ALL-POINTS TECHNOLOGY CORPORATION

AVIAN RESOURCES EVALUATION

Date: October 23, 2014

Chuck Regulbuto
Tower Holdings, LLC
199 Brickyard Road
Farmington, CT 06032

APT Project No.: CT323100

Re: Proposed Farmington Facility
199 Brickyard Road
Farmington, Connecticut

Tower Holdings, LLC ("Tower Holdings") proposes to construct a new wireless telecommunications Facility ("Facility") at 199 Brickyard Road in Farmington, Connecticut (the "host Property"), consisting of two lots, identified as Tax Assessor Parcel ID Maps 25 & 26, Lots 3A & 3B. In addition to hosting licensed wireless service providers (including AT&T), the Facility would also be used as a training tower for the employees of Northeast Towers, Inc., an affiliate of Tower Holdings, and other professionals servicing the industry. The host Property consists of 2.4 acres and is a developed industrial parcel that includes an office building, attached garage, and gravel-surfaced equipment/material storage areas. The proposed Facility would be located in the fence-enclosed, eastern portion of the host Property currently used for material storage. Tower Holdings proposes to install a 180-foot tall unguyed lattice tower and ground equipment enclosure within a 3,600 square foot irregularly shaped gravel compound area surrounded with an 8-foot tall chain link security fence. Access to the Facility would be gained over existing gravel/bituminous pavement. Underground utilities would extend from Brickyard Road approximately 580 feet to the Facility.

The purpose of this evaluation is to document the proposed Facility's proximity to avian resource areas and its compliance with recommended guidelines of the United States Fish and Wildlife Service for minimizing the potential for telecommunications towers to impact bird species.

All-Points Technology Corporation, P.C. ("APT") reviewed several publicly-available sources of avian data for the state of Connecticut to provide the following information with respect to potential impacts on migratory birds associated with the proposed development. This desktop analysis and attached graphics identify avian resources and their proximities to the host Property. Information within an approximate 2-mile radius of the host Property is graphically depicted on the attached Avian Resources Map. Some of the avian data referenced herein are not located in proximity to the project area and are therefore not visible on the referenced map due to its scale. However, in those cases the distances separating the host Property from the resources are identified in the discussions below.

Proximity to Important Bird Areas

The National Audubon Society has identified 27 Important Bird Areas ("IBAs") in the state of Connecticut. IBAs are sites that provide essential habitat for breeding, wintering, and/or migrating birds. The IBA must support species of conservation concern, restricted-range species, species vulnerable due to concentration in one general habitat type or biome, or species vulnerable due to their occurrence at high densities as a result of their congregatory behavior. The closest IBA to the host Property is Northwest Park in Windsor located approximately 12.4 miles to the northeast. Northwest Park is a 473-acre multi-recreational facility that contains a complex of open early successional habitats and mixed hardwood forests. The park also borders on the Rainbow Reservoir providing a complex of open water and wetland areas for avian species. A number of Connecticut-listed endangered, threatened, and special concern avian species have been observed within the park including red-headed woodpecker, bald eagle, and grasshopper sparrow. Due to its distance from the host Property this IBA would not experience an adverse impact resulting from the proposed development of the Facility.

Supporting Migratory Bird Data

Beyond Audubon's IBAs, the following analysis and attached graphics also identify several additional avian resources and their proximities to the host Property. Although these data sources may not represent habitat indicative of important bird areas, they may indicate possible bird concentrations[1] or migratory pathways.

Critical Habitat

Connecticut Critical Habitats depict the classification and distribution of 25 rare and specialized wildlife habitats in the state. It represents a compilation of ecological information collected over many years by state agencies, conservation organizations and individuals. Critical habitats range in size from areas less than one acre to areas that are tens of acres in extent. The Connecticut Critical Habitats information can serve to highlight ecologically significant areas and to target areas of species diversity for land conservation and protection but may not necessarily be indicative of habitat for bird species. The nearest Critical Habitat to the proposed Facility is a terrestrial non-forested sand barren area that includes a pitch pine scrub subtype community, denoted as the Brickyard Road Sand Barren located on the adjacent property to the north. This abutting property is part of an active sand and gravel and composting operations and material storage yard that experiences an active disturbance regime. As discussed in APT's Sand Barren Habitat Survey Report, dated October 23, 2014, it appears that this nearby Critical Habitat has been eliminated by the existing operations. A second Critical Habitat exists approximately 1,000 feet to the north consisting of a terrestrial forested dry acidic forest denoted as Walton Pond-Winding Trails.

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[1] "bird concentrations" is related to the USFWS *Interim Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* (September 14, 2000) analysis provided at the end of this document

According to an October 25, 2013 letter from the Connecticut Department of Energy and Environmental Protection ("CTDEEP") Natural Diversity Data Base ("NDDB"), "records indicate that many state-listed sand barren-obligate plant and invertebrate species occur on this site", and therefore no records for state endangered or threatened avian species currently exist. Based on these conditions, no adverse impacts are anticipated to avian species.

Avian Survey Routes and Points

Breeding Bird Survey Route

The North American Breeding Bird Survey is a cooperative effort between various agencies and volunteer groups to monitor the status and trends of North American bird populations. Routes are randomly located to sample habitats that are representative of an entire region. Each year during the height of the avian breeding season (June for most of the United States) participants skilled in avian identification collect bird population data along roadside survey routes. Each survey route is approximately 24.5 miles long and contains 50 stops located at 0.5-mile intervals. At each stop, a three-minute count is conducted. During each count, every bird seen or heard within a 0.25-mile radius is recorded. The resulting data is used by conservation managers, scientists, and the general public to estimate population trends and relative abundances and to assess bird conservation priorities. The nearest survey route to the host Property is the Southington Breeding Bird Survey Route (Route #18015) passes within approximately 1.6 miles to the west. This ±25-mile long bird survey route begins on East Street in Southington and generally winds its way north through Plainville, Farmington, Avon, and Canton before terminating in West Simsbury. Since bird survey routes represent randomly selected data collection areas, they do not necessarily represent a potential restriction to development projects, including the proposed Facility.

Hawk Watch Site

The Hawk Migration Association of North America ("HMANA") is a membership-based organization committed to the conservation of raptors through the scientific study, enjoyment and appreciation of raptor migration. HMANA collects hawk count data from almost 200 affiliated raptor monitoring sites throughout the United States, Canada and Mexico, identified as "Hawk Watch Sites." In Connecticut, Hawk Watch Sites are typically situated on prominent hills and mountains that tend to concentrate migrating raptors and may be an indicator of secondary migratory routes that connect to the Atlantic Flyway. The nearest Hawk Watch Site, Taine Mountain, is located in Burlington, approximately 3.4 miles to the northwest of the proposed Facility.

Most hawks migrate during the day (diurnal) to take advantage of two theorized benefits: (1) diurnal migration allows for the use of updrafts or rising columns of air called thermals to gain lift without flapping thereby reducing energy loss; and, (2) day migrants can search for

prey and forage as they migrate. Therefore, no adverse impacts to migrating hawks are anticipated with development of the Facility, based on the 3.4± mile separation distance to a principal migration corridor (Taine Mountain Hawk Watch Site) and hawk migration behavior occurring during the daytime under favorable weather conditions when thermals form.

Bald Eagle Site

Bald Eagle Sites consist of locations of midwinter Bald Eagle counts from 1986 to 2005 with an update provided in 2008. This survey was initiated in 1979 by the National Wildlife Federation. This database includes information on statewide, regional and national trends. Survey routes are included in the database only if they were surveyed consistently in at least four years and where at least four eagles were counted in a single year. A Bald Eagle Site survey route is located along the Connecticut River approximately 8.5 miles east of the host Property.

Bald Eagle migration patterns are complex, dependent on age of the individual, climate (particularly during the winter) and availability of food.[2] Adult birds typically migrate alone and generally as needed when food becomes unavailable, although concentrations of migrants can occur at communal feeding and roost sites. Migration typically occurs during the middle of day (10:30–17:00) as thermals provide for opportunities to soar up with limited energetic expense; Bald Eagle migration altitudes are estimated to average 1,500–3,050 m by ground observers.[3] Four adults tracked by fixed-wing aircraft in Montana averaged 98 km/d during spring migration and migrated at 200–600 m above ground (McClelland et al. 1996).[4]

Therefore, no adverse impacts to migrating Bald Eagle are anticipated with development of the Facility, based on the short (180-foot) height of the Facility, distance separating the host Property from the Connecticut River and eagle migrate patterns during the daytime under favorable weather conditions when thermals form.

Flyways

The project area is located in Hartford County, approximately 34 miles north of Long Island Sound. The Connecticut coast lies within the Atlantic Flyway, one of four generally recognized regional primary migratory bird flyways (Mississippi, Central and Pacific being the others). This regional flyway is used by migratory birds travelling to and from summering and wintering grounds. The Atlantic Flyway is

[2] Buehler, David A. 2000. Bald Eagle (*Haliaeetus leucocephalus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/506 [Accessed 09/09/13].

[3] Harmata, A. R. 1984. Bald Eagles of the San Luis valley, Colorado: their winter ecology and spring migration. Ph.D. Thesis. Montana State Univ. Bozeman.

[4] Mcclelland, B. R., P. T. McClelland, R. E. Yates, E. L. Caton, and M. E. McFadden. 1996. Fledging and migration of juvenile Bald Eagles from Glacier National Park, Montana. J. Raptor Res. 30:79-89.

particularly important for many species of migratory waterfowl and shorebirds, and Connecticut's coast serves as vital stopover habitat. Migratory land birds also stop along coastal habitats before making their way inland. Smaller inland migratory flyways ("secondary flyways") are often concentrated along major riparian areas as birds use these valuable stopover habitats to rest and refuel as they make their way further inland to their preferred breeding habitats. The Connecticut Migratory Bird Stopover Habitat Project (Stokowski, 2002)[5] identified potential flyways along the Housatonic, Naugatuck, Thames, and Connecticut Rivers. This study paralleled a similar earlier study conducted by the Silvio O. Conte National Fish & Wildlife Refuge (Neotropical Migrant Bird Stopover Habitat Survey[6]), which consisted of collection of migratory bird data along the Connecticut River and the following major Connecticut River tributaries: Farmington, Hockanum, Scantic, Park, Mattabesset, Salmon, and Eight Mile Rivers. Of these potential flyways, the nearest to the host Property is the Farmington River, located approximately 0.8 mile to the west. This major riparian corridor may provide secondary flyways as they likely offer more food and protection than more exposed upland sites, particularly during the spring migration[7].

Siting of tower structures within flyways can be a concern, particularly for tall towers and even more particularly for tall towers with guy wires and lighting. The majority of studies on bird mortality due to towers focuses on very tall towers (greater than 1000 feet), illuminated with non-flashing lights, and guyed. These types of towers, particularly if sited in major migratory pathways, do result in significant bird mortality (Manville, 2005)[8]. The proposed Facility is not this type of tower, being an unlit, unguyed lattice structure only 180 feet in height. More recent studies of short communication towers (<300 feet) reveal that they rarely kill migratory birds[9]. Studies of mean flight altitude of migrating birds reveal flight altitudes of 410 meters (1350 feet), with flight altitudes on nights with bad weather between 200 and 300 meters above ground level (656 to 984 feet)[10].

No adverse impacts to migrating bird species are anticipated resulting from the Project, based on the significant distance separating the host Property from the Atlantic Flyway. Potential impacts to migrating bird species possibly using the Farmington River as a potential flyway are mitigated by the proposed Facility's short (180-foot) height, 0.8 mile separation distance and the fact that it would be unlit and unguyed.

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[5] Stokowski, J.T. 2002. Migratory Bird Stopover Habitat Project Finishes First Year. Connecticut Wildlife, November/December 2002. P.4.

[6] The Silvio O. Conte National Fish & Wildlife Refuge Neotropical Migrant Bird Stopover Habitat Survey http://www.science.smith.edu/stopoverbirds/index.html

[7] The Silvio O. Conte National Fish & Wildlife Refuge Neotropical Migrant Bird Stopover Habitat Survey. http://www.science.smith.edu/stopoverbirds/Chapter5_Conclusions&Recommendations.html

[8] Manville, A.M. II. 2005. Bird strikes and electrocutions at power lines, communications towers, and wind turbines: state of the art and state of the science - next steps toward mitigation. Bird Conservation Implementation in the Americas: Proceedings 3rd International Partners in Flight Conference 2002. C.J. Ralph and T.D. Rich, editors. USDA Forest Service General Technical Report PSW-GTR-191. Pacific Southwest Research Station, Albany CA. pp. 1-51-1064.

[9] Kerlinger, P. 2000. Avian Mortality at Communication Towers: A Review of Recent Literature, Research, and Methodology. Prepared for U.S. Fish and Wildlife Service Office of Migratory Bird Management.

[10] Mabee, T.J., B.A. Cooper, J.H. Plissner, D.P. Young. 2006. Nocturnal bird migration over an Appalachian ridge at a proposed wind power project. Wildlife Society Bulletin 34:682-690.

No adverse impacts to migrating bird species are anticipated with the project, based on the combination of distance separating the host Property from the Farmington River, and the Facility's relatively short (180-foot) height and design (unlit and unguyed).

Waterfowl Focus Areas

The Atlantic Coast Joint Venture ("ACJV") is an affiliation of federal, state, regional and local partners working together to address bird conservation planning along the Atlantic Flyway. The ACJV has identified waterfowl focus areas recognizing the most important habitats for waterfowl along the Atlantic Flyway. Connecticut contains several of these waterfowl focus areas. The nearest waterfowl focus area to the host Property is the Connecticut River and Tidal Wetlands Complex area, located approximately 13.9 miles to the southwest. Please refer to the attached Connecticut Waterfowl Focus Areas Map. Based on the distance of these resources to the project area, no direct impacts would occur from development of the proposed Facility.

CTDEEP Migratory Waterfowl Data

The CTDEEP created a Geographic Information System ("GIS") data layer in 1999 identifying concentration areas of migratory waterfowl at specific locations in Connecticut. The intent of this data layer is to assist in the identification of migratory waterfowl resource areas in the event of an oil spill or other condition that might be a threat to waterfowl species. This data layer identifies conditions at a particular point in time and has not been updated since 1999.

No migratory waterfowl areas are located within the Town of Farmington. The nearest migratory waterfowl area (Wethersfield Cove in Wethersfield, CT) is located approximately 10.1 miles to the southeast of the proposed Facility. The associated species are identified as American black duck, bufflehead, mallard, hooded merganser, common merganser, green wing teal, and wood duck. Based on its distance to the host Property, no impacts to migratory waterfowl habitat are anticipated to result from development of the proposed Facility.

CTDEEP Natural Diversity Data Base

CTDEEP's NDDB program performs hundreds of environmental reviews each year to determine the impact of proposed development projects on state listed species and to help landowners conserve the state's biodiversity. State agencies are required to ensure that any activity authorized, funded or performed by a state agency does not threaten the continued existence of endangered or threatened species. Maps have been developed to serve as a pre-screening tool to help applicants determine if there is a potential impact to state listed species.

The NDDB maps represent approximate locations of endangered, threatened and special concern species and significant natural communities in Connecticut. The locations of species and natural communities depicted on the maps are based on data collected over the years by CTDEEP staff,

scientists, conservation groups, and landowners. In some cases an occurrence represents a location derived from literature, museum records and/or specimens. These data are compiled and maintained in the NDDB. The general locations of species and communities are symbolized as shaded areas on the maps. Exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowner's rights whenever species occur on private property.

According to an October 25, 2013 letter from the CTDEEP NDDB, "records indicate that many state-listed sand barren-obligate plant and invertebrate species occur at this site" and further, "construction of the telecommunications tower will be within an existing graveled lot therefore it is unlikely that this project will impact the remaining sand barren habitat that exists on-site." As discussed in APT's Sand Barren Habitat Survey Report, dated October 23, 2014, the proposed Facility will not impact sand barren habitat or associated state-listed species. Also, it appears that the nearby Brickyard Road Critical Habitat has been eliminated by existing composting and sand and gravel operations that are occurring within this area.

USFWS Communications Towers Compliance

The U.S Fish and Wildlife Service ("USFWS") prepared its *Interim Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* (September 14, 2000), which recommends the 12 voluntary actions below be implemented in order to mitigate potential bird strikes that could result by the construction of telecommunications towers. APT offers the following responses to each of the USFWS recommendations.

1. *Any company/applicant/licensee proposing to construct a new communications tower should be strongly encouraged to collocate the communications equipment on an existing communications tower or other structure (e.g., billboard, water tower, or building mount). Depending on tower load factors, from 6 to 10 providers may collocate on an existing tower.*

   Collocation opportunities on existing towers, buildings or non-tower structures are not available in the area while achieving the required radio frequency ("RF") coverage objectives of AT&T. In addition, no other training towers of this type exist within the region.

2. *If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level (AGL), using construction techniques which do not require guy wires (e.g., use a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Administration regulations permit.*

   The proposed Facility would consist of a 180-foot unguyed lattice structure which requires neither guy wires nor lighting.

3. *If constructing multiple towers, providers should consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.*

   Multiple towers are not proposed as part of this project.

4. *If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, or other known bird concentration areas (e.g., state or Federal refuges, staging areas, rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.*

   There are no existing "antenna farms" in the area. The proposed Facility is not within wetlands, known bird concentration area, migratory or daily movement flyway, or habitat of threatened/endangered species. According to a October 25, 2013 letter from the CTDEEP Natural Diversity Data Base NDDB, "construction of the telecommunications tower will be within an existing graveled lot therefore it is unlikely that this project will impact the remaining sand barren habitat that exists on-site." As discussed in APT's Sand Barren Habitat Survey Report, dated October 23, 2014, the proposed Facility will not impact sand barren habitat or associated state-listed species.

   In Connecticut, seasonal atmospheric conditions can occasionally produce fog, mist and/or low ceilings. However, high incidences of these meteorological conditions, relative to the region, are not known to exist in the vicinity of the host Property.

5. *If taller (>199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used.*

   The proposed Facility height (180 feet AGL) is less than 199 feet and would not require any aviation safety lighting.

6. *Tower designs using guy wires for support which are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species.*

   The proposed Facility would be free-standing and would not require guy wires or visual marking

7. *Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance, and to reduce above ground obstacles to birds in flight.*

   The proposed Facility is sited, designed, and would be constructed to accommodate proposed equipment and to allow for future collocations within the smallest footprint possible. The proposed

Facility would be located within an existing gravel surface lot contained within chain-link fencing and therefore will not result in habitat fragmentation.

8. *If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation to an alternate site should be recommended. If this is not an option, seasonal; restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.*

   The proposed construction areas are located within portions of the host Property that are developed and subject to regular or periodic disturbance activities. No trees or mature vegetation will be removed with the proposed development. Therefore, due to the lack of suitable avian habitat, the proposed development is not anticipated to disturb breeding, feeding, or roosting migratory birds and no seasonal restrictions are recommended.

9. *In order to reduce the number of towers needed in the future, providers should be encouraged to design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.*

   The proposed Facility has been designed in accordance with this guidance, as it could accommodate at least three antenna platform positions and multiple emergency communications system antennas. The proposed, free-standing Facility would be neither lighted nor guyed.

10. *Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.*

    Security lighting for on-ground facilities would be down-shielded using Dark Sky compliant fixtures set on motion sensor with timer.

11. *If a tower is constructed or proposed for construction, Service personnel or researchers from the Communication Tower Working Group should be allowed access to the site to evaluate bird use, conduct, dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, Global Positioning System, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.*

    With prior notification to Tower Holdings, USFWS personnel would be allowed access to the proposed Facility to conduct evaluations.

12. *Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.*

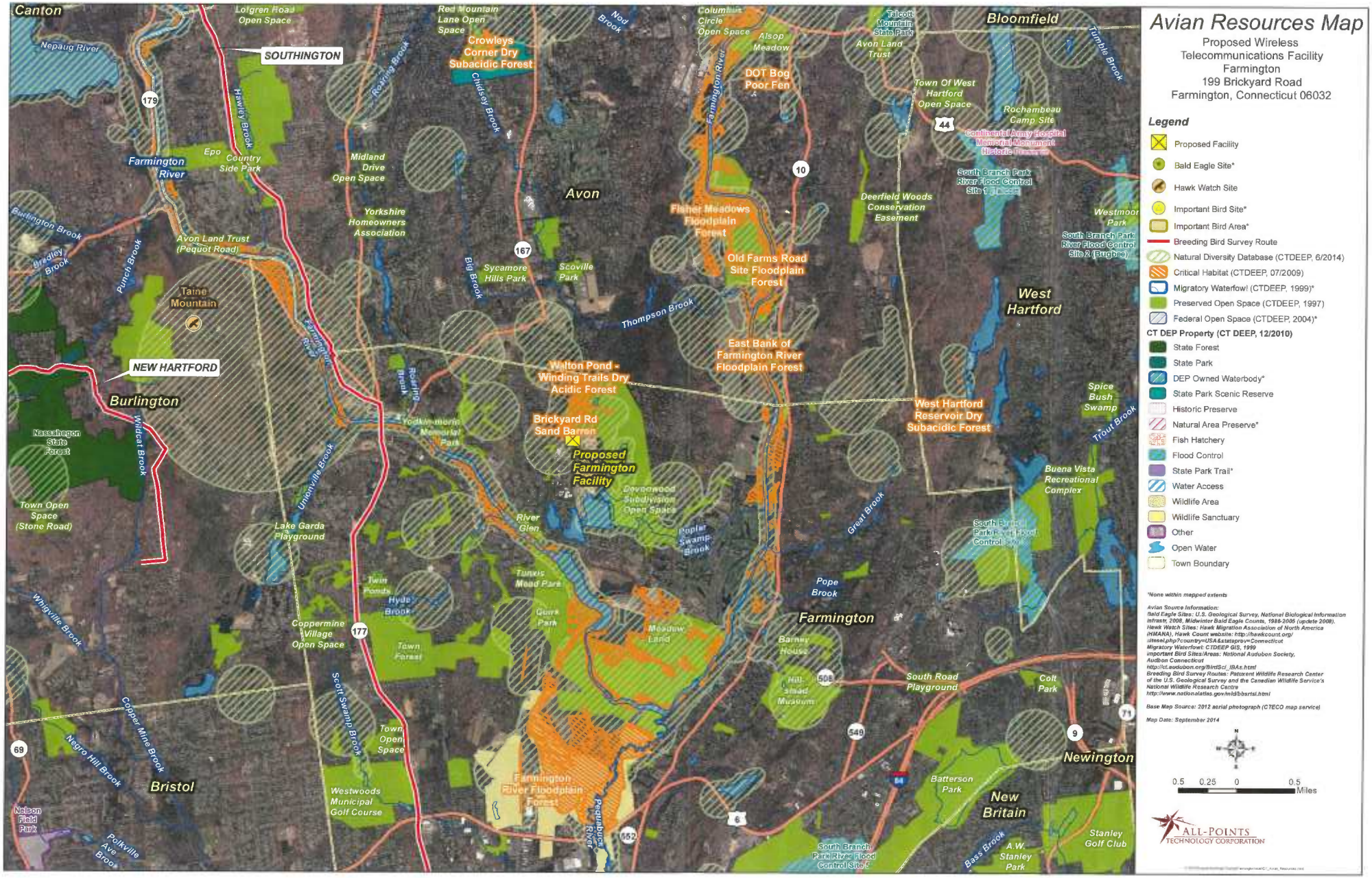
    If the proposed Facility becomes non-operational or obsolete, it would be removed within 12 months of cessation of use.

Summary and Conclusions

Based on the results of this desk-top evaluation, no migratory bird species are anticipated to be impacted by Tower Holdings' proposed development. The proposed Facility is not proximate to an Important Bird Area and would comply with the USFWS guidelines for minimizing the potential impacts to birds.

Figures

- Avian Resources Map
- Connecticut Waterfowl Focus Areas Map



Avian Resources Map

Proposed Wireless Telecommunications Facility
Farmington
199 Brickyard Road
Farmington, Connecticut 06032

Legend

- Proposed Facility
- Bald Eagle Site*
- Hawk Watch Site
- Important Bird Site*
- Important Bird Area*
- Breeding Bird Survey Route
- Natural Diversity Database (CTDEEP, 6/2014)
- Critical Habitat (CTDEEP, 07/2009)
- Migratory Waterfowl (CTDEEP, 1999)*
- Preserved Open Space (CTDEEP, 1997)
- Federal Open Space (CTDEEP, 2004)*

CT DEP Property (CT DEEP, 12/2010)

- State Forest
- State Park
- DEP Owned Waterbody*
- State Park Scenic Reserve
- Historic Preserve
- Natural Area Preserve*
- Fish Hatchery
- Flood Control
- State Park Trail*
- Water Access
- Wildlife Area
- Wildlife Sanctuary
- Other
- Open Water
- Town Boundary

*None within mapped extents

Avian Source Information:
Bald Eagle Sites: U.S. Geological Survey, National Biological Information Infrastr, 2008, Midwinter Bald Eagle Counts, 1986-2005 (update 2008).
Hawk Watch Sites: Hawk Migration Association of North America (HMANA), Hawk Count website: http://hawkcount.org/sitesel.php?country=USA&state=Connecticut
Migratory Waterfowl: CTDEEP GIS, 1999
Important Bird Sites/Areas: National Audubon Society, Audubon Connecticut http://ct.audubon.org/BirdSci/_IBAs.html
Breeding Bird Survey Routes: Patuxent Wildlife Research Center of the U.S. Geological Survey and the Canadian Wildlife Service's National Wildlife Research Centre http://www.nationalatlas.gov/mld/bbsrtsl.html

Base Map Source: 2012 aerial photograph (CTECO map service)

Map Date: September 2014

0.5 0.25 0 0.5 Miles

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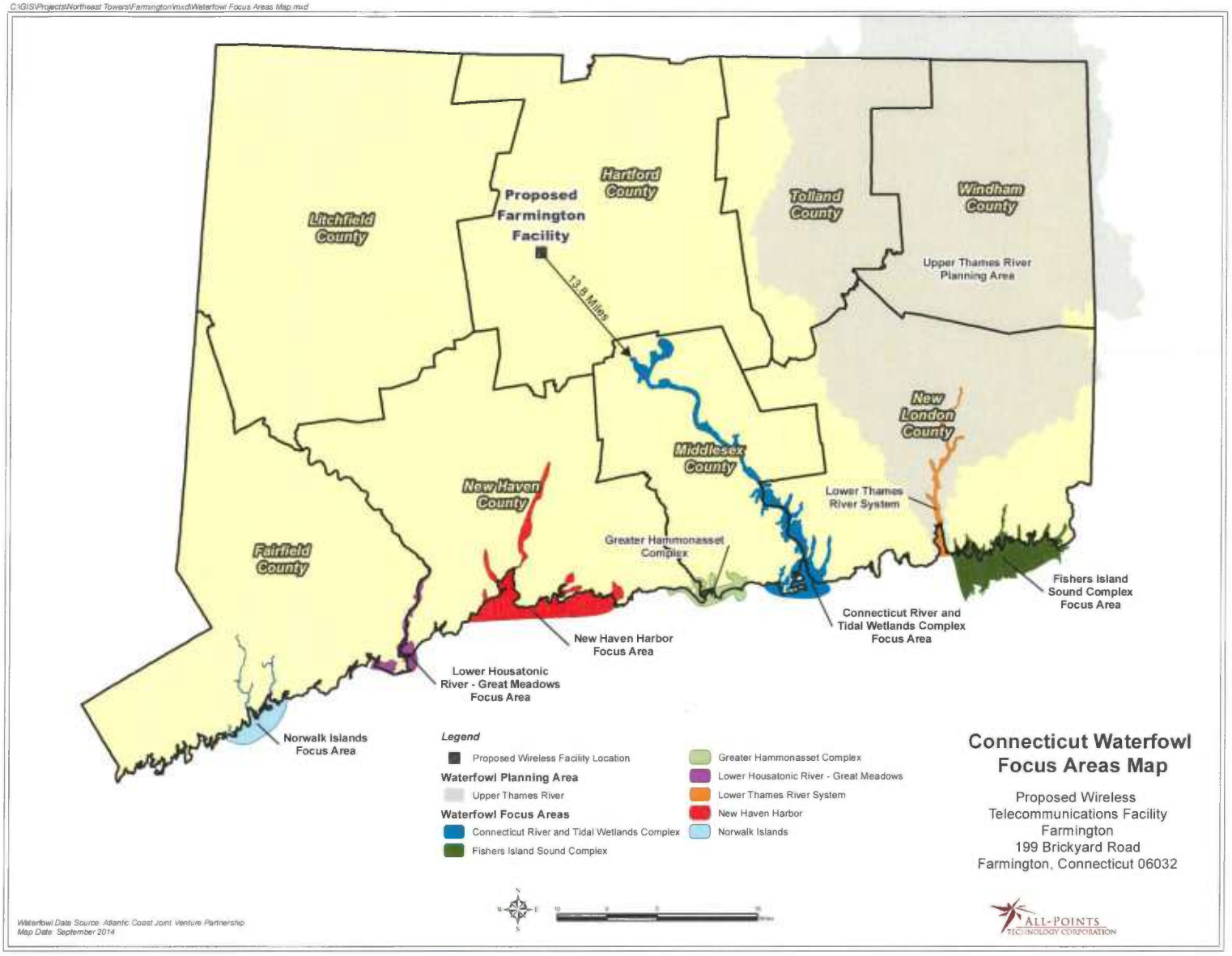

Connecticut Waterfowl Focus Areas Map

Proposed Wireless Telecommunications Facility
Farmington
199 Brickyard Road
Farmington, Connecticut 06032

Waterfowl Data Source: Atlantic Coast Joint Venture Partnership
Map Date: September 2014

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