August 25, 2022

Sturbridge Conservation Commission
c/o Ms. Rebecca Gendreau
Conservation Agent
Town of Sturbridge
301 Main Street
Sturbridge, MA 01566

RE: Peer Review of Supplemental Materials
DEP File No. 300-1113
30 Main Street, Lot 3
Sturbridge, MA

Dear Ms. Gendreau and Members of the Commission:

OA has reviewed the supplemental materials prepared and submitted by LEC Environmental Consultants to the Commission on August 18, 2022. OA has prepared additional comments to address the adjustments made to the proposed project.

Project Changes

The Applicant has increased the amount of protected land as a migratory corridor between vernal pools A and E by eliminating a structure on an additional lot (Unit #67) and adjusting the orientation of the structures on lots adjacent to the corridor. The Applicant has also increased the size of the crossing structure proposed beneath the roadway from 2x2 feet to 5x3 feet to allow for wildlife movement and increase the amount of light into the crossing structure.

Siting previous language from the Commission, the Applicant has also removed the curbing/walls that were to be used to direct wildlife towards the crossing structure. The edges of the proposed lots will be graded to match existing grades of the migratory corridor. Differences in existing grades and proposed grades surrounding the crossing structure necessitate the use of a retaining wall on the south side of the roadway.

Recommendations

Crossing Structure

With the elimination of the curbing/retaining walls to direct migrating wildlife towards the crossing structure, OA recommends the Commission explore the feasibility of additional crossing structures to bypass beneath the roadway, or the possibility of a grated bridge (see Photos) spanning a larger proportion of the migratory corridor to ensure that wildlife do not bypass the opening of the crossing structure.

Vernal Pool A – Buffer Zone Impacts

The Applicant has stated that the proposed project will not result in significant adverse impact to the on-site vernal pools. While the Applicant has removed themselves from the 200-foot Vernal Pool Buffer on the north side of the proposed roadway (Vernal Pool E), there are substantial impacts within the 200-foot buffer on the south side of the roadway, including four housing units, their accessory structures, the associated yards/lawn, and the construction of a detention basin.

The table located on Page 2 of the supplemental LEC letter (dated Aug. 18, 2022) depicting detailed impact calculations does not include a percentage of impacts to the vernal pool buffer outside of impervious surfaces. As previously mentioned in a previous OA letter (June 17, 2022) the study by Rittenhouse et al. (2006) shows that salamander movement is also limited by fragmentation of forested habitat. While the lawn/grassland proposed on the property may eventually be vegetated, it remains a barrier to dispersal and migration to vernal pool amphibians, as it exposes them to dehydration, predation, roadway crossings, and other human activities, which may ultimately result in population decline. The Applicant should demonstrate how the proposed work within the 200-foot buffer will not substantially reduce or impair the adjacent upland resource areas, and if the proposed work in this area is necessary to the success of the overall project.

As previously mentioned, the Bylaw states:

> "shall not result in a measurable decrease in extant wildlife populations or biological community composition, structure, and species richness of the site or in the vicinity…or impair, damage, or reduce in value for wildlife purposes identified specific habitat features."

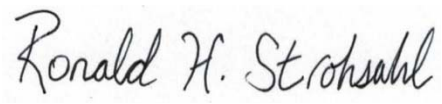
Minor abiotic changes to vernal pool habitat can result in changes to the hydrology of the vernal pool and interfere with growth and development of vernal pool species. The Applicant has not demonstrated that the rain gardens/detention basin will sufficiently prevent road pollution (oil, gasoline, deicer, salt, etc.) from runoff from infiltrating groundwater and ultimately changing abiotic factors of the pools. Over multiple years accumulating soluble chemicals/salts from road runoff will be deposited in the soils of the rain gardens and will inevitably result in an increase in groundwater levels infiltrating to the vernal pools, especially towards Vernal Pool A. As demonstrated in the study by Langhans et al. (2009) even minor increases in salt concentrations resulted in decreased survivorship or wood frog (*Rana sylvatica*) tadpoles.

The Commission should consider maximizing the available protection of the adjacent upland resource areas to ensure the biological functionality of the three vernal pools is not reduced, ensure landscape connectivity and continuity between the wetland systems is kept intact to the most reasonable degree, and limit indirect effects to important abiotic vernal pools characteristics (potential chemical changes affecting pH, salinity, light, temperature, etc.).

Thank you for the opportunity to provide these comments. The Commission should feel free to contact me at 978-929-9058 ext. 107, with any questions regarding this review.

Sincerely,

Oxbow Associates, Inc.



Ron Strohsahl, PWS
Senior Wetland Scientist

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References

Langhans, Margaret, Bridget Peterson, Annie Walker, Geoffrey R. Smith & Jessica E. Rettig (2009) Effects of Salinity on Survivorship of Wood Frog (*Rana sylvatica*) Tadpoles, Journal of Freshwater Ecology, 24:2, 335-337.

Rittenhouse, T. A. G. and R. D. Semlitsch. (2006). Grasslands as movement barriers for a forest-associated salamander: Migration behavior of adult and juvenile salamanders at a distinct habitat edge. Biol. Cons. 131:14-22.

Photographs

Photo 1: Grated bridge spanning BVW between two vernal pools supporting rare amphibians.
Source: Oxbow Associates, Inc.