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CONNECTICUT
SITING COUNCIL

MEMORANDUM

July 21, 2014

Ms. Alexandria Carter
Verizon Wireless
99 East River Drive
East Hartford, CT 06108

APT Project No.: CT1411060

Re: Peak Amphibian Movement Period Restriction
Verizon Wireless Palmer Pond Facility
53 Gallup Road
Voluntown, Connecticut

Dear Ms. Carter,

As conditioned by the Connecticut Siting Council ("Council") in their approval of the Development and Management ("D&M") Plan – Part II, in order to avoid unintentional impact or mortality to vernal pool herpetofauna, the construction activities would be restricted during peak amphibian movement periods (early spring breeding between March 1 and May 15 and late summer dispersal between July 15 and September 15). Work at the Verizon Wireless Palmer Pond Facility did not begin until May 15, 2014 and was ceased on July 15, 2014. Photographs of the state of development completed on July 15th are included as Photos 1 and 2 in the enclosed Photo Documentation attachment. All-Points Technology Corporation, P.C. ("APT") inspected the Facility on July 17th and confirmed that no work was being performed and that the entire project perimeter was properly isolated with erosion control barriers (e.g., silt fence).

APT has been providing periodic monitoring of construction activities during the May 15th to July 15th construction period to ensure the Contractor properly implements the Eastern box turtle (*Terrapene c. carolina*) Protection Program (as incorporated into the approved D&M Plan) so that this State Special Concern Species will not be adversely affected. No encounters with or observations of Eastern box turtle have been recorded at the project site. As a result of Eastern box turtle caution posters mounted along Gallup Road at the Facility, APT was recently contacted by a Voluntown citizen who assisted a box turtle crossing Gilliver Road near the Voluntown/Griswold municipal boundary approximately 2 miles west of the Palmer Pond Facility. APT has collected information regarding this sighting and will be submitting a Special Animal Survey Form to the Connecticut Department of Energy & Environmental Protection Natural Diversity Data Base.

Monitoring activities have also included observations of the nearby forested vernal pool, located 220± feet to the north/northeast of the Facility. An inspection on January 21, 2014 found the pool area to be dry. An April 16, 2014 inspection revealed the pool to be inundated to a maximum depth of 12± inches and contain 20± wood frog (*Rana sylvatica*) egg masses, 2 spotted salamander (*Ambystoma maculatum*) egg masses and spotted salamander spermatophores along the pool's northern margin. Observations from May 15 and 23, 2014 revealed numerous wood frog larvae (tadpoles), a few adult wood frogs, two salamander egg masses still in development, several green

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frogs (*Rana clamitans melanota*), an Eastern American toad (*Bufo a. americanus*) and a Northern spring peeper (*Pseudacris c. crucifer*). A July 17, 2014 inspection revealed the vernal pool completely dry. Representative photographs from the vernal pool inspections are included in the Photo Documentation attachment.

Based on the July 17th observation which found the vernal pool dry, any of the wood frogs and spotted salamanders that metamorphosed into juveniles have since dispersed into the surrounding terrestrial habitat. Observations from 2014 indicate that this vernal pool is a spring filling pool with a short-cycle hydroperiod; although observations were not collected, it appears the pool dried sometime late June/early July. Wood frogs are able to successfully breed in spring-filling, short-cycle vernal pools¹. The time required for spotted salamander larvae development to metamorphose into their terrestrial form and leave the pool generally takes longer than wood frogs. As a result, spotted salamanders can be sensitive to a short-cycle hydroperiod, although larvae can transform earlier in response to early-drying pools². Adult wood frogs prefer heavily forested areas with a thick cover of herbaceous vegetation and duff³; spotted salamanders also have a preference for forested areas⁴. A study in Rhode Island evaluating the effect of forest fragmentation by turf (golf course) found that wood frog metamorphs were 32 times more likely to be found in forest-interior habitats as opposed to forest-turf edge habitats⁵. DeMaynadier and Hunter (1998) classified metamorph mole salamanders (*Ambystoma spp.*) and wood frog as habitat specialists that preferred forest-interior⁶.

The Facility is located immediately adjacent to the north side of Gallup Road with a large forested habitat block (including Patchaug State Forest) located to the north and an open pasture/hayfield that is actively managed as part of the Gallup Homestead Farm across Gallup Road to the south. Please refer to the enclosed Vernal Pool Impact Analysis Map that was previously submitted as part of APT's Wetland & Vernal Pool Evaluation report, dated February 2, 2014 and submitted to the Council (Docket No. 438). Considering the Facility's location at the edge of the forested habitat block with a managed agricultural field beyond it and the preference for forested habitat by wood frogs and spotted salamanders, there appears to be a relatively low probability that metamorphs of these two species would be encountered at the Facility's construction area.

Therefore, it is APT's opinion that there is no longer a need to observe the late summer dispersal period of July 15-September 15 that restricts construction as identified in the Council's D&M Plan-Part II based on the following: the vernal pool has dried up; spotted salamander and wood frog metamorphs have dispersed from the pool into the surrounding terrestrial habitat; both species have a preference for forested habitats; and, the Facility is located at the edge of the forested habitat block with a maintained agricultural field beyond it. Even in the unlikelihood of wood frog or spotted salamander metamorphs (or adults) migrating near the Facility construction area, the isolation barrier that is being maintained for protection of Eastern box turtle would also prevent any harm from occurring to these frogs or salamanders should there be an encounter.

¹ Colburn, E.A. 2004. Vernal Pools Natural History and Conservation. The McDonald & Woodward Publishing Co., Blacksburg, VA and Granville, OH. Pg. 177.

² Colburn, E.A. 2004. Vernal Pools Natural History and Conservation. The McDonald & Woodward Publishing Co., Blacksburg, VA and Granville, OH. Pg. 194.

³ Klemens, M.W. 1993. Amphibians and Reptiles of Connecticut and Adjacent Regions. State Geological and Natural History Survey of Connecticut Bulletin No. 112. Connecticut Department of Environmental Protection, Hartford CT, USA. Pg. 142.

⁴ Klemens, M.W. 1993. Amphibians and Reptiles of Connecticut and Adjacent Regions. State Geological and Natural History Survey of Connecticut Bulletin No. 112. Connecticut Department of Environmental Protection, Hartford CT, USA. Pg. 42.

⁵ Peter, P. 2000. Can Golf Courses Be Designed To Enhance Amphibian Diversity on Golf Courses: Effects of Turf on Amphibian Movements. University of Rhode Island, Kingston, RI.

⁶ DeMaynadier, P.G., and M.L. Hunter (1998) Effects of silvicultural edges on the distribution and abundance of amphibians in Maine. Conservation Biology 12:340-352.

Therefore, APT recommends (1) that Verizon Wireless respectfully request from the Connecticut Siting Council the lifting of the late summer dispersal construction restrictive period of July 15-September 15, and (2) that APT meet with the Contractor when construction activities are resumed to review the Eastern box turtle Protection Plan and Wetland and Vernal Pool Protection Plan requirements as noted in the Environmental Notes on Sheet C-5 of the D&M Plans to ensure that this State-listed species and other herpetofauna are properly protected during construction activities.

If you have any questions regarding the above-referenced information, please feel free to contact me by telephone at (860) 663-1697 ext. 201 or via email at dgustafson@allpointstech.com.

Sincerely,

All-Points Technology Corporation, P.C.

A handwritten signature in blue ink that reads "Dean Gustafson".

Dean Gustafson
Senior Environmental Scientist

cc: Kenneth C. Baldwin, Robinson & Cole LLP

Enclosures

Photo Documentation



Photo 1: View of Palmer Pond Facility with construction completed as of July 15, 2014, looking northwest. Photo date 7/17/2014.



Photo 2: View of Palmer Pond Facility with construction completed as of July 15, 2014, looking west. Photo date 7/17/2014.



Photo 3: Overview of vernal pool (dry) in center of photo, looking southeast. Photo date 01/21/2014.



Photo 4: Overview of vernal pool, looking north. Photo date 04/16/2014.



Photo 5: View of wood frog egg mass. Photo date 4/16/2014.



Photo 6: View of spotted salamander egg mass. Photo date 4/16/2014.



Photo 7: View of spotted salamander spermatophores (white colored deposits on right side of leaf). Photo date 4/16/2014.



Photo 8: Overview of vernal pool, looking north.
Photo date 5/15/2014.



Photo 9: View of wood frog larvae (tadpoles). Photo date 5/15/2014.



Photo 10: View of adult wood frog along south margin of pool, looking northwest.
Photo date 5/15/2014.



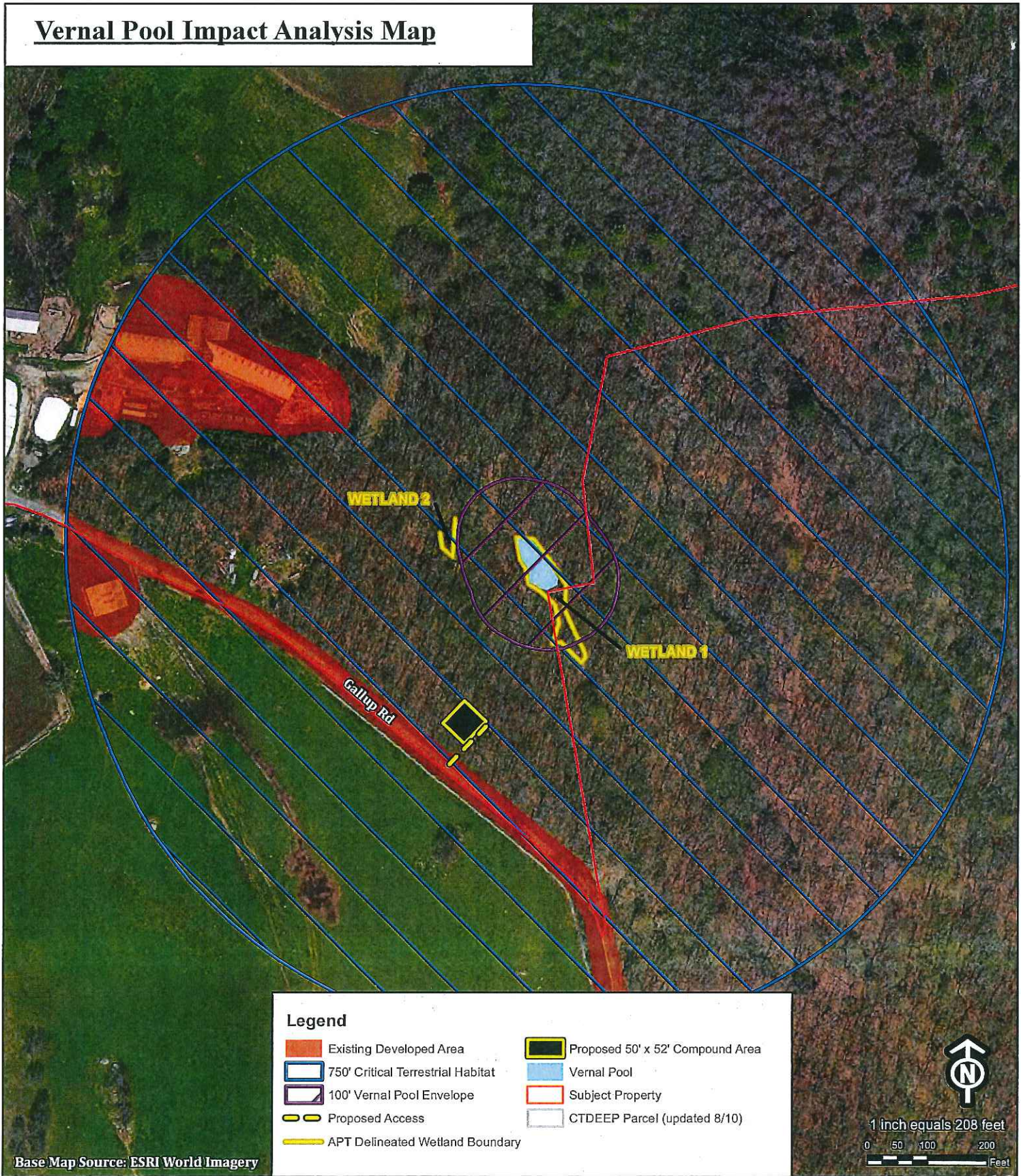
Photo 11: Overview of vernal pool (dry) in center of photo, looking north. Photo date 7/17/2014.



Photo12: View of deepest portion of vernal pool (dry), flag represented location of spotted salamander egg mass. Photo date 7/17/2014.

Vernal Pool Impact Analysis Map

Vernal Pool Impact Analysis Map



Legend

- Existing Developed Area
- 750' Critical Terrestrial Habitat
- 100' Vernal Pool Envelope
- Proposed Access
- APT Delineated Wetland Boundary
- Proposed 50' x 52' Compound Area
- Vernal Pool
- Subject Property
- CTDEEP Parcel (updated 8/10)

Base Map Source: ESRI World Imagery


 1 inch equals 208 feet


Proposed Verizon Wireless Palmer Pond Facility
53 Gallup Road
Voluntown, Connecticut



Thursday, February 27, 2014