

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
: :
APPLICATION OF CELLCO PARTNERSHIP : DOCKET NO. 438
D/B/A VERIZON WIRELESS FOR A :
CERTIFICATE OF ENVIRONMENTAL :
COMPATIBILITY AND PUBLIC NEED FOR :
THE CONSTRUCTION, MAINTENANCE AND :
OPERATION OF A WIRELESS :
TELECOMMUNICATIONS FACILITY IN THE :
TOWN OF VOLUNTOWN, CONNECTICUT : JUNE 20, 2013

RESPONSES OF CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS
TO CONNECTICUT SITING COUNCIL PRE-HEARING INTERROGATORIES, SET ONE

On May 31, 2013, the Connecticut Siting Council (“Council”) issued Pre-Hearing Interrogatories, Set One to Cellco Partnership d/b/a Verizon Wireless (“Cellco”), relating to the above-captioned docket. Below are Cellco’s responses.

Question No. 1

Would Cellco’s antennas comply with E911 requirements?

Response

Yes.

Question No. 2

Identify distances and directions to the adjacent sites with which the proposed facility would hand off signals. Include addresses of these sites.

Response

As described in the Application, the Palmer Pond Facility will interact with three (3) existing or approved cell sites (Griswold East; Bailey Pond; and Voluntown) and two (2) proposed cell sites (North Stonington East and Wyassup Lake) in the area.

- Cellco's existing Griswold East cell site is located at 1439 Voluntown Road in Griswold, approximately 3.4 miles northwest of Site 1 and 4.1 miles northwest of Site 2.
- Cellco's approved Bailey Pond cell site is located at 497 Ekonk Hill Road in Voluntown, approximately 4.6 miles north of Site 1 and 4.9 miles north of Site 2.
- Cellco's approved Voluntown cell site is located at 422 Rockville Road in Voluntown, approximately 2.2 miles east of Site 1 and 1.8 miles east of Site 2.
- Cellco's proposed North Stonington East cell site is located at 31F Clarks Falls Road in North Stonington is approximately 5.3 miles south of Site 1 and 5.0 miles south of Site 2.
- Cellco's proposed Wyassup Lake cell site is located at 177 Cossaduck Hill Road in North Stonington, approximately 3.7 miles south of Site 1 and 4.1 miles south of Site 2.

Question No. 3

What is the lowest height at which Cellco's antennas could achieve its coverage objectives from either of the proposed sites? Submit propagation maps showing the coverage at ten feet below these heights.

Response

As proposed in the Application, Cellco's RF Engineers have determined that an antenna height of 130 feet at Site 1 and 150 feet at Site 2 is the minimum height needed to satisfy its coverage objectives in the area. The additional coverage plots requested are attached behind Tab 1.

Question No. 4

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

Response

All certified mail return receipts were received.

Question No. 5

What is the signal strength for which Cellco designs its system? For in-vehicle coverage? For in-building coverage?

Response

Cellco's signal strength design threshold is -85 dBm for in-vehicle service of and -75 dBm for in-building service.

Question No. 6

What is the existing signal strength within the area Cellco is seeking to cover from this site?

Response

Cellco's existing signal strength in the area around the proposed Palmer Pond cell site ranges from -86 dBm and -105 dBm (no service).

Question No. 7

Does Cellco have any statistics on dropped calls and/or ineffective attempts in the vicinity of the proposed facility? If so, what do they indicate? Does Cellco have any other indicators of substandard service in this area?

Response

Cellco can only produce dropped call and ineffective attempt data from those adjacent

cell sites that are currently operating. For the antenna sectors facing the Palmer Pond coverage area, Cellco’s Griswold East cell site experiences dropped calls at a rate of 3.0% and ineffective attempts at a rate of 1.8%. Cellco’s design threshold for “dropped call” and “ineffective attempt” is less than 1%. Because many of the surrounding sites are not currently activated, Cellco relies on other indicators of substandard service including its monthly baseline drive data and propagation modeling tool.

Question No. 8

What is the length of the coverage gaps on Route 49 that Cellco is seeking to cover from the proposed site at cellular frequencies? At PCS frequencies? At AWS frequencies? At LTE frequencies?

Response

As depicted on the coverage maps included in Attachment 7 of the Application, Cellco’s coverage gaps along Route 49 would measure 4.3 miles at cellular frequencies; 5.4 miles at PCS frequencies; 4.3 miles at LTE frequencies; and 6.0 miles at AWS frequencies.

Question No. 9

Quantify the amounts of cut and fill that would be required to develop the proposed facility at each of the alternate sites.

Response

Cellco estimates the following cut and fill quantities.

	<u>Cut</u>	<u>Fill</u>	<u>Net</u>
Site 1	97 cy	284 cy	187 cy Fill
Site 2	192 cy	429 cy	237 cy Fill

Question No. 10

What was the approximate radius of Cellco’s search ring for this area? What was the

approximate center of the search ring for this area?

Response

The search area map for the Palmer Pond Facility is included as a part of the Site Search Summary (Attachment 9) is more of a search rectangle, than a search ring. The Palmer Pond search area contains approximately four (4) square miles and is centered approximately 0.8 miles east of Route 49.

Question No. 11

Would any blasting be required to develop the site?

Response

Cellco does not anticipate the need for blasting at either Site 1 or Site 2. A geotechnical survey will be completed if one of the two proposed cell sites is approved and will be submitted to the Council as part of the project's D&M Plan.

Question No. 12

Did any of the boards or commissions of the Town of Voluntown conduct any meetings or issue any statements or recommendations regarding the proposed project? If so, provide such documentation.

Response

No.

Question No. 13

How would Cellco mount its antennas to the proposed tower?

Response

Cellco will attach its antennas to a low-profile platform at the 130-foot level on the Site 1 tower and at the 150-foot level on the Site 2 tower.

Question No. 14

Would either tower's setback radius encroach on any adjoining properties? If so, state the distance of the encroachment and who owns these properties?

Response

The Site 1 tower is located more than 130 feet from all property boundaries at 596 Pendleton Hill Road. The 150-foot tall Site 2 tower setback radius would extend over the nearest property line, to the south along Gallup Road. The tower is setback approximately 92 feet from Gallup Road and more than 150 feet from all other property boundaries.

Question No. 15

Is either proposed site near an "Important Bird Area" as designated by the National Audubon Society?

Response

No. The nearest Important Bird Area is located approximately 12 miles to the south of the Site 1 and Site 2 facility locations. See discussion on page 2 of an Avian Resources Evaluation attached behind Tab 2 of these responses.

Question No. 16

Would Cellco'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?

Response

Yes. See pages 6-8 of the Avian Resources Evaluation included behind Tab 2 of these responses.

Question No. 17

Provide the distance that would be covered on Route 49 and the total area in square miles

that would be covered at Cellco's AWS frequency from the proposed sites.

Response

At AWS frequencies, Cellco anticipates coverage of approximately 4 miles along Route 49 and an overall area of 7.44 square miles from Site 1; and approximately 4 miles along Route 49 and an overall area of 7.1 square miles from Site 2.

Question No. 18

Provide an estimate of the residential population living within the area that would be covered from the proposed facility.

Response

	<u>SITE 1</u>	
	<u>Coverage (square miles)</u>	<u>Population</u>
Cellular	9.44	677
PCS	9.04	641
LTE	8.9	646
AWS	7.4	514

	<u>SITE 2</u>	
	<u>Coverage (square miles)</u>	<u>Population</u>
Cellular	9.24	569
PCS	9.77	591
LTE	8.8	534
AWS	7.6	449

Question No. 19

Provide an estimated traffic count for those portions of Route 49 that would be covered from the proposed facility.

Response

The traffic information provided below is taken from the Connecticut Department of Transportation Traffic Monitoring website.

- Northerly portion of Route 49 near its intersection with Route 165 – 1500 Average Daily Trips.
- Southerly portion of Route 49 near the Voluntown/North Stonington town line – 1400 Average Daily Trips.

Question No. 20

What would be the respective run times for Cellco's diesel and propane generators before they would need to be refueled?

Response

Propane fueled Generator will run for approximately 70 hours before needing to be refueled (based on 1000 gallon fuel tank). Diesel fueled generator will run for approximately 48 hours before needing to be refueled (based on 210 gallon fuel tank).

Question No. 21

Would there be any interruption in service between the time power goes out and the generators come on?

Response

No. A combination of both the battery back-up system and back-up generator would provide the cell site with power to operate without interruption.

Question No. 22

Would either tower be visible from any hiking trails within two mile radius area used for the visibility analysis?

Response

As noted in the Visibility Analysis report, numerous hiking trails, some of which are part of the Connecticut Blue-blazed system, are located within two miles of each proposed site. A short spur trail originating off Pendleton Hill Road provides access to State Forest land and the trail system around Hodge Pond to the west of Site 1. Views of Site 1 may be possible from a short section of this spur trail. Photograph 3 in the Visibility Analysis, was taken along this trail at the edge of the corn field that abuts the Site 1 location. Photograph 4 was taken from the western extent of visibility along this same trail spur. Site 2 would not be visible from this trail, with the exception of the area where the trail intersects with Pendleton Hill Road. Neither the trail spur nor the trails in the Hodge Pond area are part of the blue-blazed trail system. Because the trail systems in the area remain at relatively low elevations and extend through some heavily forested areas, no views of a tower at either Site 1 or Site 2 would be possible.

Question No. 23

In the narrative section of the application, it is stated that Cellco would install fifteen antennas - six cellular antennas, six PCS antennas and three LTE antennas. However, in Attachments 1 and 2, it is stated that Cellco would install 12 antennas - three cellular antennas, three PCS antennas, three LTE antennas and three AWS antennas. Which of the two antenna arrays would Cellco deploy?

Response

Cellco intends to install twelve (12) antennas on the approved tower, three (3) cellular, three (3) PCS, three (3) LTE and three (3) AWS antennas.

Question No. 24

Provide the following information: number of channels per sector for each antenna system that would be installed on the proposed tower, ERP per channel for each antenna system,

and frequency at which each antenna system would operate.

Response

SITE 1 – CELLULAR ANTENNAS

Alpha Sector – 130 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx: 869-880,890-891.5 MHz; Rx: 824-835, 845-846.5 MHz

No. Channels: 9

ERP/Channel: 257 W Max

Beta Sector – 130 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx: 869-880,890-891.5 MHz; Rx: 824-835, 845-846.5 MHz

No. Channels: 9

ERP/Channel: 257 W Max

Gamma Sector – 130 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx: 869-880,890-891.5 MHz; Rx: 824-835, 845-846.5 MHz

No. Channels: 9

ERP/Channel: 257 W Max

SITE 1 – PCS ANTENNAS

Alpha Sector – 130 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 1965-1980,1945-1950 MHz; Rx: 1885-1900,1865-1870 MHz

No. Channels: 11

ERP/Channel: 250 W Max

Beta Sector – 130 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 1965-1980,1945-1950 MHz; Rx: 1885-1900,1865-1870 MHz

No. Channels: 11

ERP/Channel: 250 W Max

Gamma Sector – 130 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 1965-1980,1945-1950 MHz; Rx: 1885-1900,1865-1870 MHz

No. Channels: 11

ERP/Channel: 250 W Max

SITE 1 – LTE ANTENNAS

Alpha Sector – 130 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx:746 – 757 MHz; Rx: 776-787 MHz

No. Channels: 1

ERP/Channel: 1050 W Max

Beta Sector – 130 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx:746 – 757 MHz; Rx: 776-787 MHz

No. Channels: 1

ERP/Channel: 1050 W Max

Gamma Sector – 130 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx:746 – 757 MHz; Rx: 776-787 MHz

No. Channels: 1

ERP/Channel: 1050 W Max

SITE 1 – AWS ANTENNAS

Alpha Sector – 130 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 2120 - 2130 MHz; Rx: 1720 - 1730 MHz

No. Channels: 1

ERP/Channel: 1750 W Max

Beta Sector – 130 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 2120 - 2130 MHz; Rx: 1720 - 1730 MHz

No. Channels: 1

ERP/Channel: 1750 W Max

Gamma Sector – 130 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 2120 - 2130 MHz; Rx: 1720 - 1730 MHz

No. Channels: 1

ERP/Channel: 1750 W Max

SITE 2 – CELLULAR ANTENNAS

Alpha Sector – 150 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx: 869-880,890-891.5 MHz; Rx: 824-835, 845-846.5 MHz

No. Channels: 9

ERP/Channel: 249 W Max

Beta Sector – 150 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx: 869-880,890-891.5 MHz; Rx: 824-835, 845-846.5 MHz

No. Channels: 9

ERP/Channel: 249 W Max

Gamma Sector – 150 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx: 869-880,890-891.5 MHz; Rx: 824-835, 845-846.5 MHz

No. Channels: 9

ERP/Channel: 249 W Max

SITE 2 – PCS ANTENNAS

Alpha Sector – 150 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 1965-1980,1945-1950 MHz; Rx: 1885-1900,1865-1870 MHz

No. Channels: 11

ERP/Channel: 238 W Max

Beta Sector – 150 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 1965-1980,1945-1950 MHz; Rx: 1885-1900,1865-1870 MHz

No. Channels: 11

ERP/Channel: 238 W Max

Gamma Sector – 150 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 1965-1980,1945-1950 MHz; Rx: 1885-1900,1865-1870 MHz

No. Channels: 11

ERP/Channel: 238 W Max

SITE 2 – LTE ANTENNAS

Alpha Sector – 150 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx:746 – 757 MHz; Rx: 776-787 MHz

No. Channels: 1

ERP/Channel: 1050 W Max

Beta Sector – 150 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx:746 – 757 MHz; Rx: 776-787 MHz

No. Channels: 1

ERP/Channel: 1050 W Max

Gamma Sector – 150 ft.

Antenna Type: BXA-70063-6CF (1)

Frequency: Tx:746 – 757 MHz; Rx: 776-787 MHz

No. Channels: 1

ERP/Channel: 1050 W Max

SITE 2 – AWS ANTENNAS

Alpha Sector – 150 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 2120 - 2130 MHz; Rx: 1720 - 1730 MHz

No. Channels: 1

ERP/Channel: 1750 W Max

Beta Sector – 150 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 2120 - 2130 MHz; Rx: 1720 - 1730 MHz

No. Channels: 1

ERP/Channel: 1750 W Max

Gamma Sector – 150 ft.

Antenna Type: BXA-171063-12CF

Frequency: Tx: 2120 - 2130 MHz; Rx: 1720 - 1730 MHz

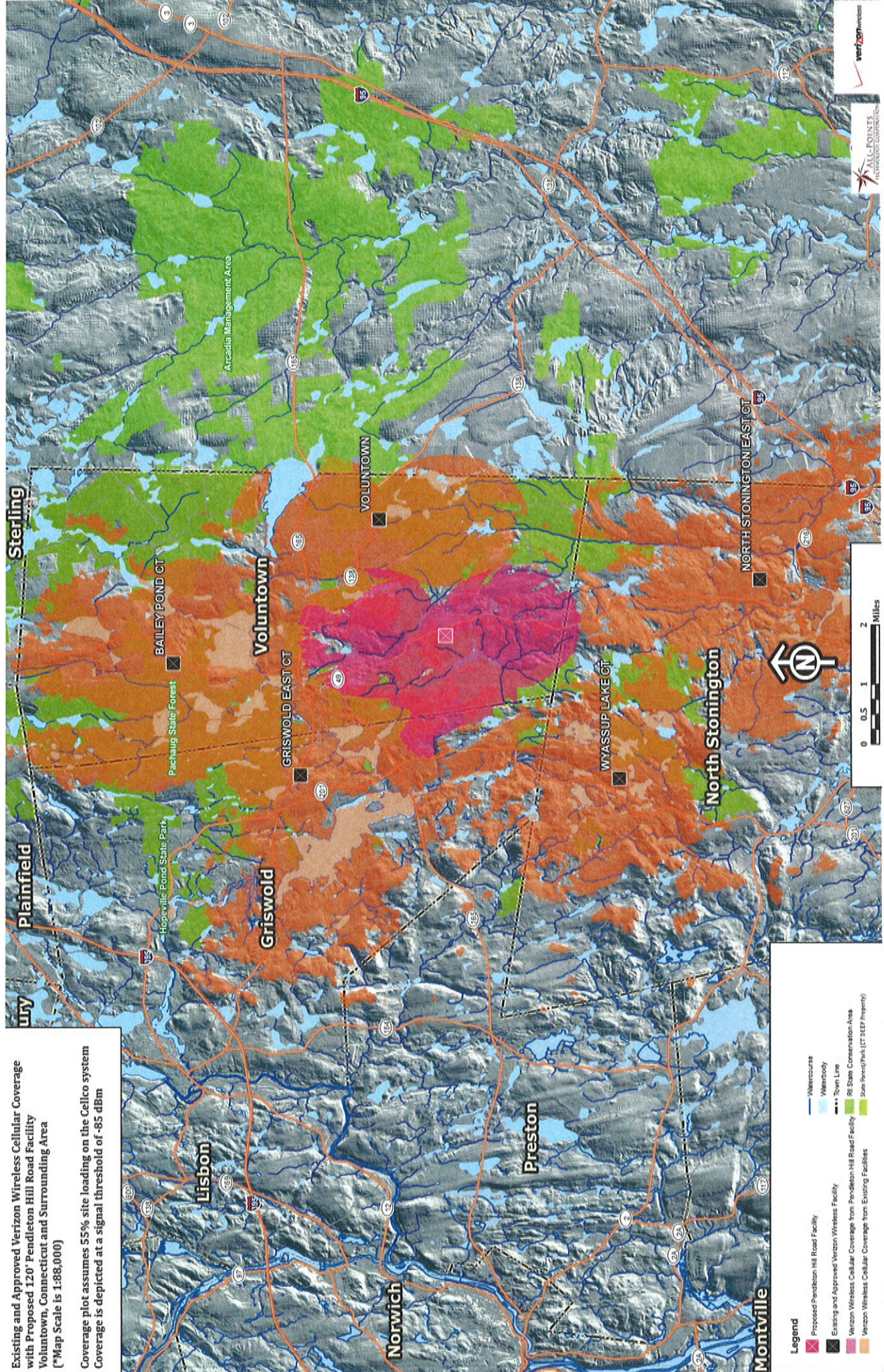
No. Channels: 1

ERP/Channel: 1750 W Max

TAB 1

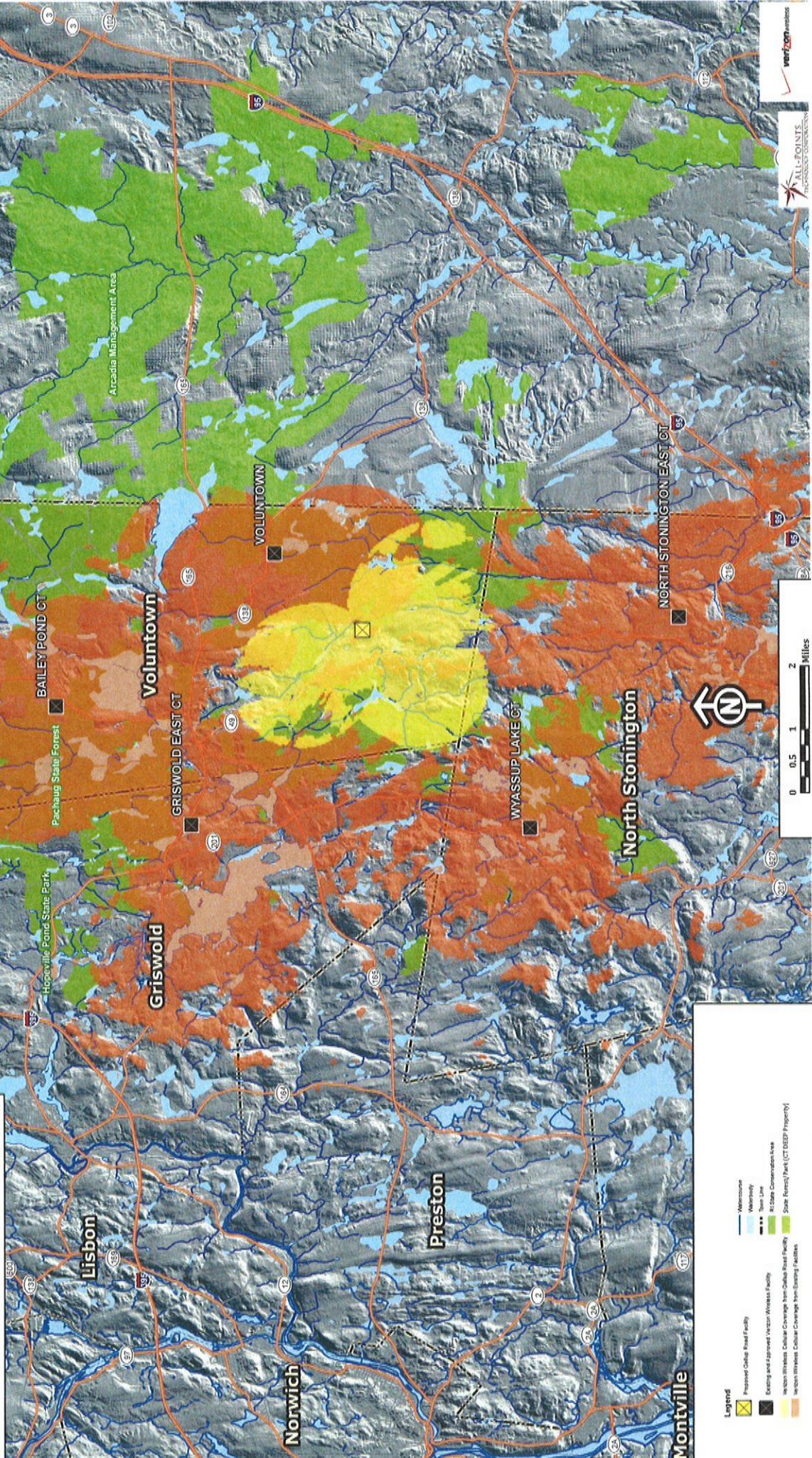
Existing and Approved Verizon Wireless Cellular Coverage with Proposed 120' Pendleton Hill Road Facility Voluntown, Connecticut and Surrounding Area
 (**Map Scale is 1:88,000)

Coverage plot assumes 55% site loading on the Cellico system Coverage is depicted at a signal threshold of -85 dBm



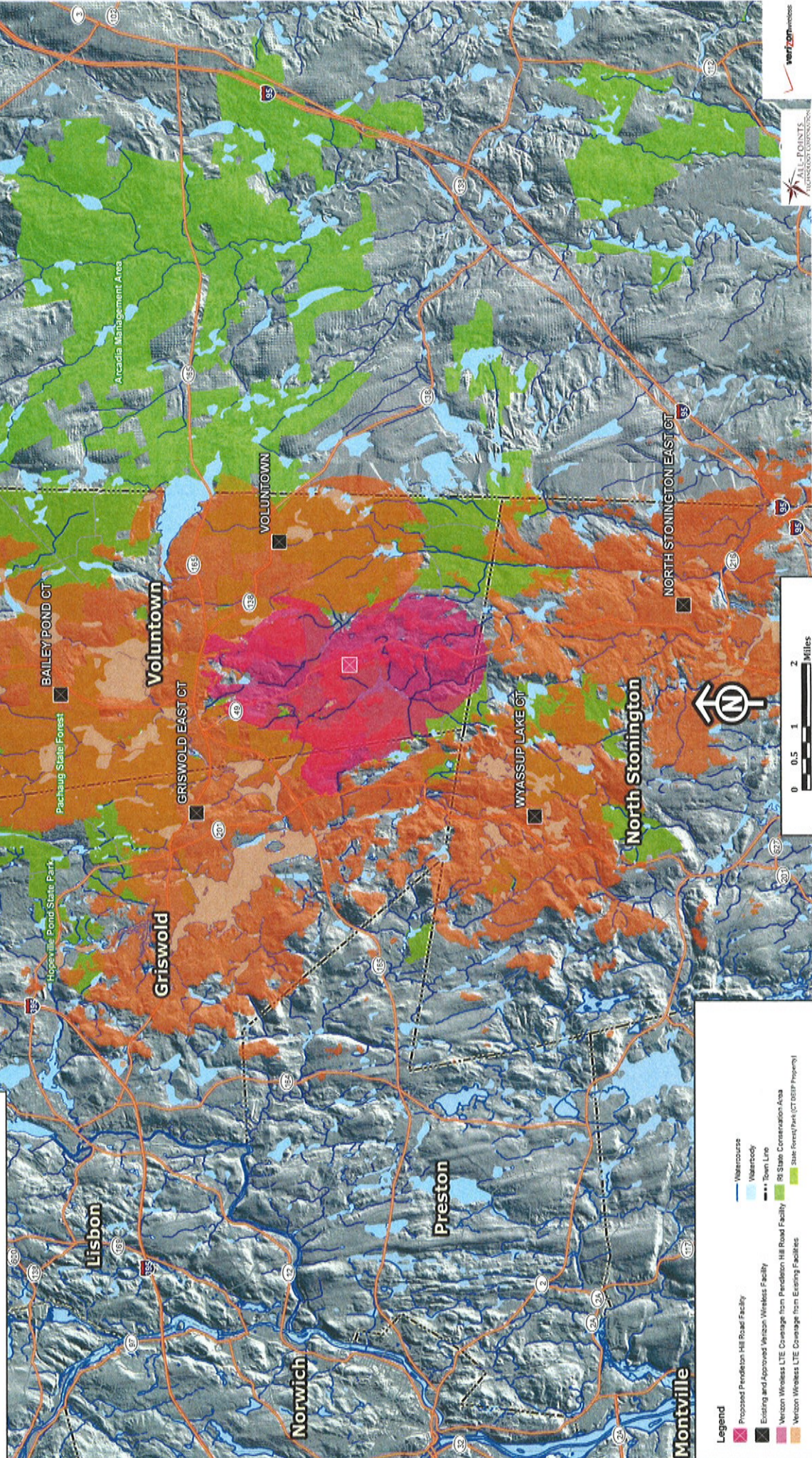
Existing and Approved Verizon Wireless Cellular Coverage with Proposed 140' Gallup Road Facility Voluntown, Connecticut and Surrounding Area (*Map Scale is 1:88,000)

Coverage plot assumes 55% site loading on the Celco system Coverage is depicted at a signal threshold of -85 dBm



Existing and Approved Verizon Wireless LTE Coverage with Proposed 120' Pendleton Hill Road Facility Voluntown, Connecticut and Surrounding Area (*Map Scale is 1:88,000)

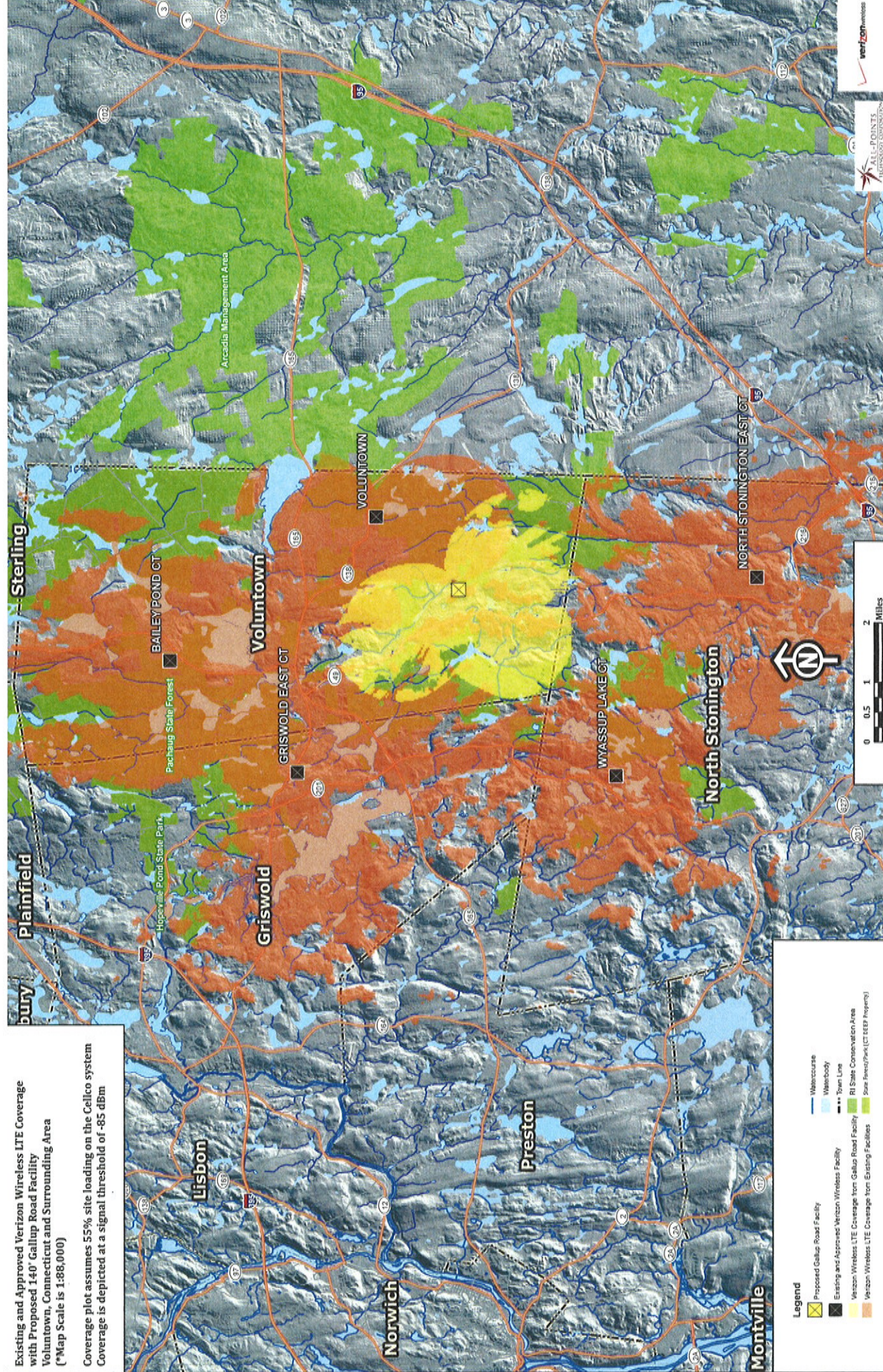
Coverage plot assumes 55% site loading on the Colco system Coverage is depicted at a signal threshold of -85 dBm



- Legend**
- Watercourse
 - Waterbody
 - Term Line
 - X Proposed Pendleton Hill Road Facility
 - Existing and Approved Verizon Wireless Facility
 - Verizon Wireless LTE Coverage from Pendleton Hill Road Facility
 - Verizon Wireless LTE Coverage from Existing Facilities
 - RI State Conservation Area
 - State Forest/Park (CT DEP Property)

Existing and Approved Verizon Wireless LTE Coverage
with Proposed 140' Gallup Road Facility
Voluntown, Connecticut and Surrounding Area
(*Map Scale is 1:88,000)

Coverage plot assumes 55% site loading on the Cellico system
Coverage is depicted at a signal threshold of -85 dBm

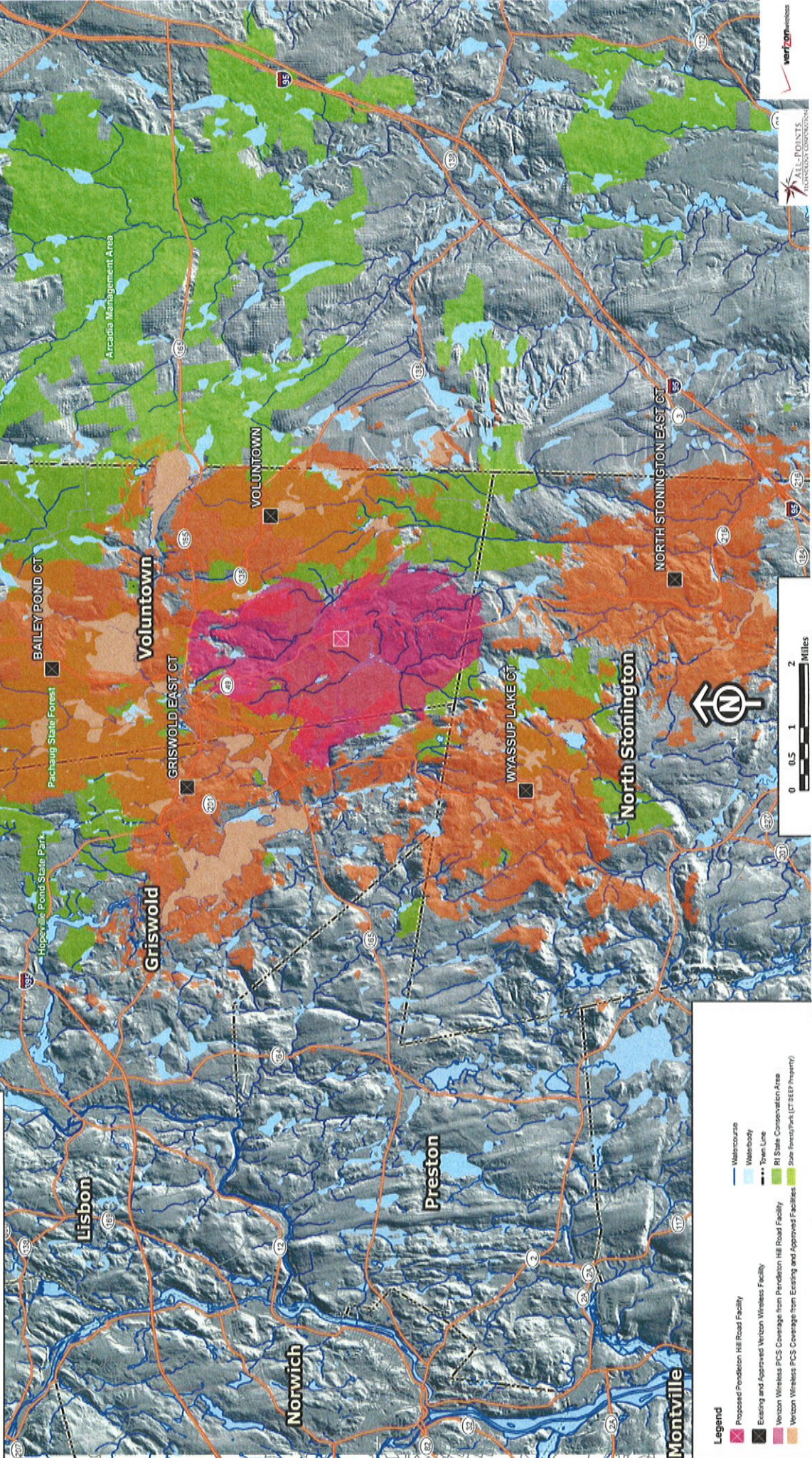


- Legend**
- Proposed Gallup Road Facility
 - Watercourse
 - Waterbody
 - Town Line
 - Existing and Approved Verizon Wireless Facility
 - Verizon Wireless LTE Coverage from Gallup Road Facility
 - RI State Conservation Area
 - Verizon Wireless LTE Coverage from Existing Facilities
 - State Forest/Park (CT DEEP Property)



Existing and Approved Verizon Wireless PCS Coverage with Proposed 120' Pendleton Hill Road Facility Voluntown, Connecticut and Surrounding Area (*Map Scale is 1:88,000)

Coverage plot assumes 55% site loading on the Cellico system Coverage is depicted at a signal threshold of -85 dBm

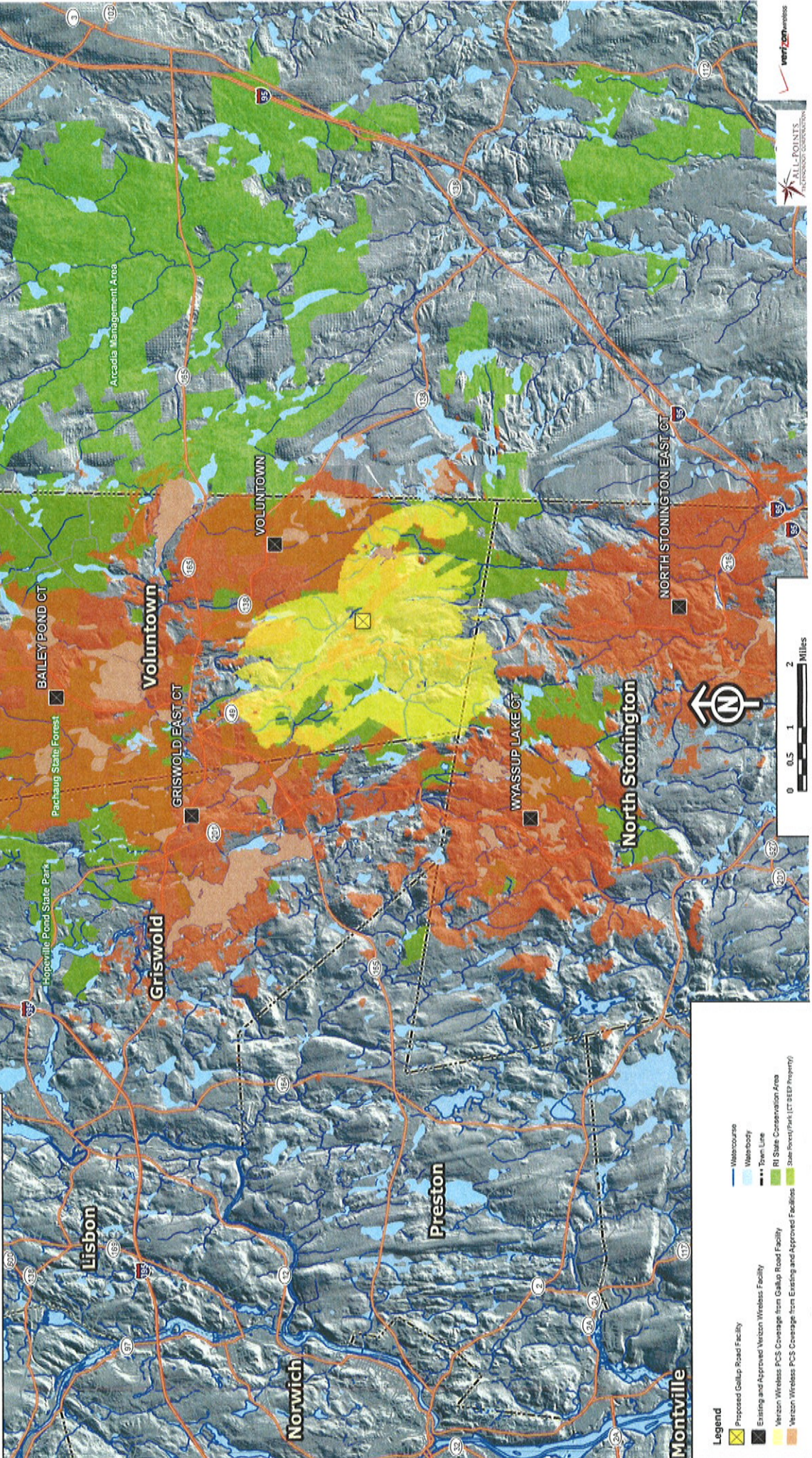


- Legend**
- Watercourse
 - Waterbody
 - Town Line
 - Proposed Pendleton Hill Road Facility
 - Existing and Approved Verizon Wireless Facility
 - Verizon Wireless PCS Coverage from Pendleton Hill Road Facility
 - Verizon Wireless PCS Coverage from Existing and Approved Facilities
 - RI State Conservation Area
 - Bear River/Park (OT BEEP Property)



Existing and Approved Verizon Wireless PCS Coverage with Proposed 140' Gallup Road Facility
 Voluntown, Connecticut and Surrounding Area
 (*Map Scale is 1:88,000)

Coverage plot assumes 55% site loading on the Celco system
 Coverage is depicted at a signal threshold of -85 dBm



- Legend**
- Watercourse
 - Waterbody
 - Town Line
 - RI State Conservation Area
 - Verizon Wireless PCS Coverage from Gallup Road Facility
 - Verizon Wireless PCS Coverage from Existing and Approved Facilities
 - Proposed Gallup Road Facility
 - Existing and Approved Verizon Wireless Facility
 - RI State Conservation Area
 - State Forest/Park (CT DEP Property)

0 0.5 1 2 Miles



TAB 2



AVIAN RESOURCES EVALUATION

Date: June 12, 2013

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

APT Project No.: CT1411063

**Re: Proposed Telecommunications Facility
Palmer Pond Search Area
Voluntown, Connecticut**

Cellco Partnership d/b/a Verizon Wireless ("Verizon") proposes to construct a new wireless telecommunications Facility ("Facility") in the southwest portion of Voluntown, Connecticut (referred to as the Palmer Pond search area). The proposed Facility would be located at one of two alternate locations: 596 Pendleton Hill Road ("Site 1") or 53 Gallup Road ("Site 2"). The general vicinity of these two locations is referred to herein as the "Project Area".

- Site 1 (596 Pendleton Hill Road) is located on the western fringe of cultivated fields at a ground elevation of approximately 400 feet above mean sea level ("AMSL"). The proposed Facility at Site 1 would consist of a 130-foot tall steel monopole enclosed within a 50-foot by 50-foot fenced, gravel-base compound. A total of 15 directional panel antennas would be mounted at a center line elevation of 130 feet above ground level ("AGL"). The monopole has been designed to accommodate up to four commercial service providers and municipal/regional emergency services equipment. Access to the Facility would be gained via a $\pm 1,085$ -foot long existing farm road that requires upgrading with gravel.
- Site 2 (53 Gallup Road) is located approximately 80 feet north of Gallup Road within woodlands at a ground elevation of approximately 458 feet AMSL. The proposed Facility at Site 2 would consist of a 150-foot tall steel monopole within a similarly designed compound. A total of 15 directional panel antennas would be mounted at a center line elevation of 150 feet AGL. This monopole would also be designed to accommodate up to four commercial service providers and municipal/regional emergency services equipment. A new gravel access drive would be developed from Gallup Road to the Facility location.

This evaluation is provided in response to *Pre-hearing Questions Set One* submitted by the Connecticut Siting Council (the "Council") for Docket No. 438, specifically:

- Question #15 – Is either proposed site near an “Important Bird Area” as designated by the National Audubon Society?
- Question #16 – Would Cellco’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?

All-Points Technology Corporation, P.C. (“APT”) reviewed several publicly-available sources of avian data for the state of Connecticut to provide the following information with respect to potential impacts on migratory birds associated with the proposed development. This desktop analysis and attached graphics identify avian resources and their proximities to the Project Area. Information within an approximate 2-mile radius of the Project Area 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 Project Area 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 project area is the Barn Island Wildlife Management Area, located in Stonington approximately 12 miles south of the Project Area. Barn Island Wildlife Management Area is a 1,013 acre coastal property, the single largest coastal property managed for wildlife conservation with 4 miles of trails. The area is known as an important area for migratory birds. Due to its distance from the Project Area, 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 Project Area. 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

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

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land conservation and protection but may not necessarily be indicative of habitat for bird species. The nearest Critical Habitat to Site 1 is a poor fen/ shrub thicket, denoted as the Dennison Brook in Voluntown, located approximately 0.7 miles to the north. The nearest Critical Habitat to Site 2 is an acidic Atlantic white cedar swamp, denoted as the Voluntown Cedar Swamp, located approximately 1.1 miles to the north. Based on the distance separating these resources from the Sites, 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 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 Project Area is the Shannock Breeding Bird Survey Route, which generally begins in Charlestown, RI and winds its way north through Hopkinton, RI before terminating in Exeter, RI, within approximately 4 miles to the east. Since bird survey routes represent randomly selected data collection areas, they do not necessarily represent a potential restriction to development projects, including the proposed Facility.

Hawk Watch Site

The Hawk Migration Association of North America (“HMANA”) is a membership-based organization committed to the conservation of raptors through the scientific study, enjoyment and appreciation of raptor migration. HMANA collects hawk count data from almost 200 affiliated raptor monitoring sites throughout the United States, Canada and Mexico, identified as “Hawk Watch Sites.” In Connecticut, Hawk Watch Sites are typically situated on prominent hills and mountains that tend to concentrate migrating raptors. The nearest Hawk Watch Site, Beelzebub Street, is located in Manchester, CT along the Hockanum River, approximately 40 miles to the northwest of the Project Area. Hawk Watch Sites may be an indicator of migratory routes for raptors.

Bald Eagle Site

Bald Eagle Sites consist of locations of midwinter Bald Eagle counts from 1986 to 2005 with an update provided in 2008. This survey was initiated in 1979 by the National Wildlife Federation. This database includes information on statewide, regional and national trends. Survey routes are included in the database only if they were surveyed consistently in at least four years and where at least four eagles were counted in a single year. The nearest Bald Eagle Site survey route to the Project Area is the Thames River Bald Eagle Site located at the delta of the Thames River also known as the New London harbor, approximately 20 miles south.

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Flyways

The project area is located in New London County, approximately 14 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 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 Project Area is the Thames River, located approximately 12 miles to the west. Although the Shetucket River riparian corridor, located 10 miles west of the Project Area, is not identified as a potential flyway, it likely forms a secondary flyway as birds move northward from the Thames River corridor during the spring migration. These riparian corridors may provide secondary flyways as they likely provide 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 Facilities at Site 1 or Site 2 are not this type of tower, being an unlit, unguyed monopole structure only 130 or 150 feet, respectively, in height. 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.

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.

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No adverse impacts to migrating bird species are anticipated with the Project, based on the distance separating the Project Area from both the Thames and Shetucket River potential flyway corridors and the short (130-foot or 150-foot) heights of the unlit and ungyed proposed Facilities.

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 Project Area is the Lower Thames River System area, located approximately 10.5 miles to the west. Please refer to the attached Connecticut Waterfowl Focus Areas Map. Based on the distance of these resources to the Project Area, no direct impacts would occur from development of the proposed Facility.

CTDEEP Migratory Waterfowl Data

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

No migratory waterfowl areas are located within the Town of Voluntown. The nearest migratory waterfowl area (Poquetanuck Cove in Preston-Ledyard, CT) is located approximately 1 mile to the southwest of the Project Area. The associated species are identified as American black duck, bufflehead, Canada goose, goldeneye, mallard, and red-breasted merganser. Based on its distance to the Project Area, 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 (“NDDDB”) 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 NDDDB 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

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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 of federal endangered, threatened or special concern avian species at or near the Project Area. APT submitted a review request to the CTDEEP NDDB in September 2010 with respect to this Project. The CTDEEP responded in a letter (dated October 1, 2010) that, according to NDDB information, records exist in the vicinity of Site 1 and Site 2 for the non-avian State Special Concern Species *Psectraglaea carnosa* (Pink Sallow moth). APT corresponded with CTDEEP and also conducted independent literature research regarding this species to determine its preferred habitat. Based on this information, APT completed field surveys of the proposed Facility compound areas, access roads, and within 200 feet of those areas at each of the Sites on April 18, 2013 to identify potential *Psectraglaea carnosa* habitat. The results of these surveys concluded that no suitable habitat for this species is located proximate to the Sites and no disturbance to *Psectraglaea carnosa* habitat would occur from development of a Facility at either Site.

USFWS Communications Towers Compliance

The U.S Fish and Wildlife Service ("USFWS") prepared its *Interim Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* (September 14, 2000), which recommends the 12 voluntary actions below be implemented in order to mitigate potential bird strikes that could result by the construction of telecommunications towers. With respect to Question 16, APT offers the following responses for each of the recommended actions below.

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 Verizon Wireless.

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 either a 130-foot or 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.*

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Multiple towers are not proposed as part of this project.

- 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 site is not within wetlands, known bird concentration area, migratory or daily movement flyway, or habitat of threatened/endangered species. As discussed above, according to the CTDEEP NDDDB, there are no known extant populations of state of federal endangered, threatened or special concern avian species at or near the Project Area. A In Connecticut, seasonal atmospheric conditions can occasionally produce fog, mist and/or low ceilings. However, high incidences of these meteorological conditions, relative to the region, are not known to exist at the site.

- 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 heights (130 and 150 feet AGL, respectively) are less than 199 feet and would not require any aviation safety lighting.

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

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

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

The proposed Facility is sited, designed, and would be constructed at either candidate location to accommodate proposed equipment and allow for future collocations within the smallest footprint possible. Site A is located at the edge of a cultivated field with access extending through existing cleared areas. Site B is located in woodlands within 80± feet of Gallup Road and surrounding cleared fields and developed areas. As such, habitat fragmentation and disturbance have been minimized at either Site.

- 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*

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option, seasonal; restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.

Significant numbers of breeding, feeding, or roosting birds are not known to habitually use the proposed tower construction areas at the site.

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 four antenna platform positions. 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 Verizon Wireless, 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

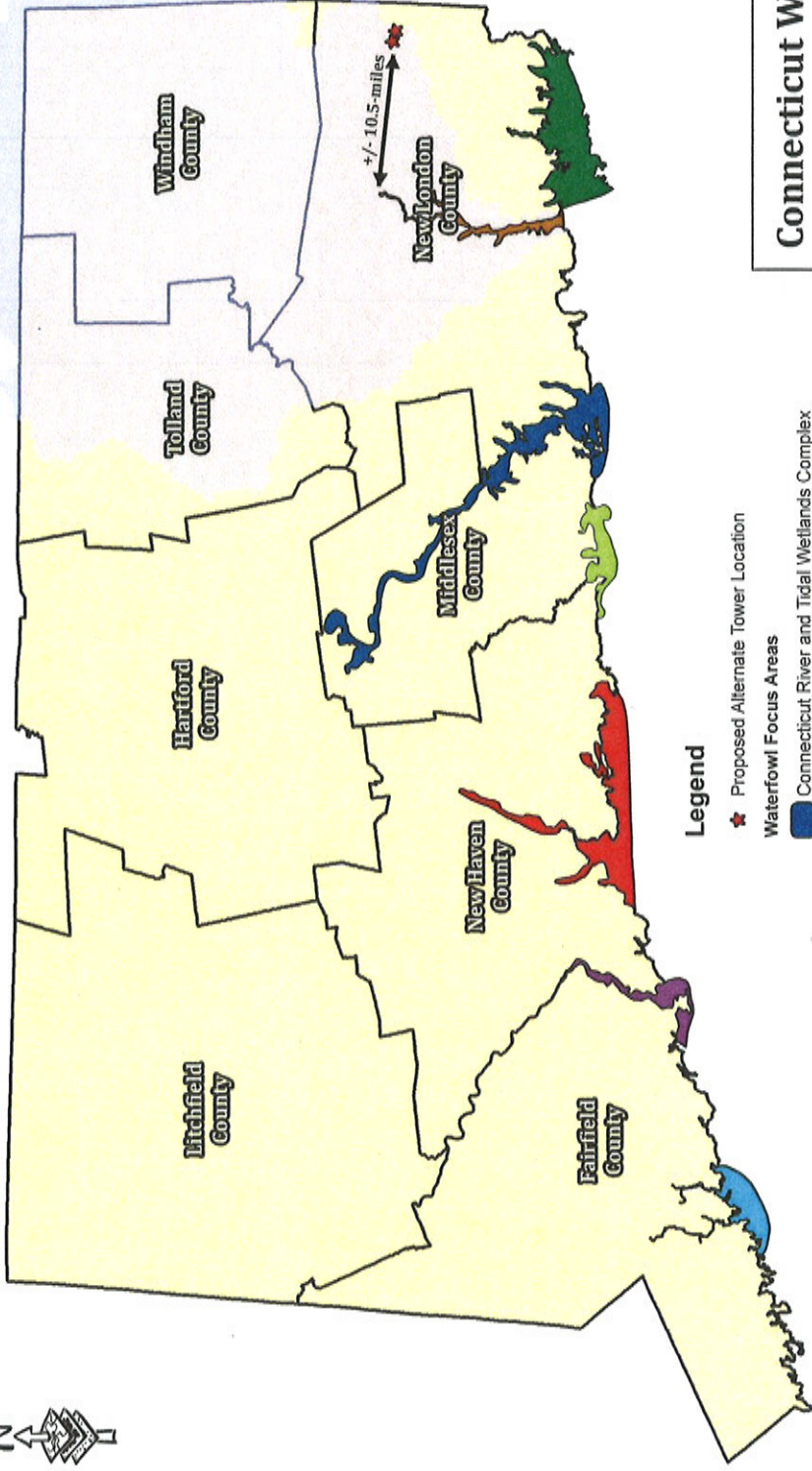
Based on the results of this desk-top evaluation, no migratory bird species are anticipated to be impacted by Verizon Wireless' proposed development. The Project Area is not proximate to an Important Bird Area and a Facility at either Site location would comply with the USFWS guidelines for minimizing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

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Figures

- Avian Resources Map
- Connecticut Waterfowl Focus Areas Map



Legend

★ Proposed Alternate Tower Location

Waterfowl Focus Areas

Blue Connecticut River and Tidal Wetlands Complex

Green Fishers Island Sound Complex

Light Green Greater Hammonasset Complex

Purple Lower Housatonic River - Great Meadows

Orange Lower Thames River System

Red New Haven Harbor

Light Blue Norwalk Islands

Waterfowl Planning Area

Upper Thames River



Connecticut Waterfowl Focus Areas Map

Site 1 - 596 Pendleton Hill Road
Site 2 - 53 Gallup Road
Voluntown, Connecticut

Thursday, June 13, 2013



Waterfowl Focus Areas Developed
by the Atlantic Coast Joint Venture Partnership