

APPENDIX F

Letter Report prepared by Chris Doyle,
Certified Lake Manager, Director of Biology/Sr.
Aquatic Biologist, Solitude Lake Mgt. Re: Ulmar
Pond, dated February 15, 2018

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Glennon J. Watson, LS
Bodey & Watson
Surveying & Engineering P.C.
3063 Route 9
Cold Spring, NY 10516

February 15, 2018

Dear Mr. Watson,

In 2015, SOLitude Lake Management (formerly Allied Biological, Inc.) conducted biological surveys at Ulmar Pond at the request of Bodey & Watson Surveying & Engineering. I had the pleasure to be the project manager for the project and was on-site to conduct the water quality, plankton, aquatic vegetation and fish surveys in the pond proper, and supervise the surveys in the nearby creek. Although our surveys only consisted of a one-time sampling event at the pond, our data indicated a eutrophic pond, supported by the fact that an intensive blue-green algae bloom was occurring on the date (late June) of the survey. These surveys took place prior to the development of the land. Since the pond could already be considered eutrophic, any additional development of the land could put the resource at further risk. An urban pond such as this requires active management to retain its natural state, and ecologically responsible development of the nearby land.

At the request of Bodey & Watson, Surveying & Engineering P.C., I have conducted a review of the Best Management Plans (BMPs) for the proposed development of the Hudson Highlands project in Cold Spring, NY. The greatest threats to the pond from nutrient loading are runoff, fertilizer use on lawns, septic system leaching and animal waste leaching. The current development plan includes several BMPs, such as a conservation easement from the edge of the pond to the closest property, a sewer system for all residences, and a proposed horse manure management system for the planned Equestrian Center on the site. The plan, as reviewed, addresses all of these potential nutrient loading sources. In several cases, these BMPs are exceeded by the sponsor. In addition, following development, the sponsor plans to engage with the Home Owners' Association (HOA) to actively manage the pond via a professional lake management firm. All of these actions are steps to protect the natural resource that is Ulmar Pond.

The proposed conservation easement will include a minimum 140 foot forested buffer from the pond edge to a constructed wall. This is 40 feet wider than statutory required 100 feet. This easement will support a walking trail (but not for horses) and will include access to the

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pond for lake management services and the fire hydrant system installation and use. This forested buffer will remain untouched during development of the land. According to the Massachusetts Buffer Manual (provided to the sponsor), a minimum 125 foot wide vegetative buffer is suitable for the interception of nutrients via run-off. This buffer will also provide pond bank stabilization and suitable wildlife habitat, and possibly a degree of sediment control. It is recommended that this forested buffer be maintained by the HOA following development. Despite the increased slopes of the surrounding land, the majority of the soils (Charlton) are well drained, and combined with the existing tree cover and minimal impervious surfaces (via homeowner development restrictions), runoff to the pond will be reduced. Imposing Covenants and Restrictions on all lots will restrict the use of fertilizers on manicured lawns. This easement and the restrictions on fertilizer will be suitable to minimize the impacts of run-off into the pond.

There will be no septic systems immediately around the pond. The proposed plan includes a central sewer system, with a requirement that all houses be connected to this system. Therefore, septic system leaching from houses will not be a source of nutrient loading to the pond.

The Equestrian Center, located 350 feet away from the pond, poses several challenges to protect the pond from nutrient loading. The sponsor has provided a horse manure management plan (dated September 21, 2017 from B. Laing Associates). This plan has accounted for the stabling of 40 horses, and the efficient collection and removal of horse waste and bedding material. Waste and bedding will be removed from stalls daily and placed in a temporary holding unit. This unit will be large enough to hold waste for 40 horses over 11 days. It is planned to be emptied every 7 days with the waste hauled off-site by a reputable manure handling company. To reduce the potential for leaching the unit will include a roof and an impervious concrete pad. The pad will be pitched to a drain system leading to an 800 gallon septic tank, and eventually a dry well system. This manure management plan and storage design is consistent with guidelines created by the Penn State Extension Service for the protection of nearby surface waters (<https://extension.psu.edu/horse-stable-manure-management>).

We expect the installation of the dry hydrant to have minimal impacts to the pond. The actual installation might disturb the nearby sediments, but these will be short-term impacts. This will require access to the pond's edge, but this access site will be helpful for any lake management services required following the development of the land.

Any surface water body located near a developed parcel of land requires active management to remain in a steady state, and continue to be a valued resource for the residents. Currently the pond is not actively managed, and is experiencing excessive nutrients, algal blooms, and imbalanced biological communities (phytoplankton,

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zooplankton, fish and aquatic plants). We strongly recommend that following development, the HOA engage with a professional lake management firm to actively manage the pond as this is an important resource for the community. This will require an annual budget and both proactive and reactive management programs. These could include water quality monitoring, aeration installation and annual service (which will require a power source at the pond's edge, or a solar option), and potential nutrient remediation and/or nuisance algal and aquatic plant control. Since the 2015 biological surveys were only conducted on one date (several years ago), the sponsor might want to consider initiating a water quality monitoring program during the development phase (2018/2019?) to begin generating a robust baseline of data to use for the effective management of the system. This will also be useful to track the water quality changes over time and aid in the design of scientific-based management programs.

If you have any questions regarding this letter, please do not hesitate to reach out to me via e-mail (cdoyle@solitudelake.com) or via the office phone (908)-850-0303

Sincerely,

Chris Doyle, Certified Lake Manager
Director of Biology/Sr. Aquatic Biologist

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