November 12, 2020

Mr. Ian Neviaser
Superintendent of Schools
Region #18 Lyme-Old Lyme Schools
49 Lyme Street
Old Lyme, CT 06371

RE: Lyme Street Campus Multipurpose Athletic Field
Old Lyme, Connecticut
MMI #141.12999.00003.0150

Dear Superintendent Neviaser:

We understand that a number of residents, including several that live on or in the area of Library Lane, have contacted you concerning the proposed reconstruction of the athletic field at Lyme-Old Lyme High School. The comments of which we are aware have focused upon the materials of construction and the concern about the effect upon nearby surface water and groundwater. We provide the following information in the hope that it provides answers to some of the questions being asked.

The potential environmental effects associated with synthetic turf fields, and in particular those filled with crumb rubber, have been extensively evaluated for the last 2 decades. These studies have been undertaken by various scientific organizations, consultants, state and local regulatory agencies, and federal (US) and national (worldwide) regulatory agencies. Several key studies have been published here in Connecticut through a cooperative program between the Connecticut Department of Health (CT DPH), the Connecticut Department of Energy & Environmental Protection (CT DEEP), and the University of Connecticut Health Center. These studies have been peer reviewed and published in leading health and safety and environmental journals. Milone & MacBroom, Inc. (MMI) was at the forefront of these studies, having conducted internal studies of fields in Connecticut in 2007 and 2008, and our work has been referenced in a large number of published papers.

The extensive body of knowledge concerning crumb rubber infilled turf fields concludes that the environmental effects are negligible.

One key aspect of MMI's studies has been the evaluation of stormwater drainage from artificial turf fields. This is also an area where the studies have found no detrimental effects on nearby waterways or habitats. In fact, MMI recently conducted sampling of stormwater at a newly installed crumb rubber field in Connecticut. Sampling was conducted of solely stormwater that had fallen on the field and was conveyed to each of three drainage structures. The stormwater was sampled and analyzed for several metals (zInc, selenium, cadmium, and lead). The samples were analyzed for total and dissolved fraction concentrations. No detectable concentrations of dissolved metals were found in the three samples. The laboratory reporting limits were sufficiently low to allow for a valid comparison to the Connecticut Water Quality Standards (WQS). The total concentration (solid and dissolved fraction) of zinc was detected at a concentration of approximately one-third of the WQS. (Note that WQS only applies to the dissolved fraction.)

Since the stormwater drainage from the planned field at Lyme-Old Lyme High School would be similar to many other already studied fields, the conclusion can be drawn that the drainage would have no detrimental effect upon the Duck River in regard to water quality.

We do understand that a resident has noted a February 2019[1] study that was published in the *Journal of Environmental Research*. Please note that this study was simply a literature search of all compounds and elements noted in other published studies. The compounds and elements listed in those studies are incorrectly noted by the commenter as "proven to be in crumb rubber." In fact, the February 2019 study simply lists those compounds as "linked to artificial turf," which could and likely does simply mean that they were evaluated during the prior studies. The authors of the February 2019 study simply conclude that their work "underscore(s) the need for human exposure studies that investigate the likelihood of users of synthetic turf fields being exposed to the chemicals identified in our study." What the authors do not state, however, is that many of their referenced reports, including those conducted by the CT DPH, CT DEEP, and University of Connecticut Health Center, did exactly that. It is also noteworthy that one conclusion that the February 2019 paper did include pertaining to environmental concerns was the following:

> *Synthetic turf fields have several advantages over natural grass fields. They do not require irrigation, fertilizers, or pesticide application, which saves water, labor, time, and reduces the likelihood that certain potentially toxic chemicals will be introduced into the environment.*

Finally, and as you have previously noted, there are multiple options concerning the type of infill material used in an artificial turf field. Each material has unique properties that result in some being favored over the others for a specific installation. The purpose of this communication is to simply present the fact that many studies have been conducted locally, statewide, nationwide, and internationally concerning the effects upon the environment of artificial turf fields and in particular the effect of using crumb rubber as the infill material.

We hope this information is useful in your communications with your students, staff, and the concerned public. Please note that the CT DPH maintains a dedicated website where much information is available should people be interested: https://portal.ct.gov/dph/Environmental-Health/Environmental-and-Occupational-Health-Assessment/Artificial-Turf-Fields

Very truly yours,

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[1] *Perkins, Alaina N., et al, 2019. Evaluation of potential carcinogenicity of organic chemicals in synthetic turf crumb rubber. Environmental Research, Volume 169, pages 163-172.*

A copy of the study is available for purchase at www.sciencedirect.com.