



T 508.366.0560
F 508.366.4391
www.bealsandthomas.com
Regional Office: Plymouth, MA

November 16, 2015

Ms. Cheryl Jolley, Chair, Topsfield Conservation Commission
c/o Ms. Lana Spillman, Conservation Administrator
Town of Topsfield
Town Hall, 8 West Common Street
Topsfield, MA 01983

Ms. Martha A. Morrison, Chair, Topsfield Planning Board
c/o Ms. Roberta Knight, Purchasing and Community Development Coordinator
Town of Topsfield
Town Hall, 8 West Common Street
Topsfield, MA 01983

Via: Email to: lspillman@topsfield-ma.gov and rknight@topsfield-ma.gov

Reference: Supplemental Notice of Intent Peer Review
57 Perkins Row
Topsfield, Massachusetts
B+T Project No. 2613.01

Dear Commissioners and Members of the Planning Board:

Beals and Thomas, Inc. (B+T) is pleased to assist the Town of Topsfield Conservation Commission (the Commission) and Planning Board (the Board) with the peer review of the Notice of Intent (NOI) for the proposed 57 Perkins Row subdivision (the Project). A separate letter summarizing the results of our review of the Application for Definitive Subdivision Approval was issued to the Planning Board on November 10, 2015.

The Project proposes a five lot residential subdivision on the ±8.2-acre property, areas of wetland alteration, an area of wetland replication, a stormwater management system and on-site septic systems.

A summary of the review to date is provided below:

- B+T previously issued a letter dated July 28, 2015 which presented the results of our preliminary review of the initial documentation submitted by the Applicant.
- As a consequence of our initial comments, the Applicant provided supplemental documentation in a letter dated August 18, 2015.
- Subsequently, B+T issued a letter dated September 16, 2015 which presented the results of our review of the NOI documentation submitted by the Applicant.
- The Applicant provided a response to those comments and associated materials dated October 6, 2015.

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- B+T issued a supplemental comment letter addressing the Applicant's responses on October 21, 2015.
- As a consequence of our comments, the Applicant has provided the supplemental documentation as listed below, which served as the basis for the current supplemental review:
 - *Response to Peer Review Comments Notice of Intent 57 Perkins Row Topsfield, Massachusetts* letter dated November 11, 2015 from The Morin-Cameron Group, Inc.
 - Federal Emergency Management Agency Flood Profile for the Ipswich River
 - *Plan to Accompany a Notice of Intent at 57 Perkins Row in Topsfield, Massachusetts* prepared by The Morin-Cameron Group, Inc., in nine sheets, revised November 11, 2015.

The review process has been undertaken with consideration of the Massachusetts Wetlands Protection Act at M.G.L. Chapter 131 Section 40 and implementing regulations at 310 CMR 10.00 (collectively referred to as the Act); the Town of Topsfield Chapter LXII General Wetlands Bylaw (the Bylaw) and Chapter R:10 Regulations for Topsfield General Wetlands Bylaw (the Regulations); the Stormwater and Erosion Control Regulations Town of Topsfield Planning Board; and, particularly the comments presented in our previous review letter dated October 21, 2015.

Site Visit

The following information is excerpted from our November 10, 2015 letter to the Planning Board, summarizing the site visit:

We visited the Site on November 9, 2015 with Town personnel and representatives of the Applicant to gain familiarity with the surrounding land use patterns and to evaluate the existing conditions with regard to the proposed development. We have included photographs herein that were obtained during the site visit to help illustrate the existing conditions and provide context for our comments.

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Existing driveway and proposed location of new roadway at Perkins Row.



Perkins Row at the proposed subdivision roadway viewed to northwest

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Perkins Row at the proposed subdivision roadway viewed to southeast



The existing wetland on the west of the driveway viewed to the southwest

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The existing wetland on the east of the driveway viewed to the northeast



The existing hydraulic crossing of the driveway viewed to the south

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The existing dwelling viewed to the north

Review Format:

In an effort to establish clarity for the Administrative Record, we have included comments as follows:

- The comments from our preliminary review letter report dated July 28, 2015 in regular font.
- The comments from our NOI submission review letter report dated September 16, 2015 in regular font.
- The Applicant's response in *italicized font*.
- The comments from our letter dated October 21, 2015 in regular font.
- The Applicant's current response in *italicized font*.
- Our current comment in **bold font** to document the status of our original comment.

Comments that were considered adequately addressed as of our October 21, 2015 letter are not included herein.

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Comments from Preliminary Review (July 28, 2015 Letter)

We have included and/or updated comments from our original July 28, 2015 letter below.

1. This comment was previously adequately addressed by the Applicant.
2. Waiver criteria at Section R:10-4 i. of the Regulations: the NOI does not fully address the waiver criteria, specifically:
 - a. This comment was previously adequately addressed by the Applicant.
 - b. This comment was previously adequately addressed by the Applicant.
 - c. Replication - We acknowledge the Applicant's indication on Page 4 of the NOI Project Summary that the proposed impact can be permitted without replication, but that the project is providing replication. However, we note for the administrative record that, based on our current understanding of the project, we disagree that the wetland impact could be permitted without mitigation. 310 CMR 10.55(4)(c) allows less than 500 sf loss of bordering vegetated wetland only when the impact area "extends in a distinct linear configuration ("finger-like") into adjacent uplands..." We will review the proposed replication in more detail during our comprehensive review; however, we recommend that the Applicant ensure that the NOI materials address Section R:10-22 *Replication Policy and Guidelines*.

Previous B+T Comment: No supplemental information provided by Applicant.

It appears that the intent of Section R:10-22 of the Regulations is generally met by the wetland replication proposal, but that additional documentation is warranted. Specifically, we recommend that a narrative addressing the information requested by Sections R:10-22 d. 2, 9 and 10 be provided.

Furthermore, although some monitoring information has been submitted with the Mitigation Plan narrative, it does not appear to fully address the information requested by Section R:10-22 d. 12. We recommend that the Applicant prepare a monitoring plan complying with this section of the Regulations.

We also recommend that a note be added to the plans indicating that wetland replication is to occur prior to the other on-site work and wetland impact, pursuant to Section R:10-22 d. 3.

We also note that Item 4 of this section of the Regulations indicates that security pursuant to Section R:10-10 shall be required.

Previous Applicant's Response: A response to this comment will be submitted under separate cover.

Previous B+T Comment: B+T defers review of the response to this comment until a response is received.

Current Applicant's Response: The following responses follow each section of the Town of Topsfield Regulations regarding wetland replication projects at R:10-22. Our comments follow the various section of the regulations so it will be clear that we address the interests of the bylaw.

Current B+T Comment: We have included comments below pertaining to specific provisions of the requirements. No comment is listed where we consider the provision adequately addressed by the Applicant.

d. The following guidelines shall apply:

- 1. The replication area shall be at least one and a half times the area destroyed.*
 - The area proposed to be filled equals approximately 470 square feet.*
 - The proposed mitigation area equals approximately 1300 square feet.*
- 2. The replication shall match the destroyed wetland to the maximum extent possible, in reference to the following parameters:*
 - (a) Wetland type(s)*
 - Both wetlands are bordering vegetated wetlands which border on the existing wetland basin.*
 - (b) Spatial relationship to associated water body/way (adjacency, location)*
 - The wetland mitigation area is immediately adjacent to the same ponded area at the site.*
 - (c) Groundwater and surface water hydrology and flood control*
 - Both fill and wetland mitigation areas are connected to the same surface water and hydrological connection.*
 - (d) Vegetational community composition and structure*
 - The plant community associated with the proposed area to be filled consists principally of several invasive shrubs including multiflora rose and honeysuckle as well as high bush blueberry. The area is sparsely vegetated and a narrow strip of resource area.*

- *The proposed wetland mitigation area will consist of a more desirable plant species assemblage and substantially improve the function and value of the wetland areas at the site. Refer to Figures 2a, 2b, 2c, 2d, and 2e for further information and details.*
- (e) *Soils composition, structure, permeability*
- *The proximity of the fill and mitigation areas will insure that the soils will be similar. The mitigation area will be created with 10 to 12 inches of organic soils at the water table to create the hydric conditions necessary to create a sustainable wetland resource area.*
- (f) *Fisheries and wildlife habitat values*
- *Wildlife habitat considerations have been discussed in other comments to B&T queries but the intent of the proposed mitigation plan is to improve the current wildlife habitat characteristics of the site by the installation of a diverse set of native plantings in the canopy, shrub and herbaceous vegetation layers.*
- (g) *Water quality protection and enhancement*
- *An additional benefit of the proposed wetland plantings and construction of the wetland mitigation area will be to protect water quality and enhance water quality by better filtering runoff waters from the adjacent impervious surfaces which are currently untreated.*
- (h) *Sedimentation dynamics*
- *The BMP designed for the project has been designed to remove sediment from the runoff waters of the new roadway, but to also improve wildlife habitat quality and water quality by functioning as a treatment cell where native plants will metabolize road water runoff constituents and condition the water before discharge to the downgradient wetland resource areas. Sediment removal from the water column is a major element of this system design.*
3. *Creation of the replication area shall occur prior to the other site work, to the extent possible.*
- *The wetland mitigation area will be constructed at the same time as the crossing is implemented. This to make efficient uses of materials and equipment during the construction process. By having the mitigation areas construction at the front end of the project will allow the monitoring and aftercare elements of the project to proceed while the other elements of the projects are completed.*
4. *Security pursuant to Section R:10-10 shall be required.*
- *This will be addressed by the applicant as directed by the Commission.*

5. *The applicant shall provide an expert consulting team with a proven track record in planning and managing wetland replication projects. Expertise shall include engineering, hydrology, botany, biology/ecology, soil science, geology/geohydrology, horticulture, and/or other relevant areas. A list of the consultant team's previous replication projects and other appropriate credentials shall be submitted, and is subject to approval by the Commission. The consultant team shall be responsible for data collection; site documentation; project planning including preparation of required plans and reports; supervision of project implementation; troubleshooting and corrective action; monitoring; reports on all activities to the Commission.*
 - *DEC is well known to the Commission and has completed several restoration projects in town regarding wetland restoration and replication as well as buffer zone restoration and invasive species management including: 270 Boston Road; 34 Gail Street; 14 Grove Street; Ferncroft Country Club; among others.*
6. *Cooperative scientific research efforts in conjunction with accredited universities are encouraged.*
 - *There will be no research elements of this project, at this time.*
7. *Restoration of natural wetlands destroyed by prior filling/alteration is encouraged where feasible.*
 - *This does not apply to this project.*
8. *Replication areas shall not be used for direct discharges of wastewater or stormwater, or for detention/retention of stormwater.*
 - *The current project confirms to this design parameter.*
9. *The Notice of Intent shall include data to fully and accurately describe and document:*
 - (a) *The general setting, including: relationship to water body/way; seasonal water levels including dry weather and flood conditions; water supply issues; water quality issues; direction of groundwater flows; tributary surface drainage areas; normal and peak runoff conditions; surficial soil and geologic characteristics in tributary areas; land use within five hundred (500) feet; habitat values;*
 - *This all appears in the narrative prepared by DEC for the Notice of Intent (NOI) application prepared and submitted by the MCG.*

- (b) *Specific site characteristics of wetland to be destroyed (plans one inch equals five feet (1" = 5'); cross-sections, plan views, reports, photos etc. as appropriate to fully depict existing site including: topography including microrelief; soil profile and permeability; depth to bedrock; surficial and groundwater hydrology including seasonal variations; extent of flooding; plant community(ies) composition and structure; fisheries and wildlife habitat; water quality (list parameters);*
- *It is our professional opinion that this level of detail is not warranted for this wetland mitigation project given the small scale of the project. All work related to plant community and hydrology is included in the NOI narrative and subsequent submittals to the Commission as part of their review process.*
 - *The wetland mitigation area will be constructed to intersect the existing water table elevation associated with the existing bordering vegetated wetland and construction will be overseen by a Professional Wetland Scientist (DeRosa, PWS No. 2250) to insure that the construction and grading is completed to insure proper hydrologic connection to the local water table.*

Current B+T Comment: The Applicant's representative has indicated their professional opinion with regard to the level of detail appropriate for this project, and we acknowledge the indication in the Regulations that the provisions of Section R10-22.d. are "guidelines". In our opinion, the Applicant has provided appropriate information documenting the proposed replication. Furthermore, the Applicant has committed to having a Professional Wetland Scientist oversee the proposed mitigation, and has provided further acknowledgement of monitoring requirements elsewhere herein. Therefore, we consider this comment adequately addressed.

- (c) *Specific site characteristics of proposed replication/restoration area (plans and documentation as paragraph (b) above). Particular data regarding site hydrology, geohydrology, groundwater hydrology must be included to document the suitability of the site to support wetland vegetation, and to persist over time. In addition, the existing values of the upland area must be evaluated;*
- *The wetland mitigation area was located because of its proximity to the adjacent wetland resource area which is indicative of the local water table elevation. A professional wetland scientist will oversee the*

construction of the wetland mitigation area to insure the proper hydrologic connection to the water table is established.

- *The subgrade will be excavated to approximately 12 inches below the observed water table elevation and filled with manufactured organic soils to the finish grade of the existing bordering vegetated wetland.*

(d) Planimetric calculations, critical and spot elevations; benchmark(s)

- *All survey and elevational data was prepared and submitted by Morin-Cameron engineers and surveyors. (Refer to revised site plans).*

10. The consulting team shall identify potential problems and prepare contingency plans to be reviewed with the Commission.

- *We do not foresee any problems with the design as all elevations have been maintained during the design process so that the water table will be maintained at the existing elevation.*

11. Implementation shall be undertaken by skilled personnel under supervision of a wetland scientist experienced in wetland replication work.

- *Michael J. DeRosa is a Professional Wetland Scientist (PWS No. 2250) and has over 25 years' experience working in Massachusetts with the Wetlands Protection Act and its Regulations and will oversee the construction of the wetland mitigation area and BMP construction. Plantings will also be overseen during installation and maintenance and aftercare of the mitigation area.*

A detailed implementation plan and schedule shall be submitted to the Commission. Site preparation techniques must be detailed, including: type of equipment; rough grading and verification; verification of groundwater levels; sources and handling techniques for soils; plant species list; quantities and sources of native plant materials; handling of plant materials; planting scheme; hydraulic connection to wetland; protection against erosion/sedimentation; and other appropriate data. Documentation of site work to create the replication area and fill/alter the existing wetland shall be prepared and submitted to the Commission.

- *The construction sequence was prepared and submitted by Morin-Cameron engineers with review and discussion by DEC scientists.*

Current B+T Comment: The construction sequence was not readily obvious to us in reviewing the various project filings. There is construction sequence (“Major Activities”) information included in the SWPPP, but it does not appear to address the provisions above. We recommend that a singular construction sequence be prepared by the Applicant, or that reference to its location be provided to facilitate review.

12. *A monitoring plan shall be prepared and submitted to the Commission. Qualified personnel shall take measurements/samples needed to assess the progress of the replication area in replacing the functions of the natural wetland. Reports shall be submitted quarterly unless otherwise specified by the Commission.*

Monitoring shall address, at a minimum:

- (a) Erosion/sedimentation control*
- (b) Plant community reestablishment: species; distribution; % cover by stratum; vigor; mortality; growth rates; successional patterns; need for replanting (species, dates, action taken)*
- (c) Evidence of wetland hydrology*
- (d) Evidence of reestablishment of habitat value, repopulation by animals*
- (e) Water quality parameters*
- (f) Problems and actions taken*
 - *These measurements will be collected and summarized in the quarterly reports required by the Commission under the Bylaw requirements listed above. Additionally, our aftercare and maintenance plan included in the wetland mitigation plan included as part of the NOI application will be followed.*

Current B+T Comment: As a singular comprehensive monitoring plan has not been submitted for the project, we recommend that the Commission incorporate reference to the Aftercare and Maintenance Plan as well as the monitoring requirements of R:10-22.d.12, as acknowledged by the Applicant.

13. *No certificate of compliance shall be issued for any replication area unless it has been established for at least two (2) years, and has met criteria specified.*
- *This is also required by the protocols set out in 310 CMR 10.55 of the Wetlands Protection Act Regulations and if the plantings and mitigation areas are planted at the time of construction will be completed at the time the project is ready to submit the Request for a Certificate of Compliance.*

Current B+T Comment: We note that it is our understanding, pursuant to the Bylaw, Regulations, and information provided by the Applicant herein, that plantings and mitigation will occur coincidentally with wetland impacts. Therefore, we presume the phrase “...and if the plantings and mitigation areas are planted at the time of construction...” [emphasis added] was intended to be “...and since the plantings...”

14. *Further alterations of wetlands on the subject property will be limited or prohibited. A permanent condition recorded against the title to the property shall specify this limitation. Replication area shall be subject to protection afforded to natural wetlands.*
- *This is understood by the Applicant.*

e. Public Interest/Unconstitutional Taking –

Previous B+T Comment: No response provided by Applicant. Original comment updated and expanded below:

We recommend that the Applicant clarify under which condition (public interest or taking) the waivers are requested, and provide the associated supporting information.

The NOI Project Summary on Page 4 addressing this criterion appears to focus on when the lot was created and what would have been allowed (based on current zoning) since the Wetlands Protection Act and local Bylaw and Regulations were not in place at that time. If the Applicant finds it appropriate to make this comparison, we recommend that the number of house lots achievable pre- wetlands regulations be based upon the then-current zoning.

There is also significant discussion regarding local versus state Riverfront Area. It is unclear how much of the information contained in this section is relevant to this particular waiver criterion.

Public benefits noted in the NOI narrative are “scaling back the project to accommodate the Topsfield Wetlands Bylaw...” and that “The proposed road crossing will restore this [wildlife corridor] by providing a bottomless box culvert meeting the requirements of the MassDEP River and Stream Crossing Guidance Document.” The first of these, accommodating the Topsfield Wetlands Bylaw, does not appear to appropriately address the requirement that “The waiver is necessary to accommodate an overriding public interest...” (Section R:10-4 i. of the Regulations). Similarly, it is a requirement of the Act that replacement crossings meet the Stream Crossing Standards to the maximum extent feasible. There is also discussion in the NOI narrative that the new roadway cross-section will “alleviate the interface between automobiles and wildlife by raising the elevation of the paved surface and directing wildlife to the more passable culvert crossing.” It is not apparent that the existing single-family home use of the property, or potential future five single-family home use would result in sufficient traffic to conflict with wildlife passage such that raising the road surface to direct wildlife beneath/through the new crossing represents a benefit for wildlife passage significant enough to correspond to an overriding public interest. We acknowledge the extension of the public water main, which will “provide a hookup for residents on Perkins Row for public water, potentially eliminating private wells in the future.” It would be useful information to know how many residences may be able to connect to public water in the future due to this extension.

Previous Applicant’s Response: Under R:10-4.g(d), the waiver can be granted “to accommodate an overriding public interest...” The project satisfies this provision of the Bylaw for several reasons.

- *The structural integrity of the existing driveway is compromised. As evidenced by a sinkhole that has developed over the past year, it appears that soil is eroding from under the driveway as water flows through the large diameter loose stone backfill which is serving as the conveyance channel for stormwater flowing under the driveway. A large storm event has the potential to cause the driveway to fail. This event would severely damage the wetland ecosystem, eroding it towards the Ipswich River and also poses a risk of causing erosion on downstream properties. The new road will be constructed in a manner as to ensure that it is structurally sound. The road will be bounded by a modular wall designed by a structural engineer and a structural box culvert designed to manage small and large storm events. Prevention of flood damage and preventing loss of wetland habitat is in the public interest.*

- *The road will ensure that hydrologic conditions of the wetland system are maintained. Stormwater runoff will be conveyed through a new box culvert which has been designed to manage the various storm events as well as maintain the existing static water level of the wetland. It will also restore the wildlife corridor, currently obstructed by the driveway, in accordance with the river and stream crossing guidance issued by MADEP. Restoration of the wildlife corridor is in the public interest.*
- *Drainage infrastructure, specifically a Low Impact Development (LID) constructed stormwater wetland as well as replicated wetland area would expand the wetland habitat area and improve the management of stormwater runoff from the property. The constructed wetland meets the Wetlands Bylaw Section R:10-4.k.10 which states that "developments or construction in ... Buffer Zones shall be designed to be in conformance with LID." Compliance with the stormwater sections of the bylaw is in the public interest.*
- *The extension of the municipal water main approximately 800 feet down Perkins Row will provide additional hydrants for fire protection, improve water quality and provide a potential hookup point for existing dwellings that are currently on private wells. Eliminating drinking water wells is in keeping with the interests of the Topsfield Wetlands Bylaw. Seven existing dwellings on Perkins would be able to connect to the new water main. The extension of the water main is in the public interest.*
- *The project complies with the town Zoning Bylaw applicable to the Inner Residential and Agricultural Zoning District. Compliance with the Zoning Bylaw is in the public interest.*

Previous B+T Comment: The Applicant has summarized the public interests they contend are gained by the proposed Project. The Commission must find that these items result in an overriding public interest in order to grant the waiver. The Commission may wish to solicit input from the public and appropriate public officials to determine the validity of the overriding public interest.

Current Applicant's Response: No response necessary.

Current B+T Comment: Agreed; the matter is subject to the Commission's review.

3. This comment was previously adequately addressed by the Applicant.
4. This comment was previously adequately addressed by the Applicant.

General Comments

5. This comment was previously adequately addressed by the Applicant.
6. This comment was previously adequately addressed by the Applicant.
7. This comment was previously adequately addressed by the Applicant.
8. This comment was previously adequately addressed by the Applicant.
9. The mitigation plan narrative indicates that invasive species removal and subsequent plantings to establish a native community will be undertaken in buffer zone and wetland (Page 2 Item 3). However, Figure 2a "Mitigation Elements Plan" depicts "The proposed invasive species management areas..." only within the buffer zone. Clarification is requested. Additionally, if work is proposed within the wetland, given that the restoration plan appears to indicate that the areas will be entirely cleared of all vegetation, thought should be given to and information provided relating to how/whether this work should be quantified as a wetland impact.

Previous Applicant's Response: The mitigation/restoration effort will predominantly include the whole plant removal of woody invasive species within the surrounding buffer zones to the wetland areas. Some herbaceous invasives such as purple loosestrife and/or Phragmites, if encountered with the wetland area will be removed by hand. The removal of invasive plants in this manner is considered a maintenance activity and will not adversely impact the bordering vegetated wetland. We do this as a matter of course when working in or near wetlands that may have small, or new invasions of these species. Our intent was to include this as a maintenance or de-minimus activity.

Previous B+T Comment: We acknowledge the intent and commend the Applicant for incorporating hand removal of small populations of invasive plants within wetlands. We recommend that a note(s) be added to the Mitigation & Planting Plans detailing the potential hand removal of herbaceous invasive species within the wetlands, including how much contiguous area may be cleared without further Commission review.

Current Applicant's Response: We have revised Figure 2c. Wetland Restoration Planting Plan to include the hand removal of invasive plant species that may come to be found within the restoration areas. The Aftercare and Maintenance Plan included in the NOI narrative also includes this language and this is our standard operating procedure for our wetland and buffer zone restoration plans. The total area that this work will be conducted in is uncertain but will include areas that invasive plants are removed and also the new planted areas as well as the wetland mitigation area and the pocket wetland BMP area.

Current B+T Comment: We acknowledge the Applicant's response and addition of the note "Invasive plant species that may come to be found with the wetland mitigation area will be removed by hand and composted off site at a local composting facility" to the Wetland Replication Planting Plan (Figure 2c). We presume that the intent is that this note relates to all wetland mitigation areas (as indicated by the note) despite its inclusion on the Wetland Replication Planting Plan specifically. The intent of our comment was to ensure that future contractors were aware of the restrictions associated with potential invasive species removal within the wetlands, such as total amount of disturbance and type of species, for example. We again commend the Applicant for including invasive species management, and given their indication that a Professional Wetland Scientist will be involved during the construction of the project, we consider this comment adequately addressed.

10. As impacts to bordering vegetated wetland is proposed, and the project is not a limited project, it appears that a wildlife habitat evaluation pursuant to 310 CMR 10.60 and the Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands (March 2006) is required.

Previous Applicant's Response: The project is below the 50 linear foot threshold for loss of intermittent stream (only one side of the stream is counted); accordingly, it is our professional opinion that a wildlife habitat evaluation is not required as part of this project.

Previous B+T Comment: Our comment related to the BVW impact. A simplified wildlife habitat evaluation is required for impacts to BVW below 5,000 sf, as the project was not submitted as a limited project. A detailed wildlife habitat evaluation may be required depending on other considerations (refer to the Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands (2006).

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Also, although historically counted only one side of an intermittent stream to determine Bank impact, it is our experience that that is no longer the methodology, and that both sides are counted. This is noted in the Ninth Edition (2006) of the Environmental Handbook for Massachusetts Conservation Commissioners, and has also been previously noted to us by MassDEP.

Finally, no impact to Bank was noted on the original NOI form; however, the Applicant's response above seems to indicate that an impact to Bank will occur. Clarification is requested.

Current Applicant's Response: We have reviewed the MA Wetlands Protection Act Regulations at 310 CMR 10.55 and find no reference to the need for a wildlife habitat evaluation as defined at 310 CMR 10.6000. Conversely, the Regulations specifically reference the need for a wildlife habitat evaluation of specific wetland resource areas including inland bank, land subject to flooding and land under water. Table 1, cited in the MassDEP Wildlife Habitat Evaluation guidance document however, does reference the need for a wildlife habitat evaluation, as pointed out by B&T. Apparently, there is a conflict between the regulations and the guidance document. In these cases, the Regulations will govern. Additionally, in 25 years of working within Massachusetts and with the WPA we have never been asked or prepared a wildfire [sic] habitat evaluation for a wetland fill project. Accordingly it is our professional opinion that the wildlife habitat interests for bordering vegetated wetland alteration is adequately regulated under 310 CMR 10.55 and a separate wildlife habitat evaluation is not necessary. That said, we do offer the following responses to the B&T query:

- 1. The fill area equals approximately 470 square feet immediately adjacent to the existing driveway. This is a comparatively small wetland alteration in the universe of wetland alterations and in our professional opinion does not require the level of review afforded this project to date. The applicant has reduced the size of the crossing and substantially improved passage for wildlife. We have designed a wetland mitigation area that more than compensates for the area filled and substantially improves its function and value through removal of invasive species and re-establishment of native canopy, shrub and herbaceous plantings.*
- 2. Wildlife habitat quality in this fill area is restricted to various shrubs including, multiflora rose, buckthorn and high bush blueberry. Rocks and small boulders associated with the construction of the driveway may provide some cover and burrowing habitat for wildlife as well.*

3. *The intent of the proposed 1300 square foot wetland mitigation plan is to substantially improve the function and value of the bordering vegetated wetland adjacent to the ponded area by improving plant species diversity and structure and providing food, shelter, overwintering areas and nesting areas for wildlife (see Figures 2a, 2b, 2c, 2d and 2e).*

Accordingly, we suggest that the proposed wetland mitigation plan and this supplemental information meets the intent of the wildlife habitat evaluation investigation raised by B&T and adequately defines the conditions of the proposed wetland fill and wetland restoration elements of the project.

Current B+T Comment: We acknowledge and agree with the Applicant's regulatory analysis regarding a wildlife habitat evaluation for BVW impacts pursuant to the Act, and further acknowledge the Applicant's provision of the wildlife habitat discussion above, which addresses the requirement for wildlife habitat analysis pursuant to the local Regulations. However, we reiterate our request for clarification as to whether Bank impact is proposed.

11. Section R:10-16.2 c of the Regulations requires contingency plans, described in detail, for erosion/sedimentation control measures to be implemented at the site. We request that the Applicant provide a detailed contingency plan to comply with this regulation.

Previous Applicant's Response: The construction phase stormwater pollution prevention plan was included in the original application package. This "SWPPP" details the contingency plan and procedures for addressing erosion and sediment control related issues during construction.

Previous B+T Comment: The SWPPP provided appears to not be specific to this site, and in the latest submission, several pages are missing. B+T reiterates the intent of original comment pending the submission of a complete, site specific SWPPP for the proposed project. We request that the Applicant document the contingency plan elements contained within the revised SWPPP.

Current Applicant's Response: The SWPPP has been revised to be site specific. It details contingency measures to be taken prior to anticipated storm events and in itself is the contingency plan for the project. The main contingency plan elements are ensuring that additional haybales, silt fencing and other erosion control measures are stockpiled on site and that precautions are taken ahead of rain events to ensure that the in place erosion control measures are in sound condition.

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Current B+T Comment: This comment has been adequately addressed by the Applicant.

12. This comment was previously adequately addressed by the Applicant.

Plan Comments

13. This comment was previously adequately addressed by the Applicant.

14. Section R:10-15.1 b of the Regulations requires that the ten (10)-year floodplain be depicted on the site plans; however, this designation does not appear on the plans. We request that the Applicant revise the plans accordingly to comply with this regulation.

Previous Applicant's Response: The limit of inland bank referenced in R:10-15.1 b is not the 10-year "floodplain" which is defined in the Act as the estimated maximum lateral extent of the flood water which will theoretically result from the statistical ten-year frequency storm and determined based on the FEMA Flood Insurance Rate Map Study. The 10-year mean annual high water is a measurement unique to the Topsfield Wetlands Bylaw and intended to be based on observed flooding over a 10-year period. The 10-year mean annual high water was reviewed by the Commission and approved under the Order of Resource Area Delineation. The corresponding line on the plan is labelled as "10-Year Mean Annual High Water (Inland Bank). According to 310 CMR 10.57 (2)(a)4 "The boundary of the ten year floodplain is the estimated maximum lateral extent of the flood water which will theoretically result from the statistical ten-year frequency storm."

Previous B+T Comment: R:10-15.1 b, documentation of existing site and protected interests, does not reference inland bank, and does cross-reference 310 CMR 10.57, which is land subject of flooding section of the Wetlands Protection Act Regulations. We understand that inland bank is defined differently locally; however, our comment does not pertain to inland bank but rather to the required depiction of the 10-year flood plain.

310 CMR 10.57 states that "The boundary of the ten year floodplain is the estimated maximum lateral extent of the flood water which will theoretically result from the statistical ten-year frequency storm. Said boundary shall be determined as specified under 310 CMR 10.57(2)a(3)., except that where NFIP Profile data is unavailable, the boundary shall be the maximum lateral extent of flood water which has been observed or recorded during a ten year frequency storm and, in the event of conflict, engineering calculations under 310 CMR 10.57(2)(a)3.a. shall be based on a design storm of 4^{8/10} (4.8) inches of precipitation in 24 hours."

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It appears to us that the ten-year floodplain referenced at R:10-15 as being required on the plans is the flood limit theoretically resulting from a ten year frequency storm, rather than the mean annual high water as averaged over a ten-year period. We request that the Applicant depict the 10-year flood plain on the plans.

Current Applicant's Response: According to the current FEMA Flood Insurance Rate Map Panel 25009C 0268F effective July 3, 2012, the Ipswich River study cross section falling nearest the premises is Cross Section A-A. Interpolating from the Flood Profile 63P, the elevation of the 10% annual chance flood is 36.0 NAVD1988. This elevation contour was identified on the plans and labeled accordingly. The 10-year flood boundary is generally concurrent with the 100-year flood boundary and does not have any impact on the development proposal.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

15. This comment was previously adequately addressed by the Applicant.
16. This comment was previously adequately addressed by the Applicant.
17. The limit of work should be depicted on the plans. We recommend that the Topsfield Wetland Fee Calculation Area exhibit (Figure A) be created to scale and differentiate between buffer zone and wetland impact areas so that the areas may be easily verified.

Previous Applicant's Response: The requested changes have been made to the Topsfield Wetland Fee Calculations Area exhibit (Figure A).

Previous B+T Comment: The requested changes to Figure A have been incorporated; however, it does not appear that a limit of work has been added to the plan set.

Current Applicant's Response: The limit of work has been added to the plans.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

18. This comment was previously adequately addressed by the Applicant.
19. This comment was previously adequately addressed by the Applicant.
20. This comment was previously adequately addressed by the Applicant.

21. This comment was previously adequately addressed by the Applicant.
22. Site Plan Sheet 2, Erosion and Sedimentation Control Note 6 does not reference use of siltsoxx; however, an associated detail is included on Sheet 4. Use of siltsoxx is also not referenced in the Construction Period Pollution Prevention Plan. We request that the erosion and sedimentation control methodology be clarified and made consistent across project documents, and that if both siltsoxx and silt fence are proposed to be used in tandem, an associated detail be provided.

Previous Applicant's Response: All plans and documentation have been updated to reflect the use of siltsoxx and silt fence in tandem, and the associated detail has been provided.

Previous B+T Comment: B+T acknowledges the revisions made to the detail regarding the use of siltsoxx and silt fence in tandem; however, documentation of this practice in the SWPPP appears to be on one of the several missing pages. B+T reiterates the intent of original comment pending the submission of a complete, site specific SWPPP for the proposed project.

Current Applicant's Response: Refer to response 11 above. The silt sock was added to the SWPPP.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

23. This comment was previously adequately addressed by the Applicant.
24. This comment was previously adequately addressed by the Applicant.

Stormwater Management Comments

25. Item 6 on Page 6 (Stormwater Management Standards) of the WPA Form 3 indicates that a portion of the site constitutes redevelopment. However, the MassDEP Stormwater Checklist indicates that the project is new development. We request that the stormwater management approach be clarified.

Previous Applicant's Response: The stormwater checklist has been revised to be consistent with the Narrative discussion.

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Previous B+T Comment: The NOI form has been updated to remove the redevelopment designation. However, we further note that the revised MassDEP Stormwater Checklist is not stamped or signed by a Registered Professional Engineer (PE) in the Commonwealth of Massachusetts. We request that the Applicant provide a MassDEP Stormwater Checklist endorsed by a PE for the Administrative Record.

Current Applicant's Response: The stamped form was submitted to the Commission and somehow the B+T copy was not stamped. We have included the stamped page for B+T's files.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

26. This comment was previously adequately addressed by the Applicant.

27. This comment was previously adequately addressed by the Applicant.

28. Section R:10-25.5 of the Regulations requires that the first 1-inch of stormwater runoff be pretreated; however, the water quality calculation provided with the Stormwater Management Calculations only accounts for 0.5-inches. We request that the Applicant revise the calculation accordingly.

Previous Applicant's Response: The "Water Quality Volume" calculation has been revised to document compliance with the 1-inch runoff depth requirement. The original calculation did not take credit for all the water quality storage volume that was present in the design, but the revised calculation takes credit for all acceptable treatment measures, including the subsurface infiltration volume, and full volume of the pocket wetland/sediment basin below the lowest outlet.

Previous B+T Comment: B+T acknowledges the calculation revisions made by the Applicant; however, the referenced storage values utilized in the calculations do not appear to correlate within the HydroCAD model as indicted. We request that the Applicant clarify the storage volumes used and revise the calculations as applicable. We further note an inconsistency within the Subcatchment 1 calculation (the reference to 20,415) and request that it be revised for clarity of the Administrative Record.

Current Applicant's Response: The calculations and report table have been updated to reflect the minor inconsistency in the impervious surface areas. No changes to the design were necessary.

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Current B+T Comment: This comment has been adequately addressed by the Applicant.

29. This comment was previously adequately addressed by the Applicant.

30. In the Pre-development HydroCAD modeling, it is unclear how Pond S1 was modeled. The outlet is modeled as a "12" Round Culvert w/9" inside fill". The narrative in the Stormwater Management Report references a "small conduit under the driveway". We request that the Applicant clarify how Pond S1 is modeled and revise the documents as applicable.

Previous Applicant's Response: The outlet of Pond S1 is comprised of a collection of stacked rocks that connect each side of the existing driveway embankment, the voids of which allow for the flow of stormwater. The hydraulic characteristics of this type of "conduit" are difficult to model, so empirical observations were made by MCG during a large storm event in order to understand how much stormwater is held back by the existing driveway crossing. The field observations were corroborated with the HydroCAD model for the tributary watershed, and the characteristics of this "conduit" were thereby approximated in the most reasonable manner possible.

Previous B+T Comment: B+T acknowledges the Applicant's response; however, we request that the Applicant provide the field documentation utilized to approximate the driveway crossing for review and for the clarity of the Administrative Record.

Current Applicant's Response: Since the issuance of this letter from B+T, MCG witnessed the crossing conditions with a B+T representative during a site walk on November 9, 2015. B+T included a photograph of the "existing hydraulic crossing of the driveway view from the south" in their letter issued to the Planning Board dated November 10, 2015. A copy of that photo from the letter is included herewith for the administrative record. Based on the subsequent site inspection and letter from B+T, we trust that the crossing condition has been adequately documented for the administrative record.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

31. In the Post-development HydroCAD modeling, the Paving Blocks are modeled with a CN of 76. We request that the Applicant provide documentation as to how this value was established.

Previous Applicant's Response: The paving block center island has been removed from this site design in response to Planning Board comments. The stormwater management function of the island has been replaced by a subsurface infiltration facility.

Previous B+T Comment: B+T acknowledges the design revision; however, the modeling of the subsurface infiltration facility appears to be inconsistent with the design details. The dimensions and use of a 20-ft diameter catch basin and broad crested weir are unclear. We request that the Applicant clarify the design intent of the subsurface infiltration system and revised the documents as applicable.

Current Applicant's Response: The 20-foot diameter catch basin is a HydroCAD adjustment necessary to account for an oscillation error that occurs when modeling a large jump in storage volumes. Inputting the actual 4' diameter of the catch basin results in an oscillation error in the program due to its iterative computation processes. We have included a printout showing the results for a 4' catch basin (actual) with 3 additional tanks added into the storage volume. You will note that the discharge from the system actually increases substantially above the inflow despite added 30% more volume to the system. This is due to the sudden change in volume from the underground tanks to the small 4' diameter catch basin creating an oscillation error that corrupts the integrity of the data. In order to artificially force the program to account for this, the catch basin diameter is increased so that the gap in volumes decreases and the oscillation error goes away. The change in the catch basin diameter has a de minimis impact on the reported discharge rate because the system is only being slightly surcharged into the catch basin structure in order to take full advantage of the infiltration capacity of the system. It should be noted that the peak elevation only exceeds the top of the tanks in the 25- and 100-year storm events by 3/8" and 7/8" respectively for the 20' diameter catch basin. This increases by only 1/8" when adjusted back to the 4' catch basin. The storage volume benefits for the theoretical 20' catch basin compared to the 4' diameter catch basin for the 1/8" change in peak elevation is only 2 cubic feet (0.1%) which is well within a reasonable tolerance for this application.

Current B+T Comment: B+T acknowledges the response provided by the Applicant. We note that it may have been more straightforward to exclude the catch basin, with its negligible storage, from the HydroCAD analysis, as that would be more reflective of the actual proposed condition. However, the Applicant has adequately explained the calculation and their approach, and therefore we consider this comment adequately addressed.

32. Although the individual lot development is not being requested to be reviewed under the current NOI, the stormwater management system has been designed with consideration of the subdivision roadway as well as an assumed impervious area from future potential dwellings. Therefore, it was necessary to review the drywell component of the potential future lot development.

In the Post-development HydroCAD modeling, it is unclear how the drywells were modeled. We request that the Applicant clarify the following and revise the documents as applicable:

- a. All of the drywells are modeled as 9-ft x 21-ft x 2-ft. These dimensions do not correlate to the detail provided. Additionally, all of the drywells are depicted as having different dimensions on the site plan.

Previous Applicant's Response: The dimensions of the drywells have been adjusted for consistency on the definitive subdivision plan set and removed from the NOI plan set pursuant to other comments herein. A detail has been provided to generally depict the size of the drywells however the size of the drywells will need to be verified based on the final lot designs. The modular drywell system is very easy to adjust in size by adding units to the system as opposed to a concrete tank type of drywell.

Previous B+T Comment: B+T has not been provided a revised Definitive Subdivision plan set. B+T defers the review and approval of the drywell systems to a point where individual lots are developed.

- b. All of the drywells are modeled as being comprised of 42 units. The detail depicts 40 units for each system.

Previous Applicant's Response: The final lot designs will be completed pursuant to the roadway design. Detail on the installation of the drywells will be included on these plans.

Previous B+T Comment: B+T defers the review and approval of the drywell systems to a point where individual lots are developed.

- c. The modeled elevations do not appear on the site plans. Please clarify, without the benefit of the HydroCAD model, how a perspective contractor would install these structures at the intended design elevations.

Previous Applicant's Response: The final lot designs will be completed pursuant to the roadway design. Detail on the installation of the drywells will be included on these plans.

Previous B+T Comment: B+T defers the review and approval of the drywell systems to a point where individual lots are developed.

- d. It appears that invert and storage for the drywells do not correlate with proposed grading of each future house lot. Please confirm that the proposed elevations associated with the modeling of each drywell correlate to the proposed future surface grading.

Previous Applicant's Response: The final lot designs will be completed pursuant to the roadway design. Detail on the installation of the drywells will be included on these plans.

Previous B+T Comment: B+T defers the review and approval of the drywell systems to a point where individual lots are developed.

- e. Please confirm that each structure has a two foot vertical separation from the groundwater elevation. Groundwater elevations for the site were provided in ranges. If a four foot vertical separation does not exist, the Applicant shall also provide a mounding analysis.

Previous Applicant's Response: According to page 28 of Volume 3 of the Massachusetts Stormwater Handbook, a "mounding analysis is required when the vertical separation from the bottom of an exfiltration system to seasonal high groundwater in less than four (4) feet and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm." Since the proposed exfiltration systems have not been designed to attenuate the peak discharge from a 10-year or higher storm, a mounding analysis is not required.

Previous B+T Comment: B+T defers the review and approval of the drywell systems to a point where individual lots are developed. We request that the Applicant document to what standard the drywell systems will be designed.

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Current Applicant's Response: This comment pertains to the design of the individual roof drywells for the lots. We have consolidated the current comment and response for the administrative record...

To summarize, the drywells were designed with chamber systems based on an anticipated development footprint for the lots, which is conservatively higher to include a factor of safety. The drywell systems can be easily adjusted by adding chambers in the event that impervious areas are increased above those assumed for the design of the drywells herein. The standard to which the drywells were modeled to ensure no impact on post-development rates of runoff is based on a ratio of 1 storm tank to each 45 square feet of roof area. So, for a 1,925 square foot roof, a total of 42 stormtanks will be required. The design was intended to make it easy for the reviewing authority to check the drywell designs based on the final house designs.

Current B+T Comment: The Applicant has provided information pertaining to the anticipated design approach for future home lot drywells. B+T concurs that the design approach as outlined by the Applicant is appropriate. We understand that detailed design and review of the future drywells will occur in association with individual lot development. For the purposes of our evaluation of the proposed stormwater management system, the information submitted with regard to the drywells is sufficient. Therefore, we consider this comment adequately addressed. No further action is required with respect to the current NOI filing for the subdivision roadway.

33. This comment was previously adequately addressed by the Applicant.

34. In the Post-development HydroCAD modeling, it is unclear how Pond S2 was modeled. The outlet control structure detail does not provide a breadth for the 4-ft weir at elevation 50.75-ft. Additionally, the weir at elevation 51.00-ft is modeled with a breadth of 2-ft when the detail requires 5-ft. We request that the Applicant clarify the design intent for Pond S2 and revise the documents as applicable.

Previous Applicant's Response: The design of this outlet structure has been modified in the revised plan set, and the characteristics of the structure has been updated in the HydroCAD model.

Previous B+T Comment: B+T acknowledges the revisions made by the Applicant; however, we note that a reference to elevation 48.20-ft remains in section A-A. We request that the Applicant revise the detail and resubmit this sheet to the Commission for clarity of the Administrative Record.

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Current Applicant's Response: The outlet elevation was revised to 49.0.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

35. In the Post-development HydroCAD modeling, it is unclear how Pond S3 was modeled. Please clarify how the modeled elevations and inverts correlate to the detail provided. Also, please confirm that a two (2) foot vertical separation from the groundwater elevation exists and if a four (4) foot vertical separation does not exist, the Applicant shall also provide a mounding analysis. We request that the Applicant clarify the design intent for Pond S3 and revise the documents as applicable.

Previous Applicant's Response: Pond S3 has been changed to a subsurface infiltration facility comprised of a series of concrete galleys under the fill section of the proposed cul-de-sac. A detail of the facility has been provided, and the HydroCAD model has been updated to represent this stormwater management feature. See the response for comment 32.e regarding the mounding analysis requirement.

Previous B+T Comment: B+T acknowledges the design revision; however, the modeling of the subsurface infiltration facility appears to be inconsistent with the design details. The dimensions and use of a 20-ft diameter catch basin and broad crested weir are unclear. We request that the Applicant clarify the design intent of the subsurface infiltration system and revised the documents as applicable. We request that the Applicant document to what standard the galley system will be designed.

Current Applicant's Response: See response to comment #31.

Current B+T Comment: Please refer to the response to Stormwater Management Comment #31.

36. In the Stormwater Management calculations, a conflict exists between the value used for total increase of impervious area stated in the narrative versus the value utilized in the calculations. We request that the Applicant clarify the value used and revise the calculations as applicable.

Previous Applicant's Response: This conflict has been corrected.

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Previous B+T Comment: B+T reiterates the intent of our previous comment. The narrative states the net impervious area increase is 33,617 sf. The calculations utilize a value of 33,561 sf. We request that the Applicant clarify the value used for clarity of the Administrative Record.

Current Applicant's Response: The correct value is 34,119 square feet.

Current B+T Comment: B+T acknowledges the response provided by the Applicant but notes for the Administrative Record that 34,129 square feet was used in the calculations. The de minimis error in the calculations does not affect the proposed design. We consider this comment adequately addressed.

37. In the Stormwater Management calculations, a conflict exists between the values used for the recharge volume stated in the recharge calculation versus those used in the drawdown time analysis. We request that the Applicant clarify the values used and revise the calculations as applicable.

Previous Applicant's Response: This conflict has been corrected.

Previous B+T Comment: See response to Comment #28.

Current Applicant's Response: See response to Comment #28.

Current B+T Comment: This comment has been adequately addressed by the Applicant.

38. On Sheet 5 of 10, it appears that the inverts listed for catch basins CB-5 and CB-6 may have been transposed. We request that the Applicant clarify the design intent of each structure and revise the plan as applicable.

Previous Applicant's Response: The plan has been revised to show the correct invert elevations.

Previous B+T Response: The original comment was made in reference to the Definitive Subdivision plan set. The revised NOI plan set (Sheet 3 of 9) continues to depict what appears to be transposed invert elevations. B+T reiterates the intent of our original comment.

Current Applicant's Response: The plan has been revised to show the correct inverts.

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Current B+T Comment: This comment has been adequately addressed by the Applicant.

39. This comment was previously adequately addressed by the Applicant.

40. This comment was previously adequately addressed by the Applicant.

Administrative Comments

41. This comment was previously adequately addressed by the Applicant.

42. Section R:10-5.1 of the Regulations requires that a variety of entities, including various Town Departments, as well as the US Army Corps of Engineers when a permit is required, be sent a copy of the NOI. We request confirmation by the Applicant that the filing requirements of Section R:10-5.1 have been met.

Previous Applicant's Response: The town departments were notified and provided a copy of the plans, reports and applications through the Definitive Subdivision Application. A copy of the distribution list can be viewed by contacting the Planning Board Administrator Roberta Knight. The Army Corps of Engineers self-verification form has been included herewith. A copy of the mailing receipt will be provided to the Commission at the next regular meeting.

Previous B+T Comment: The Applicant's response does not confirm that a copy of the NOI was provided as required.

Current Applicant's Response: A copy of the stamped transmittal letter is included herein.

Current B+T Comment: The stamped transmittal letter was not apparent to us in the supplemental materials.

43. Section R:10-5.2 h of the Regulations requires "Certification that all other required permits have been obtained and/or applied for; list of permits that must be obtained subsequent to Commission approval." This information did not appear to be included with the NOI.

Previous Applicant's Response: The list of permits needed appears on the Cover Sheet of the Plan set.

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Previous B+T Comment: The list of permits on the Cover Sheet does not include Army Corps permitting.

Current Applicant's Response: A permit from the Army Corps of Engineers is not required. See attached correspondence from the Corps.

Current B+T Comment: We acknowledge the fact that a formal application review by the Army Corps is not required, as the project qualifies for "Self-Verification" according to the Applicant. We note that B+T considers this as falling under the Army Corps "General Permit" as noted on the Self-Verification form, which also uses the term "permittee". However, we further note that this does not affect the project as proposed, and may be a difference of opinion in what constitutes a permit.

Therefore, we consider this comment adequately addressed.

We appreciate the opportunity to assist the Town of Topsfield with the review of this Project. Please do not hesitate to contact our office with any questions.

Very truly yours,

BEALS AND THOMAS, INC.



Stacy H. Minihane, PWS
Associate



Matthew Cote, PE
Senior Civil Engineer

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