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August 3, 2022

Town of Cromwell
Cromwell Inland Wetlands & Watercourses Commission
Town Hall
41 West Street
Cromwell, CT 06416

**RE:** **APPLICATION REVIEW - *FINAL***
**"Proposed Warehouse Facility,"** Scannell Properties, LLC
210 Shunpike Road, Cromwell, CT

*REMA Job #: 22-2499-CRO49*

Dear Chairman Whitney and Commissioners:

At the request of the Intervenor, REMA ECOLOGICAL SERVICES ("REMA) is responding in this report to the comments on REMA's Report and testimony on the above-referenced application, dated July 6, 2022, prepared by Dean Gustafson, of All-Points Technology Corporation ("APT"), the applicant's chief environmental scientist. We also respond to the attached materials in the APT report, in particular the State Listed Plant Survey Results document (January 5th, 2022), prepared by botanists James Cowen and Aubree Keurajian, and soil pit/profile data. REMA had been asked to compete review the plans and other supporting documentation for an application for IWWA Application #22-02, for a 1,042,849 square foot warehouse on a 250-acre property.

For the convenience of the commission, we address issues of concern in the same order as presented in Mr. Gustafson's letter. We conclude be reiterating some points made in the July 6th report or in oral testimony, that were not refuted by APT.

**Potentially Missed Wetlands**

It is somewhat disingenuous to underline and bold, **"<u>No evidence was provided by REMA to substantiate these claims</u>,"** when REMA got no response to our request to be allowed on the property to conduct our own investigations of these areas (see REMA 5/31/22 report, page 2). Furthermore, there was ample evidence from remote sensing, viewing from the site perimeter, and the fact that the southerly of the two areas was not planted to corn this season. Moreover, the applicant's own botanical consultant characterized this area as a "wet meadow" following their Spring 2021 field investigations. Also, the Town's own wetland mapping, in which Mr. Gustafson participated back in the late 1980s and early 1990s, showed a wetland area at the northern position of the two areas inquired about. This was a very legitimate question, that All-Points has answered by conducting fieldwork, which we do not question. Therefore, the **<u>bold</u>** emphasis and language is unwarranted and does not promote a friendly and professional cooperation.

To more fully elaborate, Area 1 was initially characterized by the Davison Environmental botanists in March 2021 as a "*wet meadow,"* and was not cultivated, but the area was later cultivated and planted, and the description was changed to "*mesic portion of cornfield*." REMA's concern was not "speculation" "without evidence" as the letter asserted; vegetative evidence was observed, that is, the poor growth of corn and the hydrophytic *Nyssa sylvatica* (black gum) thriving in adjacent uplands and "wet" signatures on aerial photos. To reiterate, while we do not dispute that the soil profile indicates moderately well-drained status in both Area 1 and Area 2, we also point that a history of cultivation modifies soil profiles. Mr. Gustafson also recognizes that August water table measurements are not useful data.

**Vernal Pool Conservation**

<u>Filling of Vernal Pool 7</u>

Mr. Gustafson did *not* dispute our statement that *"connectivity among pools is key for long term sustainability; it allows recolonization after local extinctions, and creates a large, genetically diverse metapopulation, able to adapt in response to ecological change."* Because this application calls for filling of Vernal Pool 7, a deep pool, formerly a farm pond, with high productivity for spotted salamander, we focused on the threat to its connectivity to Vernal Pool 4 and Vernal Pool 6. Mr. Gustafson agrees that connectivity is present to Vernal

Pool 4, improved by via forested strips. This connectivity is in itself important, not only for Vernal Pool 4, but for other pools in the western forested vernal pool complex.

However, he questioned whether habitat quality is sufficient between Vernal Pool 7 and Vernal Pool 6, for successful migration. First, the inner vernal pool envelope is of high quality, based not only on first hand observations of the tall, full-canopied trees around the pool, from the eastern site perimeter, but also based on the detailed vegetation description in the State-Listed Plant Survey Results report by Davison Environmental. Some woody invasives are present, but they have comparable value to native trees to detrivore invertebrates and amphibians.

In fact, cultivated fields can be readily crossed by to migrating amphibians, depending on the time of year; early spring when the soil is moist and temperatures moderate is a favorable time for adults migrating to breed, as is mid fall for neomorphs, after spending a month or two in the inner vernal pool envelope. Note also that not only corn but also other crops have been grown here over the years.

APT criticizes REMA by stating that, *"REMA's speculation about possible metapopulation impacts is not supported by the facts of this application."* However, APT's comments that "*it is unlikely that Vernal Pool 7 plays a key role in linking all three pools"* is highly speculative, because no data (or facts) are offered on amphibian movement between the three vernal pools (i.e., VP 4, VP 7, and VP 6).

We note that an alternative that would not require filling a productive Tier 1 Vernal Pool has not yet been proposed by the applicant, as required by Section 10.2b (and 10.3) of the Town's Inland Wetlands & Watercourses Regulations, which specifically reads:

> "The applicant's purpose for, and any feasible and prudent alternatives to, the proposed regulated activity which alternatives ***would cause less or no environmental impact to wetlands or watercourses.***" (emphasis added)

Alternatives with two or three smaller warehouse or manufacturing buildings could have similar economic befits, and significant less wetlands impacts, and preserve connectivity between vernal pool resources.

REMA was criticized for stating that filling a Tier 1 vernal Pool would be a statewide precedent, but Mr. Gustafson was also unable to provide any other example of a municipal permit to fill a Tier 1 vernal pool. Both Mr. Logan and Mr. Gustafson have been working for about 35 years in this state, on many hundreds of wetlands applications.

Mr. Gustafson appears to imply that since the Town of Cromwell Inland Wetlands and Watercourses Regulations do not mention the guidance document entitled *Best Development Practices, Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States* ("BDP", Calhoun and Klemens 2002) that using this publication to analyze impacts to vernal pools is not necessary. By that logic then, since *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach* (USACE 1999) used by APT in evaluating wetlands (Wetland Assessment Report, May 2022), is also not mentioned in the regulations, it should not have been used. That of course is absurd.

As professional wetland scientists, the most commonly used and cited science-based protocols and methodologies are always relied upon when the conservation of vernal pool habitats is at hand. In Connecticut, as well as throughout New England, the "BDP" (Best Development Practices) is the most commonly referenced and used publication, as Mr. Gustafson would attest. It is the methodology that is endorsed by the CT DEEP and the US Army Corps of Engineers in assessing potential impacts to vernal pool habitats. In other words, this is "the industry standard." We have seen many examples of APT's use of this methodology in many applications, including for petitions before the Connecticut Siting Council (CSC).

APT goes into considerable discussion attempting to analyze the reasons why Vernal Pool 7 is productive for spotted salamanders, stating: *"it was surprising to see that level of productivity in this man-made former irrigation pond feature particularly given its location and the surrounding suboptimal terrestrial habitat associated with the adjacent cultivated agricultural fields,"* and *"(t)hese types of unintentional man-made vernal pool are somewhat common throughout Connecticut's highly suburbanized and urbanized landscape…"*. In fact, it should ***not*** have been "*surprising*," and these pools are ***not*** "*somewhat common*." APT, in our opinion, is attempting to diminish and discount what is clear for all to see, that Vernal Pool 7, is a productive and highly functioning wetland/watercourse resource. The

fact that Vernal Pool 7 is a *"man-made former irrigation pond feature"* and an *"unintentional man made vernal pool"* is irrelevant.

Mortality Related to the Entry Road

Mr. Gustafson does not deny that the nearly almost half mile-long, 36-foot wide long entry road, will deplete amphibian and reptile populations, and connectivity in the northwestern and north-central portion of the site. He does express skepticism as to whether the losses of wood frog detritivores will have a quantitatively significant physical effect on substrate and water depth, as uneaten leaf litter accumulates. His contention is that invertebrate detritivores will consume a higher proportion of detritus, as wood frog numbers decline. However, no invertebrate surveys were done and no information is provided on invertebrate communities. A relatively shallow vernal pool can become unsuitable for breeding, following loss of just a few inches of depth.

Here we restate concerns expressed during the first public hearing regarding the threats of toxicity over the long term from exhaust fallout into pools and their subwatersheds, which pertain to the invertebrate as well as to the herptile fauna. Our concern is the cumulative amount of coarse particulate emissions from a such a large number of trucks, each travelling almost a mile on the site. This will be a steady stream of heavy-duty diesel trucks, most without expensive, non-mandatory, modern emission controls. Polyaromatic hydrocarbons (PAHs) in particular, build up in the sediments of pools, lakes and reservoirs, arriving via atmospheric deposition as well as runoff. Even if runoff is effectively treated, atmospheric deposition remains an anticipated source. Aquatic invertebrates and the early life stages of amphibians (tadpoles) are particularly sensitive. Submitted separately in conjunction with this report, are the results of a local study in the Quinnipiac Watershed, with toxicity thresholds and additional discussion of PAHs from vehicular sources. Also submitted separately as a companion to this report are data that show the proportion of particulate and toxic pollution, also of carbon emissions, associated with heavy duty diesel trucks. This is an ~20 year old study, but the proportions of vehicle type on the roads in the US have not changed much since then.

To reiterate an important point made in our previous testimony, impacts upon the wood frog population is of paramount importance due to their ability, during their larval stage, to effectively cycle nutrients, which counters eutrophication of pools. Diminution of the wood

frog population results in an adverse physical impact to regulated wetlands, by altering the water chemistry, and thereby the quality of these seasonally flooded wetlands.

Various measures are proposed to reduce the amphibian mortality due to roadkill, and also adverse impacts due to toxic road runoff. Amphibians crossing the road will not be entrapped by basins, but they will encounter roadside contaminated soil and water. As mentioned in a prior hearing, Connecticut, unlike Sweden and California, still allows diesel trucks emitting high levels of particulates, PAHs, and other toxic compounds, on its highway system. Pollutants in long-distance "fallout" of exhaust particles into vernal pools will build up over time, especially in pools with minimal throughflow. The applicant has proposed four amphibian tunnels, which have at least one serious drawback, that of being a magnet for amphibian predators. It will increase mortality, not only for recently metamorphosed amphibians and for adults travelling to and from breeding pools.

Such a long, wide, heavily-travelled road, passing through diverse complex of wetlands and uplands, also threatens an important suite of vernal pool predators: garter snake, water snake, ribbon snake, spotted turtle, painted turtle, and Eastern box turtle. These species will not use the proposed tunnels and are all active during daytime when the road is busiest. They are highly vulnerable to roadkill.

Loss of vernal pool predators will change the inter-species interactions of the vernal pool community, and will reduce production export of biomass. Some species, formerly kept in check by a predator will become much more abundant and outcompete other herbivore and detritivore species. As the food chain shortens, biodiversity declines, and utilization of multiple food chain niches becomes less efficient. Biological oxygen demand (BOD) is expected to increase. "Trophic cascades" is the term used for this undesirable ecology phenomenon[1]. Presence of "higher trophic predators" is widely used as an indicator of ecosystem health, for example, in evaluation of the wildlife support function in the USACOE Highway Methodology, for assessment of wetland functions and values, also used by APT in their Wetlands Assessment (May 2022).

[1] See last page of document, following the references, for an expanded definition of this term.

**Mitigation Planning**

Mr. Cohen and Ms. Keurajian located only one rare plant, but they provided very informative descriptions of the vegetation in wetlands and uplands, though many sedges (*Carex* species) were likely missed due to limited searching from mid-June to late July. A wide range of plant communities are described, with overall exceptional plant diversity, with only a moderate level of invasive infestation. However, the described Habitat Units, do not clearly correspond to the areas to be transformed to wooded habitat, as terrestrial mitigation. The prevalence of high quality vegetation in the northern and central portion of the site, raises grave concern about the extent of proposed soil manipulation for mitigation, and whether there will be net losses of overall habitat value and biodiversity. This should be a key design consideration for mitigation planning. It is widely known that invasive species tend to colonize bare exposed soil.

Furthermore, conversion of non-forested to forested habitat is expected to result in loss of needed nesting and basking habitat for reptiles, and for shrubland-grassland birds, including the Connecticut-listed species of Special Concern American Kestrel, observed in the north central part of the site by REMA.

**Wetland Functions and Values Characterization**

There was no response to REMA's criticism of the lack of an in depth functions and values assessment, discussing rationales. Wetlands data was collected, but was not integrated into a proper assessment of wetland functions and values, using the set of rationales provided for each function in the USACE methodology. We repeat, that even if the full detailed forms are not filled out, a substantive narrative needs to describe the wetland characteristics that influence each function.

**Conclusion**

Aside from the substantial direct, permanent adverse physical impacts to wetlands and a vernal pool, this project will diminish the ecological integrity of the overall wetland complex at the subject property. Insufficient data was collected to formulate a plan that minimizes adverse impacts; the plan lacks data on wetland characteristics (other than vernal pools), and on-site invasive species distribution. It also fails to provide enough detail on follow-up measures, to provide reasonable assurance of success for the proposed mitigation.

In our professional opinion, as currently proposed, there is a reasonable likelihood that the proposal will result in unreasonable impacts to regulated wetlands and watercourses.

We sincerely thank the Commission for allowing us the opportunity to contribute to the discussion regarding the proposed development proposal before the Commission.

Respectfully submitted,

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**trophic cascade**, an ecological phenomenon triggered by the addition or removal of top predators and involving reciprocal changes in the relative populations of predator and prey through a food chain, which often results in dramatic changes in ecosystem structure and nutrient cycling. In a three-level food chain, an increase (or decrease) in carnivores causes a decrease (or increase) in herbivores and an increase (or decrease) in primary producers such as plants and phytoplankton. Article in on-line Britannica by Stephen Carpenter, Director of the Center for Limnology, University of Wisconsin, Madison.