STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
APPLICATION OF CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE AND OPERATION OF A WIRELESS TELECOMMUNICATIONS FACILITY AT 831 DERBY MILFORD ROAD, ORANGE, CONNECTICUT	:	DOCKET NO. 448
	:	AUGUST 5, 2014

RESPONSES OF CELLCO PARTNERSHIP d/b/a
VERIZON WIRELESS TO THE COUNCIL'S PRE-HEARING QUESTIONS SET 2

On July 22, 2014, the Connecticut Siting Council ("Council") issued Pre-Hearing Questions – Set 2 to Cellco Partnership d/b/a Verizon Wireless ("Cellco"), relating to the above-captioned docket. Below are Cellco's responses.

1. Please map the vernal pool areas within Wetland 2 and illustrate the 100-foot vernal pool envelope boundary and 750-foot critical upland habitat boundary on that map. *(Note that wetland flags 2-13 through 2-17 were documented during the site visit and confirmed during the hearing as having vernal pool function by the presence of sub-adult wood frogs).*

Response

Included in Attachment 1 is a Vernal Pool and Eastern Box Turtle Habitat Assessment Report prepared by Davison Environmental dated August 4, 2014. The vernal pool mapping information requested is included as an attachment to that report.

2. Please analyze the feasibility of relocating the proposed tower site southward along the ridge to a location behind and north of the cluster of buildings at the southern end of the ridge. If a site is viable in this location, please address the following:

a) discuss the potential relocation in terms of vernal pool protection as it pertains to Wetland 2. Is more protection of the vernal pool upland habitat associated with Wetland 2 afforded by this potential relocation?

b) discuss the potential relocation in terms of protection of the wetland/ridge interface, which could be favored by box turtles. Are the potential areas of box turtle use, including hibernation areas, better protected by this proposed relocation?

c) compare the visibility of the proposed facility and this potential relocation from the residential lots on the south end of Rainbow Trail for leaf-on and leaf-off conditions.

d) address general visual impacts (other than those from Rainbow Trail) that would result from this potential tower relocation.

Response

a) Please see the Vernal Pool and Eastern Box Turtle Habitat Assessment Report prepared by Davison Environmental dated August 4, 2014, included in Attachment 1.

b) Please see the Vernal Pool and Eastern Box Turtle Habitat Assessment Report prepared by Davison Environmental dated August 4, 2014, included in Attachment 1.

c) Relocating the proposed tower site southward along the ridge would not change visibility of the tower from areas along Rainbow Trail during the times of year when the leaves are on the trees because the intervening woods provide significant screening that wholly obstructs views of the Bespuda Farm property and the proposed tower site both in the location proposed in the Cellco application and the alternative location described above. Similarly, views from Rainbow Trail during leaf-off conditions would not substantively be changed by a relocation of the Facility. As demonstrated in the Visibility Analysis submitted with Cellco's application, limited and heavily obscured views may be possible from a few locations at the south end of Rainbow Trail. Photograph 6 represents the single location where APT was able to view a red, four-foot diameter weather balloon through the trees during leaf-off conditions from the public right of way. The balloon is so deeply imbedded in and amongst the trees from this vantage point that simulating the tower was not feasible. Overall visibility from Rainbow Trail is minimal at best, limited to a few select locations at the south side of the end of the road and only possible when the leaves are completely off the trees. There would be no unobstructed views of the proposed Facility at its currently proposed location. Any potential views from Rainbow Trail would be further minimized by the incorporation of camouflaging the Facility as proposed (either painted brown or using a monopine design). Relocation of the Facility as discussed above would physically push the facility 380± feet southeast of and at a ground elevation approximately 16 feet higher than the ground elevation at the currently proposed location. If the purpose of the relocation is an attempt to

lessen potential views through the trees, it is unlikely that any benefits would be gained. Nominal buffering would be achieved from the relocation as the coniferous trees along that ridge do not have adequate height to provide any additional screening.

d) Relocation of the Facility to the southeast would significantly affect views to the south and east by placing the Facility in a more prominent position with less surrounding tree cover and no topographic break with which to assist in screening the compound and lower portions of the tower. The current site location takes advantage of these features to soften direct views from the south and east. The proposed relocation would make nearly the entire Facility visible from locations along Derby Milford Road, Glenbrook Road, Brookside Drive and Garden Road. In addition, views would open up to several new locations farther south along Derby Milford Road and on High Ridge Road and Quarter Mile Road to the west. From a visibility perspective, relocation of the Facility represents a dramatic increase in both the character and extent of views.

CERTIFICATE OF SERVICE

I hereby certify that on this 5th day of August, 2014, a copy of the foregoing was sent via electronic and first class mail, postage prepaid, to the following:

Albert Subbloie c/o Mario F. Coppola, Esq. Mark Kovack, Esq. Berchem, Moses and Devlin, P.C. 1221 Post Road East Westport, CT 06880 mcoppola@bmdlaw.com mkovack@bmdlaw.com	Jacqueline Barbara c/o Mario F. Coppola, Esq. Mark Kovack, Esq. Berchem, Moses and Devlin, P.C. 1221 Post Road East Westport, CT 06880 mcoppola@bmdlaw.com mkovack@bmdlaw.com
Glenn Macinnes c/o Mario F. Coppola, Esq. Mark Kovack, Esq. Berchem, Moses and Devlin, P.C. 1221 Post Road East Westport, CT 06880 mcoppola@bmdlaw.com mkovack@bmdlaw.com	Jill Macinnes c/o Mario F. Coppola, Esq. Mark Kovack, Esq. Berchem, Moses and Devlin, P.C. 1221 Post Road East Westport, CT 06880 mcoppola@bmdlaw.com mkovack@bmdlaw.com
State Senator Gayle Slossberg Legislative Office Building Room 2000 Hartford, CT 06106 gslossberg@yahoo.com	State Representative Paul Davis Legislative Office Building Room 4045 Hartford, CT 06106 paul.davis@cga.ct.gov
State Representative Themis Klarides Legislative Office Building Room 4200 Hartford, CT 06106 themis.klarides@housegop.ct.gov	State Representative James Maroney Legislative Office Building Room 5006 Hartford, CT 06106 james.maroney@cga.ct.gov

Kenneth C. Baldwin

ATTACHMENT 1

DAVISON
ENVIRONMENTAL

Biodiversity Studies • Wetland Delineation & Assessment • Habitat Management • GIS Mapping • Permitting • Forestry

August 4, 2014

Mike Libertine
All Points Technology Corporation
3 Saddlebrook Drive
Killingworth, CT 06419

RE: **Vernal Pool and Eastern Box Turtle Habitat Assessment**
Proposed Telecommunications Facility
831 Derby Milford Road, Orange

Dear Mr. Libertine,

An application to construct a wireless telecommunications facility at the above-reference site has been submitted to the Connecticut Siting Council (CSC, Docket No. 448). Under the direction of All Points Technology (APT) and on behalf of Cellco Partnership (d/b/a Verizon Wireless), I have evaluated the site for the presence of vernal pool and Eastern box turtle (*Terrapene carolina*) habitat, with the primary purpose of addressing pre-hearing questions posed by council member Dr. Michael W. Klemens (set 2), dated July 22, 2014.

The optimal time to conduct field surveys for vernal pool amphibians and box turtle has passed (i.e., April-June). Therefore, a conventional inventory of the site for these target species was not feasible. As a result, my assessment of biological resources provided herein is primarily habitat-based. I visited the site on July 28, 2014 to characterize the habitat types present as well as to conduct a brief survey of observable wildlife via cover searching (i.e., turning of rocks, logs and debris) and dip-netting to observe larval amphibians.

Habitat Types

The site is a working farm, with habitat types consisting of hayfield, pasture/old field, hemlock-mixed hardwood forest, wooded swamp and pond types. The hayfields are dominated by Eurasian feed grasses and reed canarygrass (*Phalaris arundinacea*). The pasture consists of "old field" habitat characterized by dense herbaceous vegetation and woody pioneer species interspersed with large shade trees. Common plant species include brambles (*Rubus sp.*), deer tongue grass (*Panicum clandestinum*), goldenrods (*Solidago sp.*), wild strawberry (*Fragaria vesca*), steeplebush (*Spirea tomentosa*), greenbriar (*Smilax rotundifolia*), wild grape (*Vitis sp.*), sweet fern (*Comptonia peregrine*), black birch (*Betula lenta*) and the invasive Japanese barberry (*Berberis thunbergii*) and Asiatic bittersweet (*Celastrus orbiculatus*). Shade trees consist of mature eastern red cedar (*Juniperus virginiana*), cherry (*Prunus serotina*) and oaks (*Quercus sp.*).

A large forested wetland lies north-northwest of the proposed tower site and drains from northeast to southwest across the site. The wetland is sloping, with a seasonally-saturated to temporarily-flooded hydrology. The tree layer is dominated by red maple (*Acer rubrum*) with American elm (*Ulmus americana*) and hemlock (*Tsuga canadensis*) also occurring. The shrub layer is dominated by spicebush (*Lindera benzoin*). The herb layer consists of skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), halberdleaf tearthumb (*Polygonum arifolium*), sensitive fern (*Onoclea sensibilis*), the invasive Japanese stiltgrass (*Microstegium vimineum*), jack-in-the-pulpit (*Arisaema triphyllum*), jewelweed (*Impatiens capensis*),

smallspike false nettle (*Boehmeria cylindrica*), marsh marigold (*Caltha palustris*), sphagnum moss and clearweed (*Pilea pumila*). The wetland contains an embedded intermittent watercourse draining to the pond.

The pond is anthropogenic in origin, created by excavating the wetland and impounding the stream. The pond includes an inlet and an outlet. The pond is >2 feet in depth and the southerly boundary of the pond has a band of emergent vegetation.

Habitat for Box Turtle

The eastern box turtle is a state-listed species of special concern. Box turtle are widespread throughout the low-lying portions of Connecticut. They favor old field habitat and deciduous forest ecotones, including powerline cuts and logged over woodland (Klemens, 1993). Box turtles utilize different habitat types at different times of the year (Dodd, 2001). Early-successional habitats are generally inhabited during months with moderate temperate while forested habitats are utilized during the heat of the summer as well as for hibernation (Erb, 2011). Wetlands are used for hydration and cooling.

The structure and composition of the vegetation present, including forest suitable for summer and hibernation habitat, wetlands suitable for hydration and cooling and pasture/old field suitable for basking and nesting, represents optimal habitat for eastern box turtle. One possible limiting factor with respect to box turtle is the long-term management of the pasture. The farmer indicated to me that this area is sometimes more intensively grazed as well as brush-hogged. Such activities can negatively affect box turtle via direct mortality and reduced habitat quality.

Vernal Pool Habitat

Vernal pools are small seasonal bodies of water with a hydrologic signature that includes inundation in the spring and fall and drying or significant drawdown during the summer months. They generally lack a permanent surface water connection with other wetlands. Vernal pools most often do not support fish populations as a result of periodic drying or anoxic conditions and therefore provide breeding habitat for forest-dwelling amphibians; principally frogs and salamanders. Confirmation of breeding by vernal pool indicator species, sometimes referred to as obligate species, confirms the presence of a vernal pool.

According to pre-hearing questions, Dr. Klemens observed several sub-adult wood frog (*Rana sylvatica*) in the vicinity of wetland flags 2-13 through 2-17. The wood frog is a vernal pool indicator species (Calhoun and Klemens, 2002, p. 5). As a result, I endeavored to map potential cryptic (a.k.a. embedded) vernal pools within the wooded swamp using the following data:

1. Field observations on July 28th - Due to the timing of my survey, when most pools are in the hydrologic drawdown phase, I searched the wetland for areas with a sparsely vegetated concave surface and water staining (on the substrate, trees and shrubs) as evidence of potential breeding sites.
2. Spring observations by APT staff - site photographs taken on April 24, 2004 by APT were reviewed for areas that indicated suitable vernal pool hydrology (see APT photo log). In addition, I discussed observations of standing water made by APT staff during their spring field work.

Based on these data sources I have identified two potential vernal pool locations, denoted as Potential Vernal Pool 1 (PVP 1) and Potential Vernal Pool 2 (PVP 2) on the attached Vernal Pool Analysis Map prepared in cooperation with APT. PVP 1 is a man-made pond. The following species were observed in the pond:

- Minnows, gray treefrog (*Hyla versicolor*) tadpoles, green frog (*Rana clamitans*) adults and pickerel frog (*Rana palustris*) tadpoles. An American toad (*Bufo americanus*) adult was observed in the old field near the proposed tower site but may be breeding in the pond.

The pond is the most likely location to support breeding by wood frogs (or other vernal pool indicator species) due to its permanently-flooded hydroperiod. The presence of predatory species (fish and green frog) may negatively affect overall productivity, however there is a narrow band of emergent vegetation along the southern shore of the pond that may provide cover from these predators during the larval development stage (gray treefrog tadpoles were concentrated in this area).

PVP 2 encompasses a small area that lies adjacent to an existing woods road culvert crossing. The area is a small shallow depression on an upper wetland terrace and therefore is likely to have a relatively short hydroperiod, but may be suitable for successful wood frog breeding. The area was completely dry on July 28th but was ponded in late April based on APT observations (see APT photo log).

Response to Pre-Hearing Questions (Set 2) dated July 22, 2014
Excerpted below are the pre-hearing questions (in bold italics) followed by my response:

1. ***Please map the vernal pool areas within Wetland 2 and illustrate the 100-foot vernal pool envelope boundary and 750-foot critical upland habitat boundary on that map.***

The attached Vernal Pool Analysis Map, created in cooperation with APT, illustrates both potential vernal pools along with their Vernal Pool Envelope (VPE, 0-100 feet from pool) and Critical Terrestrial Habitat (CTH, 100-750 feet from pool) management zones as described in *Best Development Practices: Conserving pool breeding amphibians in residential and commercial developments in the northeastern United States* (Calhoun and Klemens, 2002).

2. ***Please analyze the feasibility of relocating the proposed tower site southward along the ridge to a location behind and north of the cluster of buildings at the southern end of the ridge. If a site is viable in this location, please address the following:***

   a) ***Discuss the potential relocation in terms of vernal pool protection as it pertains to Wetland 2. Is more protection of the vernal pool upland habitat associated with Wetland 2 afforded by this potential relocation?***

The currently proposed tower site lies outside of the VPE habitat zone for both potential vernal pools. Therefore, either location complies with the guideline of "no disturbance within the VPE zone" recommended in Calhoun and Klemens (2002, p. 18).

Generally speaking, locating development farther from a vernal pool is preferable due to the fact that the density of indicator species in terrestrial non-breeding habitat decreases with increasing distance from the pool basin (Colburn, 2004). However, the proposed tower site is currently non-forested pastureland. Therefore, it does not constitute viable long-term terrestrial habitat for amphibians due to a lack of forest canopy, soil duff layer and surficial cover objects[1].

[1] *It should be noted that amphibians will use old field habitat during dispersal and for cover, feeding or thermoregulation; however, old field habitat does not constitute viable long-term terrestrial habitat.*

Based on the fact that the current location lies outside of the VPE habitat zone and construction of the facility including the access road will not require clearing of forest habitat[2], I do not believe that the alternate location will result in greater protection of terrestrial vernal pool habitat, with one possible exception. This conclusion does not consider potential secondary impacts that might be associated with the tower site such as noise (from vehicle traffic, generators and other equipment) or lighting that might disrupt amphibian behavior. Should such secondary impacts be generated from a facility of this type, and if these secondary impacts are reduced by moving the tower southerly, then moving the tower would be a prudent measure to mitigate impacts to these potential vernal pools.

b) Discuss the potential relocation in terms of protection of the wetland/ridge interface, which could be favored by box turtles. Are the potential areas of box turtle use, including hibernation areas, better protected by this proposed relocation?

Construction of the tower at the alternate location would provide better protection of box turtle habitat than the currently proposed tower location. Although the vegetation is essentially identical at both the proposed and alternate tower locations, the juxtaposition of habitats at the currently proposed tower location is more suitable for box turtle. The currently proposed tower site is part of a toposequence that includes wetlands, upland forest and old field habitat that can provide the full range of habitats utilized by box turtle throughout the year. The alternate location is located further from forest and wetland habitats, and therefore is less suitable for box turtle.

Additionally, the alternate location would result in less overall habitat fragmentation, as the tower site and access road would be shifted southerly, closer to the existing farm development. This would result in less fragmentation of the pasture/old field habitat unit. The impacts of habitat fragmentation are well document in a number of publications, including Johnson and Klemens (2005), and are considered one of the greatest threats to Connecticut's wildlife. However, the impacts of habitat fragmentation are complex and depend upon a number of factors including the habitats being impacted, the species present and the nature of the fragmentary feature. Without site specific wildlife usage data, we cannot adequately assess the potential for impacts to wildlife resulting from habitat fragmentation.

Conclusions

The lack of wildlife use data at the site is a limiting factor with respect to fully understanding the potential impacts of the proposed tower development on vernal pool wildlife and box turtle. With respect to vernal pool protection, the currently proposed tower location can be constructed without impact to terrestrial vernal pool habitat (i.e., forest) and in compliance with the guidelines set forth in Calhoun and Klemens (2002). Therefore, the proposed project would not be expected to adversely affect vernal pool wildlife. I draw this conclusion based on the assumption that little or no secondary impacts will result from the project. As I am not well versed in the operation of such a facility, I would recommend that you present data on the extent of noise and light spillage expected from such a facility to the CSC in support of this conclusion.

With respect to eastern box turtle, the currently proposed tower location offers a higher-quality habitat matrix than the alternate location. Therefore, utilizing the alternate location affords better protection of this higher-quality habitat. However, given the small-scale of the development proposed (less than ½ acre) I do not believe the potential impact to box turtle or box turtle habitat is significant by any standard of measure, as these

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[2] *Only five trees will be removed during construction according to the site plans, sheet C-1A*

activities are commensurate with the development activities associated with construction of one single-family residence.

Should construction of the tower facility occur at either location, I would recommend measures be implemented during construction to prevent incidental "take" of box turtle during construction. Such measures should include installation of exclusion fencing during the hibernation period (ca. November-April) to prevent turtles from entering the active construction area once they emerge from hibernation. This fencing would also serve to prevent vernal pool wildlife from entering the active construction site during spring migration or summer dispersal.

Sincerely,

Eric Davison

Wildlife Biologist
Certified Professional Wetland Scientist

ATTACHMENTS

(1) Vernal Pool Analysis Map
(2) Photo Log

REFERENCES

Dodd, Kenneth C. 2001. North American box turtles, a natural history. University of Oklahoma Press.

Calhoun, A.J.K and M.W. Klemens. 2002. Best development practices: Conserving pool breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronz, New York.

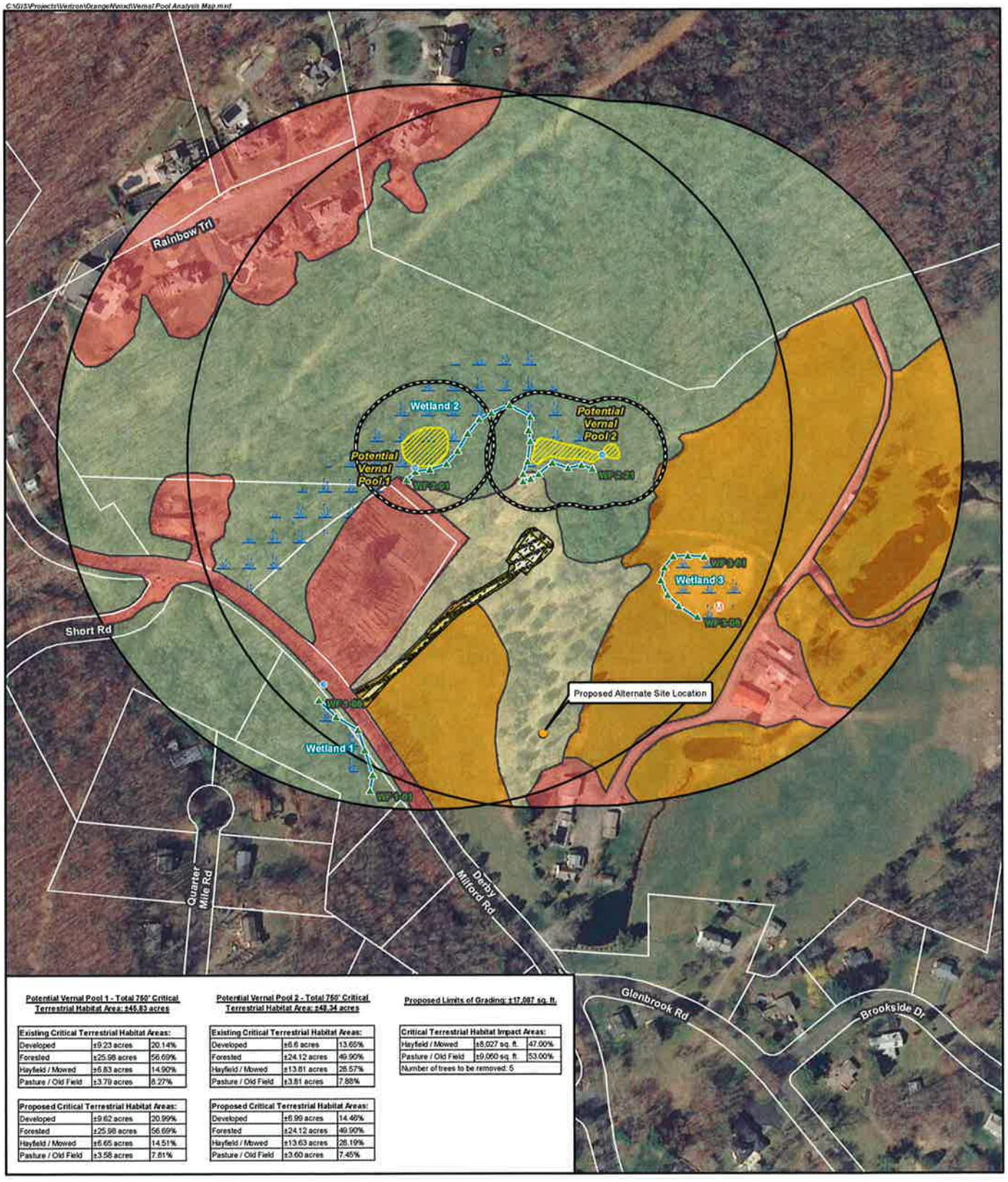
Colburn, E.A. 2004. Vernal pools, natural history and conservation. The McDonald and Woodward Publishing Company, Blacksburg, VA.

Erb, Lori. 2011. Eastern Box Turtle Conservation Plan for Massachusetts. Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program. 1 Rabbit Hill Road, Westborough, MA 01581.

Johnson, E.A. and Klemens, M.W. 2005. Nature in fragments, the legacy of sprawl. American Museum of Natural History. Columbia University Press

Klemens, Michael W. 1993. Amphibians and Reptiles of Connecticut and Adjacent Regions. Connecticut Department of Environmental Protection Bulletin 112.

C:\GIS\Projects\Verizon\OrangeNorth\Vernal Pool Analysis Map.mxd



Potential Vernal Pool 1 - Total 750' Critical Terrestrial Habitat Area: ±45.83 acres

Existing Critical Terrestrial Habitat Areas:		
Developed	±9.23 acres	20.14%
Forested	±25.98 acres	56.69%
Hayfield / Mowed	±6.83 acres	14.90%
Pasture / Old Field	±3.79 acres	8.27%

Proposed Critical Terrestrial Habitat Areas:		
Developed	±9.62 acres	20.99%
Forested	±25.98 acres	56.69%
Hayfield / Mowed	±6.65 acres	14.51%
Pasture / Old Field	±3.58 acres	7.81%

Potential Vernal Pool 2 - Total 750' Critical Terrestrial Habitat Area: ±48.34 acres

Existing Critical Terrestrial Habitat Areas:		
Developed	±6.6 acres	13.65%
Forested	±24.12 acres	49.90%
Hayfield / Mowed	±13.81 acres	28.57%
Pasture / Old Field	±3.81 acres	7.88%

Proposed Critical Terrestrial Habitat Areas:		
Developed	±6.99 acres	14.46%
Forested	±24.12 acres	49.90%
Hayfield / Mowed	±13.63 acres	28.19%
Pasture / Old Field	±3.60 acres	7.45%

Proposed Limits of Grading: ±17,087 sq. ft.

Critical Terrestrial Habitat Impact Areas:		
Hayfield / Mowed	±8,027 sq. ft.	47.00%
Pasture / Old Field	±9,060 sq. ft.	53.00%
Number of trees to be removed: 5		

Legend

- Culvert
- Manhole
- Wetland Flag
- Delineated Wetland Boundary
- Wetland Area
- Proposed Cellco Gravel Access Road and Compound Area
- Proposed Limits of Grading
- Proposed Alternate Site Location
- Vernal Pool
- 100' Vernal Pool Envelope

750' Critical Terrestrial Habitat

- Developed
- Forested
- Hayfield / Mowed
- Pasture / Old Field
- Approximate Parcel Boundary (CTDEEP)

150 75 0 150 Feet

N W E S

Base Map Source: 2012 Aerial Photograph (CTECO) Map Date: August 2014

Vernal Pool Analysis Map

verizonwireless

Proposed Wireless Telecommunications Facility
Orange North
831 Derby Milford Road
Orange, Connecticut

ALL-POINTS TECHNOLOGY CORPORATION

ALL-POINTS TECHNOLOGY CORPORATION

PHOTO DOCUMENTATION
831 Derby Milford Road
Orange, CT
April 24, 2014

Photo 1: View of cleared Wetland 2 hillside seep at the location nearest the proposed Facility, looking north.

Photo 2: View of eastern extents of Wetland 2 identified as Potential Vernal Pool 2, west of existing wetland crossing, looking northeast.

Photo 3: View of Wetland 2 near Wetland Flag 2-08 east of Potential Vernal Pool 1, looking west.

Photo 4: View of eastern extents of Wetland 2 identified as Potential Vernal Pool 2, east of existing wetland crossing, looking northeast.

Photo 5: View of Potential Vernal Pool 1, looking northwest.

Eric R. Davison, CSS, CPWS

10 Maple Street, Chester, CT 06412
860-803-0938
ericrdavison@gmail.com

EDUCATION

2000 **University of Massachusetts** **Amherst, MA**
New England Regional Soil Science Certificate Program

1998 **University of Massachusetts** **Amherst, MA**
Bachelor of Science, Wildlife Conservation & Management

WORK EXPERIENCE

1998-present **Private Environmental Consultant, Chester, CT**
Wildlife Biologist, Wetland Scientist and Soil Scientist

Provided the following consulting services to clients:

- Herpetological surveys
- Vernal pool inventory and impact assessment
- Breeding bird surveys
- Wetland delineation and soil mapping
- Local, state and federal wetland permitting assistance
- Wetland impact assessments
- Wetland restoration and mitigation plans
- Land management planning
- Wetland functions and values assessments
- GIS based environmental assessments

2009-2011 **Metropolitan Conservation Alliance**
Cary Institute of Ecosystem Studies, Millbrook, NY
***Biodiversity Specialist* (three-year grant funded position)**

- Conduct biodiversity studies throughout Connecticut and New York
- Inventory amphibian and reptile species using field techniques including cover searching, minnow trapping, pitfall trapping and hoop-net trapping
- Characterize and map upland and wetland habitats, soils, geology and other natural resource features
- Catalogue breeding bird species via visual identification and song
- Collect field data using GPS equipment and compile data collected using GIS software (*ArcMap 10.0*); create GIS maps and files of all field data collected

2000-2002 **Northwest Park and Nature Center, Windsor, CT**
Naturalist -Land Manager

- Responsible for habitat management and wildlife monitoring at 473-acre municipal park, with a focus on early-successional habitat management and monitoring of rare and state-listed grassland and shrubland wildlife
- Conducted public programs and special events
- Conducted conservation-related public outreach
- Staff liaison for the Town of Windsor Conservation Commission

1998-2000 **Connecticut Department of Environmental Protection, Stafford, CT**
Park Maintainer

- Maintained all state park and forest areas within Shenipsit State Forest Unit
- Responsible for all facility and grounds maintenance
- Regular equipment operation included chainsaws, tractor with backhoe, loader, dumptruck, snowplow, skid-steer, mowers & woodworking

1995 **Smithsonian Institution, Quantico Marine Base, Quantico, VA**
Field Technician

- Mist netting and banding of neotropical migrant songbirds
- Radio telemetry of the Wood Thrush (*Hylocichla mustelina*)
- Vegetation surveys around wood thrush nesting sites

Certifications & Computer Skills

- Certified Soil Scientist (Society of Soil Scientists of Southern New England)
- Certified Professional Wetland Scientist (Society of Wetland Scientists)
- Proficient in GIS (ESRI ArcMap 10.0), Microsoft Word, Excel & Access

Relevant Publications & Projects

- Author, Audubon Important Bird Area Conservation Plan, Greenwich Point Park, Greenwich *in progress*
- Author and field biologist, conservation easement documentation plans (four parcels), Granby Land Trust, 2013
- Co-author, Town of Ridgefield Natural Resource Inventory, 2012
- Author and field biologist, open space management plans (six parcels), Northern Connecticut Land Trust, 2012
- Author, Audubon Important Bird Area Conservation Plan, Bent of the River Sanctuary, Southbury, CT, 2011
- Field biologist, point-count breeding bird surveys for CT Audubon, 2010 – 2011
- Author and field biologist, Lighthouse Point Meadow Restoration Plan, Lighthouse Point Park, New Haven, CT, 2011
- Field biologist and co-author, Haines Pond Management Plan, Brewster, NY, 2010
- Field biologist and co-author, Eastern Westchester Biotic Corridor: Northern Terminus Addendum, North Salem and Southeast, NY, 2010
- Field biologist and co-author, Haines Pond Biodiversity Study, Brewster, NY, 2009
- Field biologist and co-author, Eastern Westchester Biotic Corridor: Titicus Reservoir, North Salem, NY, 2009
- Author, Audubon Important Bird Area Conservation Plan, Northwest Park, Windsor, CT, 2007
- Field biologist and co-author, Town of Windsor Natural Resource Inventory, 2005

Professional Affiliations

- Commissioner, Inland Wetlands and Watercourses Commission, Town of Chester, CT
- Board Member, Connecticut River Coastal Conservation District
- Member, Society of Soil Scientists of Southern New England