

March 4, 2021

Linda Hansen  
Conservation Administrator  
Town of Wayland  
41 Cochituate Road  
Wayland, MA 01778

**RE: Wayland Loker Conservation and Recreation Area Multiple-Use Athletic Field  
Vernal Pool Protection Plan  
Wayland, MA**

Dear Ms. Hansen and members of the Conservation Commission,

BSC Group, Inc. (BSC) is pleased to submit these comments pertaining to the proposed Multi-Use Athletic Field at the Loker Conservation and Recreation Area on Commonwealth Road in Wayland. BSC Senior Ecologist, Matt Burne, PWS, has reviewed available materials relative to the proposed project and attended the public meeting held via Zoom on March 3, 2021. Mr. Burne also has previous experience with the project site as an independent contract biologist when, in April of 2019, he was hired by the Wayland Conservation Commission to evaluate the ecological function of what is referred to as North Pool, which is now a Certified Vernal Pool.

This letter report provides a summary of the ecological functional values and our recommendations for protecting the wildlife habitat value of the vernal pool at the Loker Conservation and Recreation Area.

**North Pool Function**

The history of the Loker Conservation and Recreation Area is not one of setting aside pristine wild lands for wildlife and passive recreation. The site's history as a Dow Chemical production facility, and the understanding that the North Pool was man-made and may have been a discharge point for residuals of the production processes, or possibly as a fish pond for employees is not necessarily a compelling story for conservation of natural resources.

However, nature does recover, and following environmental clean-up and the passage of time, the North Pond has been colonized by amphibians, reptiles, and invertebrates and now functions as a vernal pool. Birds and mammals no doubt use the wetland for important habitat functions as well. Over time, it could be expected that populations of the species recorded in

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the pool will expand, and that the pool may continue to provide valuable habitat functions for a variety of wildlife species in the area.

BSC suggests the following measures to support the Commission's interests in protecting the wildlife habitat values of the Certified Vernal Pool in the process of permitting the proposed artificial turf playing field at the site.

### **Virgin Crumb Rubber infill**

BSC recognizes the various and complex decision-making process around the choice of artificial playing field surfaces for recreational facilities. We note that there is concern about the long-term human and environmental health pertaining to use of crumb rubber products, including acute toxicity to amniote vertebrates (Xu et al 2019), and that artificial turf has been recognized to be a source of microplastics in receiving waters. Due to the developmental life histories of amphibians and invertebrates, there is uncertainty around crumb rubber toxicity in these groups, and it is a potential concern for long-term health of wildlife populations.

The Chair of the Commission recommended consideration of bio-degradable crumb rubber infill alternatives, such as cocoanut husk infill, at the public meeting on March 3, 2021. BSC concurs that an alternative to rubber products is a worthwhile consideration for both humans and wildlife.

### **Crumb Rubber migration**

It is not difficult to find examples of crumb rubber infill material migrating/eroding from field surfaces. Pathways of infill material movement include wind, runoff during heavy precipitation events, and incidental human transport, among others. This material can end up in adjacent wetlands and buffer zones.

BSC recommends that the Commission require fabric (or similar) fencing at field edges to mitigate the risk of infill material migration to surrounding natural areas. We further suggest the development of a long-term monitoring program and development of a remediation plan for an eventuality of infill movement from the proposed field to adjacent wetland resources.

### **Direct impact to vernal pool wildlife**

The proposed artificial playing field and parking area represent a significant hazard to migrating amphibians. Road mortality is a major factor in the decline of amphibian populations (Glista et al 2007) and open field habitat is not preferred by neonatal amphibians (Semlitsch et al 2009). Juvenile amphibians that find their way into the parking lot or playing field area are at greater risk of predation, desiccation, and other sources of mortality.

Some structural elements of the project as currently proposed will provide a degree of physical barrier to emigrating amphibians in the form of vertical retaining walls. This should serve to block animals seeking to travel from the vernal pool in certain directions, but may concentrate



migratory paths along the south and west margin of the vernal pool toward the walkways, parking area, other parts of the project that would be hazardous to juvenile amphibians.

BSC recommends that a physical barrier to migration be considered along the entirety of the proposed field and parking area to reduce the likelihood of juvenile amphibians gaining access to the project area. This will functionally cut off a large portion of potential forested non-breeding habitat in the south-west corner of the property but may represent an effective way to mitigate the threat to juvenile amphibians that the field and parking area represent.

Such a barrier should be at least six (6) inches in height, continuous along the entire northern limit of the project, and should present a vertical or negative-sloped face to the bank of the vernal pool. Such barrier should be located as far as possible from the bank of the pool to allow the maximum naturally vegetated area between the pool bank and the barrier.

BSC recommends the development of a monitoring and maintenance plan to ensure that natural materials, such as leaf litter, do not build up over time and provide a means of trespass over such a barrier.

### **Construction Impacts**

The proposed project will result in the loss of non-breeding habitat for vernal pool dependent wildlife and the functional isolation of non-breeding habitat to the southwest of North Pool. It is possible that adult salamanders and frogs currently reside in these areas that will be impacted. Adult salamanders live for up to 15 years in the wild (pers. obs.) and occupy forested non-breeding habitat that may be over 700 feet from their breeding pools (Kleeberger and Werner 1983; Faccio 2003).

It is an unfortunate fact that development activities including earthworks and tree cutting will harm small animals where they live within a project footprint. While possibly just a feel-good measure, BSC suggests that an interested group of volunteers might be successful in locating and moving salamanders and frogs from the proposed work zone in days prior to the beginning of site work. Such an effort would be most effective immediately following rain events.

Following erection of limit of work erosion control structures, BSC recommends conducting regular inspection of the inside of the structures for any trapped animals that may have been present in the work zone, especially following rain events. Any animals observed can be physically moved outside of the work zone and released in forested portions of the property.

### **Planting Plan**

BSC has reviewed the proposed planting plan for areas that will be temporarily disturbed within the limit of work. We have no concerns over the selection of plant species, proposed density or arrangement of plantings.



BSC strongly recommends inclusion of coarse woody debris in the wetland buffer zone between the bank of the Certified Vernal Pool and project limit of work, especially where plantings are sparse. Coarse woody debris has been experimentally shown to be important to the survival of juvenile anurans (frogs) (Rittenhouse et al 2008; Davis et al 2010). We note that there is an area proposed for conservation seed mix along the curved portion of the limit of work in between the parking area and proposed field where no shrub or tree plantings are proposed. We feel that incorporation of coarse woody debris in this area would be a strong benefit due to its proximity to the pond shore and lack of other low-height cover plantings.

Coarse woody debris should be sourced from the site. Use of material from trees that will be removed is the preferred source. Large branches of two- to four-inch diameter are an appropriate size, along with some larger trunk material that can settle into the ground and decay naturally over time. We assume that landscaping mulch will not be used under the proposed plantings after establishment within the wetland buffer zone.

### **Field and Parking Lot Lighting**

BSC has reviewed the materials submitted to the Commission pertaining to proposed lighting and benefited from the discussion of this topic at the public hearing on March 3, 2021. Artificial lighting is believed to be a potential significant threat to amphibians and reptiles, though these effects are presently under-studied (Perry et al 2008).

Artificial lighting has been shown to affect hatchling sea turtle post-emergence orientation, and there is concern over urban lighting effects on metamorphosing amphibians. We are optimistic that the proposed lighting will be as focused as suggested and not “leak” into the surrounding wetlands, and also reiterate that the most critical time for potential impacts would be on rainy nights in mid- to late-summer.

BSC recommends that a commitment be made to minimizing use of lighting when conditions are most appropriate for transforming juvenile amphibian migrations. Rain and wet weather at night in the summer and fall are the most sensitive conditions for this concern.

### **Conclusion**

I hope that these comments are helpful to the Commission in developing a permit that is protective of the wildlife habitat values of the Certified Vernal Pool at Loker Conservation and Recreation Area. Please do not hesitate to contact our office with any questions you may have.



Very truly yours,

BSC Group, Inc.



Matt Burne, PWS  
Senior Ecologist

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