

February 23, 2023

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

**Re: Franklin Heights – 0 Lincoln Street
MassDEP File No. 159-1260
Notice of Intent Peer Review #3**

Dear Ms. Goodlander:

BETA Group, Inc. (BETA) has reviewed revised documents and plans for the project entitled: **Franklin Heights – Parcel B**, located at **0 Lincoln Street** in Franklin, Massachusetts. This letter is provided to present BETA's findings, comments and recommendations based on the most current Notice of Intent (NOI) submission.

BASIS OF REVIEW

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

- Notice of Intent entitled **Re: NOI, 0 Lincoln St (Parcel ID# 219-178-002-000), Franklin, MA**; prepared by Creative Land & Water Engineering, Inc.; dated September 21, 2022.
 - WPA Form 3 revised through December 7, 2022
- Plans (12 Sheets) entitled **Franklin Heights, Parcel B, 40B Development Plan**; prepared by Guerriere & Halnon, Inc.; dated September 14, 2022; revised through February 14, 2023; stamped and signed by Robert E. Constantine II, MA P.L.S. No. 49611 and Robert J. Duff, MA P.E. No. 40707.
- **Stormwater Report, Franklin Heights, Parcel B, 40B Development Plan**; prepared by Guerriere & Halnon, Inc.; dated September 14, 2022; revised through February 14, 2023; stamped and signed by Robert J. Duff, MA P.E. No. 40707.
- Plan (3 Sheets) entitled **Stream Crossing and Wetland Replication Plan**; prepared by Creative Land & Water Engineering, LLC.; dated July 20, 2022; revised through January 25, 2023; stamped and signed by Desheng Wang, MA P.E. No. 39511.
- Letter entitled **Franklin Heights – 0 Lincoln Street MassDEP File No. 159-1260 Notice of Intent Peer Review**; prepared by Creative Land & Water Engineering, LLC.; dated January 25, 2023.
- Letter entitled **Review Comments from BETA Group, Inc: Franklin Heights, Parcel B, 0 Lincoln Street dated November 2, 2022**; prepared by Guerriere & Halnon, Inc.; dated February 14, 2023.

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

- Site Visit on October 25, 2022
- **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

PEER REVIEW UPDATE – FEBRUARY 23, 2023

For ease of review, BETA's original comments from the December 29, 2022 peer review letter are included in plain text. Original comment responses attributed to the Guerriere & Halnon, Inc. (G&H) letter are prefaced with "G&H:", and original comment responses attributed to Creative Land & Water Engineering, LLC. (CLAWE) are prefaced with "CLAWE:". BETA's responses to these per the December 29, 2022 letter are prefaced with "BETA2:".

Updated comments responses from G&H and CLAWE per the most recent documents submitted through February 14, 2023 are prefaced with "G&H2:" and "CLAWE2:", respectively. BETA's most recent responses are prefaced with "BETA3:" and highlighted in yellow for ease of review.

The revisions to the Project presented by the Applicant generally include the following:

- Inclusion of additional details regarding dewatering and the construction of the crossing;
- Submission of a proposed Buffer Zone restoration procedure;
- Inclusion of additional details regarding the construction of the slope at the western side of the Site;
- Modification to stormwater BMPs design in support of compliance with the Massachusetts Stormwater Management Regulations; and
- Accurate documentation of temporary Resource Area impacts.

At this time, the Applicant has provided sufficient information to describe the Site, the work, and the effects of the work on the interests of the Act. Further, the Project now complies with the Massachusetts Stormwater Management Regulations.

SITE AND PROJECT DESCRIPTION

The Site includes two (2) parcels located at 0 Lincoln Street in Franklin, Massachusetts, further identified by the Franklin Assessor's Office as Assessor's Parcel 219-178-001-005 ("Parcel A") and Assessor's Parcel 219-178-002-000 ("Parcel B"). The Site is bounded on all sides by residential development and to the west by Lincoln Street. Parcel A consists of the existing Franklin Heights apartment and condominium complex and is improved by paved private roadways (Trooper Paul Barry Way, Shayne Road, and Leanne Way), maintained landscape areas, stormwater management infrastructure, and utilities. Parcel B is an undeveloped, wooded parcel featuring a centrally located area of upland vegetated by species including sugar maple (*Acer saccharum*), Eastern white pine (*Pinus strobus*), and roundleaf greenbrier (*Smilax rotundifolia*). Gentle topographic relief from the central upland area is present on all sides.

Several 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 the following:

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

The boundaries of BVW and IVW were previously confirmed by an Order of Resource Area Delineation (ORAD) issued under MassDEP File No. 159-1249 on May 17, 2022 and recorded at the Norfolk County Registry of Deeds in Land Court Book 7224, Page 356. The ORAD does not indicate that Bank boundaries were approved; however, the potential presence of Vernal Pools are incorporated by reference.

The Site is not located within any Wellhead Protections Areas (Zone I, Zone II, & Interim) or Surface Water Protection Areas (Zone A, B, or C). There are also 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 Woodbridge Fine Sandy Loam with a Hydrologic Soil Group (HSG) rating of C/D, Paxton Fine Sandy Loam with a HSG rating of C, and Whitman Fine Sandy Loam with a HSG rating of D.

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 a looped bituminous concrete roadway with a single entrance/egress off Trooper Paul Barry Way;
- Construction of a wetland and intermittent stream crossing consisting of an open-bottom culvert and retaining walls;
- Construction of 60 residential units, 19 of which are within Buffer Zone;
- Construction of a sidewalk with a grass buffer along one (1) side of the new roadway;
- Construction of driveways and parking areas for each unit;
- Construction of a closed drainage system that directs runoff to a detention basin, an infiltration basin which is in the Buffer Zone, and 3 sand filters inside the buffer which treat roof runoff from the units along the southerly edge of the development;
- Installation of new water and sewer utilities with service off of Trooper Paul Barry Way;
- Re-grading of Parcel B, including backfill at the western portion of the Site, with increases in elevation of up to twelve (12) feet; and
- Planting of various trees and shrubs.

The Project will result in direct impacts to Bank, BVW, and LUW. As a 40B development, it is assumed that the Bylaw has been or will be waived by the Franklin Zoning Board of Appeals (ZBA); therefore, the Project is being reviewed only under the Act.

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	✓	
Abutting Property Assessors' Reference	✓	
Survey Benchmark	✓	

Existing Conditions Topography (with source and date of survey)	✓	
Accurate Plan Scale	✓	
Plan Scale 1" = 40' or smaller	✓	

PLAN AND GENERAL COMMENTS AND RECOMMENDATIONS

- A1. No file number or technical comments have been issued by the Massachusetts Department of Environmental Protection (MassDEP) as of 10/31/2022.

CLAWE: DEP has issued a file number -159-1260

BETA2: Acknowledged.

- A2. Depict Assessors' references for both the Site and the abutting properties on the plans.

G&H: The Assessor information has been added to the Existing Conditions Plan Sheet 2 as requested.

BETA2: Comment resolved.

- A3. Include at least one (1) survey benchmark on the plans.

G&H: Benchmarks have been added to plans as requested.

BETA2: Comment resolved.

- A4. Include the date(s) and method(s) of the topographic survey in the plan notes.

GH: Note 14 has been added to Sheet 2 of 12 identifying the date and method of the topographic survey.

BETA2: Comment resolved.

- A5. Depict the proposed tree line on the Site development plans.

G&H: the proposed tree line has been added as requested. See Sheet 5 of 12.

BETA2: Comment resolved.

- A6. Provide a detail of the proposed retaining wall at the stream/BVW crossing.

CLAWE: The wall will be Shea Concrete block wall and will be provided for construction.

BETA2: The typical retaining wall detail requested to corroborate the proposed work with the reported impacts has not been provided - comment remains.

CLAWE2: A typical shea block wall is provided. See detail sheet in updated plan.

BETA3: The requested detail has been provided. Comment resolved.

- A7. Revise the WPA Form 3 to detail all temporary and permanent impacts to BVW, Bank, and LUW.

CLAWE: The WPA Form 3 is updated as requested.

BETA2: Comment remains. The WPA Form 3 does not appear to include temporary Bank impacts associated with the crossing/retaining wall installation. It is also unclear if temporary LUW impacts have been included.

CLAWE2: We noted in the form that all the banks and LUW under culvert will be treated to temporarily altered and will be restored. We have added the restoration notes in our plan.

See Response to W18 for restoration plan to Bank and LUW.

BETA3: Impacts have been appropriately documented; comment resolved.

A8. Depict the limit of erosion controls on all plan sheets.

CLAWE: Provided all erosion control lines on all applied plans.

BETA2: Comment resolved.

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.

The NOI and associated documents and plans have been revised to address several plan comments as identified above. The Applicant has also provided additional information on the design of the stream crossing and now proposes a more appropriate channel geometry with the intent of mirroring existing hydraulics/hydrology. In addition, more detailed information related to the proposed wetland replication area has been provided to demonstrate that this area could be successfully established as a wetland and can meet the applicable Performance Standards.

However, the NOI application remains insufficient in quantifying temporary impacts (i.e., to Bank and Land Under Water) and does not propose adequate restoration of temporarily impacted Resource Areas or Buffer Zones. Therefore, the Project as proposed does not represent a minimization of impacts to jurisdictional areas. In addition, stabilization of the large 2H:1V slope at the southern extent of the property remains unclear; it is BETA's opinion that the construction sequencing proposed for this feature does not minimize the potential for impacts to Resource Areas. BETA recommends that the Applicant address the outstanding comments presented in this letter to demonstrate that the Project will support the interests of the Act.

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.

BETA3: The Applicant has revised the NOI and Project plans and provided supplemental documentation to address outstanding comments from BETA's December 29, 2022 peer review letter. Generally, the Applicant has now sufficiently quantified all impacts to Resource Areas and their Buffer Zones and is proposing appropriate restoration that will restore temporarily impacts areas to existing conditions or better. Restoration will include the reuse of stockpiled stream substrate and the installation of coir logs to stabilize Banks under the crossing. In addition, further details have been provided for procedures related to dewatering at the proposed crossing and stabilization of the proposed slope along the western side of the Site. As noted in the relevant comment responses, additional clarification on these subjects is required to ensure that construction-period impacts are minimized and additional Resource Area impacts resulting from erosion and sedimentation are prevented; however, it is BETA's opinion that these can be addressed during the public hearing or through an Order of Conditions.

The Applicant has now 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 AND RECOMMENDATIONS

BETA conducted a Site visit on October 25, 2022 to assess existing conditions, particularly with regards to the proposed stream crossing and adjacent BVW replication area. BETA observed numerous wetland flags in the field and considered their location when reviewing the proposed BVW replication area.

- W1. BVW boundaries were previously approved under the ORAD; however, it is unclear whether the boundaries of Bank and the intermittent status of the associated stream were approved. BETA generally observed the Bank flagging in the field to accurately delineate the top of Bank where flags were present, i.e., the first observable break in slope/mean annual flood level. Based on information accessed through the Massachusetts Geographic Information Systems (MassGIS) website and the United States Geologic Survey (USGS) StreamStats tool, the stream does not appear on USGS topographic maps and is not associated with a drainage area greater than 0.50 square miles; therefore, the stream qualifies as intermittent.

CLAWE: All wetland and streambank delineation has been approved by the ORAD at the crossing.

BETA2: BETA defers to the Commission on the scope of the previously issued ORAD. In the event that Bank boundaries were not confirmed within the ORAD, BETA observed an accurate Bank delineation during the October 25, 2022 Site visit.

CLAWE2: We agree with BETA and consider this issue settled.

BETA3: No further response required.

- W2. Provide additional Bank delineation of the BKN series to depict the location of the stream channel along the BVW replication area.

CLAWE: Additional bank delineation are provided and surveyed as shown on the plan.

BETA2: Additional flagging has been provided as requested and based on the existing topographic data and BETA's familiarity with the location of the proposed wetland crossing, the delineation appears accurate. Comment resolved.

- W3. Provide calculations to demonstrate whether the IVWs at the Site have the water holding capacity to qualify as ILSF and be afforded protection under the Act.

CLAWE: The ILSF calculations had been provided during the ANRAD review. The two IVWs have area of 2520 Sf and 7887 Sf with less than 1 ft depth, respectively. So, the total volume is less than 0.25 ac-ft, which disqualify them as ILSF according to 310 CMR 10.57 (2) (b) 1. The only issue remain with IVW is the potential VP concern, which should not be an issue as no alteration is proposed to the IVW. Based on the depth of the IVW, it is our professional opinion that these two IVW is unlikely a vernal pool.

BETA2: The IVWs do not meet the definition of ILSF – comment resolved. BETA has not assessed the IVWs for potential vernal pool indicators and defers to the Commission on their status as vernal pools.

CLAWE2: There will be no direct impact on the IVW area regardless of Vernal pool status though we have documented hydrological evidences that does not appear to support vernal pool habitat conditions. It can be conditioned that the project shall take caution during the construction time. The limit of work is set about 10 ft minimum from the smaller IVW and about 14 ft to the larger IVW.

BETA3: No further response required.

CONSTRUCTION COMMENTS AND RECOMMENDATIONS

- W4. The Project will result in approximately 9.6 acres of 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. The proposed single line of perimeter erosion controls is anticipated to be insufficient for the large area of clearing where soils are associated with high runoff volumes.

CLAWE: We will phase the project in five phases. See Plan sheet 3 for details. It will require a temporary crossing as we did with soil testing for erosion control installation.

BETA2: The Applicant provided a phasing plan which did not include additional erosion controls at the toe of the slope or timelines for stabilization. It is also unclear if permanent stormwater BMPs will be used for construction-period stormwater management, as the notes indicate that basins will be cleaned in Phase V but also state that temporary sediment basins will be used for construction-period stormwater control. The Applicant should clarify construction period stormwater management and stabilization phasing and provide consistency with the G&H response to Comment SW28. Use of permanent infiltration BMPs for construction-period stormwater management is not recommended.

CLAWE2:

1) Additional erosion control is added along the western side fill including grinding check dam, curlex slope protection.

2) When the two stormwater basins are used for temporary sediment basin, the basin shall be cleaned when the site is stabilized with vegetation and shaped to the final designed and seeded with New England detention basin seed mix.

3) The two basins will be used for stormwater management including some temporary erosion control function as a matter of fact, that is why we required cleanup at the end. The basins will not be used as the primary erosion control device as runoff will be pretreated as much by compost socks, check dams, woodchip mulch, etc.

BETA3: In accordance with the EPA CGP temporary sediment basins are required for disturbances in excess of 10 acres. Use of the proposed stormwater basins for sediment control is not recommended.

If the Applicant intends to use the basins for construction-period erosion and sediment control, BETA recommends that stormwater basin construction in Phase II be limited to construction of temporary sediment basins. Final grading and stabilization of the basins, as well as their connection to the closed drainage system, should be conducted at the end of Phase III. The Commission could consider including this requirement within the Order of Conditions. Comment resolved.

- W5. The Erosion Control Plan indicates that the Site will be cleared following construction of the construction entrance and installation of erosion controls. Clarify whether the construction entrance will include full construction of the stream/BVW crossing, or if a temporary crossing is required. Should a temporary crossing be required, provide construction details.

CLAWE: A temporary crossing for soil testing has been granted. We would request that the same or similar method of temporary crossing can be used for clearing and Erosion Control installation without soil disturbance.

BETA2: The requested detail for a temporary crossing has not been provided. Comment remains.

CLAW2: The temporary crossing has been used before as approved by the Conservation Commission and proved effective, which include steel plates that will be placed over the stream for temporary crossing and filter fabric over the buffer zone with rubber matts or plates for temporary crossing needs. This will not impede the stream flow and minimize the impact on buffer zone. Erosion control compost tube has been placed along the sides of the crossing. This temporary crossing will stay for Phase I clearing and perimeter erosion control installation. Then the temporary crossing it will be replaced with the full crossing constructed as spelled out in Phase I

BETA3: The detail has not been provided; however, the response above is sufficient in describing the required temporary crossing. Comment resolved.

- W6. The Applicant should confirm whether additional test pits will be conducted for this Project. Test pit data provided on the Plans is dated 2005 and should be reconfirmed as discussed in Comment SW18. Conducting test pits at the Site would require approval from the Conservation Commission and would not qualify for the exemption at 310 CMR 10.02(2)(b)2.g. if Resource Area crossings are required.

CLAW2: The applicant has DA from the Commission to conduct soil testing, which is provided in the attached soil testing plan. Soil logs has been submitted to the Conservation Agent.

BETA2: Comment resolved.

- W7. Revise the Erosion Control Plan to include a note stating clearing of the BVW and BVW replication area is prohibited until the Wetland Scientist reviews the area for woody plants to potentially transplant, as indicated on the Stream crossing and Wetland Replication Plan.

CLAW2: The note has been incorporated to the plan special note for wetland and stream crossing as follows: 1. Clearing of the BVW and BVW replication area is prohibited until the Wetland Scientist reviews the area for woody plants to potentially transplant, as indicated on the Stream crossing and Wetland Replication Plan.

BETA2: Comment resolved.

- W8. The proposed 2V:1H slope at the west side of the site will be stabilized as “designed by others”. Provide the method(s) and timing of both temporary and permanent slope stabilization to prevent sedimentation of the downgradient BVW. The Applicant should consider use of native seed mixes with wildlife habitat / pollinator habitat value for permanent stabilization where within Buffer Zone.

CLAW2: The 2V:1H slope at the west side of the site will be constructed and stabilized as spelled out on sheet 3 of the plan entitled “Construction phasing and slope stabilization plan” by CLAW2.

BETA2: The above-referenced slope stabilization plan is not anticipated to be sufficient given the length and pitch of the slope, as well as its proximity to Resource Areas. BETA notes the following:

- Stabilization, even if only temporary, should be completed along lower portions of the slope as it is constructed. A phased stabilization plan would reduce the area of soils exposed at any given time.

- A “berm” of onsite loam tailing will be constructed at the top of the slope to prevent runoff from flowing down the slope with an upgradient stone trench and underdrain. Precipitation falling on the slope itself will not be captured by the trench.
- The above-referenced “berm” is pitched in two (2) directions, which will likely result in sediment accumulation occurring within the stone trench. This trench is not shown on the drainage plans. The Applicant should clarify whether this trench is temporary, and depict it on the Erosion Control Plan, including its discharge point if applicable.
- As noted in Comment W4, it is recommended that the perimeter erosion controls be doubled in locations where high runoff is anticipated, i.e., the toe of this proposed slope. A mulch berm, if feasible, could be considered for this area.

CLAWE2:

1) The slope stabilization plan is updated with additional erosion control measures including an additional row of stump grinding check dam alongside with the perimeter compost tube, fill slope curlex surface protection with loam and seed.

2) The temporary top of fill berm will be constructed to form a basin on top so the water can be contained and infiltrated into the tailing mix.

3) The trench will be installed at the final stage to reduce surface runoff over the fill. It will be level with a raised lip berm over the top of slope.

BETA3: The Applicant has provided an improved slope stabilization plan with the addition of a mulch berm downgradient of the slope. However, it is unclear if stabilization will occur in stages as requested, and the trench at the top of the slope (along with its ultimate discharge point) is not depicted on the G&H plans, nor is it clear whether this feature is temporary or permanent. The G&H plans also note that they are not providing an Engineer’s certification of the slope design; the Applicant should confirm whether CLAWE’s plan is providing this certification and whether that plan will be incorporated into the construction documents.

W9. Provide a plan that depicts all Resource Area impacts associated with the Project, as the Stream Crossing and Wetland Replication Plan does not accurately disclose all impacts. It appears that temporary impacts are anticipated to be required for the following:

- a. Stream water control (if applicable);
- b. Construction of the stream/BVW crossing and retaining walls;
- c. Construction of the BVW replication area; and
- d. Installation of erosion controls along/over the BVW boundary between flags B30A/B34AN and B40AN/B44A.

CLAWE: a. Crossing work will be preferably done during dry season if time allows to avoid dewater issue. If it needs to work during flowing season, we have devised a dewater plan for Conservation Commission to review and approval. b. The retaining wall will be provided by Shea Concrete for the crossing c. Compost tube should be adequate for the replication area given fairly flat area with little contribution watershed. D. A line of boulders can be used to shore up the bottom slope in area upgradient of flags B30A to B34AN and B40AN to B44A. The updated plan showed all resource area alteration associated with the wetland and stream crossing.

BETA2: It is recommended the following information requested below be provided in order to accurately permit the Project through an Order of Conditions.

a. BETA concurs with the Applicant's preference to conduct the work during low-flow conditions; however, it is assumed dewatering will be required for deep utility installation regardless of the time of year. The dewatering detail should be revised as follows:

- i. Remove reference to hay bales.
- ii. Clarify whether the 4 – 6-inch HPDE pipe is intended to divert streamflow through the work area during utility and culvert construction.
- iii. Relocate dewatering pump inlet to the work area within the crossing/utility trenches.
- iv. Depict locations of utility lines
- v. Quantify impacts to LUW associated with dewatering
- vi. Clarify the need for the swale and sediment basin on upstream side of culvert. The Applicant may want to consider relocation of the dewatering area to the downstream side of the culvert.
- vii. Provide Buffer Zone restoration for dewatering area if dewatering is conducted.

CLAW2: The information is provided as requested as follows:

- i. Eliminated hay bales from the dewatering plan.*
- ii. The pipe will be only used during the temporary crossing use if needed. During the utility and culvert construction, it will be replaced by dewatering sump and pump.*
- iii. The dewatering sump is moved inside the working area.*
- iv. Sewer line is added to the crossing area*
- v. The dewatering sump is expected to be 2 ft by 2ft and will be located in the floodplain and lined with crushed stones to minimize sediment. The LUW is assumed to be temporarily altered during construction as stated in the response to A7.*
- vi. The temporary sediment basin can be constructed with compost tubes to reduce erosion in discharging.*
- vii. Any dewatering area will impact only the buffer zone within the roadway and will not require restoration.*

BETA3: BETA's comments as noted above have not been sufficiently addressed; in particular, the sump remains outside of the cofferdam and the dewatering discharge will be located within an undisclosed location within Buffer Zone. It is recommended that the Commission/their agent inspect dewatering system prior to beginning dewatering operations.

b. The Applicant has quantified temporary impacts to BVW associated with the construction of the retaining wall; however, a wall detail has not been provided and the quantification of temporary Bank/LUW impacts is unclear. Permanent and temporary Bank and LUW impacts should be depicted on the plans.

CLAW2: The retaining wall construction will not require more temporary wetland alteration than has been marked on the plan. The temporarily altered wetland at the upstream and downstream for the crossing construction is estimated 5 ft wide and about 259 SF. We expect very minimum soil alteration in the area. The primary impact expected will be vegetation suppression. In case woody plants to be removed, it will be planted back in kind except for invasive plants. It is proposed there that six (6) shrubs including 3 highbush blueberry, 3 winterberry, and 3 sweet pepperbushes

to be planted. Location will be determined in the field relative to any existing saved plants. Any disturbed soil area will be restored to original grade using saved wetland soil and seeded with New England Wetmix.

BETA3: Details have been provided for the restoration of temporary impacts; comment resolved.

c. Comment remains - Temporary impacts associated with the erosion controls along the BVW boundary downgradient of the BVW replication area have not been quantified. Restoration details for this area has not been provided.

CLAW2: Given the relatively small excavation requirements for the wetland replication, we do not expect significant impact on the BVW boundary by setting the ECB (compost tube) right on the BVW line. Compost can be left in place for biodegradation and do not need removal. When the replication is established, we can assess if we need to overseed some of the decayed compost tube area. There are 172 ft wetland line bordering the proposed replication area, which shall impact no more than 172 Sf of wetland due to the placement of compost socks. With the biodegradation of the compost and establishment of the replication wetland, this less than 1 ft linear area shall naturally restore itself. If some overseeding needed at the end of monitoring, we will assess it and provide the Commission a report to make final decision on this.

BETA3: The Applicant has provided a contingency plan for the restoration of temporary disturbances between the BVW replication area and the existing BVW. Comment resolved.

d. Comment remains – temporary impacts are likely to occur along the wetland boundary and should be quantified, depicted, and restored.

CLAW2: See above for response.

BETA3: Comment resolved.

- W10. Erosion controls consisting of siltation fencing and compost filter tubes are proposed to be installed across the stream as depicted on the Wetland Replication & Stream Crossing Plan, which is 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, 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. Based on BETA's experience with the Franklin Conservation Commission, the Commission may wish to clarify if they would prefer the use of alternative erosion controls.

CLAW2: See response to W9. If time allows, we prefer to do the work during now flow summer and fall. If dewater is required, a dewater plan is provided on the plan detail sheet to assure no flowing water will coming through the construction section of the crossing.

BETA2: See BETA 2.a. response to Comment W9.

CLAW2: As we noted in our Phase Plan, during the early stage of the construction, it will require temporary crossing of the wetland. The erosion control included compost filtering tubes along the two sides of the crossing, and filter fabric over the buffer zone vegetation and steel plates and/or rubber matting. This method has been approved for soil testing and will be continued for the early construction Phase I work.

BETA3: See BETA3.a. response to Comment W9. It is recommended that the Commission/their agent inspect the contractor's dewatering system prior to beginning dewatering operations.

- W11. 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.

CLAWE: We agree and will start with USACE permitting when we reached a definitive consensus with the Commission review.

BETA2: Acknowledged.

MITIGATION COMMENTS AND RECOMMENDATIONS

The mitigation comments and recommendations for the Project are primarily related to the proposed BVW replication area. BVW replication area comments consider the Massachusetts Inland Wetland Replication Guidelines and generally accepted wetland science/construction procedures.

- W12. If available, the BVW replication area should be backfilled initially with native hydric soils, with creating a soil blend having high organic content as a way to supplement native soils. The Applicant should estimate the volume of hydric soils that can be reused from the permanent BVW impact area associated with the crossing. Based on hand auger soil sampling conducted during BETA's Site visit, soils within the proposed replication area consist of shallow refusal and gravelly A- and B-layers. Onsite soils used for a supplemental hydric soil blend should be assessed for appropriate composition, and compost used for the supplemental hydric soil blend should consist of clean leaf mulch. It is recommended that the contractor target 50% organic matter by volume when creating supplemental hydric soils; therefore, additional compost will be required beyond the 1/3 composition indicated on the plans.

BETA recommends revising the Wetland Replication & Stream Crossing plan notes to reference the items above.

CLAWE: There 2140 SF of wetland replication, which contains about 8" good high organic loam. With the additional transferring of about 12" wetland soil from the filled 947 SF wetland, we estimated about 20 Cu. yard of compost organic materials will be needed to achieve the 50% organic matter content soil for wetland plants as specified in the note.

BETA2: It is recommended that the note referenced above also include a requirement for the contractor to cover all stockpiled hydric soils and keep them moist.

CLAWE2: The recommended note is added to the Wetland Replication and Stream Crossing Special notes 2. The other notes numbering is adjusted accordingly.

BETA3: Comment resolved.

- W13. A note should be added to the Wetland Replication & Stream Crossing Plan indicating that the subgrade of the BVW replication area should be loosened prior to placing hydric soil backfill to provide sufficient vegetation rooting depth. If a heavily compacted C-layer is encountered, it is recommended that additional excavation/aeration occur to provide greater than 12 inches of hydric soils in the replication area.

CLAWE: The following note is added as part of Wetland Replication Special notes: 2. The subgrade of the BVW replication area should be loosened prior to placing hydric soil backfill to design

wetland scientist should be contact to inspect the site condition to assure that the C-soil is not heavily compacted prior to the placement of the top 12 inches or more organic hydric soils in the replication area.

BETA2: Comment resolved.

- W14. Provide the specification sheet for the New England Wetland Plants Wetland Seed Mix for the contractor's reference.

CLAWE: The New England Wetmix spec sheet is added to the replication plan for reference.

BETA2: Comment resolved.

- W15. Include a note on the Wetland Replication and Stream Crossing Plan requiring the BVW replication area to be overseeded by doubling the recommended application rate and include a note requiring placing clean straw mulch over the seed to promote stability in the replication area until germination occurs.

CLAWE: The recommended note is added to the special note. 3. The BVW replication area to be overseeded by doubling the recommended application rate in the NE Wetmix spec with placing clean straw mulch over the seed to promote stability and germination in the replication area.

BETA2: Comment resolved.

- W16. Depict supplemental erosion controls directly upgradient of the BVW replication area on the Stream Crossing and Wetland Replication Plan.

CLAWE: Temporary access is demarcated on the plan for replication access. In addition to the compost tube erosion control, other erosion control may be used if needed per the contractor and the wetland scientist, which include but not limited to woodchip/grindings mulch or check dam.

BETA2: Comment remains. Provide supplemental erosion controls.

CLAWE2: Additional row of staked silt fence or compost sock is added to the directly upgradient of the wetland replication area.

BETA3: Comment resolved.

- W17. Provide a narrative describing how Buffer Zone temporarily impacted by the Project will be restored following construction. Based on the provided plans, wooded areas will be cleared to access the BVW replication area and conduct grading, but no Buffer Zone replanting is depicted on the plans.

CLAWE: The temporary access is marked on the plan with restoration note. In practice, we will try to find a path without or minimum tree removal. In any case, the access path will be restored with loam and New England Erosion Control seed mix or as approved by FCC.

BETA2: Access for wetland replication construction will likely require clearing of woody vegetation. The Applicant should provide an appropriate restoration plan with native woody species to reestablish the existing Buffer Zone functions upgradient of the wetland replication area.

CLAWE2: The restoration plan is added to the plan as follows:

Wetland replication access buffer zone impact restoration plan:

1. The access will be marked in the field prior to construction.

2. *The design wetland Scientist will review the area with the Conservation agent to identify the impacted shrubs if any. Field adjustment of the access may be required with the mutual agreement with the Agent in order to avoid or minimize the access impact on buffer zone vegetation. The project wetland scientist shall photo document the existing access area with counted plants and species for future reference.*
3. *The access shall be temporarily protected with steel plate or rubber matting as for the temporary stream and wetland crossing.*
4. *Any unavoidable impact on vegetation (shrubs and trees) except for invasive species, shall be mitigated in 1:1 ratio or better by planting in kind plants in the impacted area according to the same planting standard as the wetland replication area.*
5. *The impacted area shall be monitored for two consecutive growing seasons as the BVW replication area as the Order conditioned by Franklin Conservation Commission.*
6. *Any dead plants shall be replanted.*

BETA3: The steps outlined above represent a reasonable approach to Buffer Zone restoration. Comment resolved.

- W18. Provide a method for restoring temporary BVW/Bank/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.

CLAWE: Field survey of the stream channel has been conducted and recorded and analyzed. The information of the channel morphology is presented in the plan for reference in case channel restoration is needed. A 8-ft steel plate will be used to cover the channel that can fit inside of the 12-ft open bottom culvert. In section of utility installation, the channel will be restored with the channel width and depth as surveyed with 1:1 slope and the saved root rich bank materials plus some 12" anchoring stones extending 6" below the bottom elevation. This is added to our special notes.

BETA2: A restoration planting plan should be provided for temporary BVW and Bank impacts associated with the crossing, and measures to stabilize the entirety of the Banks under the crossing should be provided. The Applicant may consider placement of coir logs along the Banks.

CLAWE2: The restoration plan is added to the design plan as follows:

Bank and Land Under Water (LUW) Restoration Plan:

The proposed project will involve an intermittent stream crossing of about 35 section of about 4 ft wide by less than 12-in deep. The crossing will be a 12-ft span open bottom box culvert. There will be a 4ft section temporarily excavated for sewer and water line installation. The rest of utilities including electric and cable will be located above the top of culvert and not to impact the bank and LUW. Except for the sewer/sewer trench construction, the rest of the bank and channel will be covered with steel plates to allow water flow and protected. The plan is devised with flexibility to allow of field use:

1. *The water/sewer trenches shall be demarcated in the field prior to installation of sewer line and before the culvert installation.*
2. *Any temporary alteration of bank and LUW shall be documented prior to alteration by the design wetland scientist, which includes the bank section feature: bank height, bankfull width, substrate materials*
3. *If the bank of LUW shall be excavated, it shall be conducted in sequence to save the materials in order of layers*

4. *A 10" schedule 80 PVC sleeve shall be installed under the culvert for the 8" sewer/water lines installation per the design detail drawings.*
5. *The saved materials from excavation shall be used in restoring the temporarily altered bank and LUW to match the documented geometry and restore the materials in the same order as excavated and stored.*
6. *The restored section of the bank shall be protected with jute netting in the bottom and coil roll along the bank toe of slopes.*

BETA3: In addition to the steps outlined above, it is anticipated that the Commission/their agent will inspect the crossing for stable conditions following construction. Comment resolved.

WPA PERFORMANCE STANDARDS COMMENTS AND RECOMMENDATIONS

The Project, according to the WPA Form 3, proposes 947 square feet of BVW impacts. However, the Applicant is required to quantify all temporary and permanent Resource Area impacts and demonstrate how the applicable Performance Standards are met. The submitted NOI does not provide information on compliance with Performance Standards. Additional information is also required to document compliance with the Massachusetts Stream Crossing Standards.

Bank (310 CMR 10.54)

- W19. Depict all temporary and permanent Bank impacts associated with the construction of the crossing. It is anticipated that a Wildlife Habitat Evaluation for Bank impacts will not be required pursuant to 310 CMR 10.54(4)(a)6.

CLAWE: Per the design, an open bottom box culvert is used for the stream crossing, most of the 35-ft wide stream channel will be protected during construction except for an 8" sewer line installation, which will impact about 4-5 ft section of the channel. The existing channel geometry is surveyed and will be used for restoration as we noted under W18 and in the special notes 4. We agreed that the project as designed will not significantly impact the wildlife habitat function. "Notwithstanding the requirement of 310 CMR 10.54(4)(a)5., the impact on bank caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures contained in 310 CMR 10.60."

BETA2: Temporary Bank impacts associated with the construction of the crossing are unclear – comment remains.

CLAWE2: See response to W18.

BETA3: Comment resolved.

- W20. Provide a narrative to demonstrate compliance with the Performance Standards at 310 CMR 10.54(4).

CLAWE: As we presented in the stream and wetland crossing design, the design meets all required standards for stream crossing with the preferred style of culvert. The stream section of crossing has less than 6" loose organic substrate due to reversed slope and stony underlay. The design will allow to keep the most of the existing channel intact. The water carry capacity is calculated based on the contributing watershed that is very consistent with the observed stream channel morphology. The stream and bank function will not be significantly impacted according to the design for channel stability, flow carrying capacity, and wildlife habitat.

BETA2: Quantification and restoration details for temporary Bank impacts, as well as the stabilization of all Banks under the culvert, should be provided to demonstrate compliance with the Performance Standards.

CLAW2: See response to W18.

BETA3: Comment resolved.

W21. The following comments are provided regarding the Massachusetts Stream Crossing Standards:

- a. The proposed crossing appears to meet the Massachusetts Stream Crossing Standards 1 through 4 (Type of Crossing, Embedment, Crossing Span, and Openness Ratio). However, the Applicant should clarify the proposed Openness Ratio. The Openness Ratio is listed as 0.30, which does not meet the 0.82 requirement. However, the design appears to provide sufficient openness in excess of the requirement.

CLAW2: The openness ratio has length unit. The design used metric unit of meter and the state standard used ft. $0.82 \text{ ft} = 0.25 \text{ m}$. So the design meets the openness ratio standard. The updated plan clarifies the unit.

BETA2: Comment resolved.

- b. Provide information to demonstrate compliance with Standard 5 (Substrate).

CLAW2: The existing channel is surveyed and documented. The design and construction will keep the existing channel geometry and substrate.

BETA2: It appears that the Applicant proposes to preserve the existing substrate for use in the channel in the event that temporary impacts to LUW occur under the culvert. Comment resolved.

- c. Provide survey cross sections of the stream to demonstrate that the appropriate water depth and velocity will be achieved (Standard 6). Based on BETA's Site visit, it appears that a one (1)-foot-deep channel may be too deep for this location. The existing stream in this location appears to seep through a discrete hummock under low flow conditions and overtops the hummock in higher flow scenarios. Additional spot shots and revised channel grading should be provided to demonstrate that the deeper upstream water levels observed during the Site visit, which appeared to be a result of the existing hydraulic restriction, will not be adversely affected. The proposed channel grading should result in hydraulic conditions comparable existing conditions.

CLAW2: More information and survey data are provided in the plan to update the stream channel geometry more accurately. The channel has a reverse slope in the crossing section. Some boulders appear to be placed in the downgradient side of the crossing to acting as a broad crest weir condition to cause some backup pool upstream. We analyzed the hydraulics using weir function, which matches the surveyed stream bankfull flow condition very well. The existing survey data will be used to restore the channel if altered to the hydraulic condition comparable existing condition.

BETA2: Comment resolved - the new channel design uses on-the-ground survey data which documents the preservation of existing hydrology/hydraulics.

Bordering Vegetated Wetland (310 CMR 10.55)

- W22. Provide a narrative describing the “Avoid/Minimize/Mitigate” considerations that were assessed during the design of the Project.

CLAWE: The site is surrounded by wetlands and there is no alternative access that can avoid wetland alteration. The project has designed the crossing to meet all public safety and zoning requirement with retaining wall and open bottom culvert to minimize the impact meeting all crossing and replication ratio for mitigation.

BETA2: BETA defers to the Commission to determine whether this is sufficient to demonstrate that the Applicant has minimized unavoidable impacts. BETA notes that sufficient restoration details for temporary wetland and buffer zone alteration areas have not been provided.

CLAWE2: See response to W18. The applicant team has provided all requested data and restoration plans for the updated plans.

BETA3: Comment resolved.

- W23. Although the Applicant has proposed a replication area that exceeds the size of the proposed BVW impacts, no discussion of BVW Performance Standards was included in the NOI. Demonstrate that the Project adheres to the Performance Standards at 310 CMR 10.55(4)(b).

CLAWE: Field data is provided for soil and groundwater hydrology. The wetland scientist will supervise and monitor the replication process as designed for the wetland replication to comply with the performance requirements in 310 CMR 10.55(4)(b):

- 1. The replication area is more than twice of the filled area exceeding 1:1 required.*
- 2. The groundwater and surface elevation of the replication area will mimic the filled area and suitable for wetland plants.*
- 3. The replication area is in similar configuration as the filled wetland abutting the same stream.*
- 4. The replication area has unrestricted hydraulic connection with the existing wetland around*
- 5. The replication area is located in the immediate neighboring area abutting the same stream.*
- 6. The replication area will be monitored for two consecutive growing seasons following replication planting to assure that 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species.*
- 7. As a relatively small wetland replication, it is our professional judgement that the replication exceeds all required performance standards.*

BETA2: Comment resolved.

- W24. 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.

CLAWE: Four soil testing locations are provided with soil profile and groundwater data to assure the proper grading and wetland hydrology in the replication area.

BETA2: Indicators of groundwater are present at an appropriate depth when compared to proposed wetland replication area grades. Comment resolved.

Land Under Water (310 CMR 10.56)

- W25. Depict all temporary and permanent LUW impacts associated with the construction of the crossing.

CLAWE: As discussed above, the construction will be preferably conducted during no flow time. If timing dictates work during flowing time. Dewatering plan is devised to route the water bypassing the construction section. Given that most of the channel will be kept intact. The LUW will not be impacted significantly. Any alteration will be restored to the documented existing condition.

BETA2: Comment remains. As previously noted, it is unclear whether temporary LUW impacts have been considered. These should be depicted on the plans and quantified.

CLAWE2: See response to W18. We quantified the alteration to bank and LUW in the updated WPA Form 3.

BETA3: Comment resolved.

W26. Provide a narrative demonstrating compliance with 310 CMR 10.56(4).

CLAWE: As we showed, the design will maintain the existing stream channel geometry and substrate by using large open bottom box culvert to meet and exceed all stream crossing standard that are in compliance with 310 CMR 10.56(4):

- 1. Analysis shows that the channel water capacity and other hydraulic pattern will be maintained as existing condition.*
- 2. No significant ground and surface water is expected to be altered for the water body.*
- 3. The capacity of said land under water will be significantly the same as the existing condition to provide breeding habitat, escape cover. No fish presence is expected for this intermittent stream.*
- 4. The crossing will temporarily alter less than 200 sq ft of LUW in an existing used old car path section, which will unlikely adversely impact any significant wildlife habitat function with the preferred crossing method.*
- 5. The proposed work on the stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.56(4)(a) given that the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirements of 310 CMR 10.56(4)(a)4., the impact on Land under Water Bodies and Waterways caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures established under 310 CMR 10.60.*

BETA2: Temporary LUW impacts should be quantified, and a restoration plan should be provided to comply with the Performance Standards.

CLAWE2: See response to W18.

BETA3: Comment resolved.

STORMWATER MANAGEMENT REVIEW

The stormwater management design proposes to collect stormwater runoff into two new infiltration basins, one located on the northern side of the Site, and one located on the western side of the Site. Conveyance to these systems is provided via a new closed drainage system consisting of catch basins and drain manholes. Overflow from basin #1 will be directed to basin #2. Overflow from Basin #2 will be discharged to the west, just beyond the limits of the stream, via a new outfall.

As detailed below, the currently proposed iteration of the stormwater management system has been revised to sufficiently comply with the provisions of the Standards.

GENERAL

- SW1. The 100-year flood is defined by MassDEP as the anticipated water surface elevation resulting from 7.0" of rainfall in a 24-hour period. Revise calculations accordingly.

G&H: Volume 3, Chapter 1 (Documenting Compliance) of the Stormwater Handbook, in the Standard 2: PEAK RATE ATTENUATION section, points to the "Hydrology Handbook for Conservation Commissioners" for all required computations and demonstrations. In the hydrology handbook, TP-40 is specified as the required rainfall data atlas. Appendix F-1 of the Hydrology Handbook specifies the 100 year 24-hr design storm as 6.7" for Norfolk County. This concurs with the TP-40 Rainfall table within the HydroCAD software. Accordingly, the 100-year design storm rainfall depth has not been revised.

BETA2: In accordance with the Wetlands Protection Act, the definition of Bordering Land Subject to Flooding (the 100-year Elevation), states that the applicant shall:

"determine the boundary of Bordering Land Subject to Flooding by engineering calculations which shall be:

a. based upon a design storm of seven inches of precipitation in 24 hours (i.e., a Type III Rainfall, as defined by the U.S. Soil Conservation Service);"

Thus, the Act defines the 100-year storm as seven (7) inches of rainfall in 24 hours. Comment remains.

GH2: The 100-year design storm has been revised accordingly.

BETA3: Comment resolved.

- SW2. BETA recommends that the design engineer review the proposed grades around Basin #1. As shown on the detail on sheet 11 of 12, the top of the embankment is Elevation 153.50. The grading, as shown on Sheet 5 of 12, has the crest at Elevation 153.0 with a top width of 0.0'. BETA recommends that the width of the embankment at the crest be a minimum of 4'.

G&H: A minimum embankment crest width of 4' has been provided as requested.

BETA2: The grades along the southeasterly edge of the detention basin do not show a crest width as noted. Comment remains.

GH2: A 4' wide berm crest width has been provided for Basin #1 as requested. See dimensions on sheet 5 of the revised site plan set.

BETA3: As depicted on the plans, the bottom of the detention basin is lined and has been lowered; and grading now appears correct. Comment resolved.

- SW3. In accordance with Volume 2, Chapter 2 of the Stormwater Handbook, an emergency low level dewatering device is required and should be provided at each basin.

G&H: An emergency low level dewatering device detail has been added to both basin profiles as requested.

BETA2: This is only required on the infiltration basin, and it should be gated as opposed to capped. Revise accordingly.

GH2: The emergency low level dewatering device detail for infiltration basin #2 has been revised to propose a gated outlet as requested.

BETA3: The low-level outlet on the Infiltration basin is now gated as required. At the detention basin, the low-level outlet will be restricted to a 2.5-inch diameter opening and remain open to act as an outlet control and maintain the basin dry between events. Connecting this outlet with the 4-inch perforated subdrain should assist with preventing the accumulation of debris. Comment resolved.

- SW4. Clarify the methodology used for design and sizing of the proposed culvert at the roadway crossing.

CLAWE: See response prepared by CLAWE.

BETA2: Comment resolved.

- SW5. The design calculations for the piping from the stormwater collection system assume free discharge. However, based upon the HYDRO-CAD calculations, this system will be submerged by ponding in the basins during the 10-year storm. BETA recommends that the inverts into the basin be raised sufficiently to avoid surcharging the inlet pipe into the basin at the peak of the 10-year storm.

G&H: The invert into Basin #2 has been raised to avoid surcharging as requested.

BETA2: The invert was not raised; it is the same invert elevation from the original filing. In accordance with the calculations, the water surface elevation in the basin at the peak of the 10-year storm is elevation 251.59. The inlet pipe is an 18" RCP culvert at invert elevation 249.0. Accordingly, this inlet will be entirely submerged.

Test Pit 1-2 indicates that estimated seasonal high groundwater is at elevation 248.8. The bottom of the basin in the calculations is now listed as elevation 248.5 with the low-level outlet at invert elevation 248.0. The outlet is only a 2-inch diameter orifice which is below the floor of the basin, which is depicted as being within the groundwater table. In accordance with Volume 2 Chapter 2 of the handbook, the floor of the detention basin shall be a minimum of 12 inches above groundwater. The Basin #2 design should be revised accordingly.

GH2: Basin #1, which will be a dry detention pond and proposed to be constructed with a 30-mil impermeable liner, does not have an infiltration component, and detention basins are not required to observe a minimum separation to the estimated groundwater table. Basin #2, which is an infiltration basin, satisfies the required 2-foot separation to groundwater in accordance with the handbook. Therefore, no further adjustments to Basin #2 are proposed.

BETA3: The comment was specific to Detention Basin 1. Since the basin is now lined, the issue regarding seasonal high groundwater is no longer relevant. Comment resolved.

- SW6. Indicate material and depth of rip-rap spillway. Provide impervious barrier, typically a curb, through the full depth of the spillway material to prevent stormwater flow through riprap below the intended invert elevation.

G&H: Type and depth of material (M2.032.3) "Stone for pipe end" and depth information added to detail sheet, and the basin profile for basin #2 has been revised to specify a weir wall as requested.

BETA2: Comment resolved.

MASSDEP STORMWATER STANDARDS

The project is subject to the Massachusetts Stormwater Standards (310 CMR 10.05(6)(k-m)) as outlined by MassDEP. 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 one new outfall which will discharge stormwater runoff to an area immediately upgradient of the nearby stream. The discharge location is within the 25-foot wetland buffer zone. A riprap apron is proposed to mitigate erosion potential. Stormwater runoff from the Project area will be treated by subsurface infiltration systems prior to discharge.

SW7. Provide calculations for sizing of riprap apron.

G&H: Calculations for riprap apron have been provided as requested, see sheet 12 of the revised plan set.

BETA2: The detail provided addresses this comment; however, the source of the data indicated in the detail should be noted.

GH2: The source of the data on Sheet 12 has been provided as requested.

BETA3: Design reference provided. Sizes as indicated are in accordance with the design reference. Comment resolved.

SW8. Depict proposed headwalls on the plans.

G&H: All stormwater discharges utilize flared end sections, and the detail sheets have been revised to remove any references to headwalls.

BETA2: Flared ends will be used rather than headwalls; comment resolved.

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 Site hydrology. Stormwater runoff will further be mitigated via new infiltration basins. Calculations indicate a decrease in peak discharge rate and runoff volume to all watersheds.

SW9. Based upon the contours shown, runoff from the two isolated wetlands along the southerly property line does not flow towards the culvert beneath the driveway into 611 Lincoln Street. These should be treated as a separate and distinct analysis points for both existing and proposed conditions.

G&H: A New sub catchment area and second analysis point have added to plans and stormwater report as requested.

BETA2: The watershed areas have been corrected; however, there is a discrepancy with the total areas. The existing conditions analysis yields a total runoff area of 20.807 acres. The total runoff area under the proposed conditions is only 20.360 acres. In addition, the expansion of PR-2 watershed to include the driveway entrance on the east side of the culvert crossing is not included in the existing runoff area. The watershed areas should be equal.

GH2: The watershed areas have been updated accordingly. In addition, PR-2 and PR-3 have been combined into a single watershed to more accurately reflect the stormwater design.

BETA3: The watershed areas have been corrected; the areas analyzed in both existing and proposed conditions are consistent with one another. Comment resolved.

- SW10. Indicate existing conditions flowpath on the watershed plans and provide calculations to determine time of concentration. Woodland conditions combined with a long flow path length will result in a time of concentration greater than the 6-minute minimum used in the model.

G&H: Existing Condition flowpaths have been added to plan. Calculations for the time of concentration have been updated in the revised Hydro-cad report.

BETA2: The flow paths have been added; however, they should not be a straight line but rather perpendicular to the contours. In addition, the initial sheet flow should be 50 feet. There are no restrictions or indications of channelization at the top of each of the watersheds. In addition, for watershed EX-1, the flow path is approximately 1090 feet, yet the calculations account for only 400 feet. The flow path for PR-4 is not shown and the length is greater than that which is existing. Each of these items should be corrected.

GH2: The existing conditions flow paths have been revised to remain perpendicular to the contours as indicated. As discussed during the 1/25 zoom meeting, the watershed analysis point AP-1 has been revised to the boundary between the wetlands and project upland area, and the Tc flow path terminus adjusted accordingly. The Tc for watershed PR-4 has been revised to the minimum 6 minutes to reflect the watershed boundary revisions.

BETA3: The Tc flow paths depicted on the watershed maps have been corrected and now follow the contours appropriately. Comment resolved.

- SW11. Depict limit of work and tree clearing on the watershed plans.

G&H: the proposed limit of work and tree clearing has been added to proposed watershed plan as requested.

BETA2: Comment resolved.

- SW12. Expand subcatchment PR-2 to include any portions of Leanne Way and Trooper Paul Barry Way that will be graded towards proposed catch basins.

G&H: Subcatchment PR-2 has been expanded to capture the portion of the new roadway entrance that will be graded towards proposed catch basins as requested.

BETA2: Comment resolved.

- SW13. Revise subcatchment boundaries to include the footprint of Basin #2 within subcatchment PR-2.

G&H: Sub catchment PR-2 boundary has been revised to include the footprint of Basin #2 as requested.

BETA2: Comment resolved.

- SW14. Clarify method of routing building roofs to stormwater BMPs. As no roof leaders are proposed, roofs must be sloped towards the road to match proposed routing.

G&H: The proposed catchment areas have been revised to accurately represent roof runoff routing. 3 Cultec chamber systems are proposed to capture and infiltrate the entirety of the runoff associated with the 100 year storm from the rear of the roofs for units 23-42, and 61-62.

BETA2: The roof runoff from Units 1-23 is not being treated. In accordance with the Handbook In accordance with the handbook, these flows need to go through a BMP that provides 80% TSS removal like any other impervious surface. In addition, the Cultec chamber systems are within 50 feet of the BVW boundary and do not meet the setback requirement, and the infiltration rate used is not consistent with the test pit results.

GH2: The roof runoff from units 1-23 is now captured and routed to the drainage infrastructure in the street for detention, treatment, and recharge in basins 1 & 2 As discussed during the 1/25 zoom call, 18" sand filters have been added below the cultec chamber systems with perforated pipe subdrains that discharge to the slope. This eliminates the infiltration component of the chamber design, and thus eliminates the 50' setback requirement. See detail sheet 10 of 12.

BETA3: The roof runoff from each of the units is now being collected and piped directly into either a treatment system or the stormwater collection system in the roadway. The collection system design demonstrates that all the runoff is now being treated in accordance with the Standards. In addition, the treatment for those portions of the roof area which could not discharge through the infiltration basin are now being treated by a sand filter; therefore, BVW setbacks are no longer an issue. Comment resolved.

SW15. Model infiltration basin footprints as "Water Surface, impervious" to avoid "double-counting" infiltration that will occur in these areas.

G&H: HydroCAD model has been revised to model Infiltration basin footprints as impervious, as requested.

BETA2: Comment resolved.

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 Woodbridge Fine Sandy Loam with HSGR C/D (low infiltration when unsaturated, very low when saturated), Paxton Fine Sandy Loam with HSGR C, Whitman Fine Sandy Loam with HSGR D, and Ridgebury Fine Sandy Loam with HSGR D.

Test pits conducted at the Site by the Applicant indicate that underlying soils are predominantly Very Fine Sand beneath Sandy Loam with depth to groundwater ranging from 13" to 36" below grade.

Recharge is proposed via a new two new infiltration basins which will capture runoff from the majority of impervious areas. The proposed system will provide a recharge volume in excess of what is required. Drawdown calculations indicate that basins will drain within 72 hours.

SW16. In accordance with the Stormwater Handbook, two test pits in the footprint of each stormwater basin are required. Test pits in the vicinity of each basin (TP 10, 11, 12, and 20) show variable groundwater depth. Based upon the depth to groundwater indicated in the adjacent test pits to each basin, it appears that the bottom of each basin will be less than 2' above groundwater. Additional test pits will clarify actual ESHGW elevations required for the design.

G&H: Additional test pits were excavated November 4, 2022. Two were excavated in Basin #1 and three in Basin #2. The ESHGW was determined and verifies that both basins meet the minimum ground water separation. The soil information has been added to the Plan set.

BETA2: See comment SW5 above. Comment remains.

GH2: See G&H response to SW5.

BETA3: See Comment SW5 above, comment resolved.

- SW17. Because the Basins will be used to comply with both Standards 2 and 3, a mounding analysis is required per V2C1 of the Stormwater Handbook.

G&H: The exfiltration capacity was not included in the HydroCAD model for basin #2 to demonstrate that even when excluding exfiltration, Standard 2 is met. A mounding analysis is required when separation to groundwater is less than 4' and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm. As the recharge component of the basin is not necessary to comply with standard 2, a groundwater mounding analysis is not required. Basin 1 has been revised to a conventional detention basin and no longer has a recharge component.

BETA2: As shown in the hydrologic calculations, there has been no assumed infiltration therefore, the comment can be dismissed.

- SW18. BETA notes that test pits were completed in October 2005, outside of seasonal high groundwater period. In addition, the logs fail to note soil colors, the depth to mottles, and whether the estimated seasonal high groundwater level noted is based upon observed water or mottles. BETA recommends that additional test pits be conducted throughout the Site to confirm seasonal high groundwater elevation.

G&H: New test pit were performed on 11/4/22, and the test pit data has been added to Sheet 12.

BETA2: Test pits have been identified. Comment resolved.

- SW19. BETA recommends that an agent of the town observe native soils after test pit excavation for the to confirm design assumptions.

G&H: As per discussion with the Franklin Conservation Agent, testing was allowed on the condition that the test results and pictures of the testing would be sent to the Agent as soon as possible. The pictures and test results have been sent to the Agent.

BETA2: Acknowledged.

- SW20. Revise basins to include at least 1' of freeboard between the 100-year peak elevation and the top of the basin.

G&H: The stormwater basins have been revised to provide 1' of freeboard between the 100-year peak elevation and the top of the basins, as requested.

BETA2: The label for Pond 2 on Sheet 5 states that the Top of Pond elevation is set at 246.0 feet, while calculations indicate 246.5 feet, which is required to provide freeboard. There is sufficient width to maintain elevation 246.5. Revise the note accordingly.

GH2: Note has been revised accordingly.

BETA3: Note revised; comment resolved.

- SW21. Provide a minimum setback between infiltration basin and building foundations – 10 ft when downslope and 100 ft when upslope. The designer must demonstrate that infiltration basins will not adversely impact downslope building foundations, e.g. those buildings with slab elevations located below the basin bottom elevation. The slab elevations should be raised to be above the bottom elevation of infiltration basin #1 (Elev. 248.5').

G&H: The stormwater basins have been revised to provide a minimum of 10' of separation between nearby basements. Stormwater basin #1 has been revised to a conventional detention basin with an impervious liner, eliminating the possibility of recharging water impacting downslope building foundations.

BETA2: The liner is not indicated or labeled on the plans.

GH2: The label for pond 1 on Sheet 5 of 12 has been revised to indicate the pond is to be lined, and the typical basin profile on Sheet 11 of 12 has been revised for clarity.

BETA3: Liner is clearly shown on detail Sheet 11 of 12. Comment resolved.

SW22. Basin 2 is located within 50' of the wetlands and should be reshaped to provide this minimum setback required by Table 3 of V1C1 of the Stormwater Handbook.

G&H: Basin #2 has been reshaped as requested and per the guidance provided by BETA on interpretation of the setback.

BETA2: The basin meets the setbacks from the Resource Area; however, the basin grades have been increased to 2.5H:1V on the inside face and 2H:1V on the outside face. In accordance with Volume 2, Chapter 2 of the Handbook:

"Design the side slopes of the basin to be no steeper than 3:1 (horizontal: vertical) to allow for proper vegetative, stabilization, easier mowing, easier access, and better public safety."

The basin design should be modified accordingly.

GH2: Grading for Basin #2 has been revised to the minimum 3:1 slopes as required. Retaining walls have been added to offset the reduction in pond storage capacity.

BETA3: Comment resolved.

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 includes treatment of pavement areas via deep sump catch basins, sediment forebays, and infiltration basins. The resulting TSS removal rate is between 80% and 98%. The proposed infiltration basins will treat a water quality volume in excess of what is required.

As a Project with a rapid infiltration rate (>2.4 in/hr), the Project is required to treat the 1.0 inch water quality volume and provide at least 44% TSS removal prior to discharge to an infiltration BMP.

SW23. In accordance with Volume 1, Chapter 1 of the Stormwater Handbook,

*"The required water Quality Volume equals 1.0 inch of runoff times the **total** impervious area of the post development project....".*

In the determination of compliance with the Stormwater Standards, the stormwater report states for Standard 4,

"Since roof runoff is considered clean and not considered to contribute contaminants to stormwater runoff, 101,902 sf of roof area is not included in the required water quality volume. "

The roof area is part of the Site impervious area and must be considered when calculating the required water quality volume. Accordingly, the water quality volume must be recalculated.

G&H: The stormwater report has been revised to include ALL impervious area in the Water Quality Volume calculation. In addition, the new testing within the stormwater basins and throughout the site identified the parent material as Sandy Loam. Because the parent material is no longer considered to have a rapid recharge rate, the water quality volume is based on the 0.5" standard. G&H notes that 1" of runoff is still retained on site, as demonstrated in the MS4 bylaw compliance section of the narrative.

BETA2: The calculations demonstrate that the static storage provided will exceed 1 inch of runoff from the total impervious surfaces on site. Comment resolved.

SW24. The impervious area tributary to five of the proposed catch basins exceeds 0.25 acres. In accordance with Volume 2, Chapter 2 of the Stormwater Handbook.

"The contributing drainage area to any deep sump catch basin should not exceed ¼ acre of impervious cover."

These basins will no longer provide the 25% TSS Removal assumed in the analysis. BETA recommends that additional basins be added to meet this design requirement.

G&H: Street drainage sub catchment areas have been reconfigured. All catch basin sub catchment areas are now meeting this requirement.

BETA2: BETA recommends that the design engineer review the calculations. The roof is impervious and should be considered in this determination. Comment remains.

GH2: A portion of the runoff from the roofs contributing to the catchment of the catch basins is now routed directly to drainage manholes to reduce the contributing impervious area to the over-capacity catch basins. Accordingly, all catch basins now provide the 25% TSS removal noted in the TSS worksheets.

BETA3: Comment resolved.

SW25. The treatment provided by the deep sump catch basin is part of the pretreatment requirement and cannot be counted in conjunction with the final TSS removal calculation of Basin 2. The outfall from Basin 1 is routed through Basin 2, therefore, the 80% TSS Removal rate of Basin 2 should be included in the final treatment train for Basin 1.

G&H: TSS work sheets have been revised per this comment and reflect the change in the design of detention basin #1.

BETA2: See BETA2 response to Comment SW24 above. Comment remains.

GH2: See GH2 response to Comment SW24 above.

BETA3: Comment resolved. See Comment SW 24 above.

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. The project is not located in a critical area – standard not applicable.*

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.* As the Project proposes to disturb greater than one acre of land, it will be required to file a Notice of Intent with EPA and develop a Stormwater Pollution Prevention Plan (SWPPP). Erosion control measures are depicted on the plans including silt fence, mulch sock, catch basin inlet protection, stabilized construction entrance, and temporary sedimentation basins.

SW26. Recommend requiring the final, completed SWPPP be provided to the Town prior to the start of construction. The provided SWPPP does not include all information required by the EPA.

G&P: Acknowledged.

BETA2: No further comment required.

SW27. Include location of the stabilized construction entrance on the plans.

G&P: The location of the stabilized construction entrance has been added to the plan as requested.

BETA2: Comment resolved.

SW28. Revise construction sequencing plan to clarify that temporary sedimentation basins will not be removed but rather reconfigured into permanent infiltration basins.

G&H: the temporary basins are located in different areas than the proposed basins. Accordingly, the note will remain as is. References to the basins use as temporary basins have been removed from the basin profile details.

BETA2: Temporary basins have been relocated. It is recommended that details and calculations for the basins be provided.

GH2: Please refer to response to comment W4 prepared by CLAWE under a separate cover.

BETA3: See Comment W4 above.

SW29. Include site restoration in the construction sequencing.

G&H: Site restoration has been added to construction sequencing. See documentation provided by CLAWE.

BETA2: Comment resolved.

SW30. Reconcile the two sequencing plans for consistency between the SWPPP and Sheet 4.

G&H: Sheet 4, the SWPPP, and Sheet 11 have all been revised for consistency with the construction phasing and sequencing plan provided by CLAWE.

BETA2: Comment resolved.

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 Manual was provided with the Stormwater Management Report.

SW31. Revise sediment forebay inspection frequency to be monthly and cleaning frequency to four times

per year.

G&H: Operation and Maintenance Plan revised as requested.

BETA2: Comment resolved.

SW32. Include inspection and maintenance measures for the outfall and riprap apron.

G&P: Operation and Maintenance Plan revised as requested.

BETA2: Comment resolved.

SW33. Provide plan, drawn to scale, that shows the location of all stormwater BMPs in each treatment train along with the discharge point.

G&P: A Stormwater BMP plan has been prepared and included with the stormwater report, as requested.

BETA2: Comment resolved.

SW34. Include gate or gap in fence to allow vehicular access to the entire infiltration basin perimeter for maintenance.

G&P: Include gate or gap in fence to allow vehicular access to the entire infiltration basin perimeter for maintenance.

BETA2: Comment resolved.

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. – **complies.**

REVIEW SUMMARY

Based on our review of the NOI submittal and Project plans, the Applicant has 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 complies with the Massachusetts Stormwater Management Regulations. However, it is recommended that the Applicant provide the clarification requested in the BETA3 response to Comment W8. and that the Commission condition the Project as they see fit, particularly with regards to dewatering, restoration, and the stabilization of the slope along the western side of the Site.

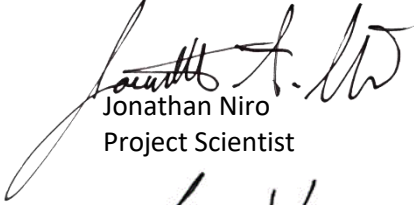
Ms. Breeka Li Goodlander, Agent

February 23, 2023

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

Very truly yours,
BETA Group, Inc.



Jonathan Niro
Project Scientist



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



Laura Krause
Project Manager

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