



April 25, 2024

Conservation Commission  
P.O. Box 276  
1 Cooleyville Rd  
Shutesbury, MA 01072

**RE: Request for Amended Order of Conditions  
14 Lake Dr – Parcel ZB-104 – DEP File #286-0289**

Dear Commissioners:

On behalf of our clients, Donna and Andrew McCallum, we respectfully request the Commission amend the existing Order of Conditions issued for this project based on the information enclosed in this submission. During construction of the project, which involves the demolition and reconstruction of a single-family house and is ongoing, a failing steel drainpipe was encountered within the footprint of new construction. We are requesting the amended order to allow replacement of this pipe. Replacement of the pipe will prevent catastrophic failure in the future and allow construction of the proposed house to proceed as originally proposed.

The project was approved as a buffer-only project. The proposed amendment would remain a buffer-only project.

Enclosed with this request are the original NOI plan set, and an amendment plan set showing just those items that would be affected by the requested amendment.

### **Background**

The project, which received an Order of Conditions on 5/27/2022, proposes to demolish and reconstruct a single-family house on a small lot on Lake Wyola. The lot is bounded by Lake Dr to the west, Lake Wyola to the east, and residential properties to the north and south.

The existing conditions survey for the project identified a storm drainpipe that carries runoff from the opposite (high) side of Lake Dr through the site to an outlet in the lake. No records on the age, material, or exact location of the pipe were found. As part of the Order of Conditions, the pipe was determined by the Commission to be carrying an intermittent stream.

As shown in the original Notice of Intent plans, the footprint of the proposed house is of similar size to the existing house but was located approximately 6 feet north of the existing footprint, to allow more buffer between the neighboring home. The proposed location of the house is approximately 7-9 feet from the assumed location of the drainpipe based on surface evidence.

During excavation of the new foundation, the pipe was encountered within the footprint of the new building, approximately 8 feet from where it was expected to be. More significantly, the material of the pipe was observed to be smooth-wall steel (which has never been a standard material for drainpipe) and in degraded condition with the bottom of the pipe heavily perforated with corrosion and in a state of failure. It is our opinion that the pipe is likely to suffer a collapse in the coming years.

The outlet end of the pipe, extending into the lake, is modern double-wall HDPE. Based on a conversation with a neighboring property owner, the last segment of the pipe was replaced in approximately 2006 during a lake drawdown. The exact length of replacement is unknown, but is unlikely to be more than the length of a single segment of HDPE (20 feet).

Note that observation at the inlet end of the pipe on the west side of Lake Dr shows that the existing culvert under the road is corrugated metal pipe. Our understanding is that this culvert was installed as part of the construction of Lake Dr, and that a previous owner of the #14 property installed the smooth-wall steel pipe to extend this culvert down to the lake at a later time.

### **Proposed Amendment**

The proposed amendment to the project, which is shown on the enclosed plans, proposes to install new HDPE drainpipe from a tie-in point at the front property line of 14 Lake Drive to a connection with the HDPE segment near the edge of the lake. Refer to Sheet C-3a depicting the “Proposed Solution”.

Plans for the proposed amendment include additional erosion controls for the expanded work area. An existing 16” black birch<sup>1</sup> tree may be impacted by the routing of the new drainpipe. The tree has a significant lean of approximately 30 degrees toward the lake. Plans include a requirement for a tree assessment prior to work within the dripline, which will provide recommendations to maximize the chances of protecting the tree. If the tree is determined to be hazardous, or would become hazardous due to the work, the plan calls for removal and planting of a replacement native tree species near the edge of the lake.

As mitigation for the impact of this utility work, we propose the planting of 4 red osier dogwood or low bush blueberry shrubs as shown on the plan. All vegetation outside the limits of work are to be protected.

### **Alternatives Analysis**

Berkshire Design and the clients are aware of the Commission’s presumption that existing direct drainage connections to the lake should be eliminated by daylighting to the surface away from the lake wherever possible. In light of this presumption, we have prepared an alternative plan to assess the feasibility of daylighting the drainpipe as part of this project. Refer to Sheet C-3b depicting the “Alternate Solution”.

The alternate solution would install new HDPE drainpipe from a tie-in point at the front property line of 14 Lake Drive to an outlet point approximately 15 feet from the edge of the lake.

In the existing condition, most of the lake frontage of 14 Lake Dr includes a small concrete retaining wall, approximately 18” tall, with a base approximately 6-12” below the normal lake surface elevation. The last five feet of lake frontage at the northeast corner of the property includes a dry-laid stone retaining wall of similar size. The alternative plan would disassemble the stone wall through that 5-ft frontage to allow the creation of a stone-lined water quality swale between the outlet point of the drainpipe and the lake edge. The perimeter of the swale would be planted with ostrich ferns for the purpose of water quality improvement and aesthetics. Two larger boulders would be placed near the pipe outlet to dissipate energy during periods of high flow.

In the opinion of Berkshire Design, this alternative is not feasible. The neighboring property at 12 Lake Drive includes a mounded septic system near the property line with #14. The existing septic field is located approximately 50 feet from the edge of the lake and 10 feet from the property line. Both dimensions represent the minimum offsets to surface waters and property lines, respectively, as required by the State Sanitary Code 310 CMR 15.00 (“Title 5”).

The construction of a water quality swale in this location would create a violation of Title 5 for the neighboring septic system. The intermittent stream carried by the drainpipe would be brought to the surface approximately 15 feet further inland from the existing edge of the lake and would constitute a surface water. As shown on

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<sup>1</sup> There is uncertainty to the identification because the tree had not leafed out at the time of observation.

Sheet C-3b, the existing septic system would be located 36' from this surface water, which is less than the minimum 50' offset required by Title 5.

In addition to the Title 5 violation, we have identified the following concerns with the alternative plan:

- The neighboring property includes a beach area that is adjacent to, and lower than, the water quality swale. Even with careful construction, there is significant risk that water will overflow the swale and erode the beach during periods of heavy rainfall.
- Moving the water quality swale further south into the property would discharge water to the back side of the existing concrete retaining wall. This stream runs approximately 10 months of the year, including most or all of the winter months. Constant saturation of the back side of the wall is likely to compromise it over time, especially if the back side of the wall is exposed to significant freeze-thaw.
- To alleviate concerns about water impacts on the wall, it would require cutting and modifying the wall to allow an opening, which would require work directly in the water. The wall would need to be cut down to the lake bottom elevation and new wall turning in toward the land to support the wall and adjacent earth would be needed.

#### **Additional Considerations**

We also note that in the existing condition, water quality treatment has been incorporated on the inlet end of the existing drainpipe. A PVC extension sleeve extends from the corrugated metal culvert under Lake Drive to the uphill side. The extension includes a riser to prevent roadway gravel from washing into the culvert and ultimately to the lake. We spoke with the neighbor who maintains this inlet and gravel is regularly removed from the catchment, demonstrating that it provides significant water quality benefit.

In the existing condition, the lake bottom shows minimal scour at the outlet of the pipe that has been in place for approximately 18 years. As part of the proposed solution, the applicant would be willing to provide additional outlet protection at this location if deemed appropriate by the commission.

#### **Conclusion**

Thank you for considering this request. We look forward to discussing this project at your next available meeting.

Sincerely,

**Berkshire Design Group**



Chris Chamberland  
Principal Civil Engineer

cc: Donna & Andrew McCallum