



455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Ph: (860) 368-5300
Fax: (860) 368-5307

Memorandum

To: Jennifer S. Kaufman, Inland Wetlands Agent, Town of Mansfield

From: Kimberly Bradley and John McGrane, GEI Consultants, Inc.

Regarding: Storrs Lodge, LLC, Town of Mansfield Inland Wetland Application Review
(PN: 1605880) – Response Review

Date: June 29, 2016

On May 25, 2016 Jennifer Kaufman for the Town of Mansfield Wetland Agency and Kimberly Bradley for GEI Consultants, Inc. (GEI) met with Anthony Girogio of The Keystone Companies, LLC, David Zaiks of F.A. Hesketh & Associates, Inc., (FAHA) and George Logan, PWS, CE, of Rema Ecological Services, LLC (REMA), to review and discuss the Inland Wetland Application Review Comment Memorandum provided to the Town of Mansfield by GEI on May 12, 2016.

In response to GEI's Memorandum the applicant team provided the following revised and supplemental documents to the Town of Mansfield on June 15, 2016:

- Comment Response Memorandum (Red Responses added by FAHA 3/31/16 & Revised 6/10/16).
- Revised Set of Inland Wetlands & Watercourse Application Plans titled: "The Lodges at Storrs, Hunting Lodge Road, Mansfield, Connecticut" March 18, 2016, Revised June 10, 2016.
- Wetlands Assessment-Supplemental: Soil Testing – REMA Ecological Services, LLC June 14, 2016
- Wetlands Assessment-Supplemental: Vernal Pool Investigation – REMA Ecological Services, LLC, June 14, 2016
- Wetlands Assessment-Supplemental: Water Quality Investigation – REMA Ecological Services, LLC, June 14, 2016

The FAHA and REMA project team responded and addressed each comment. Based on the comment response memorandum provided and review of supplemental revisions to the application documents and plans, GEI offers the follow-up comments/questions (GEI original comments are noted, followed by FAHA responses noted in italic red, and GEI follow-up in italic blue underline) below:

1. A total of 4,402 square feet of direct impacts to wetlands is proposed at the wetlands crossing over an unnamed tributary to Eagleville Brook from Hunting Lodge Road to the proposed development. The crossing would serve as the main access road to the development. The

location was selected as it is the location of an old woods road on a historic fill causeway, which, therefore, minimizes wetland impacts resulting from a wetland/stream crossing. The applicant proposes a precast arch bridge with block retaining walls which will prevent any direct impacts to the intermittent watercourse. It should be noted that arch bridges are a preferred stream crossing structure according to the Connecticut Department of Energy and Environmental Protection (CT DEEP) Inland Fisheries Division Habitat Conservation and Enhancement Program: Stream Crossing Guidelines (2008).

It is recommended that the 6' wide sidewalk proposed on the southern portion of the road crossing be reviewed. *One of the design goals for the project was to make it pedestrian friendly and encourage the use of the public pedestrian walkway located along Hunting Lodge Road. In order to connect the project to the public walkway, a sidewalk system has been incorporated throughout the project including along the south side of roadway crossing. In order to minimize the foot print width at the crossing, the design of the placement of walk was modified to eliminate the 3-5 ft. grass shoulder between the walk and curb as provided elsewhere on the site and construct the walk directly alongside the curb. See Sheet SDD-I for details. [The design modification to eliminate an additional 3-5 ft. of wetland disturbance is noted.](#)*

2. In general, the storm water management design at the site takes steps to reduce impervious surface where to the extent possible through reduction of road widths, utilizing pervious pavement, installing and maximizing the use of vegetative swales, employing level spreaders, and increasing and lengthening drainage flow paths. The Engineering and Drainage Report, along with REMA Wetlands Assessment – Supplemental: Review of Storm water System report document the use of “treatment trains” which include a significant infiltration component, using below ground, low-profile infiltration units. Above-ground primary treatment in the form of bio-retention basins and vegetated swales is also utilized at each of the catchment areas. GEI agree with REMA’s recommendation to seed the bottom of bioretention basins with Ernst Conservation Seeds (i.e. ERNMX-180). *We concur. [The comment has been addressed.](#)*
3. The plans call for an extensive use of infiltration systems to reduce runoff and meet CT DEEP requirements for Water Quality Volume, and Groundwater Recharge Volume. The entire design is dependent on the permeability of the existing soils and groundwater levels. The Engineering and Drainage report does not document whether the applicant has performed any field investigation to determine in place permeability rates, to in turn determine if the systems will work as designed. Geotechnical borings and laboratory permeability tests, or in place permeability tests may be needed to verify whether the infiltration systems are viable. *Additional deep test pits and permeability tests have been completed in the field and the results of the tests are included in the attached report by Soil Science and Environmental Services, Inc. dated June 6, 2016. Based on the results of these additional field observations, revisions to the subsurface infiltrator designs have been incorporated on the plans revised 6/10/16. Criteria developed for the placement and final design of each of the systems based on this field data is summarized in Attachment A. The minor adjustments to the system design were incorporated into the stormwater computer modeling for the project and Summary Table 1 was revised accordingly. There is very minimal change to the results and conclusions of the modeling efforts. See attached Table 1. [The site data collected addresses the comment posed.](#)*

The minimal adjustments to the stormwater computer modeling indicate the stormwater infiltration systems should be viable for documented site conditions.

4. Accurate groundwater readings should be taken to determine year-round levels in the areas of the proposed infiltration and the BioRetention Basins. If high ground water levels are present, even just seasonally, then the infiltration will not function as designed. Also, the BioRetention Basins will not function properly if they are partially filled with groundwater. If the designed storage volume is occupied with groundwater, they will not have the capacity to store surface runoff, and may overtop the basins. *Additional groundwater measurements were taken in the field at each proposed bio-retention basin location and minor revisions to the basins were completed including in some cases, the addition of an underdrain to insure they will empty completely between storm events during seasonal high groundwater periods. These changes have been incorporated onto the revised plans dated 6/10/16. The applicant's response noted "Additional groundwater measurements were taken in the field at each proposed bio-retention basin location..." It should be clarified that direct seasonal groundwater level readings were not collected at the site; rather field evaluation of soil mottling and redoximorphic features as indicators of seasonal high groundwater levels were used. These, along with seepage or standing water observations, were collected via the Soil Science and Environmental Sciences, Inc. Report included in Attachment A of the FAHA Comment Response Memorandum, in addition to the Soil Testing completed by REMA Ecological Services, LLC.*

The results indicate that groundwater is very close to the surface (i.e. within 16 to 22 inches below ground surface for most locations). Based on these readings, it will be imperative that a functional underdrain system be installed so that the basins and infiltrator systems drain completely between storms. The plans have been updated to show a conceptual underdrain at the locations specified. Generally this seems acceptable and should address the problem, however, further construction detail should be provided, perhaps as a condition of approval.

Generally, these lines of evidence and revisions to basin design are acceptable.

5. Proposed BioRetention Basins do not have any type of emergency spillway in the event of over topping. If overtopping does occur, it may cause scour and erosion which could impact the wetlands. Consideration to some type of emergency spillway or non-erodible material should be evaluated to accommodate this potential failure mode. *Special Riprap (aka No. 3 Stone) emergency overflows have been added to the basin design as recommended. The plans have been updated to show a conceptual spillway at the locations specified. Generally this seems acceptable and should address the problem, however, further construction detail should be provided, perhaps as a condition of approval. Generally, these lines of evidence and revisions to basin design are acceptable.*
6. The maintenance of the storm water system, infiltration system, and network of bio retention basins should be formalized. These systems will not function as designed if sediment, overgrowth, or erosion occurs over time, and are left unmaintained. *REMA and FAHA have prepared a written General Maintenance Plan which is now included on revised Sheet NT-1. The requirements included on the plans will be incorporated into the overall permanent site maintenance and operations manual prepared for the property which will be the ongoing*

responsibility of on-site property management. The “SCHEDULE AND DESCRIPTION OF RESPONSIBILITY FOR GENERAL SITE MAINTENANCE AND ON-SITE STORM WATER SYSTEM” is noted on NT-1. Additional detail for vegetation maintenance in bio-retention basins and maintenance/mowing restrictions with the enhanced wetland buffer areas is recommended.

7. The REMA Wetlands Assessment – Supplemental: Review of Storm Water System’s report, and review of the full Engineering and Drainage Report state that the required Water Quality Volume (WQV) for stormwater basin #6 (Watershed/Strom Darin System G, discharge G1) is 2750 C.F., while the provided WQV is only 395 C.F. REMA notes that proposed wetland creation/restoration area restricts the ability to increase the size of Bioretention Area #6. It is also noted that an oversized hydrodynamic separator is proposed within the system to attain 85% TSS removal. While REMA’s rationale of prioritizing wetland restoration and adjacent wetland conditions that allow for discharge flow dispersal are noted, it is recommended that an alternative of increasing the size of bioretention area #6 and identifying an alternative wetland mitigation area is evaluated. *Bio-retention basin #6 has been redesigned to provide the required 2,750 cf of WQ storage volume, as shown on revised Sheet GR-2 and SDD-2. The separator structure is no longer required and has been deleted from the design. The revisions to the bio-retention basin have been addressed as recommended.*

8. The vernal pool located in wetland WA was identified as a high value resource on the site. It is recommended that in addition to the two 2016 vernal pool evaluation surveys and associated summary reports provided by the applicant, at least one additional site visit occur in the June/July timeframe to provide an understanding of when the pool dries and evaluate if the vernal pool maintains adequate hydrology to support successful obligate amphibian reproduction. The proposed development plan includes a roadway within close vicinity to the vernal pool. The roadway is proposed in an area of historic fill, which may have historically influenced the hydrologic conditions within site wetlands, resulting in isolation of the vernal pool (WA) from the wetlands to the east (WC-1). The applicant has proposed installation of wildlife tunnels beneath the western access and circulation road connecting wetlands WA and WC to reduce some of the development impacts on amphibian populations. *REMA has conducted additional field observations and is submitting a supplemental report under separate cover for review and comment. They will continue to monitor the vernal pool throughout the June/July period. The Vernal Pool Investigation – REMA Ecological Services, LLC June 14, 2016 noted and photo documented the presence of wood frog tadpoles, was the population size quantified in the field?*

In reference to vernal pool review for the project site, GEI was provided with the full Wetland Report for Pond Place completed by Connecticut Ecosystems, LLC in 2007 following the initial comment memorandum. It is noted that the section 6.1.1 page 4 of the report states that the shallow impounded portion of Wetland 1D (based on the wetland description this is equivalent to REMA 2016 Wetland WC3), upstream of the dirt road crossing, fit the classification of the Army Corps of Engineers definition of a vernal pool, including observation of a small number of wood frog and spotted salamander egg masses. Was this area reviewed for vernal pool species within REMA investigations?

9. Silt fencing and other erosion control measures installed adjacent to vernal pools should be removed from February to June to reduce construction related impacts on vernal pool breeding activity/amphibian migration routes. Sequencing of construction activities within the vicinity of the vernal pool should take into consideration the February-June timeframe, if feasible. *If work needs to continue through the February-June period, we will modify the installation of erosion control barriers, such as introducing staggered openings and other techniques that follow CT DEEP and Army Corps guidelines to insure no impact to migration routes. Every effort will be made to schedule work around these areas during this timeframe. This applicant response is appropriate.*

10. Upland and wetland buffers to the unnamed tributary should be considered a valuable natural mitigation measure to protect water quality and aquatic resources of watercourses. Buffers should be enhanced with native plantings and maintained throughout the proposed development. Forested cover and wetland buffers in and around the 50 (at a minimum) to the 150 foot upland review area around wetlands located directly between the proposed developed portions of the site should be maintained throughout the construction process to limit the potential for increased evapotranspiration which may result in alteration of the hydrology of the wetland due to clearing of the forest over story. The proposed limits of disturbance should be strictly adhered to. *The contract documents with the selected site contractor will be structured to enforce the limits of construction as shown on the plans. The buffer areas will be protected by silt fence and construction fencing prior to the start of clearing activities. In some areas hay bales will be installed to back-up the silt fence. Buffer enhancement plantings will be incorporated into the final landscape plan for the project to add appropriate additional plantings along the clearing limits to enhance the permanent vegetative buffer to the undisturbed areas abutting the new development. A typical planting plan has been added to the plan set, Sheet MI-2, which will serve as the basis for the overall planting plan for the full site. The typical buffer enhancement planting plan is appropriate and focused on enhancement using native plant species. It should be noted that a 50 ft. setback is not maintained in all locations with a minimum of 30 ft. setback on the parking area proposed in the northern portion of the development adjacent to wetlands WC3.*

11. Proposed parking on northeast portion of the development adjacent to wetlands WC2 and WC3 will require maintenance restrictions to prevent snow management practices that may result in snow melt impacts to adjacent wetlands. It is recommended that storm water management and snow removal maintenance requirements restrict the placement of snow in this parking area, and propose guardrail placement as an engineering control measure. *As recommended, a snow management and storage plan, Sheet SS-1, has been developed for the entire site and is attached for review and comment. Please note that as a result of discussions with staff and comments received, the layout of the northeast portion of the site in proximity to WC2 and WC3 has been revised to relocate parking further away from the more sensitive wetland resources in the area, as shown on Sheets LA-2 and GR-2. We believe the new layout and drainage design for the area greatly enhances the buffer which will minimize any impacts from snow melt to the adjacent wetland resources. The revised layout of the parking further from sensitive wetland resources is reflective of recommended adjustments, however, it should be noted that the revised layout results in a minimum of 30 ft. setback to wetlands WC3. Pervious pavement is proposed in the closest vicinity to the wetlands. The snow management plan is acceptable and emphasizes storage of snow in areas that should promote infiltration versus runoff to wetland*

resource on the site, allowing for adequate treatment of potential contaminants associated with snow removal.

12. The Construction Sequence outlined on drawing NT-1 is vague. Construction sequence should clarify whether land clearing will occur in a single phase. Land disturbance and clearing should be kept to a minimum and completed in phases if possible. All disturbed areas should be re-stabilized as soon as possible and exposed, unvegetated areas should be protected from storm events. *As shown on Sheet MA-I, it is anticipated that the project will be completed in two major development phases. The southerly portion of the project including the Community Building will be completed first, followed by the northerly portion of the project. Clearing for each phase will occur as a single operation from start to finish. All required erosion control will be in place and inspected by a 3rd party inspector and town staff prior to the start of site disturbance in each phase. Re-stabilizing all disturbed areas will begin as soon as possible to minimize erosion risks. The Construction Sequence outlined on NT-1 has been expanded to include the culvert bridge crossing as well. The phasing of the major north and southern portions of the development is appropriate, although intermediate phases of land clearing are recommended if feasible. Erosion control management steps outlined are appropriate.*
13. Additional details, including construction methodology and sequence/timing for the wetland crossing from Hunting Lodge Road should be provided. It is recommended that construction occur during the summer low flow period (June through September), in accordance with CT DEEP Inland Fisheries Division Habitat Conservation and Enhancement Program: Stream Crossing Guidelines (2008) to reduce the potential for impacts to wetlands and the unnamed tributary. *As recommended, a more detailed construction sequence plan is included on the revised plans. Summer low flow conditions are really of little concern with the proposed crossing since the arch culvert will span the watercourse and no disturbance of the watercourse will be permitted during installation of the crossing. It is understood that the arch culvert will result in minimizing direct impact to the watercourse, however, direct wetland disturbance to fringing riverine wetlands adjacent to the watercourse is proposed, therefore, low flow conditions are recommended.*
14. Erosion and Sediment Control Note 4 states: “The contractor is responsible for the timely installation, inspection, repair or replacement of erosion control devices to insure proper operation.” It is recommended that the land owner, developer, or responsible individual (identified per Erosion and Sediment Control Note #2) ensure inspection and regular monitoring will be conducted by an individual with experience in sediment and erosion control. *As required by CT DEEP General Permit registration requirements, the owner is responsible for hiring a 3rd party expert/inspector to review the preparation of the Stormwater Control Plan prior to registration and then the installation of the devices in the field. This inspector will be retained to provide periodic inspections throughout the duration of construction of the project. The third party review process will address oversight concerns for erosion control implementation.*
15. It is recommended that a wetland creation/restoration construction plan be included with wetland mitigation report and/or as a component of a comprehensive landscape plan within the project application drawings. The wetland mitigation report states, “Mosaic of wet meadow, shallow marsh, and scrub-shrub (about 25% total woody cover of shrubs and saplings) is the short-term target cover type.” The wetland mitigation report includes appropriate planting

material including shrubs/trees, herbaceous plugs and wetland seed mixes, however, a plan will provide a visual depiction of the proposed mitigation design, and provide an estimate of required excavation. Elevations supporting hydrologic regimes required by wetland vegetation communities should be identified within the mitigation design. It is noted that the grading plan (GR-2) does not indicate grading in the wetland mitigation area. *Please note that a separate report dated April 4, 2016 was prepared and submitted by REMA that includes their detailed recommendations for implementing the proposed mitigation areas. As recommended, a wetland mitigation plan to supplement this report for both areas proposed with planting details and additional grading information is now included in the revised plan set, Sheet MI-1. Grading for both proposed mitigation areas is now included on the grading plans. [The report and revisions noted provide the detailed information requested.](#)*

16. The proposed wetland creation and restoration area is in the vicinity of storm water treatment basins. The wetland mitigation should be clearly separated from the site storm water management system. In addition, the proposed mitigation area is in close vicinity to the main roadway within the development (~20 ft. at the closest approximate distance). Has the potential influence of the roadway on the mitigation area been evaluated? Have alternative wetland mitigation areas been considered? *Per this recommendation, the mitigation area has been reduced at this location to separate it more from the Bio-retention basin #6 and to provide more isolation from the vernal pool and a second mitigation area has been added to the revised plans. See Sheets SDD-2, MI-1 and MI-2. Also, please refer to the attachment provided to these comment responses regarding Mitigation Alternatives reviewed by the applicant. Total area of the two mitigations areas proposed is 7,800 s.f. [To clarify, as noted in the comment above, the recommendation focused on selection of wetland mitigation areas buffered from potential influences of the adjacent roadway. The revised mitigation strategy is acceptable and allows for appropriate focus on stormwater management and treatment adjacent to the roadway.](#)*
17. The proposed timing of wetland creation and restoration site preparation is not identified within the wetland mitigation report. It is recommended due to the excavation directly adjacent to a wetland hydraulically connected to the unnamed tributary to Eagleville Brook, construction should occur during the summer low flow period (June through September), in accordance with CT DEEP Inland Fisheries Division Habitat Conservation and Enhancement Program: Stream Crossing Guidelines (2008). This timeframe would also limit issues associated with amphibian migration. *The mitigation site work at both proposed locations will be scheduled to occur during low flow and groundwater timeframes. This will be included in the Construction Sequence Plan. [This comment has been addressed.](#)*
18. It is recommended that a landscape plan be developed for the site as a component of the Inland Wetland Application drawings. The plan would provide an understanding of the proposed for landscaped area within the limit of disturbance, provide detailed plan for wetland mitigation as noted above, and identify areas a native plant wetland and watercourse buffer enhancement, as proposed in the Wetlands Assessment - Supplemental: Wetland Mitigation report. *As recommended, a planting plan for a typical 100 ft. length of edging along the clearing limits is now included in the revised plan set as Sheet MI-2. [The "Typical Wetland Buffer Planting" plan provided in MI-2 provides a clear understanding of the proposed wetland buffer enhancement plantings proposed.](#)*

19. According to the Town of Mansfield Inland Wetlands and Watercourses Regulations Effective February 15, 2012) Section 7.4 G, the inland wetland application shall include, at a minimum “Alternatives which would cause less or no environmental impact to wetlands or watercourses and why the alternative requested in the application was chosen; all alternatives shall be diagrammed on a site plan or drawing or otherwise described to the Agency’s satisfaction.” The application plans and reports do not provide an evaluation of feasible and prudent alternatives for the Site. The applicant should be able to provide an evaluation of an alternative for a main access road that would not require direct impact to wetlands. *Please refer to the Attachment provided to these comment responses regarding the alternatives evaluated in the design of the project. The Alternative Analysis 5/31/16 Revise 6/10/16 was reviewed. The analysis provides rationale for proposing the development plan. Section B. Development Alternatives compares the proposed development to residential subdivision development. Has there been any consideration to a master planned residential concept, as proposed, with a reduced number or proposed buildings? This should be considered with Section B of the Alternative Analysis.*
20. According to the Town of Mansfield Inland Wetlands and Watercourses Regulations Effective February 15, 2012) Section 7.4 M, the inland wetland application shall include, at a minimum “Submission of documentation verifying that CT DEEP’s Natural Diversity Database has been checked for the presence of any state-listed species or significant natural communities on the property;” the application reports and documents do not provide any documentation of a Natural Diversity Database request submitted to CT DEEP or follow-up site-specific review. It should be noted that NT-1 Erosion and Sediment Control Note 15 states: “Due to the area of proposed disturbance, this project will require a storm water permit from the CT DEEP. A copy of this permit, and the required Storm Water Pollution Prevention Plan shall be submitted to the town prior to the start of any construction.” In addition to Town of Mansfield requirements, the CT DEEP storm water permit requires a Natural Diversity Database (NDDDB) review. *The applicant will be filing a CT DEEP General Permit Registration for the discharge of stormwater associated with Construction Activities. This application must include a Stormwater Pollution Prevention Plan (aka a SWWPP Plan) designed specifically for this project. Because the project is greater than 15 acres, the owner must hire a 3rd party consultant to review and add certification to the application prior to submittal. This party must also inspect the installation of the erosion control as specified on the plans and in the SWWPP.*

A copy of a letter recently received from CT DEEP concerning review of the Natural Diversity Database is attached. The CT DEEP NDDDB Determination No: 201600729 identifies a known extant population of wood turtle (Glyptemys insculpta) within the vicinity of the project site. REMA should provide a follow-up as to any suitable habitat for wood turtle identified on the site, and best management practices recommended by CT DEEP should be adhered to during the turtles’ active season (April 1 – September 30th).