

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES

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October 31, 2014

Ms. Sylvia Willard, Administrator
Carlisle Conservation Commission
66 Westford Street
Carlisle, MA 01741

RE: Preliminary Review of Notice of Intent, Brem Property – 40B, 100 Long Ridge Road, Carlisle, Massachusetts

Dear Ms. Willard:

EcoTec, Inc. was retained by the Carlisle Conservation Commission to review the Notice of Intent (NOI) that was filed for the above-referenced property. The scope of this review included:

1. Review of NOI filing materials and the site plan and conduct map research (EcoTec will not conduct a peer review of the proposed stormwater management system as this review is being conducted for the ZBA by another firm);
2. Inspection of and field review of delineated boundaries of Bordering Vegetated Wetlands (BVW) and Bank. During the field review recommendations for modification of the delineated boundaries, if necessary, will be made. To facilitate the review, a representative from Basbanes Wetland Consulting would be invited to accompany EcoTec on the field inspection. This proposal assumes that only minor modifications to the wetland delineation would be required, and that no significant additional wetland areas are discovered on site. In addition, inspection of the remainder of the site identified as upland for possible additional (undelineated) wetland resource areas would occur. EcoTec will also make an inspection from the site boundaries and public ways for wetland areas on adjacent parcels that may project resource areas or additional Buffer Zone onto the site;
3. Preparation of a letter report that outlines the findings of the document review, site plan review, and site inspection;
4. Provide recommendations for the Draft Order of Conditions and review the Draft Order of Conditions that is prepared for the project;
5. Attendance at one Conservation Commission Hearing on this matter.

John P. Rockwood, Ph.D., PWS of EcoTec conducted this review and will attend the Conservation Commission hearing on November 6, 2014 at 8:00 pm.

SITE REVIEW AND RESOURCE AREA DISCUSSION

On October 3, 2014, John P. Rockwood, Ph.D., PWS conducted an inspection of the site with Sylvia Willard, Administrator of the Carlisle Conservation Commission. Leah Basbanes, the project wetland

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scientist, was present while the delineated wetland boundaries were reviewed and the undelineated wetlands in the southeastern portion of the site were inspected. Commission member J. Thomas Brownrigg and Jeffrey Brem, the applicant, were also present for portions of the site visit.

The field review was conducted using the following plan sheet: "Notice of Intent, Brem Property, 100 Long Ridge Road, Carlisle, Massachusetts," prepared by Meisner Brem Corporation, dated September 2, 2014. This plan sheet does not show the extreme northwestern corner of the site.

A Preliminary Memorandum was issued to facilitate survey activities for the wetland flag revisions that were made during the site walk. The on-site wetland was delineated with pink flags labeled 1A to 4A, 12A to 25A, 1B to 14B, and 20B to 25B. Wetland flags 15B to 19B are off-site and project a 100-foot Buffer Zone onto the site. The wetlands in the southeastern portion of the site were not delineated and flags are not shown on the above-referenced site plan. The delineated wetland boundaries noted above were inspected and the following revisions were made:

For the A-series flags:

- West of flag 2A, there is a text remnant on the plan that should be deleted ("11097 WF-6A");
- Delete 15A; Locate 15AR; Connect 14A to 15AR to relocated 16A (see below);
- There are two flag 16As on the plan; Locate remaining 16A, 16A1, and 17A1 in field; Connect relocated 16A to 16A1 to 17A to 17A1 to 18A;
- Flag 19A is incorrectly labeled as a second flag 17A on the plan; Correct label and connect 18A to relabeled 19A to 20A;
- Locate 20A1 and 21AR; Delete 21A; Connect 20A to 20A1 to 21AR to 22A;
- Flag 23A is incorrectly labeled as first flag 25A on the plan; Correct label and connect 22A to relabeled 23A to 24A;
- Delete 25A; Locate Blue 25AR; Connect 24A to 25AR;
- Flag 25AR does not connect to flag 1B; and
- Locate Blue Offset Flags 1, 2, and 3 along the northern property line and show on the site plan (see below for use of these flags).

The correct flag sequence for the pink A-series flags is: Start 1A, 2A, 3A, 4A, (5A to 11A off-site and do not project 100-foot Buffer Zone onto site – not reviewed), 12A, 13A, 14A, 15AR, 16A (relocated), 16A1, 17A, 17A1, 18A, 19A, 20A, 20A1, 21AR, 22A, 23A, 24A, 25AR (blue flag) Stop. This wetland continues off-site to the north and northwest and projects additional 100-foot Buffer Zone onto the site. To establish this 100-foot Buffer Zone, three Blue Offset Flags were placed along the northern property boundary and the distance to the off-site wetland was listed on the Offset Flags: Offset Flag 3 – 33' to wetland (67' to the 100-foot Buffer Zone); Offset Flag 2 – 62' to wetland (38' to the 100-foot Buffer Zone); and Offset Flag 1 – 75' to wetland (25' to the 100-foot Buffer Zone).

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For the B-series flags:

- Flag 1B does not connect to flag 25AR;
- Locate 5BA; Connect 5B to 5BA to 6B;
- Remove one of the two WF-6B labels (both are associated with a single point on plan);
- No flag 9B shown; Locate 9BR, 10B, 10B1, and 10B2; Connect 8B to 9BR to relocated 10B to 10B1 to 10B2 to 11B;
- Correct label for 10B (shown as B10 on plan);
- Delete 22B; Locate 22BR; Connect 21B to 22BR to 23B; and
- No flag 24B shown; Locate 24BR; Connect 23B to 24BR to 25B.

The correct flag sequence for the pink B-series flags is: Start 1B, 2B, 3B, 4B, 5B, 5BA, 6B, 7B, 8B, 9BR, 10B (relocated), 10B1, 10B2, 11B, 12B, 13B, 14B, (off-site 15B to 19B – reviewed - accurate), 20B, 21B, 22BR, 23B, 24BR, 25B Stop

No other changes to the wetland boundaries were recommended. However, the 100-foot Buffer Zones to both wetland boundaries need to be shown on the revised site plan and modified as needed to reflect the flag revisions and the off-site wetland as detailed above.

Observations of the wetland in the southeastern portion of the site were made and several older blue flags (not shown on the site plan) were noted around a deeper depression in this area. The delineated wetland boundaries were not extended past current flags 1A and 25B as part of this review as the work shown on the site plan (plan shows label only for Pedestrian Trail/Path) is located over 200 feet from the undelineated portion of the wetland. If and when work is proposed and is shown on the site plan within 100 feet of the undelineated wetland, the applicable wetland will need to be delineated and the NOI revised, any existing Order amended, or a new filing made to permit any future proposed work in/near this area.

EcoTec was provided with a site plan (“Notice of Intent, Brem Property, 100 Long Ridge Road, Carlisle, Massachusetts,” dated July 17, 2014, revised October 27, 2014) that was received by the Commission on October 27, 2014 to review the revised wetland boundaries. This plan shows both the original and revised wetland lines. **Based upon my review of the revised wetland boundary on this plan, EcoTec has the following comments related to the wetland resources on this plan:**

- The entire site needs to be shown on the plan. If the entire site does not fit at scale; multiple sheets should be provided with an index sheet.
- An Existing Conditions plan sheet would be helpful to allow existing conditions to be better differentiated from the proposed conditions.

- The plan needs to be revised to show only the revised wetland boundary and the flag labels associated with this revised boundary.
- The label needs to be changed from Approximate Bordering Vegetated Wetland to Bordering Vegetated Wetland.
- The ovals around certain flags need to be removed.
- Flag 5B1 should be labeled 5BA per my notes.
- Flag 24B should be labeled 24BR per my notes.
- Add a label for Flag 17A1 on the plan.
- The three off-set flags at the northern property line need to be shown on the site plan to allow the 100-foot Buffer Zone to be confirmed in this portion of the site. As the wetland moves further from the site to the west of OF-1, the 100-foot Buffer Zone based on OF-1 should be extended to the property line 100 feet from the wetland location based upon OF-1.
- There is an all capital note on the plan below Note 6 that needs to be reviewed and corrected by the applicant as the plan does not show all wetland areas within 200 feet of proposed work.

EcoTec offers the following with regard to the wetland resource areas on the site under the Act and Regulations.

- Except as noted above, no additional vegetated wetlands, stream channels, or isolated depressions subject to jurisdiction under the Act were observed on the site during the inspection. Again, the resource areas in the southeastern portion of the site were not delineated or formally reviewed under this evaluation.
- Except as noted above, no “off-site” wetlands or streams were observed that would project additional Buffer Zones onto the site.
- Based upon a review of the USGS Map (Billerica, 1987), there are no streams that are mapped as perennial or intermittent located on or within 200 feet the site. The stream that occurs on the site within the delineated wetland is not shown on the current USGS Map. Based upon a review of the USGS Map, the watershed area for this stream to a point downgradient of the site would be less than 0.5 square miles. As such, the stream would be designated as intermittent and, based upon the above, Riverfront Area would not occur on the site.
- The Bank of the intermittent stream on the site was not specifically delineated in the field. The upper boundary of Bank is contained within or is conterminous with the reviewed Bordering Vegetated Wetland boundaries. There is no requirement to delineate this resource area unless work is proposed within the resource area.
- Based upon a review of the Middlesex County Flood Insurance Rate Map 25017C0264E, Effective Date June 4, 2010, the entire site is mapped as Other Areas: Zone X which is essentially defined as areas located outside of the 500-year floodplain. Given the lack of a mapped 100-year floodplain, the lack of a significant water body or waterway on or near the site, the site topography, and the

lack of observed flooding outside of the delineated wetlands, Bordering Land Subject to Flooding would not occur on the site.

- Based upon a review of the Natural Heritage Atlas, 13th edition, Effective Date October 1, 2008, Billerica Quadrangle, the site is not located within a mapped Estimated Habitat or mapped Priority Habitat and no mapped Certified Vernal Pools are shown on the site.
- Based upon a review of the 2001 Aerial Photo Survey of Potential Vernal Pools, no Potential Vernal Pools are mapped on the site.
- Although not mapped as a Certified or Potential Vernal Pool, there is a deeper depressed area within the undelineated wetlands in the in the extreme eastern portion of the site that appears to have the physical characteristics to be a vernal pool. This area should be evaluated, with the express permission of the property owner, during the spring to see if it meets the current vernal pool certification criteria.

It is expected that the hearing for the NOI will be continued and an Order of Conditions will not be issued until the Comprehensive Permit process with ZBA has concluded. As such, the Commission will not be able to issue findings regarding the type and extent of wetland resource areas and buffer zone on the site until such time as the Order of Conditions is issued. Typically an Abbreviated Notice of Resource Area Delineation, which is independent of a project, is used to establish resource area boundaries.

MASSDEP COMMENTS

The Public Access to Wetland Notices of Intent from MassDEP was reviewed. The filing was issued DEP File No.: 125-0974. MassDEP offered three comments related to the filing:

1. Grading appears to close to wetland line;
2. Common septic leach field may be problematic to nearby wells; and
3. Fee also appears to be incorrect.

The applicable comments will be addressed below.

APPLICATION REVIEW AND COMMENTS

The materials provided for review included a photocopy of the "Notice of Intent Application Including Stormwater Management Report with Operations & Maintenance Plan, Brem Property – 40B, 100 Long Ridge Road, Carlisle, Massachusetts," prepared by Meisner Brem Corporation, dated July 25, 2014, received by Commission on August 1, 2014 and the following three plan sheets:

- Notice of Intent, Brem Property, 100 Long Ridge Road, Carlisle, Massachusetts", prepared by Meisner Brem Corporation, dated July 17, 2014, received by the Commission on August 1, 2014;
- "Notice of Intent, Brem Property, 100 Long Ridge Road, Carlisle, Massachusetts," prepared by Meisner Brem Corporation, dated September 2, 2014 (which eliminated profile box over the

eastern portion of the site and, as noted above, was used for the field review of the wetland delineation); and

- “Notice of Intent, Brem Property, 100 Long Ridge Road, Carlisle, Massachusetts,” prepared by Meisner Brem Corporation, dated July 17, 2014, revised through October 27, 2014, received by the Commission on August 1, 2014 (which makes revisions to wetland boundary and moves the well associated with Units 5 and 6 just outside of the 100-foot Buffer Zone).
- The NOI form was generally adequately completed and all required materials were provided within the document with the following exceptions:
 - Section A7a of the form should list the project type as a residential subdivision rather than a single family home as the former project type is more analogous to what is proposed and is more consistent with the answer provided in Section C6 of the form;
 - The box at Section C2a should have been checked;
 - EcoTec did not observe a USGS Map in the materials that were provided to EcoTec for review;
 - The Wetland Fee Transmittal Form showed payment for four single family houses in the 100-foot Buffer Zone. MassDEP commented that the filing fee was not correct but did not indicate the reason. Based upon the revised wetland boundaries, the site plan shows four houses (or parts thereof) within the 100-foot Buffer Zone. In addition, a point source discharge from SMF-2 is located in the 100-foot Buffer Zone. The submitted fee did not include the point source discharge. Also, there may be other activities, such as patios and decks that are not associated with the four Buffer Zone houses, a footbridge and trail system, and/or other amenities, which are discussed in the narrative, but are not presently shown on the site plan that may incur additional fees. The fee question should be resolved when a final site plan showing all work and activities subject to review under the Act has been provided.
- The NOI included a project narrative. EcoTec has the following comments on this narrative:
 - The Exclusive Use Areas (ELUs) should be shown on the site plan. The narrative uses the word “lot sizes.” Does this refer to the ELUs or are actual lots proposed to be created?
 - The site plan shows what is interpreted to be porches associated with many of the proposed houses. The narrative identifies typical patios, decks, and screened porches in the rear yard. These features and any associated grading should be shown on the site plan. In short, any activity or feature that is proposed in the 100-foot Buffer Zone (or a resource area) needs to be shown on the site plan.
 - The narrative introduces a phasing plan. Phase I would include Units 1 to 6; Phase II would presumably include the balance of the project. Some grading work in the 100-foot Buffer Zone is associated with Phase I; more significant work in the 100-foot Buffer Zone is proposed in Phase II. As such, a more detailed Phasing Plan should be provided to the Commission as part of the NOI and as part of the SWPPP required under NPDES. Of particular note would be erosion controls and long-term maintenance of erosion controls,

temporary stormwater controls, stockpiles, grading, as well as coordination of long-term stormwater controls, septic systems, and water supply wells.

- Are drywells or some other form of infiltration system proposed for the individual houses? Are water softeners proposed and, if so, where are the proposed discharge points for these systems. Such features should be shown on the site plan.
- As the project would require a Construction General Permit under NPDES and require the preparation of a proper and complete SWPPP, it should be expected that the Commission will require the SWPPP to be submitted for review either during the NOI process or prior to the start of work within the Commission's jurisdiction on the site. Adequate erosion control measures as required by the Construction General Permit based upon the setback from the wetlands, slope, soil type, the possible need for multiple rows of erosion controls, RUSLE Analysis, and other factors must be addressed in the SWPPP. It should be expected that the Commission will require the implementation of an erosion control monitoring program with the same frequency as that required by the SWPPP and that inspection reports would be submitted to the Commission on a monthly basis and immediately following any erosion control breach. The expected inspection frequency would be the same as the required by the current Construction General Permit. The SWPPP would serve as the plan to control construction-related impacts required by Stormwater Management Standard 8. Presently, this is addressed as a conceptual discussion in Sections 9.2, 9.33, and 9.36 and with more detail in Section 9.3.4 of the Preliminary Stormwater Management Report. Again, the narrative and site plans propose hay bales; straw bales should be used instead of hay bales. Lastly, the erosion control barrier that is proposed should be extended in both directions as necessary to protect the adjacent wetland resource areas.
- The narrative indicates that grading proximate to Units 13 to 16 is proposed to extend to the wetland boundary without the benefit of a natural buffer. Both the existing and the proposed grades in this area are relatively steep. Based upon the revised wetland boundary, grading is proposed in places essentially to the wetland boundary. MassDEP also commented on the proximity of the proposed grading to the wetlands. As the proposed erosion controls must be located outside of the wetlands and the proposed erosion controls consisting of an entrenched siltation fence and double staked bales take up about two feet, the proposed grading, particularly the proposed 88 contour to the southeast of house 16 does not seem feasible. Additional comments on this topic are provided below under Narrative Standard for Work in the 100-foot Buffer Zone.
- The narrative discusses project amenities, including a trail and bridge over the wetland to provide access to 3.19 acres of wooded area, a portion of which may be developed as active woodland recreation including picnic tables, play areas, walkways, and a possible outdoor fireplace. The footbridge would occur over the wetland (Bordering Vegetated Wetlands and Bank). The narrative indicates that the current project does not propose any work within any wetland resource area. While there is a Footbridge Limited Project at 310 CMR 10.53(3)(j), such a footbridge over the wetlands would need to be shown on the site

plan and be properly evaluated and permitted. As detailed at Section 10.53(3), the footbridge would need to be sited to minimize impacts/alteration and appropriate mitigation would need to be provided. Other proposed amenities may occur in the 100-foot Buffer Zone and, as such, would need to be shown on the site plan to be permitted. The Pedestrian Trail/Path label on the site plan should be removed or a more detailed rendering of the feature and the means of access to said trail/path from the site proper (including a wetland crossing/footbridge) must be shown. The Proposed Open Space A parcel, if applicable, should be more clearly defined. Again, any proposed activities in the eastern portion of the site (where the wetlands have not yet been delineated) would require that the wetland boundaries in that area be delineated, reviewed, and approved, as noted above.

- The NOI included a Wetland Delineation Report. The report adequately describes the methodology used to delineate the wetlands and provides an adequate description of the delineated wetland resources. The report did not include BVW Field Forms. Based upon the peer review of the wetland flags, the boundaries, with several minor modifications, were found to be consistent with the definition of Bordering Vegetated Wetlands at Section 10.55(2)(c) and MassDEP Policy and Guidance.
- The NOI included a Preliminary Stormwater Management Report. As noted above, review of the stormwater management system is outside of EcoTec's scope. EcoTec has incorporated applicable comments into the above section on the project narrative.
- The site plan is at a suitable scale (1" = 40'), but does not show the entire site. In one case, the eastern portion of the site is covered by the profile block, in the other, the northern corner of the site is cut off.
 - The site plan should include a large scale locus map that shows the vicinity of the site;
 - An Existing Conditions sheet should be provided. Given the nature of the work on the site, it is difficult to see the gray-line existing conditions beneath the proposed conditions;
 - The site plan must include details for all drainage and stormwater components, and other site features. The roadway profile should also be included in the plan set.
 - The plan revision date should be included and clearly shown on the plan(s).

JURISDICTION UNDER THE ACT AND REGULATIONS

It is important to note that neither the entire site nor the entire project is subject to jurisdiction under the Act and Regulations. Section 10.05(6)(b) of the Regulations states:

The Order of Conditions shall impose such conditions as are necessary to meet the performance standards set forth in 310 CMR 10.21 through 10.60 for the protection of those areas found to be significant to one or more of the interests identified in M.G.L. c. 131, § 40 and the Stormwater Management Standards provided in 310 CMR 10.05(6)(k) through (q). The Order shall prohibit any work or any portion thereof that cannot be conditioned to meet said standards.

The Order shall impose conditions only upon work or the portion thereof that is to be undertaken within an Area Subject to Protection Under M.G.L. c. 131, § 40 or within the Buffer Zone. The Order shall impose conditions to control erosion and sedimentation within resource areas and the Buffer Zone. The Order shall impose conditions setting limits on the quantity and quality of discharge from a point source (both closed and open channel), when said limits are necessary to protect the interests identified in M.G.L. c. 131, § 40; provided, however, that the point of discharge falls within an Area Subject to Protection Under M.G.L. c. 131, § 40 or within the Buffer Zone, and further provided that said conditions are consistent with the limitations set forth in 310 CMR 10.03(4).

Thus, only the work within the geographical jurisdiction of the Commission (i.e., work within wetland resource areas and the 100-foot Buffer Zone) and a demonstration that the discharge from SMF-2 meets the Stormwater Management Standards at the point of discharge would be subject to review and would be subject to the Order of Conditions under the Act.

NAARATIVE STANDARD FOR WORK IN THE 100-FOOT BUFFER ZONE

In 2005, MassDEP revised the Regulations at 310 CMR 10.53(1) to include a narrative standard for work in the Buffer Zone under an NOI. This narrative standard is not a performance standard like those set forth in the Regulations for Areas Subject to Protection Under M.G.L. c. 131, § 40. Instead, as described in the Preface to the Wetlands Protection Act Regulations, 2005 Revisions, “The standard is intended to provide better guidance to applicants, conservation commissions and DEP by identifying the measures that will ensure that adjacent resource areas are not adversely affected during or after completion of the work.” Section 10.53(1) states:

.... For work in the buffer zone subject to review under 310 CMR 10.02(2)(b)3., the issuing authority shall impose conditions to protect the interests of the Act identified for the adjacent resource area. The potential for adverse impacts to resource areas from work in the buffer zone may increase with the extent of the work and the proximity to the resource area. The issuing authority may consider the characteristics of the buffer zone, such as the presence of steep slopes, that may increase the potential for adverse impacts on resource areas. Conditions may include limitations on the scope and location of work in the buffer zone as necessary to avoid alteration of resource areas. The issuing authority may require erosion and sedimentation controls during construction, a clear limit of work, and the preservation of natural vegetation adjacent to the resource area and/or other measures commensurate with the scope and location of the work within the buffer zone to protect the interests of the Act. Where a buffer zone has already been developed, the issuing authority may consider the extent of existing development in its review of subsequent proposed work and, where prior development is extensive, may consider measures such as the restoration of natural vegetation adjacent to a resource area to protect the interest of the Act. The purpose of preconstruction review of work

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in the buffer zone is to ensure that adjacent resource areas are not adversely affected during or after completion of the work.

The applicant needs to provide a response that indicates how the proposed project complies with this narrative standard. As was introduced above, the site plan shows significant existing and proposed grades proximate to the wetlands near Units 14 to 16. Based upon a review of the plan, it may be possible to implement one or more of the following or another alternative to preserve some form of natural or enhanced vegetational buffer between the limit of work and the wetlands:

- Units 14 to 16 could have shorter driveways;
- Units 14 to 16 could be reconfigured to move the houses and associated grading further from the wetlands (e.g., the house design for Unit 11 or Unit 12 could be used);
- A retaining wall or walls could be used to avoid chasing the grade down to the wetland boundary;
- A retaining wall or some other hard marker should be used to demarcate the limit of development to prevent incremental creep toward the wetlands;
- A mitigation planting plan using native woody species can be implemented between the limit of work and the wetland boundary.

A copy of the revised site plan and any other documents that are provided to the Commission relative to this project should be provided to EcoTec for review and comment, as authorized. The revised site plan may be provided to EcoTec by email as a pdf.

I hope that the Commission finds this information useful. If you have any questions, please feel free to contact me at any time.

Cordially,
ECOTEC, INC.



John P. Rockwood, Ph.D., PWS
Chief Environmental Scientist