

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:

APPLICATION OF HOMELAND TOWERS, LLC
(HOMELAND) AND NEW CINGULAR WIRELESS PCS,
LLC (AT&T) FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY AND PUBLIC
NEED FOR THE CONSTRUCTION, MAINTENANCE
AND OPERATION OF A TELECOMMUNICATIONS
TOWER FACILITY IN RIDGEFIELD, CONNECTICUT

DOCKET NO. 445

April 1, 2014

HOMELAND TOWERS, LLC and NEW CINGULAR WIRELESS, PCS LLC (AT&T)
RESPONSES TO CONNECTICUT SITING COUNCIL PRE-HEARING QUESTIONS SET I

Q1: Of the letters sent to abutting property owners, how many certified mail receipts did AT&T receive? If any receipts were not returned, which owners did not receive their notice? Did AT&T make additional attempts to contact those property owners?

A1. *Mail receipts for all letters sent to abutting property owners were received.*

Q2. Would any blasting be required for this site?

A2. *Blasting should not be required. The majority of earthwork for this project is fill. It is expected that any rock removal will be accomplished with standard excavation equipment.*

Q3. What are the frequencies AT&T is licensed to use in the area covered from the proposed facility?

A3. *The latest list of AT&T's licensed frequencies for use in Fairfield County is:*

Radio Service	Tags	Frequency Band (MHz)	Call Sign/Lease ID
700 MHz	Broadband; Fixed Wireless; Mobile Radio; Phone; Television	710 - 716	WPWV368
700 MHz	Broadband; Fixed Wireless; Mobile Radio; Phone; Television	722 - 728	WQIZ617
700 MHz	Broadband; Fixed Wireless; Mobile Radio; Phone; Television	704 - 710	WQJU459

		734 - 740	-
700 MHz	Broadband; Fixed Wireless; Mobile Radio; Phone; Television	716 - 722	WPZA235
Broadband PCS	Broadband; Fixed Wireless; Mobile Radio; Phone	1850 - 1865	WPSL626
		1930 - 1945	-
Broadband PCS	Broadband; Fixed Wireless; Mobile Radio; Phone	1850 - 1865	WQGG892
		1930 - 1945	-
Broadband PCS	Broadband; Fixed Wireless; Mobile Radio; Phone	1885 - 1890	KNLG502
		1965 - 1970	-
Cellular	Broadband; Fixed Wireless; Mobile Radio; Phone	835 - 845	KNKA256
		846.5 - 849	-
		880 - 890	-
		891.5 - 894	-
WCS	Broadband; Fixed Wireless	2345 - 2350	KNLB297
WCS	Broadband; Fixed Wireless	2310 - 2315	KNLB204
		2355 - 2360	-
WCS	Broadband; Fixed Wireless	2305 - 2310	KNLB312
		2350 - 2355	-
WCS	Broadband; Fixed Wireless	2315 - 2320	WPQL636

- Q4. Which of these frequencies will be utilized by AT&T at this site?
- A4. *This will vary based on the date of eventual commission of the site, but the initial installation is planned to be 700 and 1900 MHz LTE and 850 and 1900 UMTS.*
- Q5. Identify the adjacent sites with which the proposed facility would hand off signals. Include addresses of these sites.
- A5. *AT&T's existing sites that would interact with the proposed Facility are provided on Page 6 of the RF Report in the application, and also included in the table below:*

Site ID	Longitude	Latitude	Address	Town	State	Structure Type	Antenna Centerline (ft)
CTV2123	-73.49936	41.281936	10 Catoonah Street	Ridgefield	CT	Monopole	58
CTV2133	-73.465471	41.35952	Moses Mtn	Danbury	CT	Self Support	68
CTV2156	-73.526352	41.393239	119 Mill Plain Road	Danbury	CT	Rooftop	50
CTV5054	-73.513299	41.375092	900 Ridgebury Rd	Ridgefield	CT	Rooftop	39
CTV5068	-73.486899	41.282492	95 Halpin Lane	Ridgefield	CT	Utility	115
CTV5069	-73.471099	41.336692	66 Sugar Hollow Rd	Danbury	CT	Monopole	108
CTV5070	-73.472499	41.377192	83 Wooster Heights Road	Danbury	CT	Rooftop	64
CTV5072	-73.514999	41.388592	18 Old Ridgebury Rd	Danbury	CT	Rooftop	106
CTV5244	-73.472499	41.312992	845 Ethan Allen Hwy	Ridgefield	CT	Unipole	67
NYCNNY5590	- 73.57535	41.368411	230 Peach Lake Road	Brewster/Town of Southeast	NY	Unipole	89' and 99'
NYCNNY5570	- 73.600275	41.340828	Delancey Road	North Salem	NY	Unipole	75' and 85'

Q6. What is the signal strength for which AT&T designs its system? For in-vehicle coverage? For in-building coverage? Does this signal strength differ according to the different frequencies AT&T is licensed to use?

A6. *AT&T's network has historically served customers on 850 and 1900 MHz using GSM and UMTS technologies. For this use and technology, the design criteria has been -74 dBm for in-building reliable service and -82dBm for in-vehicle reliable service. As the network moves toward LTE technology, and to meet the demands of faster data use, which equates to customer experienced speed and reliability, AT&T now uses the following design thresholds for the LTE (4G) network:*

- *-83 and -93dBm for 700Mhz LTE (base platform)*
- *-86 and -96dBm for 1900MHz LTE (capacity off-load for the 700MHz LTE)*

Currently, many customers remain on UMTS on 850 and 1900 bands. Those customers will need to continue to be supported as they are migrated from 3/3.5G to 4G service so AT&T continues to consider UMTS (3G) as an important service to provide, during the evolutionary period to LTE (4G)

Q7. What is the existing signal strength in the area AT&T is seeking to cover from this facility? At which frequencies?

A7. *The existing signal strength in the areas that would be covered by the proposed Facility at 850 MHz range from -74 dBm (small areas on hills) to down to -120 dBm (noise floor), which does not constitute reliable coverage.*

- Q8. Does AT&T have any statistics on dropped calls or other indicators of substandard service in the vicinity of the proposed facility? If so, what do they indicate?
- A8. *AT&T's radio frequency engineers have reviewed drive data, lost call statistics and its customer complaints and has confirmed the conclusion that a new site is required in this area. In addition, data testing indicates that substandard or nonexistent data service is provided within the area identified as a need for this site.*
- Q9. What are lengths of the respective coverage gaps on the roads that would be covered from the proposed site? What are the distances that would be covered along these roads from the proposed site?

A9. *Please see table below:*

Roads	Existing Coverage Gap in Ridgefield, CT without the proposed site	Coverage Gap covered by Proposed Site @150' RCL in Ridgefield, CT (Cellular Frequency)	
		>= -74 dBm	>= -82 dBm
Ledges Road	0.98	0.4834	0.8982
Ridgebury Road	3.688	0.378	1.244
North Salem Road	3.656	1.932	2.5999
Route 116 in Ridgefield	3.656	1.932	2.5999
Old Stagecoach Road	1.424	0.449	1.078
Bob Hill Road	0.827	0.036	0.394
Mamasco Road	1.432	0.824	1.0366
Old Sib Road	2.068	1.39	1.9662

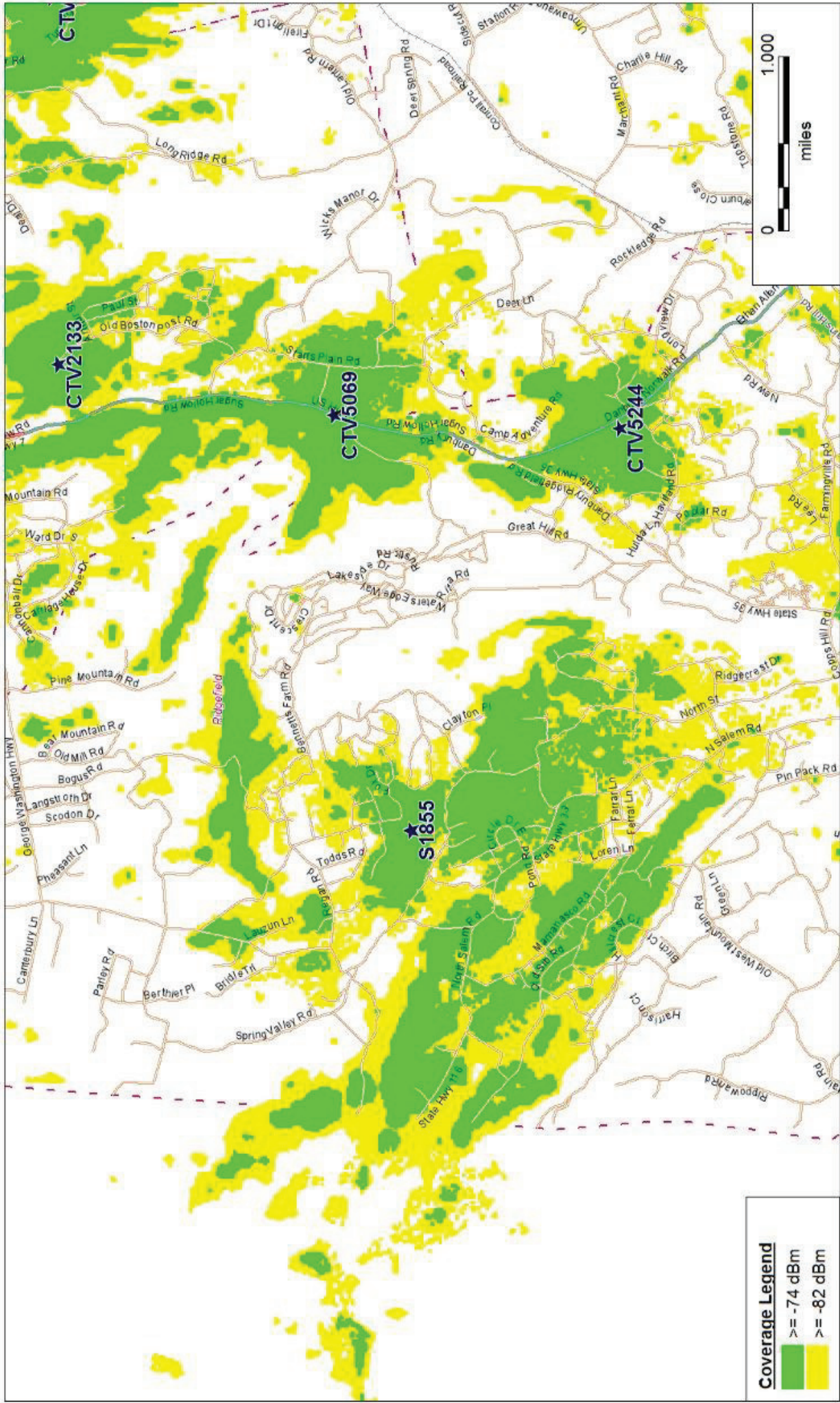
- Q10. Do the areas on the coverage maps included with the application depict a particular frequency licensed by AT&T?
- A10. *The coverage maps included in the RF Report depict existing and proposed coverage utilizing AT&T's 850 MHz frequencies and using UMTS technology.*
- Q11. What is the lowest feasible height at which AT&T's antennas could fulfill the coverage objectives from the proposed facility? What problems would result if AT&T were to install antennas at a lower height? Submit a propagation map showing the coverage at ten feet below this height.
- A11. *In initial consultations with Homeland, AT&T had sought 180' at the proposed tower location. Pre-application RF analysis from 180' and lower confirmed that the difference between 180' and 150' in coverage gained was not enough for AT&T to deem it material for purposes of this Application. The top of tower 150' elevation is AT&T's lowest feasible height. As requested, a propagation map of coverage at 140' is included as Attachment 1.*

- Q12. What is the power rating of the generator that would be installed at the proposed facility? What kind of fuel would the backup generator use? How many hours of service would the generator be able to provide before it needs to be refueled?
- A12. *AT&T will install a 50 KW, diesel powered generator. The estimated run time is approximately 48 hours based upon a 100% load and 200 gallons of fuel available. At a 50% load, run time would be approximately 86 hours.*
- Q13. What would the Town of Ridgefield use for backup power for the antennas it proposes to install at the proposed facility?
- A13. *Homeland understands that it is the Town's intention to deploy a 35KW diesel generator with a 132 gallon fuel capacity.*
- Q14. Identify the antennas that the Town would install at this site.
- A14. *Homeland understands that the Town of Ridgefield is proposing to install (1) 2' MW dish at 65' mounting level, (1) RFI antenna (11' in length – Model #BA40-41) at top of tower, mounting height will be 150' and (1) RFI antenna (20' 6" in length – Model BA40-81) at mounting height of 70'.*
- Q15. In the power density calculation submitted as part of this application, the power density of AT&T's antennas is calculated for 180 feet above ground level. However, the application indicates that the centerline of AT&T's antennas would be at 146 feet above ground level. Submit a power density calculation for AT&T's antennas at the height stated in the application.
- A15. *Please see power density calculation included as Attachment 2.*
- Q16. Is the proposed site near an "Important Bird Area" as designated by the National Audubon Society?
- A16. *No. Please see analysis provided as Attachment 3.*
- Q17. Would Homeland's proposed facility comply with recommended guidelines of the United States Fish and Wildlife Service for minimizing the potential for telecommunications towers to impact bird species?
- A17. *Yes. Please see analysis provided as Attachment 3.*
- Q18. Pursuant to CGS §16-50o, please submit a copy of the lease for the proposed site.
- A18. *The lease is being provided under separate cover along with a motion for protective order.*

Q19. Please provide a Functions and Values assessment of the nearby wetland area.

A19. *Please see assessment included as Attachment 4.*

ATTACHMENT 1



Coverage Legend

- >= -74 dBm
- >= -82 dBm

AT&T Proposed Coverage at Ridgefield, CT with S1855 @ 140' AGL

ATTACHMENT 2



Michael Lawton
 SAI Communications
 260 Cedar Hill St.
 Marlborough, MA 01752
Mike.Lawton@sai-comm.com

March 27, 2014

Connecticut Siting Council

Subject: AT&T Wireless, S1855 - Ridgefield

Dear Connecticut Siting Council:

At the request of AT&T Wireless, SAI Communications has performed an assessment of the RF Power Density of AT&T's proposed installation, along with the proposed town emergency services located at Ledges Road, Ridgefield, CT.

Calculations were done in compliance with FCC OET Bulletin 65. This report provides an FCC compliance assessment based on a "worst-case" analysis that all transmitters are simultaneously operating at full power and pointing directly at the ground.

FCC OET Bulletin 65 formula:

$$S = \frac{2.56 * 1.64 * ERP}{4 * \pi * R^2}$$

Transmission Mode	Antenna Centerline AGL (ft)	Frequency (MHz)	Number of Channels	Effective Radiated Power per Channel (Watts)	Power Density (mW/cm ²)	Standard Limits (mW/cm ²)	% MPE (Uncontrolled/General Public)
Police	150	154.9725	2	60.00	0.0019	0.1033	1.86%
Fire	70	159.045	2	60.00	0.0088	0.1060	8.31%
Microwave	65	11000	1	1.00	0.0001	1	0.01%
AT&T UMTS	146	850	2	500.00	0.0169	0.5667	2.98%
AT&T UMTS	146	1900	2	500.00	0.0169	1	1.69%
AT&T LTE	146	700	2	500.00	0.0169	0.4667	3.62%
AT&T LTE	146	2100	2	500.00	0.0169	1	1.69%
Total							20.14%

Conclusion: AT&T's proposed antenna installation along with the town's emergency services are calculated to be within 20.14% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

Sincerely,

Michael Lawton
 SAI Communications

ATTACHMENT 3



AVIAN RESOURCES EVALUATION

Date: March 26, 2014

**To: Homeland Towers
22 Shelter Rock Lane, Building C
Danbury, Connecticut 06810**

APT Project No.: CT283122

**Re: Connecticut Siting Council Docket 445
Proposed Ridgefield Ledges Facility – CT897
Ledges Road
Ridgefield, Connecticut 06877**

Homeland Towers, LLC (“Homeland”) proposes to construct a new wireless telecommunications Facility (“Facility”) at its Ridgefield Ledges site located southwest of the intersection of Old Stagecoach Road and Aspen Ledges Road in Ridgefield, Connecticut (the “host Property”). The host Property consists of 3.19± acres and is currently undeveloped land dominated by a complex of forested upland hardwoods with small areas of forested hillside seep wetland systems. The proposed Facility site is located in a generally cleared area in the north-central portion of the host Property. Homeland proposes to install a 150-foot tall monopole and ground equipment enclosure within a 62-foot by 75-foot gravel compound area surrounded with an 8-foot tall chain link fence. Access to the proposed Facility will generally follow an existing dirt/gravel drive from the corner of Old Stagecoach and Aspen Ledges Road.

This Avian Resources Evaluation is provided in response to *Pre-hearing Questions Set One* submitted by the Connecticut Siting Council for this Docket, specifically:

- Question #16 – Is the proposed site near an “Important Bird Area” as designated by the National Audubon Society?
- Question #17 – Would Homeland’s proposed Facility comply with recommended guidelines of the United States Fish and Wildlife Service for minimizing the potential for telecommunications towers to impact bird species?

To substantiate the responses to the questions above, All-Points Technology Corporation, P.C. (“APT”) reviewed several publicly-available sources of avian data for the state of Connecticut to provide the information contained herein. This desktop analysis and attached graphics identify avian resources and their proximities to the host Property to assist in evaluating potential impacts on migratory birds associated with the proposed development. 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 behavior¹. The closest IBA to the host Property is the Nature Conservancy’s Devil’s Den Preserve in Weston and Redding located approximately 7 miles to the southeast. The 1,756-acre preserve, owned by the Nature Conservancy, is the Conservancy’s largest preserve in Connecticut containing Lucius Pond Ordway, and a patchwork of woodlands, wetlands, rock ledges, and a series of north-south ridges and valleys woven with streams and swamps. The park provides important habitat for migratory birds along the Connecticut coastal migratory flyway, resulting in an exceptional concentration of migratory landbirds during the spring and fall migrations. 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 concentrations² 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 palustrine non-forested poor fen area, denoted as Sugar Hollow located approximately 2.5 miles to the northeast in Danbury along Sugar Hollow Pond. Based on the distance separating this resource from the proposed Facility, no adverse impacts are anticipated.

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

¹ http://web4.audubon.org/bird/iba/iba_intro.html

² “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

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 Danbury Breeding Bird Survey Route (Route #18011) located approximately 0.9 miles to the northwest. This ± 7 -mile long bird survey route begins in Ridgefield and generally winds its way north through Danbury and New Fairfield before terminating Lake Candlewood. Since bird survey routes represent randomly selected data collection areas, they do not necessarily represent important avian habitat or 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, Huntington State Park, is located in Redding, approximately 8 miles to the east of the proposed Facility. Based on the distance separating this possible raptor migratory route from the proposed Facility, no adverse impacts are anticipated.

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 over a period of at least four years and where at least four eagles were counted in a single year. The nearest Bald Eagle Site survey route (Survey Site No. 8) is located approximately 7.5 miles northeast of the host Property, located along Lake Candlewood. Based on the distance separating this Bald Eagle Site from the proposed Facility, no adverse impacts are anticipated.

Flyways

The host Property is located in Fairfield County, approximately 18 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 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)³ 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 Survey⁴), 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 Housatonic River, located approximately 13 miles to the northeast. The Norwalk River riparian corridor is located approximately 3 miles east of the host Property. Although the Norwalk River is not identified as a potential flyway, it potentially forms a secondary flyway as birds move northward from Long Island Sound corridor during the spring migration. These major riparian corridors may provide secondary flyways as they likely offer more food and protection than more exposed upland sites, particularly during the spring migration⁵.

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)⁶. The proposed Facility is not this type of tower, being an unlit, unguyed monopole structure only 150 feet in height and with minimal horizontal appurtenances. More recent studies of short communication towers (<300 feet) reveal that they rarely kill migratory birds⁷. 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)⁸.

Based on the distances separating the host Property from the Housatonic and Norwalk River corridors and the design consideration (150-foot high, unlit and unguyed tower), no adverse impacts to migrating bird species are anticipated with the proposed development of the Facility,

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 Norwalk Islands area, located approximately 9.5 miles to the south. Please refer to the attached Connecticut Waterfowl Focus Areas Map. Based on the distance of these resources to the host Property, no direct impacts would occur from development of the proposed Facility.

³ Stokowski, J.T. 2002. Migratory Bird Stopover Habitat Project Finishes First Year. Connecticut Wildlife, November/December 2002. P.4.

⁴ The Silvio O. Conte National Fish & Wildlife Refuge Neotropical Migrant Bird Stopover Habitat Survey <http://www.science.smith.edu/stopoverbirds/index.html>

⁵ The Silvio O. Conte National Fish & Wildlife Refuge Neotropical Migrant Bird Stopover Habitat Survey. http://www.science.smith.edu/stopoverbirds/Chapter5_Conclusions&Recommendations.html

⁶ 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.

⁷ 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.

⁸ 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.

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.

The nearest migratory waterfowl area (Shorehaven in Norwalk and Westport, CT) is located approximately 17 miles to the south of the proposed Facility. The associated species are identified as American black duck, American brant, goldeneye and lesser/greater scaup. Based on its distance to this resource, no impacts to migratory waterfowl habitat are anticipated to result from development of the proposed Facility.

CTDEEP Natural Diversity Data Base

CTDEEP’s Natural Diversity Data Base (“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 the CTDEEP NDDB, there are no known extant populations of state or federal endangered, threatened or special concern avian species at or near the host Property. APT submitted a review request to the CTDEEP NDDB on October 29, 2013 with respect to this project. The CTDEEP responded in a letter (dated January 10, 2014) that, according to NDDB information, records exist in the vicinity of the host Property for two non-avian species: federal and state endangered bog turtle (*Glyptemys muhlenbergii*) and state species of special concern eastern box turtle (*Terrapene carolina Carolina*). Homeland has committed to implementing protective measures during construction to avoid impacts to these non-avian species.

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 evaluated and implemented, where feasible, in order to mitigate potential bird strikes that could result by the construction of telecommunications towers. With respect to the Council’s Interrogatory Question 17, APT offers the following responses to each of the recommended actions.

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 wireless service providers.

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 150-foot monopole 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 for 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 (e.g., state or Federal refuges, staging areas, rookeries), migratory or daily movement flyway, or habitat of threatened/endangered species. According to a January 10, 2014 letter from the CTDEEP Natural Diversity Data Base NDDDB, there are no known extant populations of state or federal threatened or endangered avian species or state special concern avian species at or proximate to the host Property. The proposed Facility is located generally within an existing cleared area, approximately 90 feet

ALL-POINTS TECHNOLOGY CORPORATION, P.C.

northeast (from the west Facility fence) of a forested wetland system associated with a hillside seep wetland. The proposed Facility will not result in a significant adverse impact to the wildlife habitat function (including avian habitat) being supported by this nearby wetland area provided appropriate erosion controls are installed and maintained during construction.

In Connecticut, seasonal atmospheric conditions can occasionally produce fog, mist and/or low ceilings. However, unusually 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 (150 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 include a free-standing tower 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 generally sited within an existing cleared area on the host Property. As a result, limited tree clearing will occur from the proposed development and additional fragmentation will be avoided.

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 tower construction area is generally located within an existing cleared area on the host Property which limits tree clearing and is not anticipated to disturb significant numbers of breeding, feeding, or roosting birds. However, the host Property is located adjacent to forested conservation land that has the potential to support a variety of forest-dwelling avian species, including migratory Neotropical species that could also occupy the host Property. Therefore, the following recommendations are provided to avoid potential disturbance during periods of high bird activity: if construction activities should occur during the peak nesting period of April 15 through July 15⁹, tree

⁹ USFWS identifies the peak avian nesting season as April 15 through July 15 and recommends clearing activities be performed before this period in order to comply with the Migratory Bird Treaty Act, personal communication with Maria Tur, USFWS New England Field Office, February 27, 2014.

clearing work shall be completed prior to April 15th; or, if construction activities should occur during the peak nesting period but tree clearing work has not been completed by April 15th, an avian survey shall be conducted to determine if breeding birds would be disturbed and the Migratory Bird Treaty Act violated by tree clearing activities. If the avian survey concludes that breeding birds could be disturbed, construction activities would be restricted from the April 15 through July 15 peak nesting period.

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 a total of five antenna platform positions and the Town's 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 Homeland, 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 was no longer in use or determined to be obsolete, it would be removed within 12 months of cessation of use.

Summary and Conclusions

Based on the results of this desk-top evaluation, the proposed Facility is not proximate to an Important Bird Area or other significant avian resource areas. In addition, the proposed Facility would comply with the USFWS guidelines for minimizing the potential to adversely impact birds. As a result, no migratory bird species are anticipated to be impacted by Homeland's proposed development.

Figures


- Avian Resources Map
- Connecticut Waterfowl Focus Areas Map

Avian Resources Map

Proposed Homeland Towers
Wireless Communications Facility

Ledges Road
Ridgefield, Connecticut

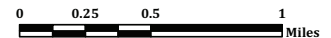
Legend

-  Proposed Tower Location
 -  Hawk Watch Site*
 -  Bald Eagle Watch Site*
 -  Important Bird Site*
 -  Bald Eagle Survey Route*
 -  Breeding Bird Survey Route
 -  Important Bird Area*
 -  Migratory Waterfowl (CT DEEP, 1999)*
 -  Natural Diversity Database Area (CT DEEP, 12/2013)
 -  Critical Habitat (CT DEEP, 07/2009)
 -  Federal Property (CT DEEP, 2004)*
 -  Municipal and Private Open Space (CT DEEP, 1997)
 - DEP Property (CT DEEP, 2010)***
 -  State Forest*
 -  State Park*
 -  State Park Scenic Reserve
 -  State Park Trail*
 -  Natural Area Preserve*
 -  Wildlife Area*
 -  Wildlife Sanctuary*
 -  Historic Preserve*
 -  Flood Control
 -  Fish Hatchery*
 -  DEP Owned Waterbody*
 -  Water Access*
 -  Other*
 -  Waterbody
 -  Town Boundary
 -  State Boundary
 -  Road
- *None within mapped extents

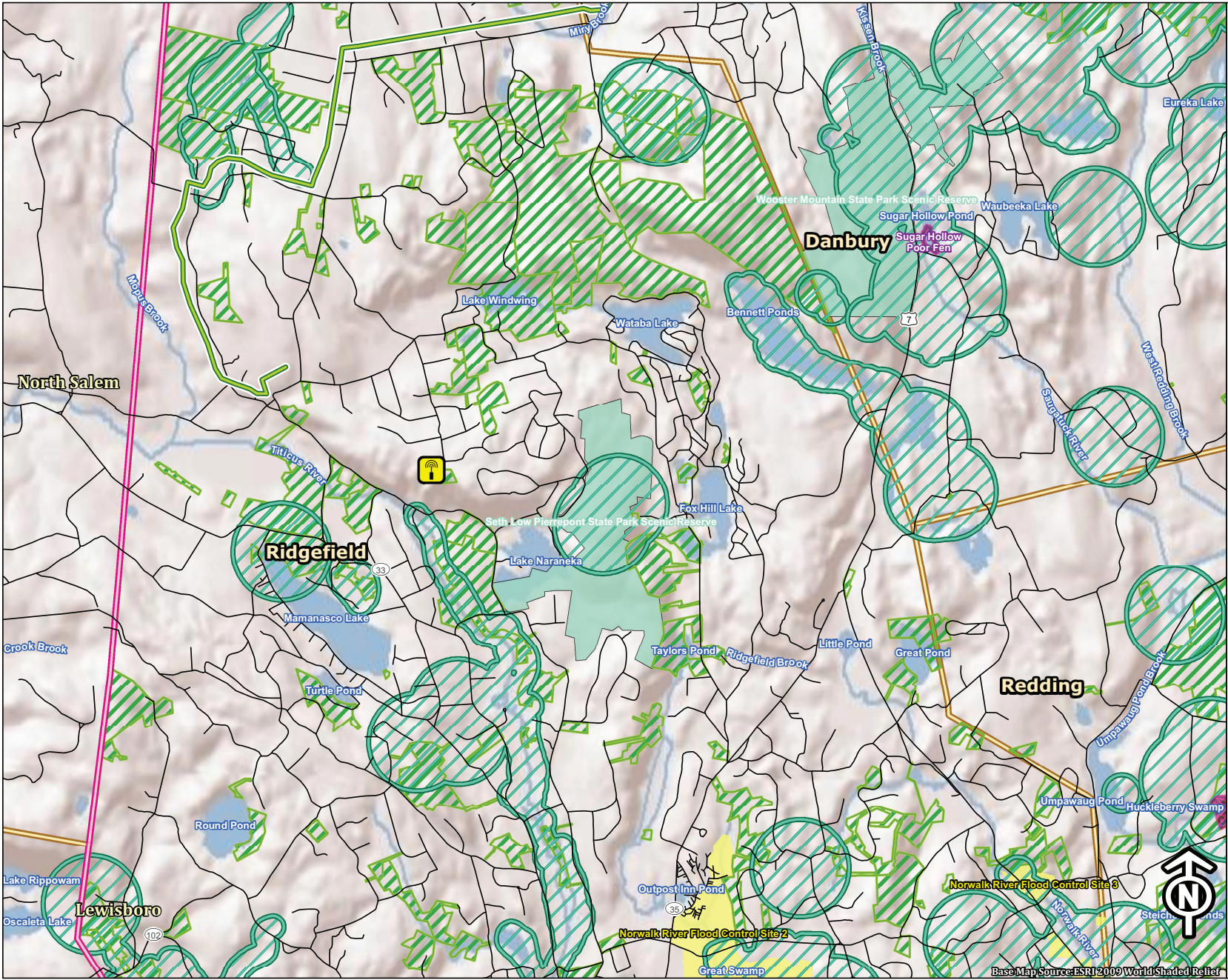
Last Updated Thursday, March 27, 2014

Avian Source Information:
 Bald Eagle Sites: Midwinter Bald Eagle Count Survey website
http://ocid.naceo.org/nbi/eagles/state.php?php_screen=first&stateIn=Connecticut
 Hawk Watch Sites: Hawk Migration Association of North America
 (HMANA), Hawk Count website:
<http://hawkcount.org/sites.php?country=USA&stateprov=Connecticut>
 Migratory Waterfowl: CTDEP 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.nationalatlantis.gov/nid/bbsrts.html>

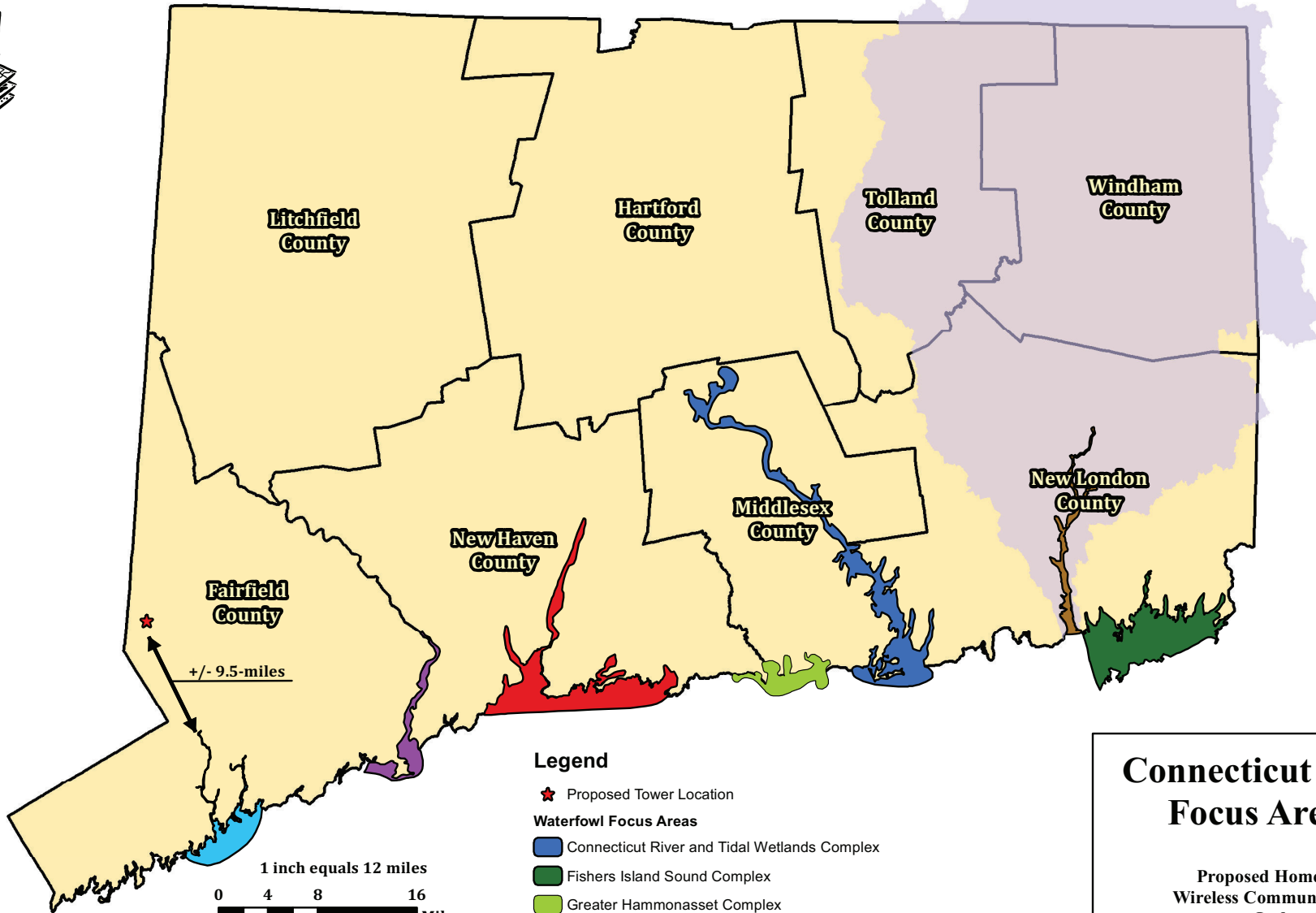
1 inch equals 2,500 feet



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TECHNOLOGY CORPORATION



Base Map Source: ESRI 2009 World Shaded Relief



Legend

- ★ Proposed Tower Location
- Waterfowl Focus Areas**
- Connecticut River and Tidal Wetlands Complex
- Fishers Island Sound Complex
- Greater Hammonasset Complex
- Lower Housatonic River - Great Meadows
- Lower Thames River System
- New Haven Harbor
- Norwalk Islands
- Waterfowl Planning Area**
- Upper Thames River

Connecticut Waterfowl Focus Areas Map

Proposed Homeland Towers
Wireless Communications Facility
Ledges Road
Ridgefield, Connecticut



Waterfowl Focus Areas Developed
by the Atlantic Coast Joint Venture Partnership

ATTACHMENT 4



WETLAND EVALUATION REPORT

March 27, 2014

**Homeland Towers
22 Shelter Rock Road, Bld. C
Danbury, CT 06810**

APT Project No.: CT283122

**Re: Response to Interrogatory #19
CT Siting Council Docket 445
Proposed Homeland Towers Facility
Ledges Road
Ridgefield, Connecticut**

All-Points Technology Corporation, P.C. ("APT") understands that a wireless telecommunications facility ("Facility") is proposed by Homeland Towers at Ledges Road in Ridgefield, Connecticut ("Site" or "Subject Property"). The Connecticut Siting Council's ("Council") pre-hearing question number 19 requested a functions and values assessment of the nearby wetland area (identified as Wetland 1). The following evaluation of functions and values supported by Wetland 1 is provided.

Site and Wetland Descriptions:

The 3.18-acre Subject Property is located west of the intersection of Aspen Ledges Drive (Ledges Road) and Old Stagecoach Road in Ridgefield, Fairfield County, Connecticut. The Ridgefield Assessor's Office identifies the Subject Property as Map D08, Lot 0124, with no numeric street address on Ledges Road. Limited access to the Subject Property currently exists via a rough dirt path. The Subject Property is undeveloped and mostly wooded. The surrounding land-use consists of residential development and undeveloped forested areas.

One wetland area was delineated on the Subject Property consisting of a hillside seep forested wetland system associated with a seasonal intermittent watercourse that generally flows to the west. Wetlands were marked with pink and blue plastic flagging tape numbered with the following sequence: WF 1-01 to 1- 12.

Wetland Evaluation

There are many methods of evaluating wetlands, all incorporating different parameters to assess these resources. This study uses The *Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach* issued by the US Army Corps of Engineers New England District ("COE NED"), September 1999. This evaluation provides a qualitative approach in which wetland functions can be considered primary, secondary, or unlikely to be provided at a significant level. Functions and values can be principal if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. The COE NED recommends that wetland values and functions be determined through "best professional judgment" based on a qualitative description of the physical attributes of wetlands and the functions and values exhibited.

ALL-POINTS TECHNOLOGY CORPORATION, P.C.

3 SADDLEBROOK DRIVE · KILLINGWORTH, CT 06419 · PHONE 860-663-1697 · FAX 860-663-0935

P.O. BOX 504 · 116 GRANDVIEW ROAD · CONWAY, NH 03818 · PHONE 603-496-5853 · FAX 603-447-2124

Wetland 1 is classified as “headwater wetlands” due to its location in the highest reach of the watershed and association with a zero order intermittent watercourse; Wetland 1 provides a source of hydrology to form this zero order intermittent watercourse. This wetland appears to have a hydroperiod associated with spring runoff and groundwater exfiltration controlled by thin glacial till overlying bedrock. This likely resulting in hydrology that is more seasonal and ephemeral than downstream portions of the wetland system located off property where a more extended hydroperiod and longer stream flow period occurs. As is typical of headwater type wetlands, the wetland’s principal and secondary functions include water quality (nutrient and sediment removal/retention/transformation), groundwater discharge, floodflow alteration, production export and wildlife habitat. The degree to which these functions and values are supported is generally proportionally related to the size of the identified wetland. Although Wetland 1 flows into and is associated with a larger continuous wetland system located to the west on Town of Ridgefield conservation land, the portion of Wetland 1 delineated on the Subject Property is the focus of this wetland values and functions evaluation. It is anticipated that greater function and value would be attributable to the wetland system located off the Subject Property due to its larger size and expanse and level of protection offered by the property’s protected status.

A summary of the functions and values of Wetland 1 is provided below.

Biological Functions: Fish habitat is not supported due to the ephemeral hydrology and lack of sustained hydrology within the confines of the seasonal intermittent watercourse.

This wetland system provides wildlife habitat functions at a secondary level due to the limited diversity of habitat provided by this headwater wetland seep. The presence of non-native invasive plants in the shrub and herbaceous layers detracts from this wetland’s ability to support this function at a principal level. The seasonal seepage may provide some staging habitat for certain herpetofauna, while a longer duration hydroperiod exists further downstream within this wetland corridor on the adjoining parcel having the ability to support a greater diversity of herpetofauna.

Production export is provided at a secondary level from this wetland since it does not support a large diversity of vegetation, wildlife food sources or commercially used products.

Hydrologic Functions: The wetland provides some floodflow alteration but not at a principal level due to the relatively narrow form of this wetland, the moderate gradient and unrestricted outlet.

A principal function of Wetland 1 is groundwater discharge/recharge, which is likely cyclical depending upon time of year and level of precipitation.

Water Quality Functions: The wetland provides sediment, toxicant, and pathogen retention functions at a principal level. The wetland has the capacity to settle and retain sediments, toxicants and pathogens due to the hillside seep form of this wetland but opportunities to provide this function is currently limited by a general lack of sources immediately upstream of the Subject Property. This wetland system provides nutrient removal/nutrient retention/transformation at a principal level for similar reasons. The wetland did not contain signs of surface water retention with a moderate gradient to the west and braided seepage channels converging to create a main channel for a seasonal intermittent watercourse that flows to the west off the Subject Property.

Sediment/shoreline stabilization functions are supported by this wetland in a secondary capacity; it is more of a function of the downstream wetland located on the adjoining parcel where the zero order intermittent channel is well-formed.

Societal Values: The wetland system does not provide recreational value as the property is restricted from public access, in contrast to the portion of this wetland located on conservation land to the west. Educational value is limited due to lack of diversity of wetland habitats and restricted public access; this value is higher for the larger wetland system on the town’s conservation land parcel.

The Uniqueness/Heritage value considers the special value of a wetland in context with the overall landscape, cultural features, and rarity of wetland/habitat type in the local area. According to Connecticut Department of Energy and Environmental Protection ("CTDEEP") Natural Diversity Data Base ("NDDB") records, eastern box turtle (*Terrapene carolina carolina*), a state species of special concern occur in the vicinity of the project. Although the habitat of Eastern box turtle is more commonly associated with a variety of terrestrial habitats, particularly for adult turtles, their habitat preferences also include areas within and in close proximity to streams/groundwater seeps, which includes Wetland 1. Therefore, this wetland does provide uniqueness/heritage value in a secondary capacity due to its possible association with a rare species although it is not considered to provide this value at a principal level since the wetland/habitat type is relatively common in the local area.

Wetlands within the Subject Property do support Visual Quality/Aesthetics value at a secondary level. Although public access directly to the wetland is restricted, it is visible from the adjoining conservation parcel.

A Wetland Function-Value Evaluation Summary Table and Office/Field Forms are attached.

Wetland Impact Analysis

Based on a review of the Site Plan prepared by APT (Sheet No. SP-1, latest revision date 01/28/14) no direct impact to wetlands is associated with the proposed Homeland Towers development. The proposed west side of the wireless communications compound is located approximately 89 feet from the nearest wetland edge. Portions of the proposed graded slope associated with the Facility's compound are located in close proximity to Wetland 1 (approximately 40 feet from wetland flag 1-04). No permanent impacts associated with construction activities are anticipated provided sedimentation and erosion controls are designed, installed and maintained during construction activities in accordance with the *2002 Connecticut Guidelines For Soil Erosion and Sediment Control*. However, due to the relatively steep slope between the proposed development and nearby wetland, APT recommends that a wetland protection plan be implemented to avoid temporary wetland impacts. A plan to protect eastern box turtle was previously submitted to and approved by the CTDEEP Wildlife Division; this plan includes elements that are also protective of the nearby wetland resource. A copy of the eastern box turtle and wetland protection plan is enclosed. Potential long term secondary impacts to wetland resources associated with the development and operation of this Facility are minimized by the fact the Facility will be unmanned, the creation of impervious surfaces is restricted with the use of a primarily gravel access drive (± 250 linear feet of the access will be paved) and gravel compound, and it creates minimal traffic. APT recommends that stormwater generated by the proposed development be properly handled and treated in accordance with the *2004 Connecticut Stormwater Quality Manual*. Provided these recommendations are implemented, it is APT's opinion that the proposed Homeland Towers development will not result in a likely adverse impact to wetland resources.

If you have any questions regarding the above-referenced information, please feel free to contact me by telephone at (860) 984-9515 or via email at dgustafson@allpointstech.com.

Sincerely,

All-Points Technology Corporation, P.C.



Dean Gustafson
Senior Wetland Scientist

Enclosures

**Wetland Function-Value Evaluation
Summary Table**

&

**Field/Office Wetland Function-Value
Evaluation Form**

Wetland Function-Value Evaluation Summary Table

Total area of wetland	<2 ac.	Human Made?	No	Is wetland part of a wildlife corridor?	Yes	or a "habitat Island"?	No	Wetland ID	Wetland 1 (WF 1-01 to 1-12)
Adjacent land use	Undeveloped forest, residential		Distance to nearest roadway or other development			adjacent to Ledges Rd.		Latitude/ Longitude	41.330275° N, - 73.517351° W
Dominant wetland systems present	Palustrine Forest		Contiguous undeveloped buffer zone present			No		Prepared by	D. Gustafson
								Date	3/24/14
Is the wetland a separate hydraulic system?	No	If not, where does the wetland lie in the drainage basin?			headwater wetland		Wetland Impact		
							Type:	None	Area
								None SF	
How many Tributaries contribute to the wetland?	none; headwater wetland system		Wildlife & vegetation diversity/abundance			Yes		Corps manual wetland delineation	
							Completed?	Yes	

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Values(s)		Comments
	Y	N				
Groundwater Recharge/Discharge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5-8, 10, 12, 13	P	headwater wetland contributes to base flow of zero order intermittent watercourse	
Floodflow Alteration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2, 5, 9, 13, 14	S	wetland's flood storage capacity is limited due to moderate gradient and unrestricted outlet	
Fish and Shellfish Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1, 8, 15, 17		fisheries habitat is not provided by the seasonal intermittent watercourse due to limited hydroperiod	
Sediment/Toxicant Retention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4, 6-11, 13-16	P	typical function of headwater wetland system	
Nutrient Removal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1, 3, 7, 9-12, 14	P	typical function of headwater wetland system	
Production Export	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1, 2, 4, 10, 11, 13	S	function is limited due to general lack of vegetation species and structure diversity	
Sediment/Shoreline Stabilization	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1, 2, 7, 9, 14	S	bordering forested wetland system to the seasonal intermittent watercourse provides bank stabilization	
Wildlife Habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2-8, 11, 16-18	P	wildlife habitat value of wetland is enhanced by presence of adjoining conservation land	
Recreation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1, 4-6, 10-12		public access is restricted to the wetland on the subject parcel; however, access is provided to the adjoining conservation property	
Educational/Scientific Value	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1, 2, 4-6, 10, 13, 14		limited value due to lack of public access; however, access provided to nearby portion of wetland located on conservation property	
Uniqueness/Heritage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5, 7, 10, 16-19, 24, 28	S	eastern box turtle is known to occur in vicinity of subject property	
Visual Quality/Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5, 7, 8, 10, 11	S	public access restricted; eastern box turtle is known to occur in vicinity of subject property	
Endangered Species Habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1, 2	S	eastern box turtle known to occur in project vicinity	
Other	<input type="checkbox"/>	<input checked="" type="checkbox"/>				

* Refer to Field / Office Wetland Function-Value Evaluation Form for number considerations.



Field / Office Wetland Function-Value Evaluation Form

Date(s):	March 24, 2014		Project Location:	Ledges Road, Ridgefield, CT	
Inspector(s):	Dean Gustafson, PSS		Wetland ID:	Wetland 1 (1-01 to 1-12)	
Corps Delineation:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	CT Delineation:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Area:	< 2 acres		Proposed Impact:	Type:None	Area:None
Created Wetland:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Adjacent Land Use:	Undeveloped Forest and Residential	
Dominate System:	PFO		Nearest Roadway:	Ledges Road & Old Stagecoach Road	
Wildlife Corridor:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Habitat Island:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Tributaries:	none; headwater wetland		Buffer Condition:	Undeveloped - Forested	
Site Photo(s):			Species List(s):	Refer to Wetlands Delineation Report	

Wetland 1 is a hillside seep forested wetland system formed in dense glacial till with an associated interior intermittent watercourse that generally flows to the west. This wetland appears to have formed mainly by seasonal seepage as a result of thin glacial till overlying bedrock (exposed ledge was observed along the east wetland boundary)

GROUNDWATER RECHARGE/DISCHARGE FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Public or private wells occur downstream of the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Potential exists for public or private wells downstream of the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Wetland is underlain by stratified drift.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Gravel or sandy soils present in or adjacent to the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Fragipan does not occur in the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Fragipan, impervious soils, or bedrock does occur in the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Wetland is associated with a perennial or intermittent watercourse.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Wetland is associated w/ a watercourse but lacks a defined outlet/contains a constricted outlet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Wetland contains only an outlet, no inlet.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Quality of water associated with the wetland is high.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Signs of groundwater discharge are present (e.g., springs).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14. Water temperature suggests it is a discharge site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15. Wetland shows signs of variable water levels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Piezometer data demonstrates discharge.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comments: headwater wetland contributes to base flow of zero order intermittent watercourse

FLOODFLOW ALTERATION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Area of this wetland is large relative to its watershed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Wetland occurs in the upper portions of its watershed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Effective flood storage is small or non-existent upslope of or above the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Wetland watershed contains a high percent of impervious surfaces.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Wetland contains hydric soils which are able to absorb and detain water.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Wetland exists in a relatively flat area that has flood storage potential.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. During flooding wetland retains higher volumes of water than under normal/average rainfall conditions.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. During a storm, this wetland may receive and detain excessive flood water from a nearby watercourse.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Valuable properties, structures, or resources are located in/near floodplain downstream of the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. The watershed has a history of economic loss due to flooding.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. This wetland is associated with one or more watercourses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. This wetland watercourse is sinuous or diffuse.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. This wetland outlet is constricted.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Channel flow velocity is affected by this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17. Land uses downstream are protected by this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
18. This wetland contains a high density of vegetation.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: wetland's flood storage capacity is limited due to moderate gradient and unrestricted outlet			

FISH AND SHELLFISH HABITAT (FRESHWATER) FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Forest land dominant in the watershed above this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Abundance of cover objects present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
3. Size of this wetland is able to support large fish/shellfish populations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Wetland is part of a larger, contiguous watercourse.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Sufficient open water size/depth so as not to freeze solid and retain some open water during winter.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Stream width (bank to bank) is more than 50 feet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Quality of watercourse associated with wetland is able to support healthy fish/shellfish populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Streamside vegetation provides shade for the watercourse.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Spawning areas are present (submerged vegetation or gravel beds).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Food is available to fish/shellfish populations within this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Anadromous fish barrier(s) absent from stream reach associated with this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Evidence of fish is present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Wetland is stocked with fish.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. The watercourse is persistent.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15. Man-made streams are absent.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Water velocities are not too excessive for fish usage.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17. Defined stream channel is present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: fisheries habitat is not provided by the seasonal intermittent watercourse due to limited hydroperiod			

FISH AND SHELLFISH HABITAT (MARINE) FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Suitable spawning habitat is present at the site or in the area.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Commercially or recreationally important species are present or suitable habitat exists.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. The wetland/waterway supports prey for higher trophic level marine organisms.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. The waterway provides migratory habitat for anadromous fish.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Essential fish habitat (1996 amendments to the Magnuson-Stevens) Fishery & Conservation Act present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: habitat does not exist in this wetland			

SEDIMENT/TOXICANT/PATHOGEN RETENTION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Potential sources of excess sediment are in the watershed above the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Potential or known sources of toxicants are in the watershed above the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Opportunity for sediment trapping by slow moving water/deepwater habitat is present in wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Fine grained mineral or organic soils are present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Long duration water retention time is present in this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Public or private water sources occur downstream.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The wetland edge is broad and intermittently aerobic.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. The wetland is known to have existed for more than 50 years.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Drainage ditches have not been constructed in the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
10. Wetland is associated with an intermittent or perennial stream or a lake.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Channelized flows have visible velocity decreases in the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. No indicators of erosive forces are present. No high water velocities are present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Diffuse water flows are present in the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. Wetland has a high degree of water and vegetation interspersion.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16. Dense vegetation provides sediment trapping/signs of sediment accumulation are present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: typical function of headwater wetland system			

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is large relative to the size of its watershed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Deep water or open water habitat exists.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Overall potential for sediment trapping exists in the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Potential sources of excess nutrients are present in the watershed above the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Wetland saturated for most of the season. Poned water is present in the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Deep organic/sediment deposits are present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Slowly drained fine grained mineral or organic soils are present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Dense vegetation is present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Emergent vegetation and/or dense woody stems are dominant.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Opportunity for nutrient attenuation exists.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Vegetation diversity/abundance sufficient to utilize nutrients.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
12. Waterflow through this wetland is diffuse.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Water moves slowly through this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: typical function of headwater wetland system			

PRODUCTION EXPORT (Nutrient) FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wildlife food sources grow within this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Detritus development is present within this wetland	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Economically or commercially used products found in this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Evidence of wildlife use found within this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Higher trophic level consumers are utilizing this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Fish or shellfish develop or occur in this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. High vegetation density is present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Wetland exhibits high degree of plant community structure/species diversity.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. High aquatic vegetative diversity/abundance is present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Nutrients exported in wetland watercourses (permanent outlet present).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Wetland contains flowering plants that are used by nectar-gathering insects.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Indications of export are present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. High production levels occurring with no visible signs of export (assumes export is attenuated).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: function is limited due to general lack of vegetation species and structure diversity			

SEDIMENT/ShORELINE STABILIZATION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Indications of erosion or siltation are present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Topographical gradient is present in wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Potential sediment sources are present up-slope.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Potential sediment sources are present upstream.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Wide wetland (>10') borders watercourse, lake, or pond.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. High flow velocities in the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. The watershed is of sufficient size to produce channelized flow.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Open water fetch is present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Boating activity is present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Dense vegetation is bordering watercourse, lake, or pond.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: bordering forested wetland system to the seasonal intermittent watercourse provides bank stabilization			

WILDLIFE HABITAT FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is not degraded by human activity.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Water quality of watercourse/pond/lake associated w/ wetland meets/exceeds Class A or B standards.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Wetland is not fragmented by development.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Upland surrounding this wetland is undeveloped.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. > 40% of wetland edge bordered by upland wildlife habitat at least 500 ft in width.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Wildlife overland access to other wetlands is present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Wildlife food sources are within this wetland or are nearby.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Wetland exhibits a high degree of interspersions of vegetation classes and/or open water.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Two or more islands or inclusions of upland within the wetland are present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. > 3 acres shallow permanent open water (< 6.6 feet deep), including in/adjacent streams present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Density of the wetland vegetation is high.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Wetland exhibits a high degree of plant species diversity.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15. Wetland exhibits high degree plant community structure diversity (tree/shrub/vine/grasses/mosses)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Plant/animal indicator species are present. (List species for project)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Animal signs observed (tracks, scats, nesting areas, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Wetland contains or has potential to contain a high population of insects.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20. Wetland contains or has potential to contain large amphibian populations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21. Wetland has a high avian utilization or its potential.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
22. Indications of less disturbance-tolerant species are present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: wildlife habitat value of wetland is enhanced by presence of adjoining conservation land			

RECREATION (Consumptive and Non-Consumptive) VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is part of a recreation area, park, forest, or refuge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Fishing is available within or from the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Hunting is permitted in the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Hiking occurs or has potential to occur within the wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Wetland is a valuable wildlife habitat.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The watercourse, pond, or lake associated with the wetland is unpolluted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. High visual/aesthetic quality of this potential recreation site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Watercourse associated w/ wetland is wide & deep enough to accommodate canoeing and/or non-powered boating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Off-road public parking available at the potential recreation site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Accessibility and travel ease is present at this site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The wetland is within a short drive or safe walk from highly populated public and private areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: public access is restricted to the wetland on the subject parcel; however, access is provided to the adjoining conservation property			

EDUCATIONAL/SCIENTIFIC VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland contains or is known to contain threatened, rare, or endangered species.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Little or no disturbance is occurring in this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Potential educational site contains a diversity of wetland classes & are accessible/potentially accessible.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Potential educational site is undisturbed and natural.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Wetland is considered to be a valuable wildlife habitat.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Wetland is located within a nature preserve or wildlife management area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Potential educational site is within safe walking distance or a short drive to schools.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Potential educational site is within safe walking distance to other plant communities.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Direct access to perennial stream at potential educational site is available.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Direct access to pond or lake at potential educational site is available.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. No known safety hazards exist within the potential educational site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Public access to the potential educational site is controlled.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Handicap accessibility is available.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Site is currently used for educational or scientific purposes.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: limited value due to lack of public access; however, access provided to nearby portion of wetland located on conservation property			

UNIQUENESS/HERITAGE VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Upland surrounding wetland is primarily urban.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Upland surrounding wetland is developing rapidly.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. > 3 acres of shallow permanent open water (< 6.6 feet deep), including streams, occur in wetlands.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Three or more wetland classes are present.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Deep and/or shallow marsh or wooded swamp dominate.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. High degree of interspersed vegetation and/or open water occur in this wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Potential educational site is within a short drive or a safe walk from schools.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Off-road parking at potential educational site is suitable for school buses.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. No known safety hazards exist within this potential educational site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Direct access to perennial stream or lake exists at potential educational site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Two or more wetland classes are visible from primary viewing locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) visible from primary viewing locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15. Large area of wetland dominated by flowering plants/plants that seasonally turn vibrant colors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Overall view of the wetland is available from the surrounding upland.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Quality of the water associated with the wetland is high.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Opportunities for wildlife observations are available.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Historical buildings are found within the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21. Presence of pond or pond site and remains of a dam occur within the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

22. Wetland is within 50 yards of the nearest perennial watercourse.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25. Wetland is known to be a study site for scientific research.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
27. Wetland has local significance because it serves several functional values.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
29. Wetland is known to contain an important archaeological site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
30. Wetland is hydrologically connected to a state or federally designated scenic river.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
31. Wetland is located in an area experiencing a high wetland loss rate.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: eastern box turtle is known to occur in vicinity of subject property			

VISUAL QUALITY/AESTHETICS VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Multiple wetland classes are visible from primary viewing locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Emergent marsh and/or open water are visible from primary viewing locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. A diversity of vegetative species is visible from primary viewing locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Visible surrounding land use form contrasts with wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Wetland views absent of trash, debris, and signs of disturbance.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Wetland is considered to be a valuable wildlife habitat.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Wetland is easily accessed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Low noise level at primary viewing locations.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Unpleasant odors absent at primary viewing locations.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Relatively unobstructed sight line exists through wetland.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments: public access restricted; eastern box turtle is known to occur in vicinity of subject property			

ENDANGERED SPECIES HABITAT VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland contains or is known to contain threatened or endangered species.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: CTDEEP confirmed eastern box turtle is known to occur in vicinity of subject property			

Eastern Box Turtle and Wetland Protection Plan

EASTERN BOX TURTLE AND WETLAND PROTECTION PROGRAM

State special concern eastern box turtle (*Terrapene carolina carolina*), afforded protection under the Connecticut Endangered Species Acts, are known to occur in the vicinity of this project. The following protective measures shall be followed to help avoid degradation of habitat or unintentional mortality as a result of construction activities for the site improvements proposed. These protective measures satisfy recommendations from the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division as specified in a January 10, 2014 letter and March 25, 2014 email and follow protocols developed from previous rare species consultations and state-approved protection plans. This protection plan is valid until January 10, 2015, at which point if construction has not been initiated, a new Natural Diversity Data Base review request from CTDEEP is required.

It is of the utmost importance that the Contractor complies with the requirement for the installation of protective measures and the education of its employees and subcontractors performing work on the project site. These measures will also provide protection to a nearby wetland system. This protection program shall be implemented regardless of time of year the construction activities occur. However, sections of this protection plan specific to protection of eastern box turtle shall be implemented during the turtle's active period of April 1 to November 15. All-Points Technology Corporation, P.C. ("APT") will serve as the Environmental Monitor for this project to ensure that eastern box turtle protection measures are implemented properly and will provide an education session on eastern box turtle prior to the start of construction activities. The Contractor shall contact Dean Gustafson, Senior Environmental Scientist at APT, at least 5 business days prior to the pre-construction meeting. Mr. Gustafson can be reached by phone at (860) 984-9515 or via email at dgustafson@allpointstech.com.

The proposed project will not result in direct impact to wetlands or watercourses. The Contractor is strictly prohibited from placing fill in wetlands or watercourse or temporarily storing equipment or materials in wetlands or watercourses or in areas that could result in a discharge into nearby wetlands.

The eastern box turtle and wetland protection program consists of several components: isolation of the project perimeter; use of appropriate erosion control measures to control and contain erosion while avoiding/minimizing wildlife entanglement; periodic inspection and maintenance of isolation structures and erosion control measures; education of all contractors and sub-contractors prior to initiation of work on the site; protective measures; and, reporting.

1. Isolation Measures & Erosion and Sedimentation Controls

- a. Plastic netting used in a variety of erosion control products (i.e., erosion control blankets, fiber rolls [wattles], reinforced silt fence) has been found to entangle wildlife, including reptiles, amphibians, birds and small mammals. No permanent erosion control products or reinforced silt fence will be used on the Homeland Tower project. Temporary Erosion control products will use either erosion control blankets and fiber rolls composed of processed fibers mechanically bound together to form a continuous matrix (net less) or netting composed of planar woven natural biodegradable fiber to avoid/minimize wildlife entanglement.
- b. Installation of conventional silt fencing, which will also serve as an isolation of the work zone from surrounding areas and required for erosion control compliance, shall be performed by the Contractor prior to any earthwork. APT will inspect the

work zone area prior to and following barrier installation to ensure the area is free of eastern box turtles prior to start of construction activities.

- c. The fencing will consist of non-reinforced conventional erosion control woven fabric, installed approximately six inches below surface grade and staked at seven to ten-foot intervals using four-foot oak stakes or approved equivalent. In addition to required daily inspection by the Contractor, the fencing will be inspected for tears or breeches in the fabric following installation and at either on a weekly or biweekly inspection frequency by APT. If inspections are performed on a biweekly basis, such inspections will also include inspections following storm events of 0.25 inch or greater. Inspections will be conducted by APT throughout the course of the construction project.
- d. The extent of the barrier fencing will be as shown on the site plans. The Contractor shall have additional barrier fencing should field conditions warrant extending the fencing as directed by APT.
- e. No equipment, vehicles or construction materials shall be stored outside of barrier fencing.
- f. All silt fencing and other erosion control devices shall be removed within 30 days of completion of work and permanent stabilization of site soils so that reptile and amphibian movement between uplands and wetlands is not restricted. If fiber rolls/wattles, straw bales, or other natural material erosion control products are used, such devices will not be left in place to biodegrade and shall be promptly removed after soils are stable so as not to create a barrier to migrating wildlife. Seed from seeding of soils should not spread over fiber rolls/wattles as it makes them harder to remove once soils are stabilized by vegetation.

2. Contractor Education

- a. Prior to work on site, the Contractor shall attend an educational session at the pre-construction meeting with APT. This orientation and educational session will consist of an introductory meeting with APT providing photos of Eastern Box Turtles and emphasizing the non-aggressive nature of Eastern Box Turtles, the absence of need to destroy animals that might be encountered and the need to follow Protective Measures as described in Section 3 below. Workers will also be provided information regarding the identification of other turtle species that could be encountered.
- b. The education session will also focus on means to discriminate between the species of concern and other native species to avoid unnecessary "false alarms". Encounters with any species of turtles will be documented.
- c. The Contractor will be provided with cell phone and email contacts for APT personnel to immediately report any encounters with Eastern Box Turtle or other turtle species. Educational poster materials will be provided by APT and displayed on the job site to maintain worker awareness as the project progresses.

3. Petroleum Materials Storage and Spill Prevention

- a. Certain precautions are necessary to store petroleum materials, refuel and contain and properly clean up any inadvertent fuel or petroleum (i.e., oil, hydraulic fluid, etc.) spill due to the project's location in proximity to sensitive wetlands.

- b. A spill containment kit consisting of a sufficient supply of absorbent pads and absorbent material will be maintained by the Contractor at the construction site throughout the duration of the project. In addition, a waste drum will be kept on site to contain any used absorbent pads/material for proper and timely disposal off site in accordance with applicable local, state and federal laws.
- c. The following petroleum and hazardous materials storage and refueling restrictions and spill response procedures will be adhered to by the Contractor.
 - i. Petroleum and Hazardous Materials Storage and Refueling
 1. Refueling of vehicles or machinery shall occur a minimum of 100 feet from wetlands or watercourses and shall take place on an impervious pad with secondary containment designed to contain fuels.
 2. Any fuel or hazardous materials that must be kept on site shall be stored on an impervious surface utilizing secondary containment a minimum of 100 feet from wetlands or watercourses.
 - ii. Initial Spill Response Procedures
 1. Stop operations and shut off equipment.
 2. Remove any sources of spark or flame.
 3. Contain the source of the spill.
 4. Determine the approximate volume of the spill.
 5. Identify the location of natural flow paths to prevent the release of the spill to sensitive nearby waterways or wetlands.
 6. Ensure that fellow workers are notified of the spill.
 - iii. Spill Clean Up & Containment
 1. Obtain spill response materials from the on-site spill response kit. Place absorbent materials directly on the release area.
 2. Limit the spread of the spill by placing absorbent materials around the perimeter of the spill.
 3. Isolate and eliminate the spill source.
 4. Contact the appropriate local, state and/or federal agencies, as necessary.
 5. Contact a disposal company to properly dispose of contaminated materials.
 - iv. Reporting
 1. Complete an incident report.
 2. Submit a completed incident report to the Connecticut Siting Council.

4. Turtle Protective Measures

- a. Prior to the start of construction each day, the Contractor shall search the entire work area for turtles.
- b. If a turtle is found, it shall be immediately moved, unharmed, by carefully grasped in both hands, one on each side of the shell, between the turtle's forelimbs and the hind limbs, and placed just outside of the isolation barrier in the approximate direction it was walking.
- c. Special care shall be taken by the Contractor during early morning and evening hours so that possible basking or foraging turtles are not harmed by construction activities.

5. Herbicide and Pesticide Restrictions

- a. The use of herbicides and pesticides at the proposed wireless telecommunications facility and along the proposed access drive are strictly prohibited.

6. Reporting

- a. Biweekly inspection reports (brief narrative and applicable photos) will be submitted to the Connecticut Siting Council for compliance verification.
- b. Following completion of the construction project, APT will provide a summary report to CTDEEP documenting the monitoring and maintenance of the barrier fence and erosion control measures.
- c. Any observations of eastern box turtle will be reported to CTDEEP by APT, with photo-documentation (if possible) and with specific information on the location and disposition of the animal.