the boundary of a single BVW complex as depicted on the submitted plans; however, the BF4 through BF9 series Bank boundaries, as shown on the provided Project plans, were not reviewed or approved under this ORAD. In addition, the off-site FRW Series BVW that projects Buffer Zone onto the Site was not confirmed under the ORAD.

The Site is not located within any Surface Water Protection Areas (Zone A, B, or C), or Zone I or Interim Wellhead Protection Areas, but the northeast corner of the Site is within a Zone II Wellhead Protection Area. There are no Outstanding Resource Waters (ORWs) or Areas of Critical Environmental Concern (ACEC) present, and the most recent Natural Heritage and Endangered Species Program (NHESP) mapping does not depict any Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife at the Site. There are no NHESP-mapped Certified or Potential Vernal Pools located within 100 feet of the Site.

Natural Resource Conservation Service (NRCS) soil maps indicate the presence various soil groups at the Site including Charlton-Hollis Rock outcrop complex with a Hydrologic Soil Group (HSG) rating of A/B, Ridgebury fine sandy loam with a HSG rating of D, Hinckley loamy sand with a HSG rating of A, and Merrimac fine sandy loam with a HSG rating of A.

Proposed work is associated with a residential development pursuant to M.G.L. Chapter 40B (40B) and includes the following activities (collectively referred to as "the Project"):

- Construction of 5 detached apartment buildings (330 total apartment units);
- Construction of a clubhouse, swimming pool, parking bays, and dog park;
- Construction of paved parking areas (574 total parking spaces) and access driveways;
- Construction of two (2) intermittent stream crossings for roadways;
- Installation of two (2) intermittent stream crossings for a pedestrian boardwalk;
- Installation of lighting and utilities (includes municipal water and sewer);
- Installation of stormwater best management practices (BMPs);
- Installation of erosion controls;
- Maintenance of landscaping and green space; and
- Grading.

The Project will result in direct impacts to Bank, BVW, and LUW. Portions of all five buildings and associated amenities are proposed within the 100-foot Buffer Zone to BVW/Bank and Building #4 will require the filling of a 2,015-square foot (sf) IVW. As a 40B development, this peer review has been prepared with the assumption that the Bylaw will be waived by the Franklin Zoning Board of Appeals (ZBA); therefore, the Project is being reviewed only under the Act. Accordingly, impacts to the IVW, which does not qualify as Isolated Land Subject to Flooding (ILSF) under the Act, are presumed to be non-jurisdictional under this filing. Should the Bylaw apply to the Project, this review would be subject to revisions.

The Project was filed under the Limited Project provisions at 310 CMR 10.53(3)(e) for the construction and maintenance of a new roadway or driveway requiring a Resource Area crossing to access uplands and 310 CMR 10.53(3)(j) for the construction of the proposed boardwalks.

ADMINISTRATIVE AND PLAN COMMENTS

The plan set (as identified above) is missing information and requires additional information for clarity.

Table 1. NOI Plan

NOI Plan Requirements	Yes	No
North Arrow	✓	
Registered PLS Stamp (Existing Condition Plans Only)	✓	
Assessors' Reference		✓ (See Comment A2)
Abutting Property Assessors' Reference		✓ (See Comment A2)
Survey Benchmark	✓	
Existing Conditions Topography (with source and date of survey)		✓ (See Comment A4)
Accurate Plan Scale	✓	
Plan Scale 1" = 40' or smaller	✓	

PLAN AND GENERAL COMMENTS

A1. The Massachusetts Department of Environmental Protection (MassDEP) has issued a DEP file number (159-1286) with the following technical comments:

a. "The Commission may want to consider a third-party review due to the complexity of this project, including but not limited to the review of the proposed stormwater system and the intermittent streams not confirmed in the ORAD process".

b. "It is recommended that phased erosion controls are provided in addition to the construction sequence. Temporary swales and basins shall be shown on (phased) erosion control plans".

c. "The site of the future infiltration basins should not be used as temporary sediment traps for construction activities, see V2, Ch2, p91 of the SW Handbook".

d. "The Commission may want to include the Operation and Maintenance of the proposed stormwater system as a perpetual conditions".

e. "Given the steep slopes and their proximity to wetlands, MassDEP recommends the Commission include a condition that requires an inspection of erosion controls prior to and following any storm events greater than 1".

It is recommended that the Applicant address MassDEP's comments above in addition to the comments provided herein by BETA.

A2. Depict Assessors' references for both the Site and the abutting properties on all plan sheets.

A3. The proposed tree line is currently only depicted on the Landscape Plan sheets. Depict the proposed tree line on all plan sheets.

A4. Provide survey dates/methods for all on-the-ground topographic and boundary survey efforts in the plan notes.

A5. The narrative references filing under two (2) limited project provisions ((310 CMR 10.53(3)(e) and (3)(j)) but the WPA Form 3 references only one. Provide a revised WPA Form 3 referencing both limited project provisions for the record.

A6. Provide a revised WPA Form 3 that includes temporary and permanent impacts proposed to LUW and includes both temporary and permanent impacts to BVW. Only permanent impacts are currently listed on the WPA form.

WETLAND RESOURCE AREAS AND REGULATORY REVIEW

BETA conducted a site visit and regulatory review of the submitted revised documents and plans, focusing on compliance with Resource Area definitions and Performance Standards set forth in the Act.

As noted above, an ORAD is in effect for the Site which confirms the boundaries of BVW, IVW, and the BF1, BF2, and BF3 Series Bank at the Site. Therefore, BETA only assessed Resource Area flagging in the field associated with the BF4 through BF9 Series Banks.

The Applicant has provided a comprehensive NOI filing with regards to filings requirements and supporting narratives. However, the NOI is missing a discussion of compliance with LUW Performance Standards and does not quantify proposed impacts to LUW for the proposed crossings. The stream/BVW crossings and boardwalks also require further detail on construction and sequencing to confirm all Resource Area impacts (temporary and permanent) are accounted for. In addition, the stream restoration area also requires further detail on construction and sequencing to ensure the establishment of appropriate hydrology/hydraulics and the long-term stabilization of Banks.

BETA noted several areas across the Project where constructability issues are apparent, including proposed grading tie-ins located under proposed erosion controls and what appears to be insufficient space to work and excavate for retaining wall construction along the faces of walls. As a result, the Project may actually require greater impacts to Resource Areas than what have been reported. In addition, select areas of BVW impacts along the retaining walls should be reassessed in the interest of avoiding/minimizing impacts.

At this time, the Applicant has not provided sufficient information to describe the Site, the work, or the effects of the work on the interests of the Act.

RESOURCE AREA BOUNDARY COMMENTS

BETA conducted a Site visit on February 1, 2024 to assess existing conditions and to review Resource Area boundaries not approved under the ORAD.

W1. The ORAD approved the Bank boundary of 3 onsite intermittent streams (BF1, BF2, and BF3); however, there are 6 additional Bank series shown on the existing conditions plan and described in the NOI narrative per the Commission's request (BF4, BF5, BF6, BF7, BF8, and BF9). Of these Bank series, the Applicant asserts that only BF9 meets the definition of a stream[1] under the Act.

BETA reviewed all additional intermittent stream Banks flagged as part of this Project and concurs with the delineated boundaries. It is recommended that the Commission consider these features jurisdictional intermittent streams.

W2. BETA did not review the FRW Series BVW in the field due to its location on private property. Based on the Project plans, work is not proposed within its associated Buffer Zone. The Commission could consider including a finding in an Order of Conditions (OOC) stating that these boundaries are not approved as part of this filing.

CONSTRUCTION COMMENTS

W3. Provide information supporting the location of the sewer line below the streambed at both stream crossings instead of within or along the roadway above the stream. Should the proposed location be required due to design/Site constraints, provide details on how construction will occur as it relates to the nature of the Resource Area impacts (i.e., open trench excavation versus directional drilling, and construction sequencing).

W4. Clearly label all Resource Area impacts (both permanent and temporary) on the Project plans. It is recommended that this information be included on the Grading and Drainage plans to supplement the callouts that are already present. Although a separate Resource Area impact exhibit is provided, it is at a larger scale and does not depict proposed grades.

W5. Erosion controls should be depicted on all sheets to demonstrate Project constructability. BETA offers the following comments on the proposed erosion controls:

a. Erosion controls consisting of siltation fencing and compost filter tubes are proposed to be installed across the stream at both intermittent stream crossings as shown on the Demolition and Erosion Control Plan (Sheets C-1A and C-1B). These erosion controls are

[1] 310 CMR 10.04 "Stream means a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into or out of an Area Subject to Protection under M.G.L. c. 131, § 40".

not a typical method of in-water erosion, sedimentation, and/or turbidity control. Clarify what time of year the crossing work will occur, what erosion controls will be used for in-water work (i.e., cofferdams), and how water will be controlled during construction of the crossing. To comply with the Section 404 Massachusetts General Permit, in-water controls should only be in place while required to complete the crossing work. At a minimum, the Applicant should provide location-specific water control and dewatering details for the proposed culvert work.

b. No erosion controls are shown at the location of either of the proposed boardwalks. Depict erosion controls proposed for boardwalk construction, describe the anticipated method of construction, and quantify any additional temporary BVW impact associated with installation of erosion controls, anti-compaction measures (i.e., swamp mats), and access for construction.

c. Erosion controls are depicted directly adjacent to the proposed retaining upgradient of the BVW near the proposed pool and clubhouse, and within Buffer Zone north of Building #3. Considering that over excavation is required to set the footings for segmented block walls, additional temporary BVW/Buffer Zone impacts are likely to be required at these locations and the limits of work do not appear to represent a constructable Project. The Applicant should revise the limits of work and disclose all impacts accordingly.

d. Erosion control placement is directly over areas of proposed grade tie-ins along several locations around the Project perimeter (e.g., northeast of Building #2). Provide locations for erosion controls that support constructability and disclose any additional temporary/ permanent BVW impacts that may be required.

W6. The Project will require significant clearing and grubbing. Provide a phasing plan to supplement the erosion control plan that limits the total area of disturbance at the Site at a one time. This plan should also include timing on environmentally sensitive activities including stream/BVW crossings (roadways and boardwalks), the wetland replication area, and the stream restoration area. In addition, all staging/stockpile areas should be staked in the field prior to advancing phases. The Commission could consider a Special Condition in the OOC requiring the Applicant achieve stabilization to the satisfaction of the Commission or their Agent prior to advancing phases.

W7. In addition to a phasing plan for the entire Project, a construction sequence and plan specific to the proposed intermittent stream crossings should also be provided. This plan should include the following:

a. Installation of erosion and sedimentation controls, and in water controls as appropriate;
b. Points of access by machinery to construct the crossings; and
c. Restoration of temporarily impacted LUW and Bank.

W8. It is recommended that all chain link fencing provide a minimum of a 4-inch bottom gap to facilitate wildlife movement for small species.

W9. To apprise the Conservation Commission of federal permitting requirements, the Project will be required to obtain U.S. Army Corps of Engineers (USACE) approval under the Section 404 Massachusetts General Permit prior to commencing construction.

MITIGATION COMMENTS

W10. The "Existing Wetland Disturbance Exhibit" depicts areas of existing disturbed wetlands (12,485 sf) resulting from active mowing that will be restored as a part of the Project. A portion of the proposed restoration (as depicted by the Applicant) will be permanently impacted through construction of the clubhouse pool. Similarly, a portion of the proposed Boardwalk #2 is also within proposed BVW restoration area. Revise the Exhibit and restoration totals accordingly or adjust the limits of work.

W11. BETA offers the following comments with regards to the wetland replication area and associated stream daylighting efforts:

a. Provide a note on the Wetland Replication Plan (Sheet C-2C) stating that the Wetland Scientist will review the proposed wetland replication area for existing, native woody plants to retain and mark them in the field for preservation.

b. Provide a note requiring the Wetland Scientist to contact the Commission for review and approval of final grades and proposed planting stock prior to planting. This could be included as a Special Condition in the OOC.

c. BETA recommends that the wetland replication area and associated stream daylighting efforts be established and temporarily stabilized, at a minimum, prior to constructing the adjacent roadway crossing over the intermittent stream. Construction of the roadway and adjacent temporary drainage swale will severely limit access to the wetland replication area. This could be included as a Special Condition in the OOC.

d. As part of the proposed wetland replication area, the Applicant proposes to daylight 180 linear feet (920 sf) of culverted stream; however, minimal details on sequencing and approach are provided. Provide information including the proposed profile of the streambed and the proposed bankfull width (and how these were determined), the proposed gradient of the stream, how the restored stream will tie into the existing BF2 Series streambed and Bank elevations, how the streambed and Banks will be stabilized (temporarily and permanently), and what type of substrate is proposed/how it was determined based on existing fluvial processes. Additional erosion controls will also be required to prevent sedimentation of the stream while the wetland replication area is being stabilized.

W12. Provide a method for restoring temporary Bank and LUW impact areas and describe how Banks under the crossing will be graded and permanently stabilized and include notes pertaining to Resource Area restoration on the plan set.

W13. Discussion of alternatives to the southern stream crossing to access Building 1 references only one alternate location to the crossing as shown in the exhibit titled "Alternative Driveway Layout". This alternative does not take into consideration other configurations for Building 1 and associated amenities that would make a driveway to this Building from Grove Street feasible.

W14. BETA offers the following comments on the Landscape Plans:

a. The proposed area of wetland fill north of the clubhouse is not depicted as being planted or stabilized on the Landscape Plans. Provide plantings within this area, unless fill is avoided.

b. Areas of proposed lawn that do not appear to be necessary for public use/access (i.e., south of Building #2 along the parking area) should be vegetated with native, herbaceous species and mowed only once per year during late fall. BETA recommends a Special Condition requiring this mowing schedule for all areas where native, herbaceous species are established.

c. The proposed Russian sage (*Perovskia a.* "Little Spire") should be replaced with a native species.

d. The Applicant proposes several cultivars in the planting plan. Cultivars alter the natural fruiting and flowering processes of plant species and oftentimes diminish their value to native wildlife. It is recommended that cultivars be removed from the plan and replaced with true native counterparts.

W15. The Applicant proposes restoration of Buffer Zone and disturbed BVW within several areas across the Site. The narrative notes that seed should be applied to "clean bare soil" in Buffer Zone restoration areas and does not specify any details regarding the preparation of the BVW restoration areas. It is recommended that the Applicant clarify if full tillage is proposed in all restoration areas; if so, additional erosion controls should be provided at the downgradient limits of disturbance.

WPA Performance Standards Comments

The Project, according to the WPA Form 3, proposes 580 square feet of BVW impacts and 320 linear feet of Bank impacts. However, the narrative documents 585 sf of temporary and 580 sf of permanent (total 1,165 sf) impacts to BVW. Furthermore, the WPA Form 3 does not quantify any LUW impacts. The Applicant is required to quantify all temporary and permanent Resource Area impacts and demonstrate how the applicable Performance Standards are met.

The Project is also being filed under the Limited Project provisions at 310 CMR 10.53(3)(e) for the construction and maintenance of a new roadway or driveway and 310 CMR 10.53(3)(j) for the construction of the proposed boardwalk. The applicability of Limited Project provisions to the Project is at the sole discretion of the Commission based on the Applicant's efforts to provide an alternatives analysis and minimize impacts.

Bank (310 CMR 10.54)

W16. Provide a narrative to demonstrate compliance with the Performance Standards at 310 CMR 10.54(4). Although the roadway crossings meeting the Stream Crossing Standards are presumed to meet the Bank Performance Standards, an assessment must be provided for the boardwalks regardless of potential Limited Project status.

W17. The Applicant should provide further justification for the southern intermittent stream crossing as part of its review under the Limited Project provisions. The alternatives analysis does not consider the establishment of a secondary entrance/egress off Grove Street that avoids a steep roadway slope by redesigning the layout of this portion of the Site so that the proposed roadway could be located where Stormwater Basin 1 is currently proposed.

Bordering Vegetated Wetland (310 CMR 10.55)

W18. Provide depth to groundwater within the replication area to demonstrate that the proposed grading will result in Estimated Seasonal High Ground Water (ESHGW) levels occurring within 12 inches of the final surface elevation.

W19. The section view for the boardwalk on Sheet L301 references finished grade that will vary dependent on location. The Applicant should clarify that no grading will occur within BVW; if grading is proposed, quantify permanent impacts that are not only associated with shading. As previously noted, all temporary impacts associated with the construction of the boardwalk should also be quantified.

W20. The Applicant should provide justification for the permanent wetland impacts adjacent to the pool and clubhouse. The NOI narrative does not discuss the feasibility of adding angle points to the retaining wall and shifting stormwater infrastructure to avoid wetland impacts at this location.

Land Under Water (310 CMR 10.56)

W21. Disclose all temporary and permanent LUW impacts associated with the construction of the crossing. Based on BETA's knowledge of the Site, the intermittent streams at the locations of the proposed crossings flow for a significant portion of the year; accordingly, the mean low water level is above the thread of the stream and the streams have associated LUW.

W22. Provide a narrative demonstrating compliance with 310 CMR 10.56(4).

STORMWATER MANAGEMENT REVIEW

The Project proposes to use a combination of 8 subsurface infiltration structures and 3 subsurface lined detention basins. The proposed detention basins are proposed below ESHGW and will require that ledge be removed to facilitate installation. Runoff from the surrounding impervious surfaces will be initially treated with proprietary separators. In addition, 3 stormwater basins are proposed to accept flows from either the subsurface detention basins or the subsurface infiltration structures prior to discharge. These 3 stormwater basins are located east of Building 2, east of Building 1, and between the clubhouse and Building #3. The Site is separated into 2 separate watersheds by 2 intermittent streams that flow from northwest to southeast across the site towards Grove Street, one of which discharges to a catch basin along Grove Street. A Zone II, which is tributary to 2 public water supply wells on the opposite side of Interstate 495, is present across the northeast corner of the Site adjacent to Grove Street.

The primary access into the Site is within the center of the parcel, southeast of Building #3, with 2 interior stream crossings proposed for roadway construction. These crossings will consist of 3-sided box culverts that measure 10 feet wide by 10 feet high. Streambed material will be maintained along the bottom of the culverts and approximately 4 feet of headroom will be provided at each culvert.

Topographic relief is present from west to east, towards Grove Street. Grades on site range from elevation 260 along Grove Street at the northeast corner of the parcel to elevation 372 at the northwest corner of the parcel. Due to the length of the buildings, there are proposed retaining walls along the outside of the paved areas around the buildings to allow for fills and cuts at each building. These walls range up to 16 feet in height at certain locations.

BETA offers the following general comments on stormwater management and Site design:

SW1. The base of the proposed retaining walls along western extent of each building will be far below existing grade and it is anticipated that blasting will be required to achieve this depth based on test pits logs within 25 feet of the BVW. As a result, significant groundwater inputs from the adjacent BVW are anticipated. There are no construction details provided for these walls; however, they are shown on the detail sheets as being segmented block walls.

Since the walls will allow free passage of water throughout a majority of the blocks, groundwater flow will impact the capability of the downgradient subsurface infiltration systems from functioning in accordance with the Standards. In addition, the Applicant should disclose the limits of work and potential BVW and groundwater associated with the blasting (fracturing of bedrock.

SW2. Several subsurface infiltration systems are within the 50-foot minimum setback from BVW per the Massachusetts Stormwater Handbook (the Handbook) including PSIS 4, 5, 7 & 8. These infiltration systems must be relocated to comply with the design requirements of the Handbook.

SW3. In accordance with Volume 2, Chapter 2 of the Handbook, all subsurface structures must have an appropriate number of observation wells to monitor the water surface elevation and serve as a sampling port. In addition, each must have an entry port to allow worker access for maintenance. Provide the required observation wells and entry ports.

SW4. Subsurface infiltration systems 1, 2, & 6 are located 5 to 15 feet upgradient of a stormwater basin. In each case, the water surface elevation in the basin during a rainfall event will be above the bottom of the subsurface infiltration system. This standing water is likely to raise groundwater levels above the bottom of the infiltration systems and restrict the ability of the systems to infiltrate. The Applicant should revise the design accordingly.

SW5. Subsurface infiltration systems 1, 2, 3, 4, 5, & 8 are all located approximately 5 feet from a proposed retaining wall. In each case, the grade at the base of the wall is either at or below the bottom of the proposed infiltration system. The proposed impervious barrier along the walls near the infiltration systems must, at a minimum, extend to the bottom of the walls, down to the lowest elevation at the base of the retaining wall to avoid breakout and circumventing the full infiltration/treatment process.

SW6. Provide monitoring wells and emergency low level outlets within all stormwater basins per the Handbook.

SW7. Based on the ESHGW elevation established by test pit 40, Stormwater Basin 1 is only 0.5 feet above groundwater, where a minimum of 2 feet is required. In addition, it has been designed as an Infiltration Basin and does not meet the minimum setback of 50 feet from BVW per the Handbook. The design should be revised accordingly.

SW8. The discharges from PSDS 1 & 2 use a proprietary separator as terminal treatment for these treatment trains. In accordance with Volume 1, Chapter 1 of the Handbook, they cannot be used as terminal treatment and will require an alternative design.

SW9. The designer is assuming a total suspended solids (TSS) Removal Rate of 80% for all proprietary separators being used. According to Environmental Protection Agency (EPA) studies, these separators are only 40-45% effective. Generally, these systems proposed in Franklin have only been allowed for use as a final treatment in redevelopment situations where the existing stormwater collection system is being maintained. The TSS removal rate should only be 44% for all proprietary separators in the TSS removal calculations in the report.

SW10. There are no hydrologic/hydraulic calculations provided for the 2 stream crossings. BETA recommends that this analysis be provided for review to ensure appropriate capacity and avoidance of potential issues related to scour, erosion, and flooding.

SW11. CB-4 should be moved to the low point in the intersection to improve the angle into DMH-6.

SW12. The connection from CB-41 to DMH-29 is an acute angle which is opposite to the flow direction out of the manhole and should be corrected to a more obtuse angle.

MASSDEP STORMWATER STANDARDS

The project is subject to the Massachusetts Stormwater Standards (310 CMR 10.05(6)(k-m)) as outlined by MassDEP. The Project's compliance with these Standards is outlined below:

NO UNTREATED STORMWATER (STANDARD NUMBER 1): *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.* The Project proposes 7 new outfalls which will discharge stormwater runoff to the 2 intermittent steams that bisect the parcel. The runoff from the development around Building #1, Building #2, and the clubhouse area will flow into the proposed stormwater basins prior to discharge. These basins will function as infiltration basins; however, they provide no treatment benefits due to their proximity to BVW (i.e., within 50 feet). The final discharge location for these structures is within 25 feet of the BVW.

SW13. The stone sizing calculations for the riprap aprons were not included in Appendix B as noted in the legend.

SW14. The impervious surface area tributary to DCB-50 exceeds ¼ of an acre and therefore does not conform with the design requirements in Volume 2, Chapter 2 of the Handbook.

POST-DEVELOPMENT PEAK DISCHARGE RATES (STANDARD NUMBER 2): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.* The Project proposes an increase in impervious area and changes to existing hydrologic patterns. Stormwater runoff will be directed to 8 new subsurface infiltration structures, 3 subsurface detention basins, and 3 stormwater basins. Stormwater Basin 1 has been designed as an infiltration basin. Calculations indicate a decrease in peak discharge rate and runoff volume to all onsite watersheds as a result of the Project.

SW15. The time of concentration (Tc) calculations for the existing conditions analysis are understated. As correctly noted in the report, Tc should be based upon the longest ***time*** of travel, not necessarily the longest distance. BETA recommends that the Applicant reassess flow paths, especially for the initial sheet flow path and slope.

SW16. The use of curve number (CN) values associated with hydrologic soil group (HSG) D within the central portion of the Site should be limited to areas of BVW. Several of the test pits performed in this area indicate that soils are classified as HSG A.

SW17. The stormwater basins are all retention basins with only an emergency spillway, however there is no discussion regarding dewatering between events. BETA recommends that a positive means of dewatering be provided for these basins.

SW18. There is no opportunity for maintenance for the subsurface detention systems. Since they are lined with no opportunity for infiltration, the storage volume is critical to their success in meeting this Standard. Although the flow into these systems is treated by proprietary separators, their limited capabilities based on the EPA's analyses indicate that the sediment which flows through

these systems from the pavement areas will impact overall storage capacity over time. BETA recommends that the Applicant review the design and find alternative above-ground means of providing storage to attenuate peak flow rates, which can be effectively maintained long-term.

RECHARGE TO GROUNDWATER (STANDARD NUMBER 3): *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable.* NRCS soil maps indicate that soil in the area of proposed modifications is predominantly Charlton-Hollis-Rock Outcrop Complex with HSG A & B ratings depending on the slope. The center of the Site, which is coincidental with BVW complexes, is a Ridgebury Fine Sandy Loam with rating of HSG D. Test pits conducted at the Site by the Applicant indicate that the entire site is shallow to bedrock. Only 3 test pits (7, 42, & 43) achieved 10 feet of depth without encountering ledge, while all others encountered refusal from 6 to 9 feet in depth. The layer above the ledge varies from a loamy sand to a sand.

Recharge is proposed via 8 new subsurface infiltration systems and 1 infiltration basin, which will capture runoff from most of the proposed impervious surface areas. The proposed systems will provide a recharge volume in excess of what is required by the Standards per the Applicant's documentation. Drawdown calculations indicate that the subsurface basins will drain within 72 hours.

SW19. In accordance with the Handbook, 2 test pits are required within the footprint of each proposed infiltration system. Additional test pits are required within the footprint of 5 of the subsurface infiltration systems to meet this requirement.

SW20. There are no calculations provided to verify the static storage volume provided in the subsurface systems. The stage-storage table for each system should be provided to verify the volumes shown in the appendix.

SW21. The overall impervious surface area at the Site should be developed to ensure that at least 65% of these surface areas are directed to an infiltration structure.

TOTAL SUSPENDED SOLIDS (STANDARD NUMBER 4): *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids (TSS)*. The Project will treat areas of pavement with deep sump catch basins, proprietary filters, and infiltration structures. As a Site with a rapid infiltration rate (>2.4 in/hr), the Project is required to treat the 1 inch water quality volume (WQV) and provide at least 44% TSS removal prior to discharge to an infiltration BMP.

SW22. The pretreatment cannot be included in the total treatment rate provided by the treatment train and must be isolated. The TSS Removal sheets should be modified appropriately including a separate sheet to identify the pretreatment provided.

HIGHER POTENTIAL POLLUTANT LOADS (STANDARD NUMBER 5): *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads (LUHPPLs) require the use of specific stormwater management BMPs*. The project is not considered a LUHPPL - **standard not applicable**.

CRITICAL AREAS (STANDARD NUMBER 6): *Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas*. A portion of the Project is located within a critical area. These standards will be applicable to the development. – **standard met.**

REDEVELOPMENT (STANDARD NUMBER 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable*. The project is not considered a redevelopment – **standard not applicable**.

EROSION AND SEDIMENT CONTROLS (STANDARD NUMBER 8): *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.* Due to the Project

proposing to disturb over 1 acre of land, the Applicant will be required to file a Notice of Intent with the EPA and develop a Stormwater Pollution Prevention Plan (SWPPP). Erosion control measures are depicted on the submitted plans including silt fencing, mulch socks, catch basin inlet protection, stabilized construction entrances, and temporary sedimentation basins.

SW23. BETA recommends that a draft SWPPP be submitted to the Commission for their review given the density of the Project, with specific phasing.

SW24. The design indicates that swales with stone check dams will be used along the edge of the BVW. Based on the existing and proposed grades, the Applicant should depict the proposed grading of swales to ensure that they can be installed and be effective in protecting the BVW during the construction process.

OPERATIONS/MAINTENANCE PLAN (STANDARD NUMBER 9): *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.* A Stormwater Operation and Maintenance (O&M) Manual was provided with the Stormwater Management Report.

SW25. Provide an annual budget for O&M.

SW26. The O&M Plan should be signed by the Applicant.

SW27. The manufacturer's maintenance requirements for the proprietary separators should be included in the plan.

ILLICIT DISCHARGES (STANDARD NUMBER 10): *All illicit discharges to the stormwater management system are prohibited.* An Illicit Discharge Compliance Statement was provided with the submission.

SW28. The Illicit Discharge statement should be signed.

REVIEW SUMMARY

Based on our review of the NOI submittal and Project plans, the Applicant has not submitted sufficient information to describe the Site, the work, and the effects of the work on the interests of the Act. In addition, the Project does not presently comply with the Massachusetts Stormwater Management Regulations.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.

Elyse Tripp
Scientist

Jonathan Niro
Senior Project Scientist

Gary D. James, P.E.
Senior Project Engineer

cc: Amy Love, Town Planner
Bryan Taberner, AICP, Director of Planning & Community Development
Matt Crowley, P.E., BETA