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August 24, 2023

Project no. W23-1882

Edward Goodwin, Chair
Conservation Commission
301 Main Street
Sturbridge, MA 01566

RE: NOI Peer Review
263 New Boston Road / Parcel ID: 455-01144-263
Sturbridge, Massachusetts
DEP file no. 300-1166

Chair Goodwin:

Ecosystem Solutions, Inc. has finalized the NOI peer review for the above-referenced property (Property).

The following documents were reviewed:

- Plans titled "CONSERVATION COMMISSION PLAN", sheets 1-2, by DC Engineering & Survey, Inc., stamped by Jason D. Dubois P.E. No. 48724, and dated March 31, 2023, with a final revision date of March 31, 2023 and at a scale of 1"=40'.
- NOI submitted on behalf of Kenneth LeBlanc including: Notice of Intent forms and attachments, Sturbridge NOI forms including abutters list and notification letter, General Project Description, Data forms and Site Pictures.

Property Description

This Property is on the west side of New Boston Road, just south of Holden Road. The landscape was formed by meltwater streams depositing sediment between a glacier and the earth. This landform the Property is located on contains proglacial and ice contact outwash, most likely in the form of a kame terrace. It is bordered to the east by ablation (loose) glacial till uplands. The sediment deposited on-site is a combination of sorted and unsorted sand and gravel. This type of landscape is often mined for sand and gravel just as this Property had been mined in the past. From New Boston Road, there is a steep slope leading down from the glacial till highlands to a nearly flat swamp in the outwash plain that covers most of the southern portion of the Property. The western Property boundary follows along the side of another steep slope with several potential vernal pools located at the base of the slope.

Table 1. Critical Areas

Mapped Resource On or Within Proximity to Site	Yes	No
Area of Critical Environmental Concern		✓
NHESP Certified Vernal Pool		✓
NHESP Potential Vernal Pool	✓ ¹	
NHESP Estimated Habitat of Rare Wildlife (2021)	✓ ²	
NHESP Priority Habitat of Rare species (2021)	✓ ³	
DFW Cold Water Fisheries Resources		✓
Outstanding Resource Waters		✓
FEMA Flood Zones		✓
Surface Water Protection Area		✓
Interim Wellhead Protection Area		✓
Zone I Wellhead Protection Area		✓
Zone II Wellhead Protection Area		✓

- 1- A NHESP Potential Vernal Pool is mapped within the wetland mapped as flags 1B thru 5B, and 101B thru 106B. Buffers to this PVP were omitted from the site plan, presumably per a Negative Determination of Applicability received in 2022.
- 2- The entire Property is located within Estimated Habitat (EH 721).
- 3- The entire Property is located within Priority Habitat (PH 942).

Initial File Review (Administrative)

The NOI filed with the Sturbridge Conservation Commission has a few page numbers that do not match the table of contents but otherwise is accurate and correct.

Site Inspection

Wetland Delineation

1. A site inspection was conducted on Wednesday, August 16, 2023. Sturbridge had a rainstorm the night before with a total of 0.92 inches of rain. It is our opinion that wetlands on-site are somewhat more extensive than current flagging displays. Furthermore, the B-series wetland connects to the A-series wetland through a narrow saddle over which the driveway is proposed. ***This means that the B-series wetland is actually a BVW.*** Pink flags were placed in three areas where we recommend revisions, as follows:
2. Flags SCC WET 9D-1 and SCC WET 9D-2 were placed near the D-series flags to round out a corner that had not been included by EBT just beyond the western Property boundary. This area was expanded due to signs of hydrology, water-stained leaves and drainage patterns, and hydrophytic herbaceous vegetation.
3. Flags SCC WET 16A-1 through SCC WET 16A-6 were placed between flags 16A and 18A. They extend around a small depression with water-stained leaves, soil with a reduced matrix and hydrophytic herbaceous vegetation, bringing the vegetated wetland further north approximately thirty (30) feet. This small depression is almost separated from the rest of the

wetland by a small ridge between the two, however hydric soils were found in this ridge indicating that it and the depression are included in the A-series wetland.

4. Flags SCC WET 1 through 5 were placed between flags 7A and 3B. SCC WET 101 through 105 were placed between flags 8A and 2B. These flags travel through a small gulley and connect the A-series wetland to the B-series wetland. This area was somewhat difficult to evaluate. A small grove of white pine saplings (*Pinus strobus*) sits at the base of the slope where the driveway is proposed. Several soil samples were taken in this area. They showed a thin layer of topsoil above a layer of gravelly loamy sand that was four to six inches thick. Below this layer was a deep layer of organic soil reaching down nearly three feet in some areas. These soil conditions are in line with the definition of a histosol according to the US Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. It is our opinion that gravel mining operations or erosion caused a buildup of sand and gravel in this area which has allowed white pine, a plant normally indicative of upland conditions, to grow in this area. The sand and gravel create more pore space in the soil and allow the roots of the pine tree to survive in soils that would otherwise be too wet. Regarding the white pine, which is *not* a hydrophytic/wetland plant, we believe that despite the heavy cover of this species, that the area still qualifies as wetland. White pine commonly grows in sandy, wet areas, and if allowed to grow larger, would exhibit hydromorphic adaptations to life in wet conditions such as buttressed trunks, at a minimum.
5. The entire Property is located with Estimated and Priority Habitats of Rare species. According to the NOI, a copy of the application package has been forwarded to NHESP. I have not received any correspondence from NHESP regarding their initial review. However, the Commission could and should consider impacts to Wildlife Habitat as a Public Interest when it comes to impacts to wetland resource areas and Bylaw protection areas in this regard.

Vernal Pools

6. EBT Environmental Consultants, Inc. (EBT) delineated and labeled a number of different potential vernal pools (PVP), all of which are off-site but within 200' of the Property boundary. In the project narrative, EBT identifies eight (8) different PVP's. 100' and 200' "offset" lines from the PVPs were drawn on the site plan. However, we would point out that a PVP mapped by NHESP was not depicted on the site plan. This PVP is located on the north side of the driveway and extends into 269 New Boston Rd. In EBT's General Project Description, they state that they investigated this areas in 2021 and 2022, eventually receiving a "Determination of Applicability which concurred that the shallow pooling areas were not vernal pools."

Other

7. This lot was created in 2007 as part of a subdivision by Waterman Design Associates, Inc. At the time the lot was left undeveloped with notes on the plan stating that no slopes are greater than 8% would affect driveway access to proposed structures. Another note states that wetland occurs on-site but its extent has not been evaluated. According to the EBT narrative,

was a major error because any development on this Property must now cross wetlands to access upland areas. That is, an easement should have been created on the plan to access upland areas without disturbing wetland. In this way, EBT states, Waterman Design created a hardship for the future Property owners. This poses a potential Regulation §365.3.11(A)(1) “Self-imposed hardships” problem for failure to consider wetlands when subdividing land.

Site Design & Compliance w/ Bylaw & Regulations

8. Under the current plan, the only work or disturbance proposed that may be problematic under the Bylaw & Regulations is the fact that grading associated with the driveway, which appears extensive, clips the 25' No-Touch Zone on both the north and south sides. However, if ESI's recommendations for revised wetland boundary lines is carried out, the driveway will then be proposed to cross BVW. If this happens, I believe that Regulation §365-3.5 “Limited Projects” would most likely be activated for review of the driveway. That said, as it applies to BVW disturbance, Limited Projects under 310 CMR 10.53 refer to when work will alter >5,000 s.f. of BVW. This would be less than 5,000 s.f.
9. If wetland flag change recommendations are followed, the portion of the driveway from about elevation 649 to about elevation 652 will be in the 25' No-Disturb Zone.
10. In regards to the Limit of Work/ Erosion Control line, I fear a logistical problem where grades are steep along the proposed driveway. In some places there is a 25' proposed change in grade between the base of the driveway and the existing ground elevation. In cases where grades are high and steep, it is not practical to place silt fence or other sedimentation control measures at the immediate base of the slope. In practicality, at least a 5' separation from the base of the slope and the ESC measure must be maintained in order to allow sediment to slow down and settle (as much as possible) before hitting the ESC practice. Otherwise, they get overwhelmed quickly and fail at a much greater rate than if they were set away from the slope. Not only that, but the logistics of potentially having to construct the slope may require machinery beyond the bottom of the slope, not to mention long-term maintenance.
11. The narrow valley we recommend flagging between the A and B-series wetlands poses a situation where, if the driveway is built, will restrict surface water or near surface groundwater flow. We therefore recommend the applicant build a box culvert, at a minimum, at this location in order to allow an unrestricted hydraulic connection between the two wetlands. The wetland may be narrow enough to completely avoid filling it. However, if the wetland is restricted from sunlight and plants can't grow, it still poses 'destruction of wetland,' in my opinion, and should still require replication.
12. The silt fence/straw wattle line is also the proposed Limit of Work. However, the silt fence ends abruptly on either side of the house. The silt fence/LOW line should be expanded to *completely* enclose the area of work. The Commission should be able to know where the limits of the lawn will be around the house in order to ensure that the future owner, far from the road, may be held accountable should they expand development into the 200' Vernal Pool BZ or beyond.

13. EBT made a statement that *had* the land been subdivided differently in 2007, this development configuration may have been avoided. This sets up a §365.3.11(A)(1) “Self-imposed hardships” problem for failure to consider wetlands when subdividing land. Given that this happened 15 years ago, I leave this issue to the Commission to discuss.

Conclusion

At this time, we recommend revising the wetland delineation to reflect the adjustments ESI made in the field. I recommend that the Commission discuss the ramifications of the possibility of a wetland (BVW) crossing under the Sturbridge Wetlands Protection Bylaw and Regulations, using my comments 1 through 6 above as a guide.

Should you have any questions regarding this letter, please do not hesitate to call at (508) 997-0268 or by using the other contact information above.

Sincerely,

Ecosystem Solutions, Inc.

Brandon B. Faneuf, MSc, Principal
PWS, RPSS, CWB, CPESC

BF/cc



FIGURE 1
 Georeferenced Plan on 2021 aerial orthophoto, w/ notes added
 Yellow shaded areas are where flag changes are proposed.

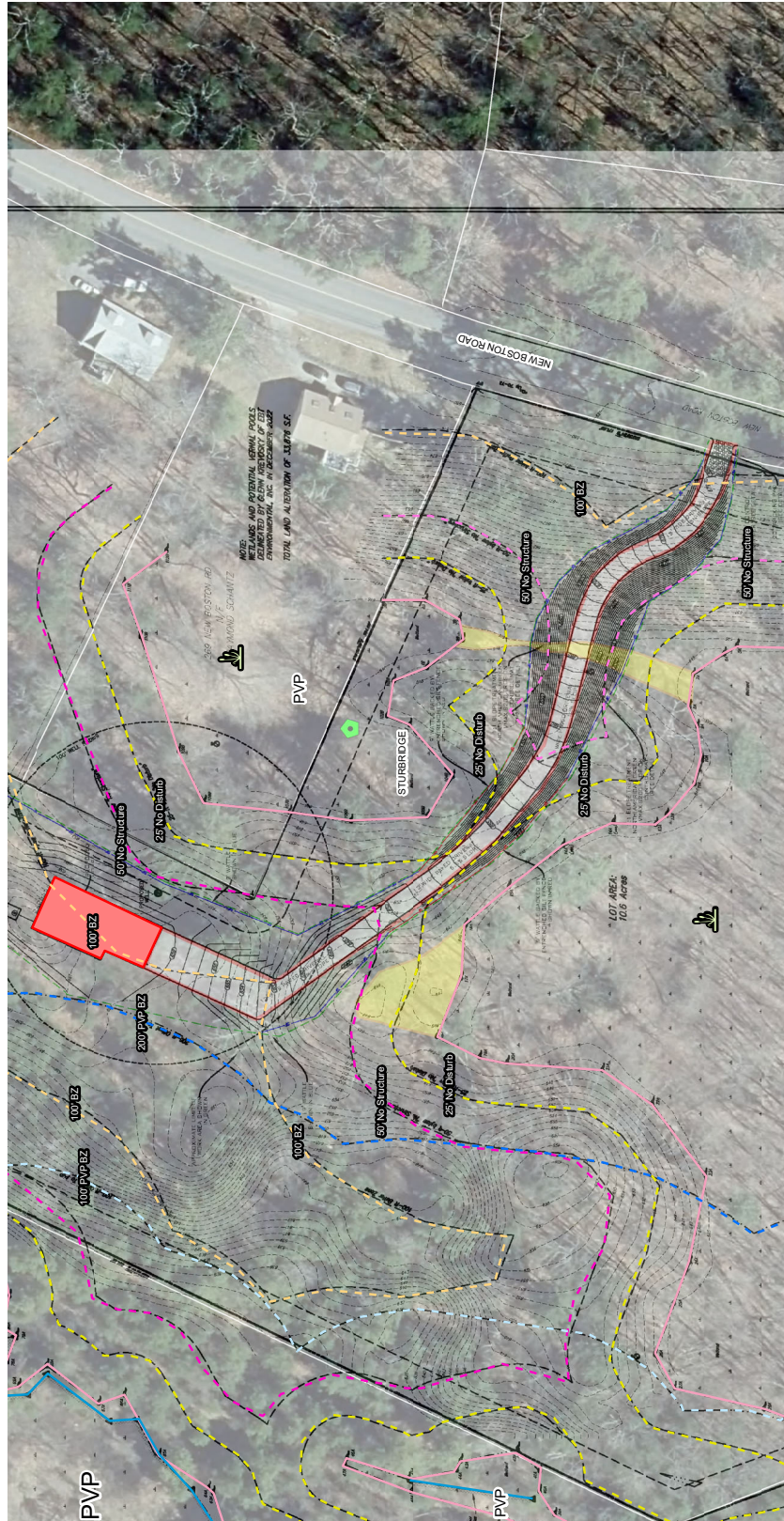


FIGURE 2
 Outline of resource areas, buffer zones, and major points of development
 Yellow shaded areas are where flag changes are proposed.



Georeferenced Plan on 2011 shaded relief map, w/ notes added
 Yellow shaded areas are where flag changes are proposed.

