

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:

APPLICATION BY CELLCO PARTNERSHIP D/B/A
VERIZON WIRELESS FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY AND
PUBLIC NEED FOR THE CONSTRUCTION,
MAINTENANCE, AND OPERATION OF A
WIRELESS TELECOMMUNICATIONS FACILITY
OFF CHESTNUT HILL, WOLCOTT,
CONNECTICUT

DOCKET NO. 494

December 1, 2020

**RESPONSES OF NEW CINGULAR WIRELESS PCS, LLC (AT&T) TO
CONNECTICUT SITING COUNCIL PRE-HEARING QUESTIONS, SET ONE**

Q1. Estimate the total cost of New Cingular Wireless PCS, LLC's (AT&T) co-location on the proposed facility. Break down the total cost into categories that AT&T deems appropriate.

A1.

| Component | Cost |
|----------------------------|------------------|
| Equipment/Materials | \$114,000 |
| Construction | \$179,000 |
| Integration & Optimization | \$15,300 |
| Total | \$308,300 |

Q2. How would the cost of AT&T's co-location at the proposed site be recovered?

A2. *AT&T's costs are recovered as part of business operations for its customers.*

Q3. Referencing page 8 of the Application, which frequency bands would AT&T deploy at the proposed facility?

A3. *AT&T will deploy the following frequencies: 700 MHz, 850 MHz, 1900 MHz, 2100 MHz and 2300 MHz.*

Q4. At which centerline height would AT&T install its antennas? Provide the number of panel antennas and other equipment (e.g. remote radio heads) that would be installed at this height.

A4. *AT&T will install its antennas at a centerline height of 105' above grade level (AGL). AT&T's antennas will be installed in three sectors with two antennas per sector for a total of six antennas. Four remote radio head units (RRH) will be installed in each sector for a total of 12 RRHs. Please see the drawings in Attachment 1 for details.*

Q5. What type of antenna mount would AT&T utilize for its proposed antennas? What is the structural design standard applicable to such antenna mount?

- A5. *AT&T will utilize a Valmont sector frame or equivalent antenna mount as shown in the drawings in Attachment 1. The structural design standards applicable to the antenna mount are as follows:*
- *ANSI/TIA-222-H;*
 - *TIA-222-G-2; and*
 - *AT&T Mount Technical Directive ATT-0020291-373.*
- Q6. Provide a drawing similar to Sheet Z-1 of the Application that includes AT&T depicted on the tower elevation drawing and the site plan.
- A6. *Please see the drawings included in Attachment 1 consisting of Proposed Site Plan, Compound & Equipment Plan, and Antenna Layout and Elevation prepared by Hudson Design Group, LLC last updated November 24, 2020 and Antenna Layout prepared by Hudson Design Group, LLC last updated November 18, 2020.*
- Q7. What measures would AT&T utilize at the site to ensure security and deter vandalism?
- A7. *In addition to the 6' tall chain link fence with barbed wire that the Applicant proposes to enclose the equipment compound, AT&T's walk-in cabinet is equipped with a 70W motion activated exterior light. Unauthorized entry triggers an alarm at AT&T's network operations center, which remotely monitors AT&T's facility.*
- Q8. Pursuant to CGS §16-50p(a)(3)(G), identify the safety standards and/or codes by which equipment, machinery or technology that would be used or operated at the proposed facility by AT&T.
- A8. *The safety standards and codes by which the equipment, machinery, or technology that would be used or operated at the proposed facility by AT&T are as follows:*
- *2015 International Building Code with the 2018 Connecticut Building Code Supplement.*
 - *2017 National Electric Code (NFPA 70).*
 - *2015 International Mechanical Code.*
 - *2018 Connecticut State Fire Prevention Code.*
 - *2018 Connecticut State Fire Safety Code (NPF A 101).*
 - *NFPA 58 Liquified Petroleum Gas Code, 2014 Edition.*
 - *ANSI/TIA-222-G-2 "Structural Standard for Antenna Supporting Structures and Antennas".*
 - *ANSI/TIA-222-H Addendum #1 "Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures".*
 - *Occupational Safety and Health Administration (OSHA).*

Coverage/Capacity

- Q9. Provide existing coverage plots for each frequency band to be deployed by AT&T at the site. Provide a similar set of plots for each frequency band that include existing plus proposed coverage.
- A9. *All coverage plots are included in Attachment 2 and in the Radio Frequency Analysis Report in Attachment 3.*

Q10. Identify distances and directions to AT&T’s adjacent sites with which the proposed facility would hand off signals. Include addresses, tower types (e.g. monopoles), and AT&T’s antenna centerline heights at these sites.

A10. *AT&T’s neighboring sites include:*

| Site Name | Address | City/State | Location | | Antenna Height (ft AGL) | Ground Elevation (feet) | Structure Type | Distance | Direction |
|-----------|----------------------|------------|----------|-----------|-------------------------|-------------------------|----------------|----------|-----------|
| | | | Latitude | Longitude | | | | | |
| CT1005 | Garden Circle | Waterbury | 41.5707 | -73.0176 | 154 | 805 | Monopole | 1.4 | SSW |
| CT1111 | 1233 Wolcott Road | Wolcott | 41.6216 | -72.9736 | 185 | 969 | Self Support | 2.8 | NE |
| CT1125 | 299 Sheffield Street | Waterbury | 41.5938 | -73.0507 | 137 | 459 | Monopole | 2.2 | W |
| CT1359 | 120 Hillside Avenue | Waterbury | 41.5619 | -73.0446 | 100 | 423 | Rooftop | 2.7 | SW |

Q11. Provide a power density analysis for AT&T including, but not limited to, the following: number of channels per sector for each antenna system that would be installed on the proposed tower; ERP per channel for each antenna system; frequency at which each antenna system would operate; and indicate if a -10dB adjustment to account for antenna pattern is included or not.

A11. *Please see the Calculated Radio Frequency Exposure for CT1432 Chestnut Hill Road, Wolcott, CT 06716 prepared by C Squared Systems, LLC dated November 25, 2020 enclosed as Attachment 4. The power density report concludes that the proposed equipment would be well below the FCC’s maximum exposure levels. The calculated results for AT&T include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.*

Q12. Would AT&T’s proposed co-location be needed for coverage, capacity, or both?

A12. *The site is required to address the need for both coverage and capacity.*

Q13. Would all of AT&T’s frequencies be used to transmit voice and data?

A13. *Yes. All frequencies will be used to transmit voice and data.*

Q14. Would AT&T’s proposed co-location at the proposed facility provide 5G services?

A14. *At launch, the site will be provisioned to provide narrowband 5G service at 850 MHz.*

Q15. What is the lowest height at which AT&T’s antennas could achieve its wireless service objectives from the proposed site? What would be the consequences in terms of hand-off, coverage and/or capacity relief if the proposed tower was ten feet shorter, i.e. AT&T’s antennas were located at a centerline height that is ten feet lower than proposed?

A15. *The requested centerline height of 105’ is the lowest height at which AT&T could achieve its wireless service objectives. While the loss in coverage at a centerline height of 95’ is not substantial, dropping down another 10’ to a centerline height of 85’ results in*

substantial losses. Thus, to achieve service objectives and allow for collocation at a height below, AT&T's minimum antenna centerline height is 105'.

Q16. Could AT&T's required coverage and capacity upgrade needs, as applicable, be met by a series of small cell facilities or a distributed antenna system rather than the proposed macro tower facility?

A16. *No. DAS systems or small cells are not a practical or feasible alternative for addressing AT&T's service needs in Wolcott. The RF maps included in Attachments 2 and 3 clearly demonstrate a significant coverage gap in this area of Wolcott. In addition to providing reliable wireless services to AT&T's customers, AT&T's proposed Facility is being built as part of the AT&T's FirstNet public safety network, where wide area coverage is of paramount importance. DAS or small cells cannot technologically provide reliable wireless service to cover this area of need. Small cells and DAS are best suited for specifically defined areas where capacity is necessary, such as more urban environments, shopping malls, stadiums and other densely populated areas.*

AT&T does use small cells in Connecticut to provide capacity relief in targeted areas. The Council is referred to PURA Docket No. 18-06-13, which includes over 200 small cells approved and either constructed or planned for deployment in urban/downtown areas and more densely populated areas of the state.

Q17. What is the signal strength for which AT&T designs its system? For in-vehicle coverage? For in-building coverage?

A17. *The signal strength for which AT&T designs its systems are -83 dBm for high quality coverage -93 dBm for adequate coverage for their 700 MHz LTE and -86 dBm and -96 dBm for their 1900 MHz LTE. The stronger thresholds (-83 dBm and -86 dBm) yield greater throughputs and improved customer experience. The -93 dBm and -96 dBm thresholds are the minimum acceptable levels required to meet customer expectations for 4G service.*

Q18. What is the existing signal strength within the area AT&T is seeking to cover from this site?

A18. *Within the area of coverage that AT&T seeks to cover, it runs as high as the "high quality" coverage threshold (-83 dBm) and ranges downward to unreliable coverage (less than -93 dBm).*

Q19. Does AT&T have any statistics on dropped calls and/or ineffective attempts in the vicinity of the proposed facility? If so, what do they indicate? Does AT&T have any other indicators of substandard service in this area?

A19. *Yes. AT&T's dropped call data for the neighboring site CT1005 and the sectors that face directly into the area where reliable service is needed indicate elevated voice and data drops. In addition, data testing indicates that substandard or nonexistent data service is provided within the area identified as a need for this site.*

Q20. Please provide AT&T's proposed coverage areas and its proposed coverage distances over state roads (i.e. roads with a route number) for each frequency band that AT&T would

deploy at the proposed facility. Also provide the existing coverage gap distances on state roads for each frequency band that AT&T would deploy at the proposed facility.

A20. *Proposed Road Coverage as follows:*

700 MHz

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| I 84 | 0.002 |
| Spindle Hill Rd | 0.033 |
| N Main St | 0.068 |
| Beach Rd | 0.102 |
| South St | 0.055 |
| Straits Tpke | 0.054 |
| Echo Lake Rd | 0.005 |
| State Hwy 262 | 0.010 |

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Avalon Cir | 0.026 |
| Bamford Ave | 0.011 |
| Beecher Rd | 0.016 |
| Belden St | 0.053 |
| Blueberry Hl | 0.068 |
| Boyden St | 0.085 |
| Boyden Street Ext | 0.039 |
| Brentwood Dr | 0.074 |
| Buckland Dr | 0.008 |
| Bucks Hill Rd | 0.020 |
| Bunker Hill Rd | 0.089 |
| Carnation Ln | 0.033 |
| Catalina Dr | 0.064 |
| Cherry Ave | 0.031 |
| Chestnut Dr | 0.255 |
| Chestnut Hill Ave | 0.254 |
| Chestnut Hill Rd | 0.208 |
| Chicory Dr | 0.000 |
| Cindy Dr | 0.059 |
| Cliff Street Ext | 0.033 |
| Clinton Hill Rd | 0.200 |
| Cooper Dr | 0.184 |
| Cornwall Ave | 0.000 |
| Crestwood Rd | 0.225 |
| Dan Parker Dr | 0.022 |
| Daventry Ln | 0.047 |
| Deer Park Cir | 0.002 |
| Deerwood Ln | 0.018 |
| Dellwood Rd | 0.151 |
| Eastwood Hall Rd | 0.010 |
| Essex Ave | 0.071 |
| Executive Hill Rd | 0.062 |
| Farmdale Rd | 0.069 |
| Fox Run Rd | 0.017 |
| Gail Dr | 0.059 |

| | |
|----------------------|-------|
| Gaylord Dr | 0.000 |
| Glenview Dr | 0.062 |
| Grassy Hill Rd | 0.006 |
| Grilley Rd | 0.159 |
| Haddad Rd | 0.006 |
| Hemple Dr | 0.055 |
| Henry St | 0.019 |
| Heritage Dr | 0.049 |
| Hidden Pond Rd | 0.003 |
| Hillsdale Ave | 0.023 |
| Hubbell Ave | 0.007 |
| Ivy Ln | 0.059 |
| Jasmine Ln | 0.100 |
| Jillson Cir | 0.005 |
| Kimberly Ln | 0.028 |
| Kingswood Ln | 0.114 |
| Lake Winnemaug Rd | 0.140 |
| Lancewood Ln | 0.196 |
| Lisa Ct | 0.026 |
| Longmeadow Drive Ext | 0.010 |
| Lyman Rd | 1.149 |
| Lyman Road Ext | 0.124 |
| Macarthur Dr | 0.070 |
| Madera Dr | 0.043 |
| Marc Dr | 0.060 |
| Meadow Lake Dr | 0.137 |
| Montoe Rd | 0.006 |
| Moss Ln | 0.015 |
| Nettleton St | 0.017 |
| Newridge Ave | 0.068 |
| Norton Hts | 0.025 |
| Oak Dr | 0.169 |
| Oak Hollow Dr | 0.011 |
| Old Colony Cir | 0.037 |
| Overvale Rd | 0.134 |
| Park Rd | 0.109 |
| Pond Dr | 0.119 |
| S Colman Dr | 0.053 |
| Sandy Ln | 0.020 |
| Seemar Rd | 0.006 |
| Sheraton Dr | 0.090 |
| Stoddard Rd | 0.015 |
| Suffolk St | 0.016 |
| Troj Dr | 0.016 |
| White Oak Ln | 0.015 |
| Wolff St | 0.015 |
| Woodgaite Dr | 0.199 |

850 MHz

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| Beach Rd | 0.117 |
| Center St | 0.020 |
| N Main St | 0.136 |
| South St | 0.037 |
| Spindle Hill Rd | 0.104 |

Secondary Roads

| Street Name | Length miles |
|----------------------|---------------------|
| Avalon Cir | 0.018 |
| Blueberry Hl | 0.042 |
| Bound Line Rd | 0.007 |
| Boyden St | 0.086 |
| Boyden Street Ext | 0.047 |
| Brentwood Dr | 0.081 |
| Buckridge Rd | 0.002 |
| Bucks Hill Rd | 0.029 |
| Bunker Hill Rd | 0.056 |
| Carnation Ln | 0.047 |
| Catalina Dr | 0.002 |
| Chestnut Dr | 0.270 |
| Chestnut Hill Ave | 0.287 |
| Chestnut Hill Rd | 0.295 |
| Chicory Dr | 0.005 |
| Cindy Dr | 0.020 |
| Cliff Street Ext | 0.048 |
| Clinton Hill Rd | 0.035 |
| Cooper Dr | 0.184 |
| Cornwall Ave | 0.016 |
| Crestwood Rd | 0.289 |
| Dan Parker Dr | 0.008 |
| Daventry Ln | 0.047 |
| Deer Park Cir | 0.012 |
| Deerwood Ln | 0.038 |
| Dellwood Rd | 0.128 |
| Edgemont Ln | 0.009 |
| Essex Ave | 0.064 |
| Executive Hill Rd | 0.048 |
| Fanning St | 0.038 |
| Farmcrest Dr | 0.111 |
| Farmdale Rd | 0.002 |
| Forestview Dr | 0.067 |
| Fox Run Rd | 0.024 |
| Gail Dr | 0.076 |
| Glenview Dr | 0.033 |
| Grassy Hill Rd | 0.005 |
| Grilley Rd | 0.143 |
| Hemple Dr | 0.048 |
| Henry St | 0.052 |
| Heritage Dr | 0.028 |
| Ivy Ln | 0.068 |
| Jasmine Ln | 0.123 |
| Jillson Cir | 0.021 |
| Kendall Cir | 0.006 |
| Kingswood Ln | 0.129 |
| Knollwood Cir | 0.009 |
| Lake Winnemaug Rd | 0.101 |
| Lancewood Ln | 0.229 |
| Lisa Ct | 0.043 |
| Longmeadow Drive Ext | 0.027 |
| Lyman Rd | 1.173 |
| Lyman Road Ext | 0.124 |
| Macarthur Dr | 0.124 |
| Madera Dr | 0.061 |
| Meadow Lake Dr | 0.149 |
| Montoe Rd | 0.034 |
| Moss Ln | 0.007 |

| | |
|--------------------|-------|
| Mountain Laurel Dr | 0.008 |
| Newridge Ave | 0.006 |
| Norton Hts | 0.065 |
| Oak Dr | 0.090 |
| Old Colony Cir | 0.003 |
| Overvale Rd | 0.178 |
| Park Rd | 0.037 |
| Pond Dr | 0.173 |
| Running Brook Rd | 0.061 |
| Rustic Acres Dr | 0.002 |
| Sandy Ln | 0.019 |
| Sheraton Dr | 0.148 |
| Sky Hill Dr | 0.020 |
| Smithwick St | 0.030 |
| Spindle Hill Rd | 0.044 |
| Suffolk St | 0.050 |
| Troj Dr | 0.009 |
| White Oak Ln | 0.029 |
| Whitewood Rd | 0.022 |
| Williams Ct | 0.011 |
| Woodgaite Dr | 0.199 |

PCS

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| Chase Ave | 0.128 |
| Hill St | 0.036 |
| N Main St | 0.217 |
| Spindle Hill Rd | 0.272 |

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Appleton St | 0.009 |
| Blueberry Hl | 0.060 |
| Bound Line Rd | 0.028 |
| Boyden St | 0.045 |
| Boyden Street Ext | 0.091 |
| Buckridge Rd | 0.031 |
| Bucks Hill Rd | 0.088 |
| Carnation Ln | 0.026 |
| Cemetery Rd | 0.018 |
| Chester Ave | 0.002 |
| Chestnut Dr | 0.204 |
| Chestnut Hill Ave | 0.175 |
| Chestnut Hill Rd | 0.168 |
| Cliff Street Ext | 0.040 |
| Cooper Dr | 0.184 |
| Copper Beech Rd | 0.037 |
| Cornwall Ave | 0.036 |
| Crestwood Rd | 0.215 |
| Daventry Ln | 0.047 |
| Deepwood Dr | 0.018 |
| Deerwood Ln | 0.072 |
| Devonshire Rd | 0.026 |

| | |
|----------------------|-------|
| Dracut St | 0.036 |
| Ellen Ave | 0.022 |
| Essex Ave | 0.055 |
| Executive Hill Rd | 0.022 |
| Fanning St | 0.291 |
| Farmcrest Dr | 0.053 |
| Forest View St | 0.035 |
| Forestview Dr | 0.284 |
| Gail Dr | 0.091 |
| Grace Ave | 0.011 |
| Green Ridge Ter | 0.002 |
| Grilley Rd | 0.075 |
| Hemple Dr | 0.014 |
| Henry St | 0.008 |
| Hickory Ln | 0.030 |
| Ivy Ln | 0.035 |
| Jasmine Ln | 0.105 |
| Kingswood Ln | 0.172 |
| Kipling St | 0.029 |
| Lake Winnemaug Rd | 0.048 |
| Lancewood Ln | 0.165 |
| Linwood St | 0.040 |
| Lisa Ct | 0.065 |
| Longmeadow Drive Ext | 0.060 |
| Longview Ln | 0.037 |
| Lyman Rd | 1.163 |
| Lyman Road Ext | 0.108 |
| Macarthur Dr | 0.179 |
| Malden Ave | 0.042 |
| Martone St | 0.014 |
| Meadow Lake Dr | 0.100 |
| Melody Ln | 0.006 |
| Michael Ter | 0.022 |
| Montoe Rd | 0.191 |
| Mountain Laurel Dr | 0.030 |
| Overvale Rd | 0.050 |
| Pond Dr | 0.123 |
| Roma Ave | 0.007 |
| Running Brook Rd | 0.012 |
| Sky Hill Dr | 0.051 |
| Smithwick St | 0.056 |
| Stafford St | 0.014 |
| Suffolk St | 0.017 |
| White Oak Ln | 0.112 |
| Wigwam Ave | 0.054 |
| Williams Ct | 0.106 |
| Winfield Ave | 0.010 |
| Woodgaite Dr | 0.199 |

AWS

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| Chase Ave | 0.126 |
| Echo Lake Rd | 0.015 |
| Hill St | 0.050 |
| N Main St | 0.225 |
| Spindle Hill Rd | 0.281 |

Secondary Roads

| Street Name | Length miles |
|----------------------|--------------|
| Appleton St | 0.050 |
| Blueberry Hl | 0.009 |
| Bound Line Rd | 0.019 |
| Brookside Rd | 0.020 |
| Buckridge Rd | 0.043 |
| Bucks Hill Rd | 0.099 |
| Cemetery Rd | 0.027 |
| Chestnut Dr | 0.162 |
| Chestnut Hill Ave | 0.130 |
| Chestnut Hill Rd | 0.112 |
| Cliff Street Ext | 0.033 |
| Cooper Dr | 0.184 |
| Corona Dr | 0.007 |
| Crestwood Rd | 0.204 |
| Daventry Ln | 0.047 |
| Deepwood Dr | 0.024 |
| Deerwood Ln | 0.082 |
| Ellen Ave | 0.006 |
| Essex Ave | 0.050 |
| Executive Hill Rd | 0.003 |
| Fanning St | 0.171 |
| Ferndale Ave | 0.019 |
| Forest View St | 0.028 |
| Forestview Dr | 0.252 |
| Grace Ave | 0.034 |
| Henry St | 0.001 |
| Hickory Ln | 0.077 |
| Ivy Ln | 0.024 |
| Jasmine Ln | 0.096 |
| Kingswood Ln | 0.134 |
| Kipling St | 0.042 |
| Lancewood Ln | 0.110 |
| Linwood St | 0.019 |
| Lisa Ct | 0.057 |
| Longmeadow Dr | 0.020 |
| Longmeadow Drive Ext | 0.038 |
| Longview Ave | 0.020 |
| Longview Ln | 0.056 |
| Lyman Rd | 1.086 |
| Lyman Road Ext | 0.096 |
| Macarthur Dr | 0.104 |
| Malden Ave | 0.042 |
| Martone St | 0.052 |
| Meadow Lake Dr | 0.084 |
| Melody Ln | 0.008 |
| Michael Ter | 0.020 |
| Montoe Rd | 0.157 |
| Overvale Rd | 0.022 |
| Pembroke Ave | 0.017 |
| Pond Dr | 0.108 |
| Roma Ave | 0.035 |
| Running Brook Rd | 0.006 |
| Sky Hill Dr | 0.003 |
| Smithwick St | 0.012 |
| Spring Garden Ave | 0.014 |

| | |
|---------------|-------|
| Stafford St | 0.021 |
| Steep Hill Rd | 0.000 |
| Suffolk St | 0.003 |
| Waller Ave | 0.002 |
| White Oak Ln | 0.085 |
| Whitewood Rd | 0.007 |
| Wigwam Ave | 0.065 |
| Williams Ct | 0.090 |
| Williamson Dr | 0.029 |
| Woodgaite Dr | 0.199 |

WCS

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| Chase Ave | 0.127 |
| Echo Lake Rd | 0.004 |
| Hill St | 0.043 |
| N Main St | 0.201 |
| Spindle Hill Rd | 0.277 |

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Appleton St | 0.048 |
| Bound Line Rd | 0.011 |
| Buckridge Rd | 0.053 |
| Bucks Hill Rd | 0.141 |
| Cassandra Dr | 0.015 |
| Cemetery Rd | 0.013 |
| Chester Ave | 0.061 |
| Chestnut Hill Ave | 0.119 |
| Chestnut Hill Rd | 0.067 |
| Cliff Street Ext | 0.029 |
| Cooper Dr | 0.184 |
| Corona Dr | 0.021 |
| Crestwood Rd | 0.194 |
| Daventry Ln | 0.047 |
| Deerwood Ln | 0.123 |
| Essex Ave | 0.008 |
| Fanning St | 0.151 |
| Ferndale Ave | 0.075 |
| Forest View St | 0.021 |
| Forestview Dr | 0.207 |
| Gaylord Dr | 0.023 |
| Gertrude Ave | 0.055 |
| Glenview Ave | 0.034 |
| Grace Ave | 0.042 |
| Greenfield Ave | 0.025 |
| Hickory Ln | 0.021 |
| Irvington Ave | 0.026 |
| Ivy Ln | 0.018 |
| Juniper Ridge Dr | 0.012 |
| Kingswood Ln | 0.114 |
| Kipling St | 0.063 |
| Lancewood Ln | 0.026 |
| Laurie Pl | 0.006 |

| | |
|----------------------|-------|
| Lisa Ct | 0.009 |
| Longmeadow Dr | 0.010 |
| Longmeadow Drive Ext | 0.042 |
| Longview Ave | 0.019 |
| Longview Ln | 0.057 |
| Lonsdale St | 0.012 |
| Lyman Rd | 1.008 |
| Lyman Road Ext | 0.085 |
| Macarthur Dr | 0.044 |
| Malden Ave | 0.030 |
| Meadow Lake Dr | 0.077 |
| Middlesex St | 0.017 |
| Monmouth Ave | 0.024 |
| Montoe Rd | 0.127 |
| Mountain View Rd | 0.017 |
| Pembroke Ave | 0.051 |
| Pond Dr | 0.086 |
| Running Brook Rd | 0.000 |
| Spring Garden Ave | 0.038 |
| Stafford St | 0.028 |
| Steep Hill Rd | 0.008 |
| Wayland Ave | 0.052 |
| Wigwam Ave | 0.055 |
| Williams Ct | 0.036 |
| Williamson Dr | 0.056 |
| Woodgaite Dr | 0.194 |

Existing Road Coverage Gaps

700 MHz

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| Beach Rd | 0.636 |
| N Main St | 0.068 |
| Spindle Hill Rd | 0.033 |
| Wolcott Rd | 1.241 |

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Alcott St | 0.032 |
| Bayview Cir | 0.079 |
| Birchwood Ct | 0.084 |
| Blackman Rd | 0.157 |
| Blueberry Hl | 0.074 |
| Boyden St | 0.477 |
| Boyden Street Ext | 0.039 |
| Breezy Knoll Ave | 0.009 |
| Brentwood Dr | 0.134 |
| Briarwood Rd | 0.041 |
| Brookdale St | 0.143 |
| Brookfield Rd | 0.111 |
| Buckland Dr | 0.008 |
| Buckland St | 0.072 |

| | |
|----------------------|-------|
| Bucks Hill Rd | 0.098 |
| Carnation Ln | 0.033 |
| Catalina Dr | 0.077 |
| Chasse Rd | 0.174 |
| Chestnut Dr | 0.255 |
| Chestnut Hill Ave | 0.254 |
| Chestnut Hill Rd | 0.267 |
| Chicory Dr | 0.204 |
| Church Dr | 0.193 |
| Cindy Dr | 0.081 |
| Cliff Street Ext | 0.042 |
| Clinton Hill Rd | 0.322 |
| Coach Dr | 0.097 |
| Cooper Dr | 0.184 |
| Cornfield Rd | 0.003 |
| Crestwood Dr | 0.123 |
| Crestwood Rd | 0.225 |
| Dan Parker Dr | 0.070 |
| Daventry Ln | 0.047 |
| Deerwood Ln | 0.018 |
| Dellwood Rd | 0.151 |
| Devonshire Rd | 0.218 |
| Executive Hill Rd | 0.125 |
| Fairway Ln | 0.116 |
| Farmcrest Dr | 0.094 |
| Fieldstream Dr | 0.114 |
| Francis Dr | 0.027 |
| Glenview Dr | 0.064 |
| Grassy Hill Rd | 0.340 |
| Grilley Rd | 0.389 |
| Hayfield Rd | 0.019 |
| Hemple Dr | 0.279 |
| Henry St | 0.019 |
| Hidden Pond Rd | 0.003 |
| Hillsdale Ave | 0.087 |
| Hillside Dr | 0.164 |
| Ivy Ln | 0.059 |
| Jasmine Ln | 0.100 |
| Judith Ln | 0.103 |
| Kingswood Ln | 0.114 |
| Klan Dr | 0.192 |
| Knollwood Cir | 0.191 |
| Lancewood Ln | 0.196 |
| Lincolndale Dr | 0.230 |
| Lisa Ct | 0.026 |
| Longmeadow Dr | 0.023 |
| Longmeadow Drive Ext | 0.010 |
| Lyman Rd | 1.254 |
| Lyman Road Ext | 0.124 |
| Madera Dr | 0.043 |
| Maple View Dr | 0.108 |
| Mccormack Dr | 0.083 |
| Meadow Lake Dr | 0.137 |
| Montoe Rd | 0.006 |
| Munson Rd | 0.252 |
| Nichols Rd | 0.029 |
| Norton Hts | 0.030 |
| Norton Rd | 0.076 |
| Nutmeg Valley Rd | 0.011 |

| | |
|--------------------|-------|
| Old Connecticut 69 | 0.056 |
| Overvale Rd | 0.134 |
| Pond Dr | 0.119 |
| Potuccos Ring Rd | 0.252 |
| Riverview Cir | 0.076 |
| Rustic Acres Dr | 0.029 |
| Ryan Pl | 0.035 |
| Sandy Ln | 0.106 |
| Sheraton Dr | 0.090 |
| Silver Pond Rd | 0.007 |
| Spindle Hill Rd | 0.157 |
| Spread Oak Ln | 0.031 |
| Sunrise Rd | 0.406 |
| Swiss Ln | 0.091 |
| Theresa Dr | 0.011 |
| Troj Dr | 0.016 |
| Valentino Dr | 0.064 |
| Village Dr | 0.089 |
| White Oak Ln | 0.015 |
| Woodgaite Dr | 0.199 |
| Zuella Dr | 0.064 |

Existing Road Coverage Gaps

850 MHz

Main Roads

| Street Name | Length miles |
|-----------------|--------------|
| Beach Rd | 0.690 |
| N Main St | 0.136 |
| Spindle Hill Rd | 0.104 |
| Wolcott Rd | 1.559 |
| Wolcott St | 0.040 |

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Alcott St | 0.099 |
| Andrews Rd | 0.003 |
| Bayview Cir | 0.113 |
| Birchwood Ct | 0.084 |
| Blackman Rd | 0.213 |
| Blueberry Hl | 0.083 |
| Boyden St | 0.723 |
| Boyden Street Ext | 0.047 |
| Breezy Knoll Ave | 0.019 |
| Brentwood Dr | 0.180 |
| Briarwood Rd | 0.075 |
| Brookdale St | 0.200 |
| Brookfield Rd | 0.111 |
| Buckland Dr | 0.075 |
| Buckland St | 0.085 |
| Buckridge Rd | 0.002 |
| Bucks Hill Rd | 0.282 |

| | |
|----------------------|-------|
| Carnation Ln | 0.055 |
| Catalina Dr | 0.086 |
| Cedar Ln | 0.026 |
| Chasse Rd | 0.230 |
| Chestnut Dr | 0.270 |
| Chestnut Hill Ave | 0.287 |
| Chestnut Hill Rd | 0.369 |
| Chicory Dr | 0.275 |
| Church Dr | 0.205 |
| Cindy Dr | 0.098 |
| Cliff Street Ext | 0.086 |
| Clinton Hill Rd | 0.398 |
| Coach Dr | 0.204 |
| Cobblefield Ct | 0.003 |
| Cooper Dr | 0.184 |
| Cornfield Rd | 0.020 |
| Crestwood Dr | 0.144 |
| Crestwood Rd | 0.289 |
| Dan Parker Dr | 0.096 |
| Daventry Ln | 0.047 |
| Deerwood Ln | 0.038 |
| Dellwood Rd | 0.158 |
| Devonshire Rd | 0.246 |
| Edgemont Ln | 0.009 |
| Ellsworth Ave | 0.026 |
| Eric Ln | 0.029 |
| Executive Hill Rd | 0.126 |
| Fairway Ln | 0.116 |
| Farmcrest Dr | 0.224 |
| Fieldstream Dr | 0.132 |
| Forestview Dr | 0.067 |
| Francis Dr | 0.052 |
| Glenview Dr | 0.064 |
| Grassy Hill Rd | 0.452 |
| Grilley Rd | 0.428 |
| Hayfield Rd | 0.061 |
| Hemple Dr | 0.291 |
| Henry St | 0.052 |
| Hidden Pond Rd | 0.080 |
| Hillsdale Ave | 0.094 |
| Hillside Dr | 0.164 |
| Ivy Ln | 0.096 |
| Jasmine Ln | 0.123 |
| Judith Ln | 0.173 |
| Kimberly Ct | 0.043 |
| Kingswood Ln | 0.129 |
| Klan Dr | 0.222 |
| Knollwood Cir | 0.299 |
| Kreger Dr | 0.084 |
| Lancewood Ln | 0.229 |
| Laurel Ln | 0.059 |
| Lincolndale Dr | 0.313 |
| Lisa Ct | 0.043 |
| Longmeadow Dr | 0.123 |
| Longmeadow Drive Ext | 0.027 |
| Lyman Rd | 1.315 |
| Lyman Road Ext | 0.124 |
| Madera Dr | 0.128 |
| Maple View Dr | 0.141 |

| | |
|--------------------|-------|
| Maywood St | 0.002 |
| Mccormack Dr | 0.095 |
| Meadow Lake Dr | 0.149 |
| Melody Ln | 0.016 |
| Montoe Rd | 0.034 |
| Morris Cir | 0.010 |
| Mountain Laurel Dr | 0.008 |
| Mulberry Ln | 0.064 |
| Munson Rd | 0.435 |
| Nichols Rd | 0.036 |
| Norton Hts | 0.098 |
| Norton Rd | 0.078 |
| Nutmeg Valley Rd | 0.029 |
| Old Connecticut 69 | 0.092 |
| Overvale Rd | 0.178 |
| Pond Dr | 0.173 |
| Potuccos Ring Rd | 0.394 |
| Riverview Cir | 0.103 |
| Running Brook Rd | 0.061 |
| Rustic Acres Dr | 0.107 |
| Ryan Pl | 0.046 |
| Saint Michaels Dr | 0.014 |
| Sandy Ln | 0.142 |
| Shagbark Rd | 0.021 |
| Sheraton Dr | 0.148 |
| Silver Pond Rd | 0.007 |
| Silvio St | 0.014 |
| Sky Hill Dr | 0.020 |
| Spindle Hill Rd | 0.301 |
| Spread Oak Ln | 0.054 |
| Sunrise Rd | 0.491 |
| Swiss Ln | 0.103 |
| Theresa Dr | 0.060 |
| Tosun Rd | 0.015 |
| Town Line Rd | 0.051 |
| Troj Dr | 0.016 |
| Tyrell Dr | 0.052 |
| Valentino Dr | 0.084 |
| Venus Dr | 0.092 |
| Village Dr | 0.099 |
| Wakelee Rd | 0.021 |
| White Oak Ln | 0.029 |
| Williams Ct | 0.011 |
| Woodgaite Dr | 0.199 |
| Zuella Dr | 0.077 |

PCS

Main Roads

| Street Name | Length miles |
|-------------------|--------------|
| Beach Rd | 0.782 |
| Chestnut Hill Ave | 0.098 |
| N Main St | 0.360 |
| Spindle Hill Rd | 0.282 |
| Wolcott Rd | 1.886 |
| Wolcott St | 0.068 |

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Alcott St | 0.214 |
| Andrews Rd | 0.282 |
| Bayview Cir | 0.161 |
| Beach Pl | 0.029 |
| Birchwood Ct | 0.084 |
| Blackman Rd | 0.294 |
| Blansfield Ln | 0.019 |
| Blueberry Hl | 0.130 |
| Boyden St | 0.978 |
| Boyden Street Ext | 0.113 |
| Breezy Knoll Ave | 0.055 |
| Brentwood Dr | 0.180 |
| Briarwood Rd | 0.151 |
| Brookdale St | 0.262 |
| Brookfield Rd | 0.111 |
| Buckland Dr | 0.170 |
| Buckland St | 0.162 |
| Buckridge Rd | 0.031 |
| Bucks Hill Rd | 0.772 |
| Carnation Ln | 0.109 |
| Catalina Dr | 0.102 |
| Cathy Ln | 0.013 |
| Cedar Ln | 0.161 |
| Cemetery Rd | 0.018 |
| Chasse Rd | 0.315 |
| Chestnut Dr | 0.327 |
| Chestnut Hill Ave | 0.436 |
| Chestnut Hill Rd | 0.408 |
| Chicory Dr | 0.420 |
| Chipper Rd | 0.099 |
| Church Dr | 0.289 |
| Cindy Dr | 0.098 |
| Cliff Street Ext | 0.152 |
| Clinton Hill Rd | 0.498 |
| Coach Dr | 0.247 |
| Cobblefield Ct | 0.019 |
| Cooper Dr | 0.184 |
| Copper Beech Rd | 0.037 |
| Cornfield Rd | 0.045 |
| Crestwood Dr | 0.151 |
| Crestwood Rd | 0.289 |
| Dan Parker Dr | 0.201 |
| Danielle Dr | 0.016 |
| Daventry Ln | 0.047 |
| Deepwood Dr | 0.305 |
| Deerwood Ln | 0.072 |
| Dellwood Rd | 0.158 |
| Devonshire Rd | 0.367 |
| Edgemont Ln | 0.074 |
| Ellen Ave | 0.031 |
| Ellsworth Ave | 0.050 |
| Eric Ln | 0.029 |
| Executive Hill Rd | 0.126 |
| Fairway Ln | 0.116 |

| | |
|----------------------|-------|
| Farmcrest Dr | 0.229 |
| Farmwood Rd | 0.069 |
| Fieldstream Dr | 0.164 |
| Forestview Dr | 0.337 |
| Francis Dr | 0.118 |
| Glenview Dr | 0.064 |
| Grace Ave | 0.011 |
| Granada Rd | 0.049 |
| Grassy Hill Rd | 0.633 |
| Green Ridge Ter | 0.015 |
| Greystone Rd | 0.162 |
| Grilley Rd | 0.442 |
| Hayfield Rd | 0.123 |
| Hemple Dr | 0.309 |
| Henry St | 0.097 |
| Hess Dr | 0.037 |
| Hickory Ln | 0.068 |
| Hidden Pond Rd | 0.144 |
| Hillsdale Ave | 0.094 |
| Hillside Dr | 0.164 |
| Holiday Hl | 0.031 |
| Ivy Ln | 0.120 |
| James Pl | 0.152 |
| Jasmine Ln | 0.183 |
| Jenny Ln | 0.018 |
| Judith Ln | 0.186 |
| Judy Ln | 0.017 |
| Kimberly Ct | 0.153 |
| Kingswood Ln | 0.211 |
| Klan Dr | 0.260 |
| Knollwood Cir | 0.398 |
| Kreger Dr | 0.234 |
| Lancewood Ln | 0.229 |
| Laurel Ln | 0.274 |
| Lincolndale Dr | 0.369 |
| Lisa Ct | 0.065 |
| Longmeadow Dr | 0.307 |
| Longmeadow Drive Ext | 0.060 |
| Longview Ln | 0.037 |
| Lyman Rd | 1.513 |
| Lyman Road Ext | 0.124 |
| Madera Dr | 0.238 |
| Maple View Dr | 0.173 |
| Maywood St | 0.015 |
| Mccormack Dr | 0.166 |
| Meadow Lake Dr | 0.191 |
| Melody Ln | 0.073 |
| Montoe Rd | 0.199 |
| Morris Cir | 0.043 |
| Mountain Laurel Dr | 0.033 |
| Mulberry Ln | 0.071 |
| Munson Rd | 0.540 |
| Nichols Rd | 0.051 |
| Norton Hts | 0.208 |
| Norton Rd | 0.078 |
| Nutmeg Valley Rd | 0.051 |
| Old Connecticut 69 | 0.092 |
| Old Stone Brook Ct | 0.038 |
| Overvale Rd | 0.319 |

| | |
|-------------------|-------|
| Patricia Ln | 0.033 |
| Pond Dr | 0.173 |
| Potuccos Ring Rd | 0.549 |
| Redcoat Rd | 0.069 |
| Riverview Cir | 0.191 |
| Rosengarten Dr | 0.017 |
| Running Brook Rd | 0.074 |
| Rustic Acres Dr | 0.177 |
| Ryan Pl | 0.087 |
| Saint Michaels Dr | 0.058 |
| Sandy Ln | 0.244 |
| Shagbark Rd | 0.046 |
| Sheraton Dr | 0.176 |
| Silver Pond Rd | 0.007 |
| Silvio St | 0.031 |
| Sky Hill Dr | 0.063 |
| Spindle Hill Rd | 0.458 |
| Spread Oak Ln | 0.054 |
| Spring Rd | 0.172 |
| Steep Hill Rd | 0.002 |
| Stowe Rd | 0.052 |
| Sunrise Rd | 0.634 |
| Swiss Ln | 0.103 |
| Theresa Dr | 0.192 |
| Tosun Rd | 0.079 |
| Town Line Rd | 0.074 |
| Troj Dr | 0.016 |
| Tyrell Dr | 0.080 |
| Valentino Dr | 0.111 |
| Venus Dr | 0.105 |
| Village Dr | 0.110 |
| Wakelee Rd | 0.154 |
| White Oak Ln | 0.139 |
| Williams Ct | 0.136 |
| Winfield Ave | 0.041 |
| Woodgait Dr | 0.199 |
| Zuella Dr | 0.115 |

AWS

Main Roads

| Street Name | Length miles |
|-------------------|--------------|
| Beach Rd | 0.870 |
| Chestnut Hill Ave | 0.120 |
| N Main St | 0.471 |
| Spindle Hill Rd | 0.398 |
| Wolcott Rd | 2.073 |
| Wolcott St | 0.080 |

Secondary Roads

| Street Name | Length miles |
|-------------|--------------|
| Alcott St | 0.214 |
| Andrews Rd | 0.375 |
| Bayview Cir | 0.257 |

| | |
|-------------------|-------|
| Beach Pl | 0.065 |
| Benito St | 0.002 |
| Birchwood Ct | 0.084 |
| Blackman Rd | 0.294 |
| Blansfield Ln | 0.069 |
| Blueberry Hl | 0.150 |
| Boyden St | 1.055 |
| Boyden Street Ext | 0.138 |
| Breezy Knoll Ave | 0.127 |
| Brentwood Dr | 0.180 |
| Briarwood Rd | 0.151 |
| Brookdale St | 0.267 |
| Brookfield Rd | 0.111 |
| Buckland Dr | 0.170 |
| Buckland St | 0.216 |
| Buckridge Rd | 0.045 |
| Bucks Hill Rd | 0.990 |
| Carnation Ln | 0.118 |
| Catalina Dr | 0.109 |
| Cathy Ln | 0.058 |
| Cedar Ln | 0.233 |
| Cemetery Rd | 0.027 |
| Chasse Rd | 0.392 |
| Chestnut Dr | 0.346 |
| Chestnut Hill Ave | 0.502 |
| Chestnut Hill Rd | 0.461 |
| Chicory Dr | 0.475 |
| Chipper Rd | 0.135 |
| Church Dr | 0.289 |
| Cindy Dr | 0.098 |
| Cliff Street Ext | 0.160 |
| Clinton Hill Rd | 0.629 |
| Coach Dr | 0.247 |
| Cobblefield Ct | 0.027 |
| Colby Ln | 0.039 |
| Cooper Dr | 0.184 |
| Copper Beech Rd | 0.089 |
| Cornfield Rd | 0.054 |
| Crestwood Dr | 0.151 |
| Crestwood Rd | 0.289 |
| Dan Parker Dr | 0.256 |
| Danielle Dr | 0.037 |
| Daventry Ln | 0.047 |
| Deepwood Dr | 0.371 |
| Deerwood Ln | 0.082 |
| Dellwood Rd | 0.158 |
| Devonshire Rd | 0.367 |
| Di Santo Dr | 0.002 |
| Edgemont Ln | 0.130 |
| Ellen Ave | 0.047 |
| Ellsworth Ave | 0.107 |
| Eric Ln | 0.029 |
| Executive Hill Rd | 0.126 |
| Fairway Ln | 0.116 |
| Farmcrest Dr | 0.229 |
| Farmwood Rd | 0.174 |
| Fieldstream Dr | 0.173 |
| Fieldwood Rd | 0.066 |
| Forestview Dr | 0.442 |

| | |
|----------------------|-------|
| Fox Meadow Way | 0.000 |
| Francis Dr | 0.145 |
| Glenview Dr | 0.064 |
| Grace Ave | 0.034 |
| Granada Rd | 0.080 |
| Grassy Hill Rd | 0.697 |
| Green Ridge Ter | 0.030 |
| Greystone Rd | 0.262 |
| Grilley Rd | 0.442 |
| Hartley Dr | 0.005 |
| Hayfield Rd | 0.123 |
| Hemple Dr | 0.335 |
| Henry St | 0.105 |
| Hess Dr | 0.104 |
| Hickory Ln | 0.187 |
| Hidden Pond Rd | 0.144 |
| Hillcrest Dr | 0.062 |
| Hillsdale Ave | 0.094 |
| Hillside Dr | 0.164 |
| Holiday Hl | 0.053 |
| Ivy Ln | 0.132 |
| James Pl | 0.153 |
| Jasmine Ln | 0.212 |
| Jean St | 0.003 |
| Jenny Ln | 0.036 |
| Judith Ln | 0.192 |
| Judy Ln | 0.111 |
| Kimberly Ct | 0.172 |
| Kingswood Ln | 0.229 |
| Klan Dr | 0.265 |
| Knollwood Cir | 0.398 |
| Kodak St | 0.014 |
| Kreger Dr | 0.280 |
| Lancewood Ln | 0.229 |
| Laurel Ln | 0.306 |
| Lincolndale Dr | 0.369 |
| Lisa Ct | 0.065 |
| Longmeadow Dr | 0.580 |
| Longmeadow Drive Ext | 0.076 |
| Longview Ln | 0.056 |
| Lyman Rd | 1.542 |
| Lyman Road Ext | 0.124 |
| Madera Dr | 0.275 |
| Maple View Dr | 0.217 |
| Maywood St | 0.022 |
| Mccormack Dr | 0.221 |
| Meadow Lake Dr | 0.200 |
| Meadowbrook Ln | 0.003 |
| Melody Ln | 0.097 |
| Montoe Rd | 0.262 |
| Morris Cir | 0.043 |
| Mountain Laurel Dr | 0.041 |
| Mulberry Ln | 0.071 |
| Munson Rd | 0.540 |
| Nicholas Cir | 0.012 |
| Nichols Rd | 0.111 |
| Norton Hts | 0.232 |
| Norton Rd | 0.078 |
| Nutmeg Valley Rd | 0.072 |

| | |
|--------------------|-------|
| Old Connecticut 69 | 0.092 |
| Old Stone Brook Ct | 0.055 |
| Overvale Rd | 0.338 |
| Patricia Ln | 0.104 |
| Pond Dr | 0.173 |
| Potuccos Ring Rd | 0.632 |
| Redcoat Rd | 0.128 |
| Riverview Cir | 0.220 |
| Rose St | 0.020 |
| Rosengarten Dr | 0.063 |
| Running Brook Rd | 0.074 |
| Rustic Acres Dr | 0.180 |
| Ryan Pl | 0.098 |
| Saint Michaels Dr | 0.073 |
| Sandy Ln | 0.325 |
| Shagbark Rd | 0.046 |
| Sheraton Dr | 0.176 |
| Silver Pond Rd | 0.007 |
| Silvio St | 0.031 |
| Sky Hill Dr | 0.197 |
| Spindle Hill Rd | 0.525 |
| Spread Oak Ln | 0.054 |
| Spring Rd | 0.193 |
| Steep Hill Rd | 0.017 |
| Stowe Rd | 0.070 |
| Sunrise Rd | 0.634 |
| Superior Dr | 0.019 |
| Swiss Ln | 0.103 |
| Theresa Dr | 0.202 |
| Tosun Rd | 0.097 |
| Town Line Rd | 0.082 |
| Troj Dr | 0.016 |
| Tyrell Dr | 0.142 |
| Valentino Dr | 0.121 |
| Venus Dr | 0.106 |
| Village Dr | 0.110 |
| Wakelee Rd | 0.232 |
| Waller Ave | 0.006 |
| White Oak Ln | 0.151 |
| Williams Ct | 0.169 |
| Winfield Ave | 0.075 |
| Woodgaite Dr | 0.199 |
| Zuella Dr | 0.135 |

WCS

Main Roads

| Street Name | Length miles |
|-------------------|--------------|
| Beach Rd | 0.933 |
| Cedar Ln | 0.072 |
| Chestnut Hill Ave | 0.128 |
| N Main St | 0.665 |
| Spindle Hill Rd | 0.471 |
| Wolcott Rd | 2.245 |

| | |
|------------|-------|
| Wolcott St | 0.095 |
|------------|-------|

Secondary Roads

| Street Name | Length miles |
|-------------------|--------------|
| Alcott St | 0.214 |
| Andrews Rd | 0.424 |
| Bayview Cir | 0.324 |
| Beach Pl | 0.065 |
| Benito St | 0.012 |
| Birchwood Ct | 0.084 |
| Blackman Rd | 0.294 |
| Blansfield Ln | 0.154 |
| Blueberry Hl | 0.162 |
| Bosse Rd | 0.004 |
| Boyden St | 1.055 |
| Boyden Street Ext | 0.145 |
| Breezy Knoll Ave | 0.172 |
| Brentwood Dr | 0.180 |
| Briarwood Rd | 0.151 |
| Brookdale St | 0.267 |
| Brookfield Rd | 0.111 |
| Buckland Dr | 0.170 |
| Buckland St | 0.216 |
| Buckridge Rd | 0.063 |
| Bucks Hill Rd | 1.230 |
| Carnation Ln | 0.128 |
| Cassandra Dr | 0.058 |
| Catalina Dr | 0.115 |
| Cathy Ln | 0.068 |
| Cedar Ln | 0.190 |
| Cemetery Rd | 0.035 |
| Chasse Rd | 0.445 |
| Chestnut Dr | 0.346 |
| Chestnut Hill Ave | 0.543 |
| Chestnut Hill Rd | 0.507 |
| Chicory Dr | 0.499 |
| Chipper Rd | 0.197 |
| Church Dr | 0.289 |
| Cindy Dr | 0.098 |
| Cliff Street Ext | 0.167 |
| Clinton Hill Rd | 0.693 |
| Coach Dr | 0.247 |
| Cobblefield Ct | 0.039 |
| Colby Ln | 0.172 |
| Cooper Dr | 0.184 |
| Copper Beech Rd | 0.089 |
| Cornfield Rd | 0.054 |
| Crestwood Dr | 0.151 |
| Crestwood Rd | 0.289 |
| Dan Parker Dr | 0.284 |
| Danielle Dr | 0.064 |
| Daventry Ln | 0.047 |
| Deepwood Dr | 0.371 |
| Deerwood Ln | 0.123 |
| Dellwood Rd | 0.158 |
| Devonshire Rd | 0.367 |
| Di Santo Dr | 0.011 |

| | |
|----------------------|-------|
| Edgemont Ln | 0.162 |
| Ellen Ave | 0.060 |
| Ellsworth Ave | 0.119 |
| Eric Ln | 0.029 |
| Executive Hill Rd | 0.126 |
| Fairway Ln | 0.116 |
| Farmcrest Dr | 0.229 |
| Farmwood Rd | 0.244 |
| Fieldstone Rd | 0.139 |
| Fieldstream Dr | 0.173 |
| Fieldwood Rd | 0.262 |
| Forestview Dr | 0.578 |
| Fox Meadow Way | 0.030 |
| Francis Dr | 0.158 |
| Glenview Dr | 0.064 |
| Grace Ave | 0.054 |
| Granada Rd | 0.080 |
| Grassy Hill Rd | 0.743 |
| Green Ridge Ter | 0.042 |
| Greystone Rd | 0.311 |
| Grilley Rd | 0.442 |
| Hartley Dr | 0.063 |
| Hayfield Rd | 0.123 |
| Haystack Cir | 0.006 |
| Hemple Dr | 0.503 |
| Henry St | 0.127 |
| Hess Dr | 0.182 |
| Hickory Ln | 0.334 |
| Hidden Pond Rd | 0.144 |
| Hillcrest Dr | 0.101 |
| Hillsdale Ave | 0.094 |
| Hillside Dr | 0.164 |
| Holiday Hl | 0.070 |
| Ivy Ln | 0.146 |
| James Pl | 0.153 |
| Jasmine Ln | 0.228 |
| Jean St | 0.012 |
| Jenny Ln | 0.053 |
| Judith Ln | 0.198 |
| Judy Ln | 0.132 |
| Kearney Dr | 0.052 |
| Kimberly Ct | 0.172 |
| Kingswood Ln | 0.229 |
| Klan Dr | 0.270 |
| Knollwood Cir | 0.398 |
| Kodak St | 0.023 |
| Kreger Dr | 0.309 |
| Lancewood Ln | 0.229 |
| Laurel Ln | 0.306 |
| Laurie Pl | 0.014 |
| Lincolndale Dr | 0.369 |
| Lisa Ct | 0.065 |
| Longmeadow Dr | 0.930 |
| Longmeadow Drive Ext | 0.106 |
| Longview Ln | 0.139 |
| Lyman Rd | 1.550 |
| Lyman Road Ext | 0.124 |
| Madera Dr | 0.292 |
| Maple View Dr | 0.261 |

| | |
|--------------------|-------|
| Maywood St | 0.028 |
| Mccormack Dr | 0.244 |
| Meadow Lake Dr | 0.200 |
| Meadowbrook Ln | 0.014 |
| Melody Ln | 0.097 |
| Montoe Rd | 0.333 |
| Morris Cir | 0.043 |
| Mountain Laurel Dr | 0.049 |
| Mulberry Ln | 0.071 |
| Munson Rd | 0.540 |
| Nicholas Cir | 0.055 |
| Nichols Rd | 0.123 |
| Norton Hts | 0.232 |
| Norton Rd | 0.078 |
| Nutmeg Valley Rd | 0.085 |
| Old Connecticut 69 | 0.092 |
| Old Stone Brook Ct | 0.055 |
| Overvale Rd | 0.338 |
| Palma Cir | 0.011 |
| Patricia Ln | 0.170 |
| Pond Dr | 0.173 |
| Potuccos Ring Rd | 0.668 |
| Randall Pl | 0.000 |
| Redcoat Rd | 0.205 |
| Riverview Cir | 0.220 |
| Rose St | 0.042 |
| Rosengarten Dr | 0.108 |
| Running Brook Rd | 0.074 |
| Rustic Acres Dr | 0.180 |
| Ryan Pl | 0.108 |
| Saint Michaels Dr | 0.086 |
| Sandy Ln | 0.348 |
| Shagbark Rd | 0.046 |
| Sheraton Dr | 0.176 |
| Silver Pond Rd | 0.007 |
| Silvio St | 0.031 |
| Sky Hill Dr | 0.408 |
| Spindle Hill Rd | 0.630 |
| Spread Oak Ln | 0.054 |
| Spring Rd | 0.193 |
| Steep Hill Rd | 0.032 |
| Stonehollow Rd | 0.029 |
| Stowe Rd | 0.116 |
| Sunrise Rd | 0.634 |
| Superior Dr | 0.066 |
| Swiss Ln | 0.103 |
| Theresa Dr | 0.202 |
| Tosun Rd | 0.118 |
| Town Line Rd | 0.090 |
| Troj Dr | 0.016 |
| Tyrell Dr | 0.142 |
| Valentino Dr | 0.131 |
| Venus Dr | 0.106 |
| Village Dr | 0.110 |
| Wakelee Rd | 0.305 |
| Waller Ave | 0.015 |
| White Oak Ln | 0.271 |
| Williams Ct | 0.203 |
| Winfield Ave | 0.086 |

| | |
|-------------|-------|
| Woodgait Dr | 0.199 |
| Zuella Dr | 0.135 |

- Q21. What nearby AT&T wireless facilities (or sectors) are nearing capacity limits? At what frequencies? Please include a projected exhaustion date for each of these sectors. Would the deployment of the proposed facility be sufficient to address AT&T's capacity concerns or would an additional facility be required in the near term to off-load traffic?
- A21. *AT&T's neighboring site CT1005 to the south-southwest is fully loaded and exhausted now. It is anticipated that AT&T's proposed facility will off-load capacity from this site.*

Backup Power

- Q22. Would AT&T utilize a backup generator? If yes, please respond to the following:
- a) What is the fuel source for the backup generator?
 - b) If fueled by propane, what measures would AT&T implement or employ to ensure an adequate supply of backup power for the site in the event of a propane fuel shortage?
 - c) Would the backup generator have containment measures to protect against fluid leakage?
 - d) What would be the respective run time for AT&T's backup generator before it requires refueling, assuming it is running at full load under normal conditions?
 - e) Would the backup generator run periodically for maintenance purposes? If so, at what frequency and duration? Would this be scheduled for daytime hours?
 - f) Would the backup generator be managed to comply with Regulations of Connecticut State Agencies Section 22a-174-3b?
- A22. *Yes, AT&T proposes a 15kW polar propane generator mounted on a steel platform.*
- a. *The fuel source is propane.*
 - b. *In the unlikely event of a shortage of propane fuel, AT&T would rely on its battery system for back-up power.*
 - c. *As a propane-fueled generator, there is no need for any type of liquid fuel containment.*
 - d. *The approximate run time for AT&T's emergency backup generator before refueling is required is 141 hours.*
 - e. *Yes, the back-up generator would be run once a week for maintenance purposes for approximately 30 minutes during daytime hours.*
 - f. *Yes, the back-up emergency generator will comply with the "permit by rule" criteria pursuant to R.C.S.A. Section 22a-174-3b.*

Q23. Would a battery backup (if applicable) be used by AT&T to provide uninterrupted power and prevent a reboot condition? How long could the battery backup alone supply power to the facility in the event that the generator fails to start?

A23. *Yes, a battery back-up will be used to provide uninterrupted power. This battery back-up will supply power for approximately 4 to 6 hours.*

Public Safety

Q24. Would AT&T's proposed facility support text-to-911 service? Is additional equipment required for this purpose?

A24. *Yes, the proposed Facility will support text-to-911 service and no additional equipment is required.*

Q25. Would AT&T's antennas comply with federal E911 requirements?

A25. *Yes.*

Q26. Would AT&T's installation comply with the intent of the Warning, Alert and Response Network Act of 2006?

A26. *Yes. AT&T will send alerts from the proposed Facility pursuant to the Warning, Alert and Response Network Act of 2006.*

Q27. Would AT&T's proposed equipment at the proposed facility comply with Department of Energy and Environmental Protection noise control standards at the property boundaries?

A27. *Yes. The proposed equipment will comply with Department of Energy and Environmental Protection noise control standards at the property boundaries.*

Q28. Would an AT&T facility at this location provide FirstNet services?

A28. *Yes. AT&T will deploy FirstNet services from this facility.*

CERTIFICATE OF SERVICE

I hereby certify that on this day the foregoing was sent electronically and one hard copy via first class mail to the Connecticut Siting Council and sent electronically to the service list below, in accordance with Connecticut Siting Council directives.

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
kbaldwin@rc.com

Andrew Candiello
Sr. Manager – Real Estate/Regulatory
Cellco Partnership d/b/a Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492
Andrew.candiello@verizowireless.com

Dated: December 1, 2020



Lucia Chiocchio
Daniel Patrick
Cuddy & Feder LLP
445 Hamilton Ave, 14th Floor
White Plains, NY 10601
(914)-761-1300

ATTACHMENT 1



SITE PLAN
 22x34 SCALE: 1"=60'
 11x17 SCALE: 1"=120'

1
LE-1



45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
 TEL: (978) 557-5553
 FAX: (978) 336-5586



12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1432
SITE NAME: WOLCOTT CHESTNUT HILL ROAD

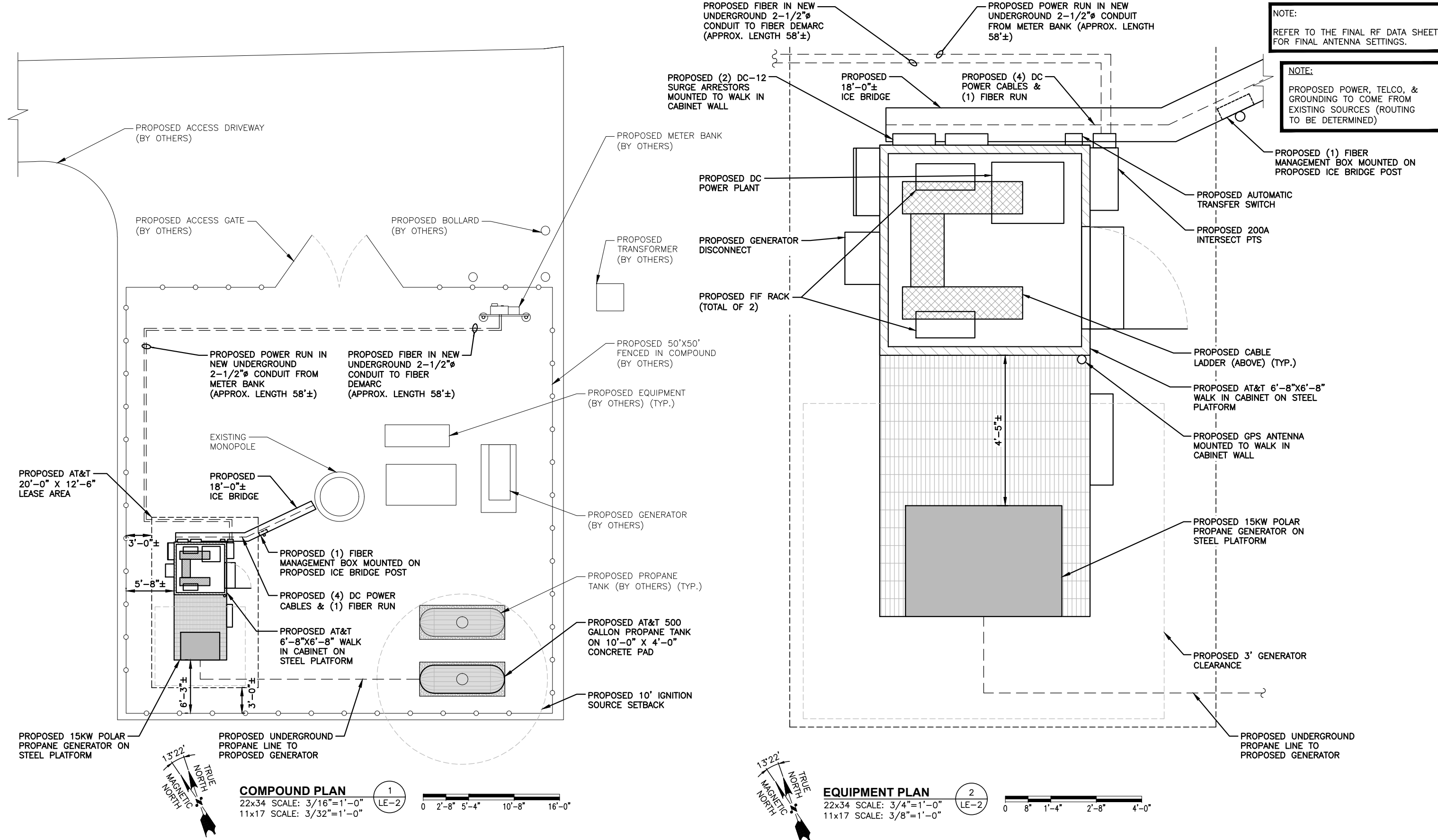
CHESTNUT HILL ROAD
 WOLCOTT, CT 06716
 NEW HAVEN COUNTY



550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

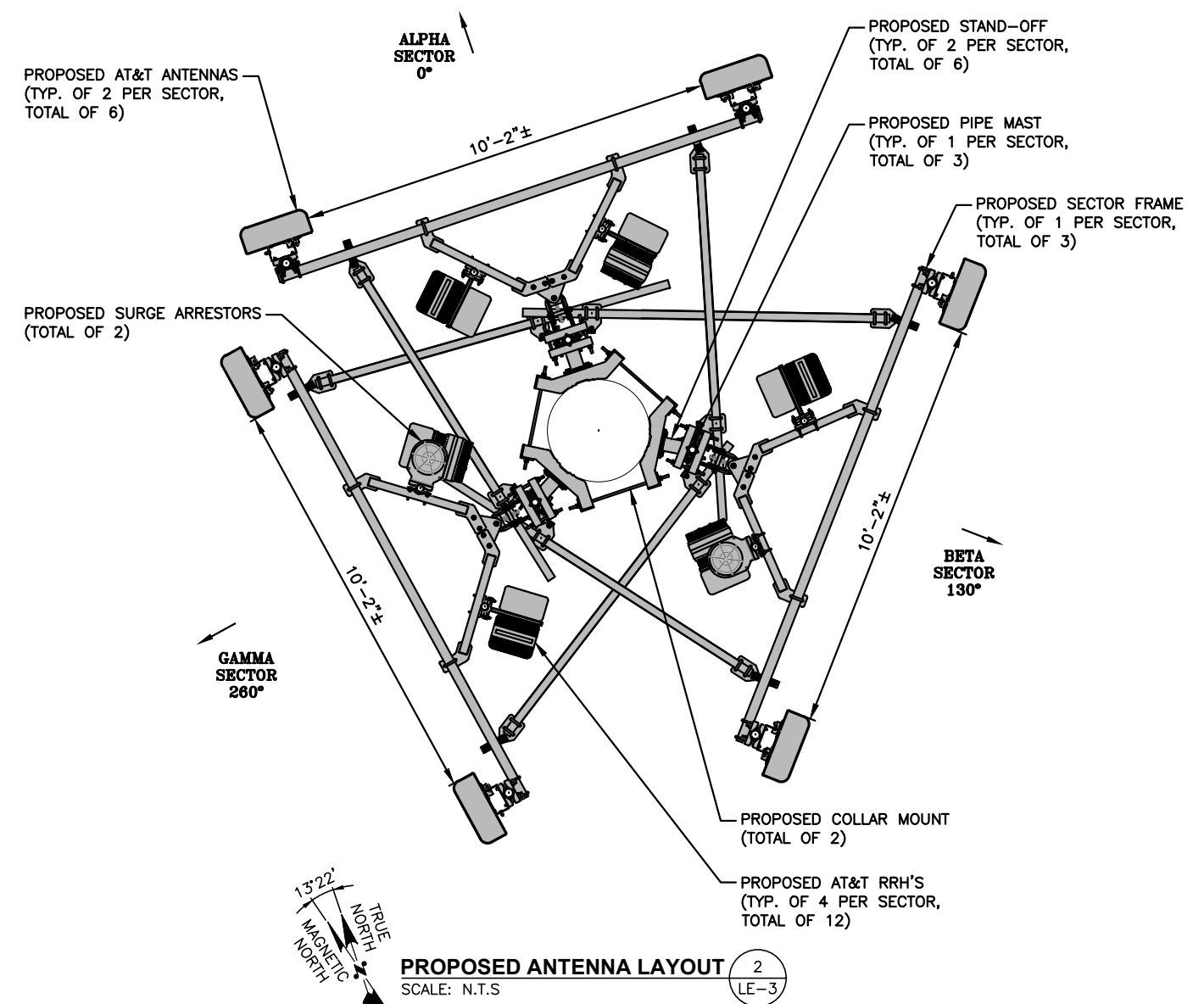
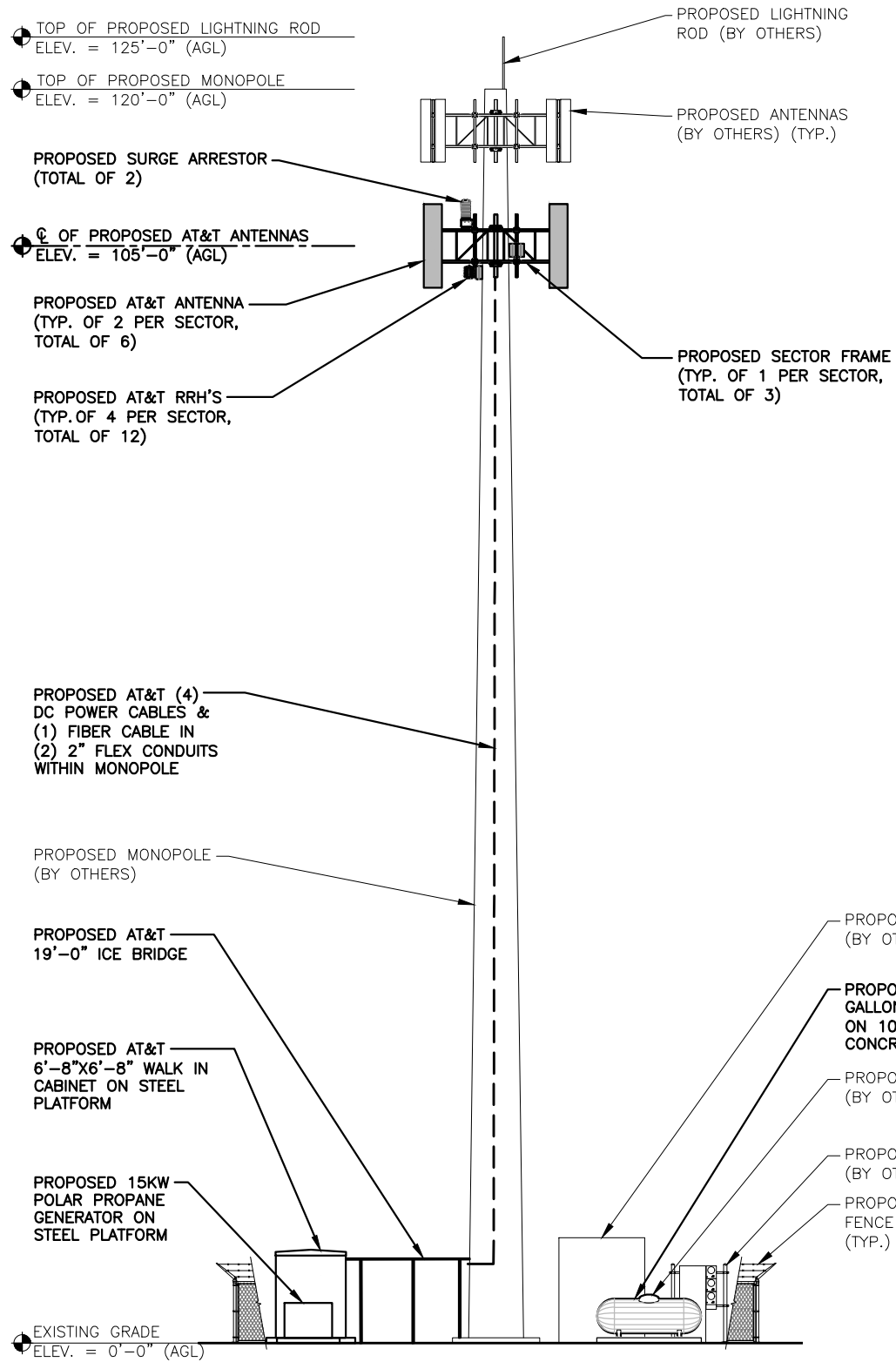
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| 0 | 11/24/20 | ISSUED FOR REVIEW | CC | JC | DPH |
| SCALE: AS SHOWN | | DESIGNED BY: JC | DRAWN BY: CC | | |

| AT&T | | |
|-----------------|----------------|-----|
| SITE PLAN (NSB) | | |
| SITE NUMBER | DRAWING NUMBER | REV |
| CT1432 | LE-1 | 0 |



| | | | | | |
|-----------------|----------|-------------------|--------------|-----|-------|
| 0 | 11/24/20 | ISSUED FOR REVIEW | CC | JC | DPH |
| NO. | DATE | REVISIONS | BY | CHK | APP'D |
| SCALE: AS SHOWN | | DESIGNED BY: JC | DRAWN BY: CC | | |

| | | |
|----------------------------------|----------------|-----|
| AT&T | | |
| COMPOUND & EQUIPMENT PLANS (NSB) | | |
| SITE NUMBER | DRAWING NUMBER | REV |
| CT1432 | LE-2 | 0 |



SOUTHWEST ELEVATION

22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

1
LE-3



NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586



12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1432
SITE NAME: WOLCOTT CHESTNUT HILL ROAD

CHESTNUT HILL ROAD
WOLCOTT, CT 06716
NEW HAVEN COUNTY



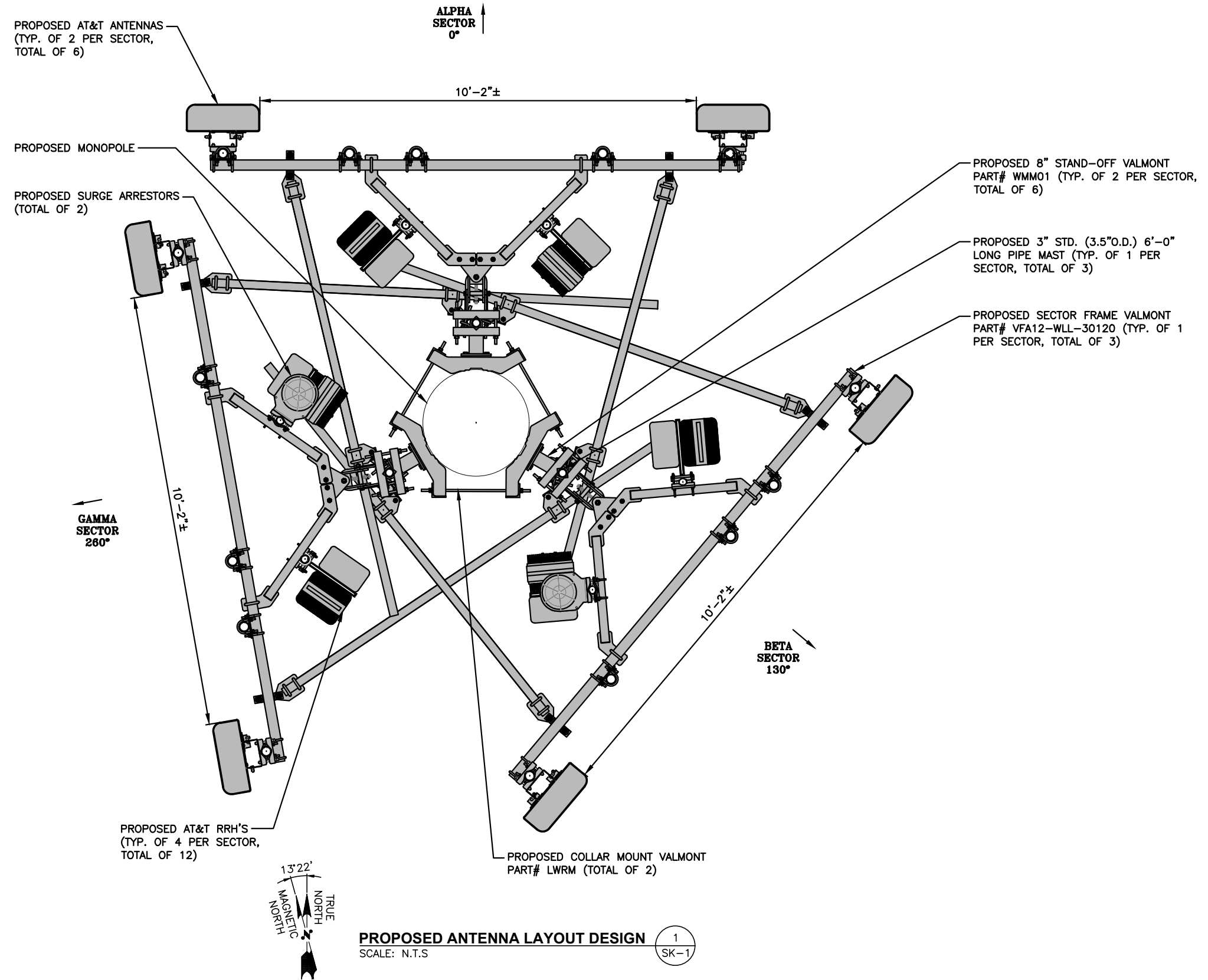
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| | | | | | |
|-----------------|----------|-------------------|--------------|-------|-----|
| NO. | DATE | ISSUED FOR REVIEW | CC | JC | DPH |
| 0 | 11/24/20 | ISSUED FOR REVIEW | | | |
| REVISIONS | | BY | CHK | APP'D | |
| SCALE: AS SHOWN | | DESIGNED BY: JC | DRAWN BY: CC | | |

AT&T
ANTENNA LAYOUT & ELEVATION (NSB)

| | | |
|-------------|----------------|-----|
| SITE NUMBER | DRAWING NUMBER | REV |
| CT1432 | LE-3 | 0 |

NOT FOR CONSTRUCTION



45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586



12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1432
SITE NAME: WOLCOTT CHESTNUT HILL ROAD

CHESTNUT HILL ROAD
WOLCOTT, CT 06716
NEW HAVEN COUNTY

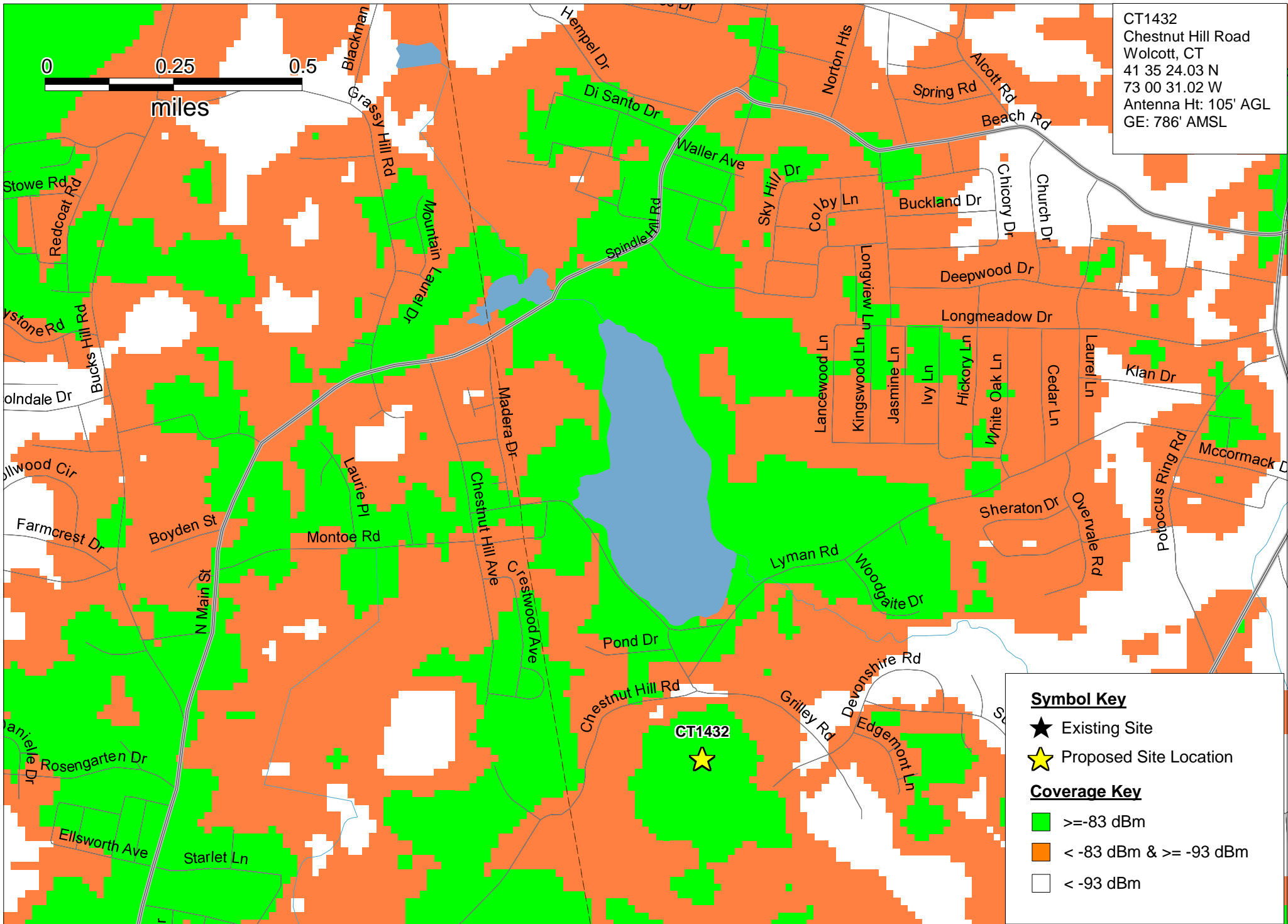


550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

| | | | | | |
|-----------------|----------|-------------------|--------------|-----|-------|
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| NO. | DATE | REVISIONS | BY | CHK | APP'D |
| SCALE: AS SHOWN | | DESIGNED BY: JC | DRAWN BY: CC | | |

| | | |
|---|----------------|-----|
| AT&T | | |
| PROPOSED ANTENNA LAYOUT DESIGN (NSB) | | |
| SITE NUMBER | DRAWING NUMBER | REV |
| CT1432 | SK-1 | 0 |

ATTACHMENT 2



CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL

Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- < -83 dBm & ≥ -93 dBm
- < -93 dBm

Existing & Proposed
 700 MHz Coverage

CT1432

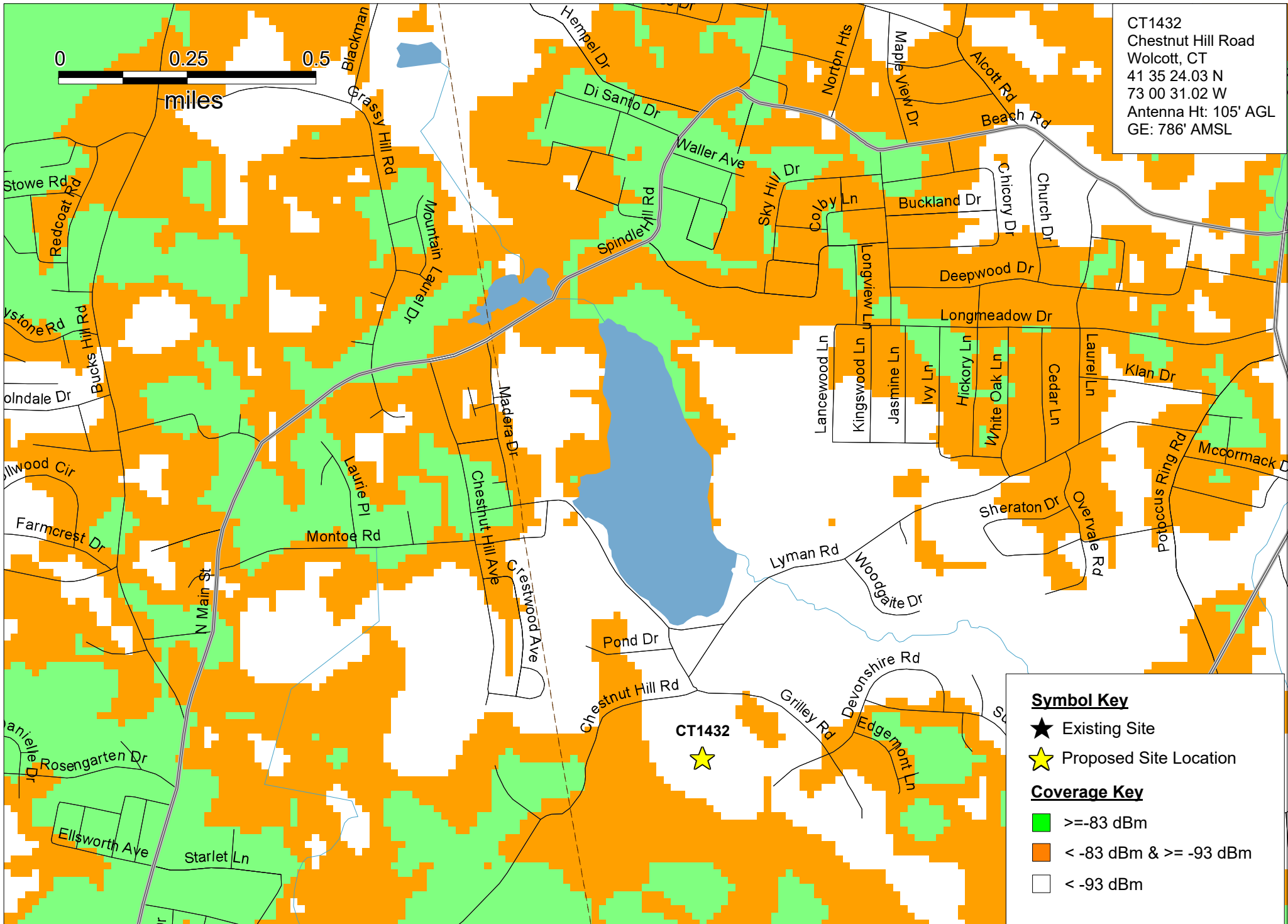
Chestnut Hill Road
 Wolcott, CT



PREPARED ON _____
 DATE: 11/19/2020

REV 0

CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL



Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- < -83 dBm & ≥ -93 dBm
- < -93 dBm

Existing Coverage
 850 MHz 5G

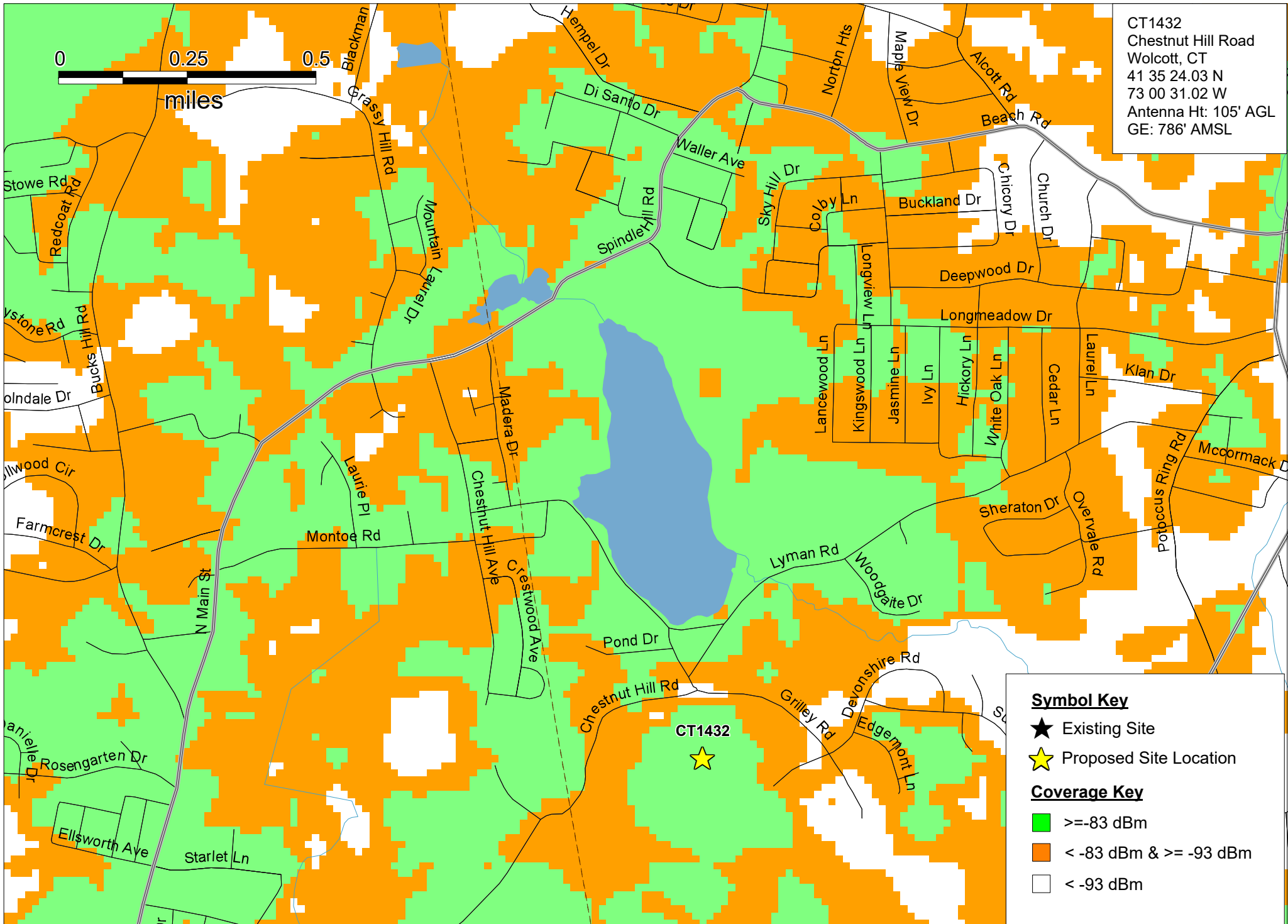
CT1432

Chestnut Hill Road
 Wolcott, CT



PREPARED ON
 DATE: 11/24/2020

REV 0



CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL

Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- >=-83 dBm
- <-83 dBm & >=-93 dBm
- <-93 dBm

Existing & Proposed
 850 MHz 5G Coverage

CT1432

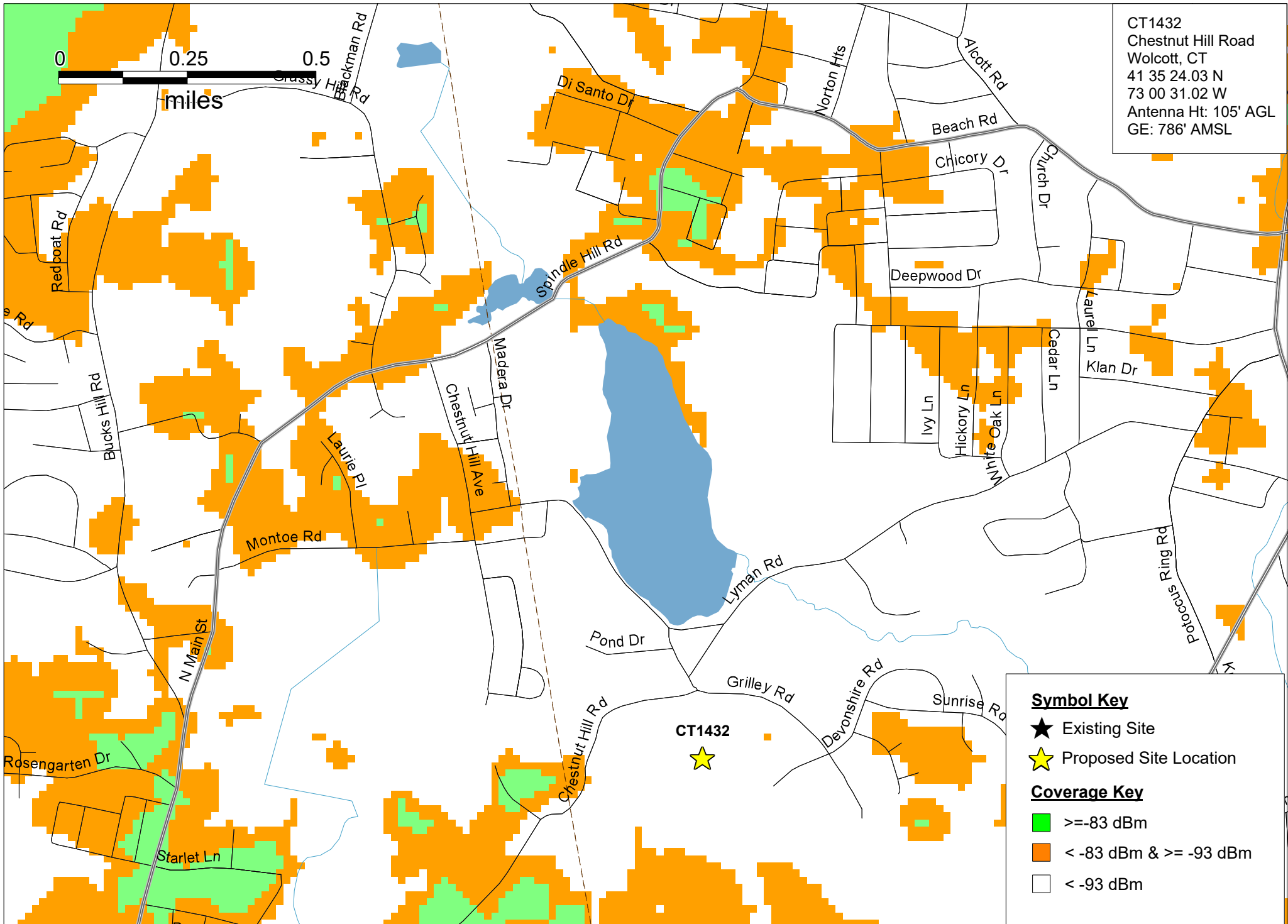
Chestnut Hill Road
 Wolcott, CT



PREPARED ON
 DATE: 11/24/2020

REV 0

CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL



Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- < -83 dBm & ≥ -93 dBm
- < -93 dBm

Existing Coverage
 AWS LTE

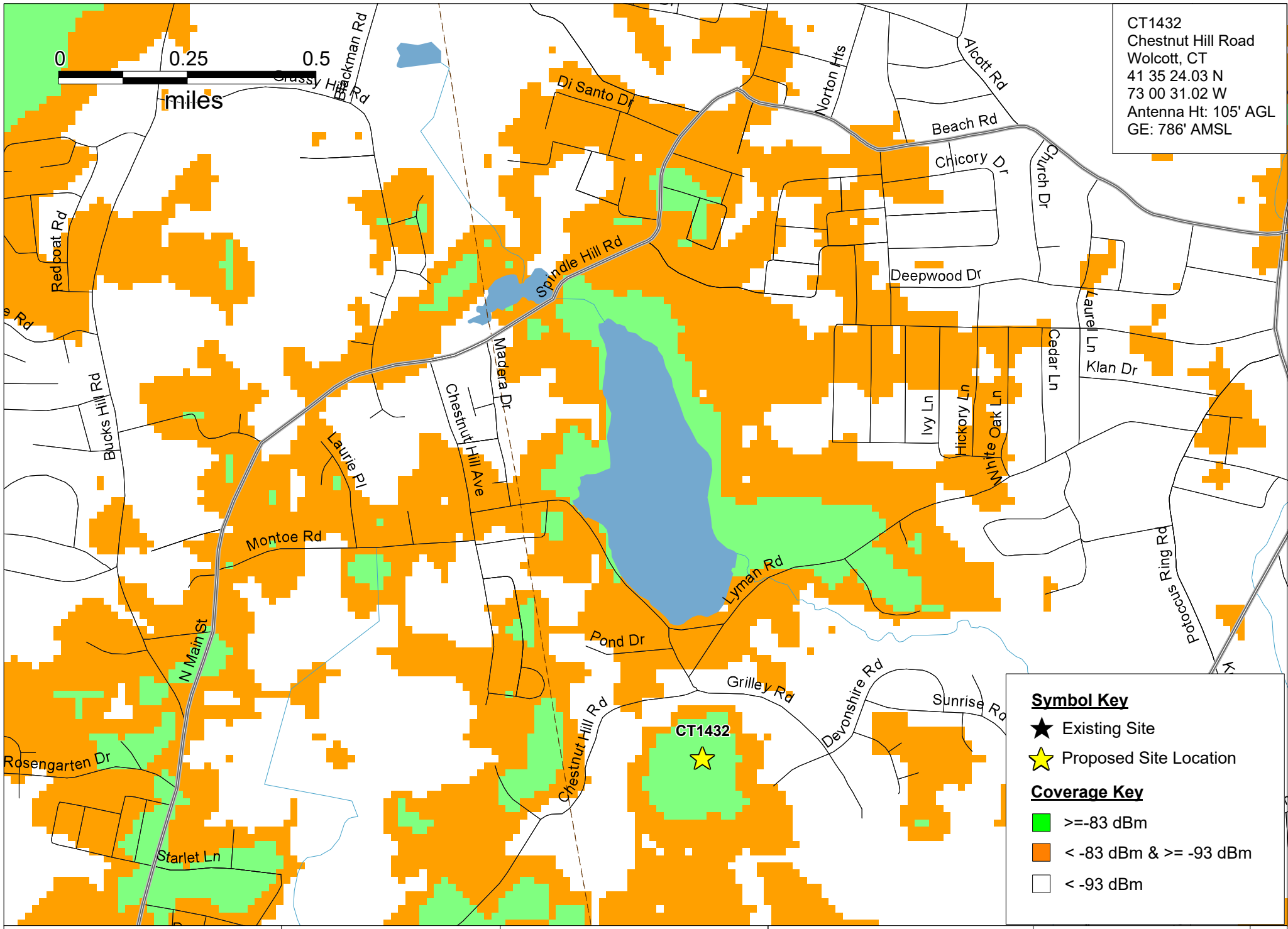
CT1432

Chestnut Hill Road
 Wolcott, CT



PREPARED ON
 DATE: 11/24/2020

REV 0



CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL

Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- -83 dBm & ≥ -93 dBm
- < -93 dBm

Existing & Proposed
 AWS LTE Coverage

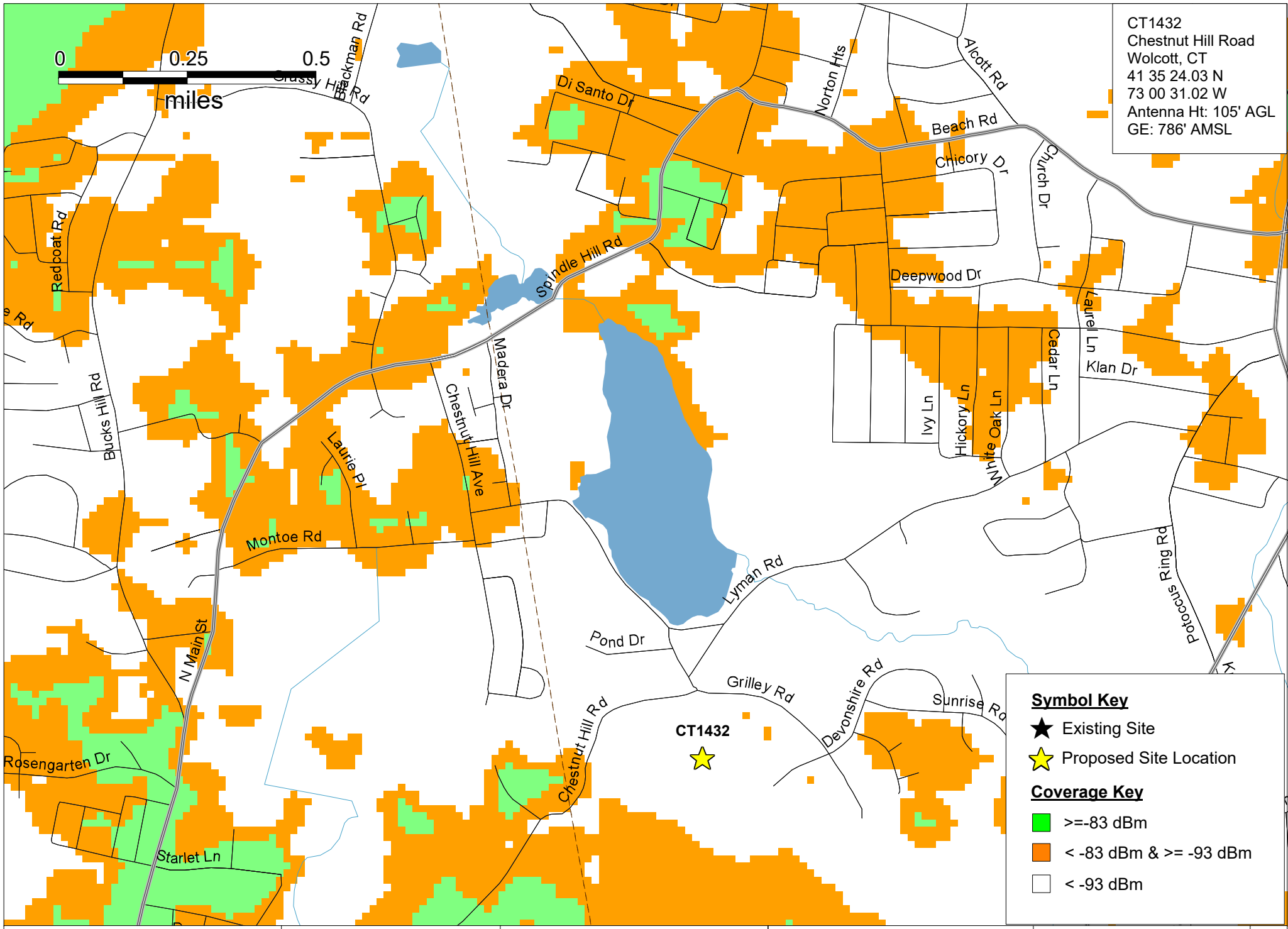
CT1432

Chestnut Hill Road
 Wolcott, CT



PREPARED ON _____
 DATE: 11/24/2020

REV 0



CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL

Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- >=-83 dBm
- <-83 dBm & >=-93 dBm
- <-93 dBm

Existing Coverage
 PCS LTE

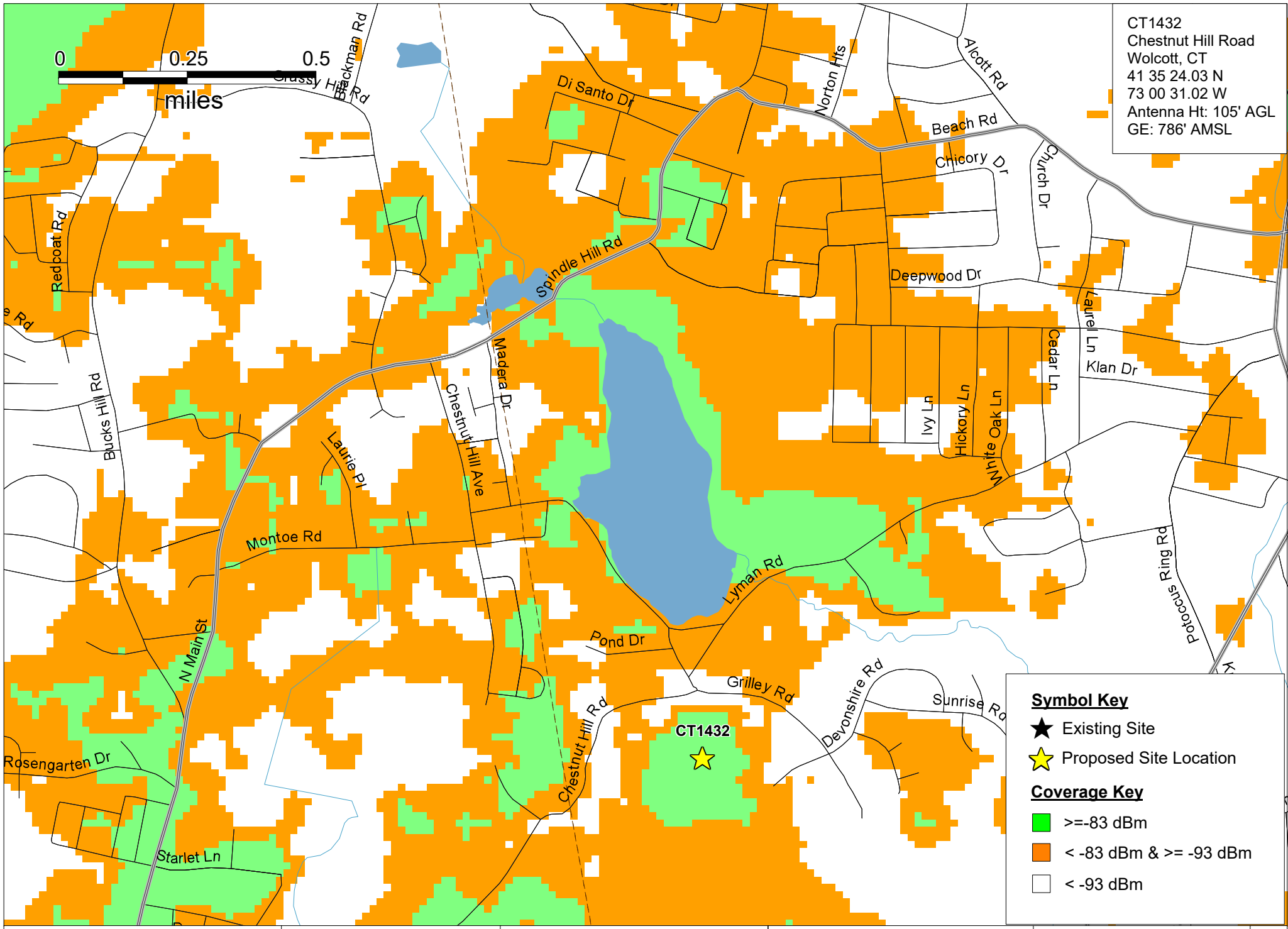
CT1432

Chestnut Hill Road
 Wolcott, CT



PREPARED ON
 DATE: 11/24/2020

REV 0



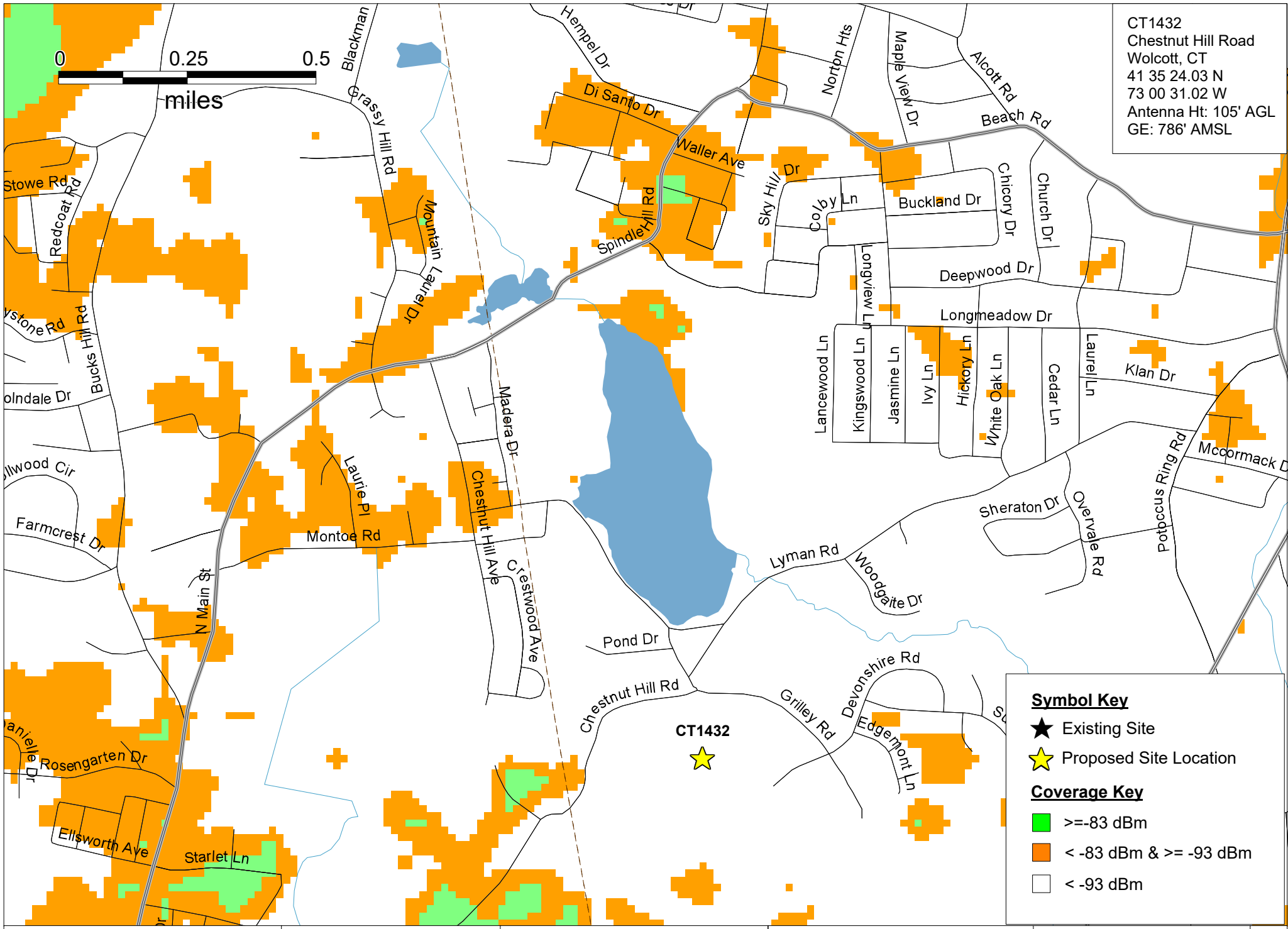
CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL

Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- < -83 dBm & ≥ -93 dBm
- < -93 dBm



CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL

Symbol Key

- ★ Existing Site
- ☆ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- < -83 dBm & ≥ -93 dBm
- < -93 dBm

Existing Coverage
 WCS LTE

CT1432

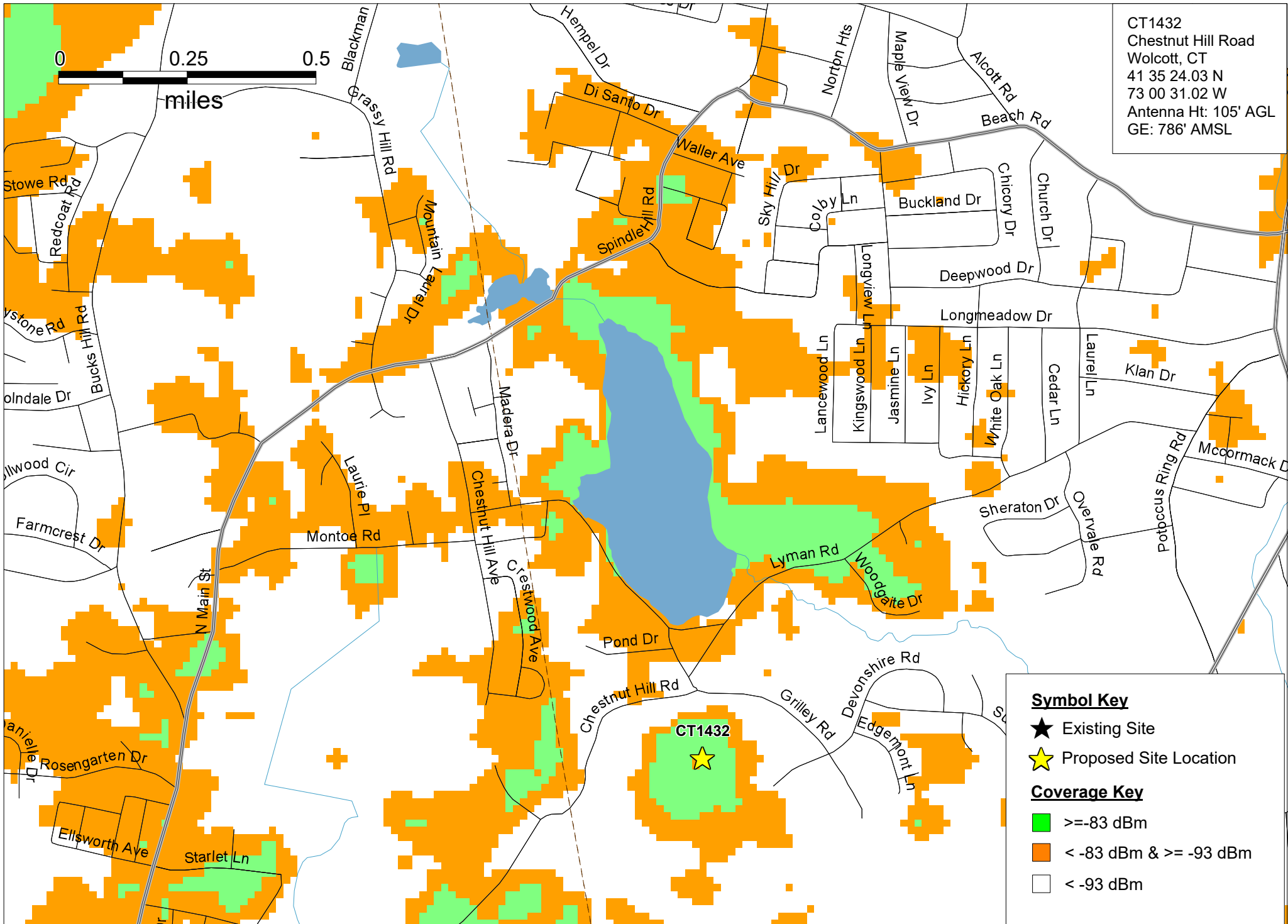
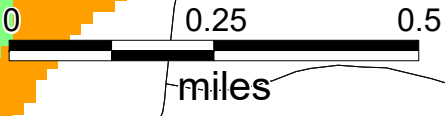
Chestnut Hill Road
 Wolcott, CT



PREPARED ON _____
 DATE: 11/24/2020

REV 0

CT1432
 Chestnut Hill Road
 Wolcott, CT
 41 35 24.03 N
 73 00 31.02 W
 Antenna Ht: 105' AGL
 GE: 786' AMSL



Symbol Key

- ★ Existing Site
- ★ Proposed Site Location

Coverage Key

- ≥ -83 dBm
- < -83 dBm & ≥ -93 dBm
- < -93 dBm

Existing & Proposed
 WCS LTE Coverage

CT1432

Chestnut Hill Road
 Wolcott, CT



PREPARED ON _____
 DATE: 11/24/2020

REV 0

ATTACHMENT 3

Radio Frequency Analysis Report

CT1432
Chestnut Hill Road, Wolcott, CT



November 25, 2020



C Squared Systems, LLC
65 Dartmouth Drive, A3
Auburn, NH 03032

Phone: (603) 644-2800
Fax: (603) 644-2801
Support@csquaredsystems.com

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1. Overview

C Squared Systems was retained by New Cingular Wireless PCS, LLC (“AT&T”) to evaluate the proposed wireless communications facility at Chestnut Hill Road, Wolcott, CT at 105 feet AGL, hereinafter referred to as “CT1432”.

AT&T is licensed by the FCC to provide wireless communications services throughout the State of Connecticut including the Town of Wolcott where the proposed facility would be located. The proposed facility has been selected as suitable for implementation of the National Public Safety Broadband Network (“NPSBN”), while also addressing a substantial gap in 4G LTE coverage for AT&T’s network.

This report addresses AT&T’s need for the proposed wireless facility and confirms that there are no other suitable existing structures that could address the coverage gaps in their wireless communications network.

The coverage analysis completed by C Squared Systems confirms: AT&T has a gap in reliable service in Wolcott, and that Candidate “CT1432” provides AT&T with coverage in that service gap. Included as attachments in this report are coverage maps detailing the existing network and expected coverage from the proposed facility, pertinent site information, terrain and network layout maps.

2. Technology Advances & Design Evolution

AT&T provides digital voice and data services using 3rd Generation (3G) UMTS technology in the 800 MHz and 1900 MHz frequency band, and advanced 4th Generation (4G) services over LTE technology in the 700 MHz and 1900 MHz frequency bands as allocated by the FCC. These data networks are used by mobile devices for fast web browsing, media streaming, and other applications that require broadband connections. The mobile devices that benefit from these advanced data networks are not limited to basic handheld phones, but also include devices such as smartphones, PDA’s, tablets, and laptop air-cards. 4G LTE services and devices have enabled AT&T customers to have even faster connections to people, information, and entertainment.

AT&T will also deploy FirstNet services from this facility. FirstNet is a federal agency with a mandate to create a nationwide, interoperable public safety broadband network for first responders. First responders across the country currently rely on more than 10,000 separate radio networks which oftentimes do not interoperate with one another. By deploying a nationwide broadband public safety network built specifically to meet the communications needs of first responders, the FirstNet network will provide a solution to the decades-long interoperability and communications challenges first responders have experienced, and which was highlighted by the 9/11 Commission’s 2004 Final Report.

FirstNet selected AT&T to build, manage and operate the National Public Safety Broadband Network (“NPSBN”) using FirstNet’s Band 14 spectrum (Call Sign WQQE234, 20 MHz of the 700 MHz spectrum), together with AT&T’s own wireless network. Using a combination of new and existing wireless facilities, AT&T provides prioritized, preemptive wireless services for first responders across Connecticut, New England and nationwide, while also improving 4G LTE coverage for AT&T customers.

It is important to note that with AT&T’s migration from 3G to 4G services come changes in the base station infrastructure and resultant changes in the operating thresholds required by the LTE network. In the past, AT&T has presented receive signal thresholds of -74 dBm for their in-building coverage threshold and -82 dBm for their in-vehicle coverage threshold. Those thresholds were based on network requirements to support 2G/3G data speeds and past usage demand. Today, customers expect low latency and faster data speeds as evidenced by increasing data usage trends and customer demand.

AT&T's 4G LTE technology is designed to thresholds of -83 dBm and -93 dBm for their 700 MHz LTE and -86 dBm and -96 dBm for their 1900 MHz LTE.¹ The stronger thresholds (-83 dBm and -86 dBm) yield greater throughputs and improved customer experience. The -93 dBm and -96 dBm thresholds are the minimum acceptable levels required to meet customer expectations for 4G service.

3. Coverage Objective

There is a significant coverage deficiency in the existing AT&T wireless communications network along Lyman Road and Woodgate Drive and the neighboring residential and business/retail areas in Wolcott, referred to herein as the "targeted area". A deficiency in coverage is evidenced by the inability to adequately and reliably transmit/receive quality calls and/or utilize data services offered by the network. Seamless reliable coverage provides users with the ability to successfully originate, receive, and maintain quality calls and data applications throughout a service area. Appropriate overlapping coverage is required for users to be able to move throughout the service area and reliably "hand-off" between cells to maintain uninterrupted connections.

AT&T is expanding and enhancing their 4G LTE high-speed wireless broadband services throughout New England by filling in existing coverage gaps and addressing capacity, interference, and high-speed broadband issues. In addition to improving 4G LTE coverage for AT&T customers, AT&T is also building, managing and operating the National Public Safety Broadband Network using FirstNet's 700 MHz Band 14 spectrum, in order to provide prioritized, preemptive wireless services for first responders across Connecticut, New England and nationwide.

Due to terrain characteristics and the distance between the targeted coverage area and the existing sites, AT&T's options to provide services in this area are quite limited (maps of the terrain in this area and the distance to neighboring AT&T sites from the proposed site are included as Attachments 1 & 2, respectively). AT&T's network requires deployment of antennas throughout the area to be covered. These antennas are connected to receivers and transmitters that operate in a limited geographic area known as a "cell." AT&T's wireless network, including their wireless handsets and devices, operate by transmitting and receiving low power radio frequency signals to and from these cell sites. The signals are transferred to and from the landline telephone network and routed to their destinations by sophisticated electronic equipment. The size of the area served by each cell site is dependent on several factors, including the number of antennas used, the height at which the antennas are deployed, the topography of the land, vegetative cover and natural or man-made obstructions in the area. As customers move throughout the service area, the transmission from the portable devices is automatically transferred to the AT&T facility with the best connection to the device, without interruption in service provided that there is overlapping coverage from the cells.

In order to define the extent of the coverage gap to be filled, both propagation modeling and real-world drive testing has been conducted in the area of Wolcott. Propagation modeling uses PC software to determine the network coverage based on the specific technical parameters of each site including, but not limited to, location, ground elevation, antenna models, antenna heights, and also databases of terrain and ground cover in the area. Drive testing consists of traveling along area roadways in a vehicle equipped with a sophisticated setup of test devices and receivers that collect a variety of network performance metrics. The data are then processed and mapped in conjunction with the propagation modeling to determine the coverage gaps.

¹ The threshold range differences between the 700 MHz and 1900 MHz frequency bands directly correlates to the type branch diversity receivers deployed in AT&T's receiver design.

Analysis of the propagation modeling and drive testing in Wolcott reveal that AT&T's network is unreliable throughout much of the area due to gaps in coverage, and that there is a service deficiency as a result. In order to fill in these coverage gaps and improve the network reliability to Wolcott, a new facility is needed in the area.

Included in this report are Attachments 1 through 5, which are explained below to help describe AT&T's 4G network deployment in and around Wolcott, and the need for the proposed facility.

- Attachment 1: "*CT1432 Area Terrain Map*" details the terrain features around the area of deficient service being targeted by the proposed site in Wolcott. These terrain features play a key role in determining site designs and dictating the unique coverage achieved from a given location. This map is included to provide a visual representation of the ridges and valleys that must be considered when siting a wireless facility. The darker green and blue shades correspond to lower elevations, whereas the orange and red shades indicate higher elevations.
- Attachment 2: "*CT1432 Neighbor Site Data*" provides site specific information of existing neighboring sites used to perform the coverage analysis provided in Attachments 1 and 4.
- Attachment 3: "*CT1432 Existing 700 MHz LTE Coverage*" for the Current AT&T Network depicts 700 MHz LTE coverage from existing sites and demonstrates that there are currently gaps in 700 MHz LTE coverage effecting service within the targeted area. The coverage shown is where the signal strengths are: > -83 dBm (minimum level required reliable, high quality service and performance at 700 MHz) and, > -93 dBm (minimum required for adequate level of service at 700 MHz). In an effort to provide the required levels of coverage to these areas, AT&T is proposing to install a wireless facility at the Chestnut Hill Road location.
- Attachment 4: "*CT1432 Existing 700 MHz LTE Coverage with Proposed Site*" shows how this proposed site would fill in the existing coverage gaps and improve AT&T's 700 MHz LTE network.
- Attachment 5: *Connecticut DOT Average Annual Daily Traffic Data* – Wolcott shows the available vehicular traffic volume data for the subject area from the Connecticut Department of Transportation. This data shows as many as 1,900 vehicles per day passing through the western end of Lyman Road, in close proximity to the proposed site, and 2,400 vehicles per day passing through the eastern end of Lyman Road.

Table 1 below lists the coverage statistics compiled for the AT&T's 700 MHz 4G LTE network with the deployment of the Proposed Site.

| | Incremental Coverage from Proposed Site (700 MHz) | |
|------------------------------------|--|-------------|
| Population: ² | (≥ -83 dBm) | 1365 |
| | (≥ -93 dBm) | 1789 |
| Business Pops: ³ | | |
| | (≥ -83 dBm) | 225 |
| | (≥ -93 dBm) | 205 |
| Area (mi²): | | |
| | (≥ -83 dBm) | 0.74 |
| | (≥ -93 dBm) | 1.28 |
| Roadway (mi): | | |
| | Main (-93 dBm): | 0.32 |
| | Secondary (-93 dBm): | 6.48 |
| | Total (-93 dBm): | 6.80 |

Table 1: Coverage Statistics

² Population figures are based upon 2010 US Census Block Data

³ Employee population counts are based upon the 2011 U.S. Census Bureau LEHD database.

4. Conclusion

AT&T has identified an area of deficient coverage affecting a significant portion of Wolcott CT, including key traffic corridors through the residential and business/retail areas of the Town. Candidate “CT1432” will bring the needed fill-in coverage to significant portions of Lyman Road and Woodgate Drive and the residential neighborhoods and business/retail areas in the vicinity of the proposed location

No existing structures were identified and available that would be able to satisfy the coverage requirements needed for this area.

As discussed in this report and depicted in the attached plots, the proposed interim AT&T site will provide a substantial portion of the coverage being lost to the “Target Area” while maintaining effective connectivity to the rest of AT&T’s existing network. In addition to providing improved LTE service to AT&T’s customers throughout the targeted areas of Wolcott, AT&T is providing enhanced services for first responders through the implementation of FirstNet’s National Public Safety Broadband Network (“NPSBN”).

5. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate.

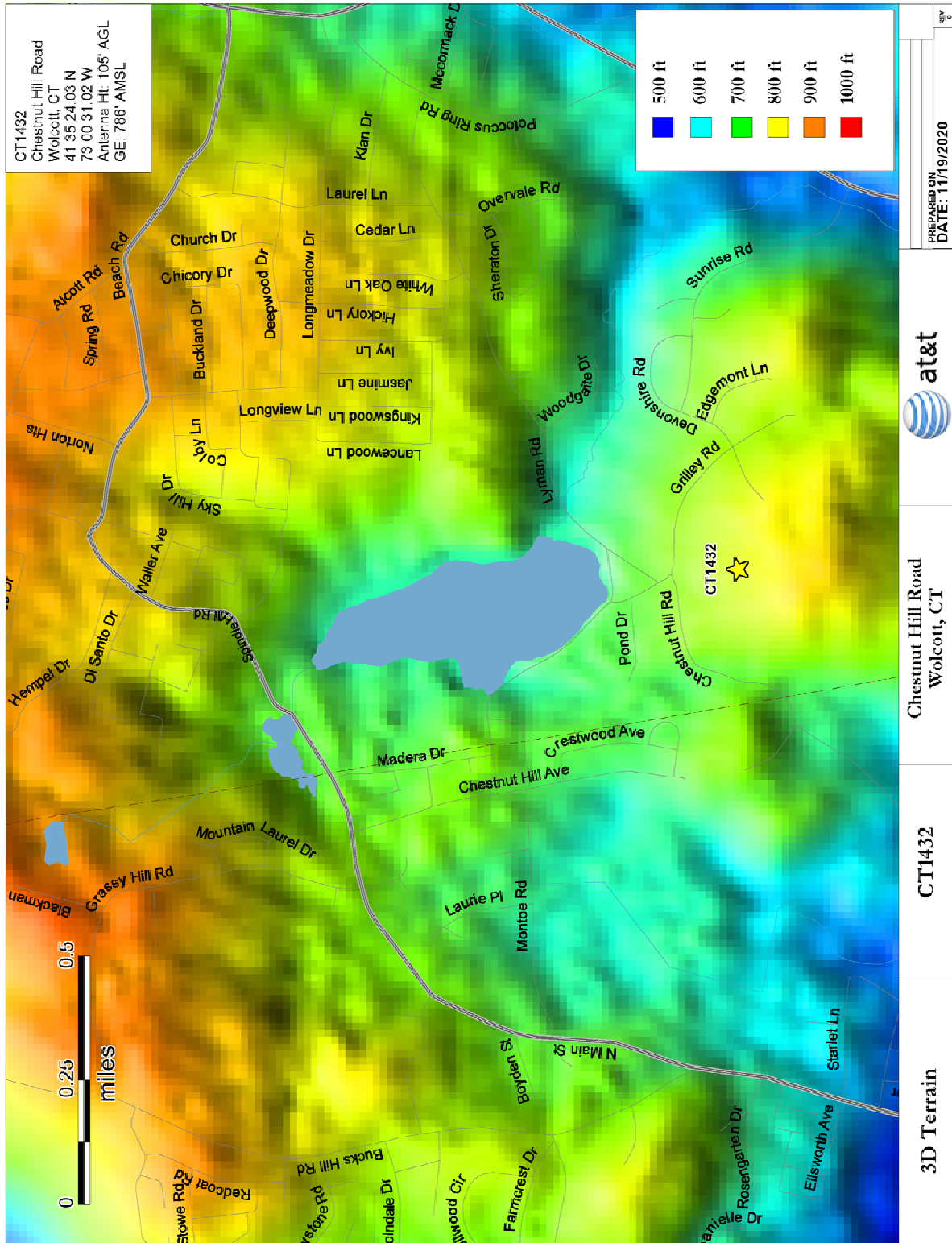


Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

November 25, 2020

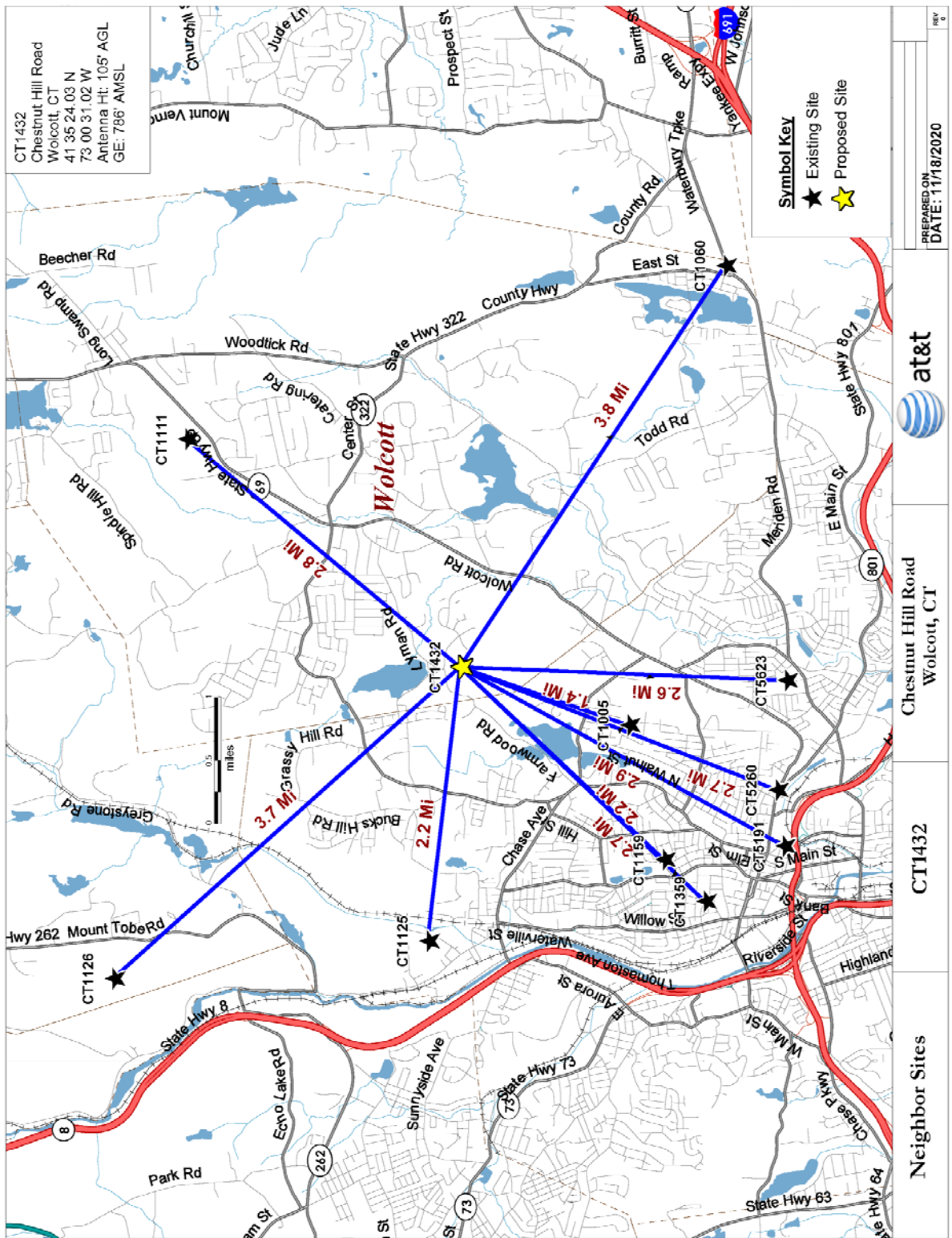
Date

6. Attachments

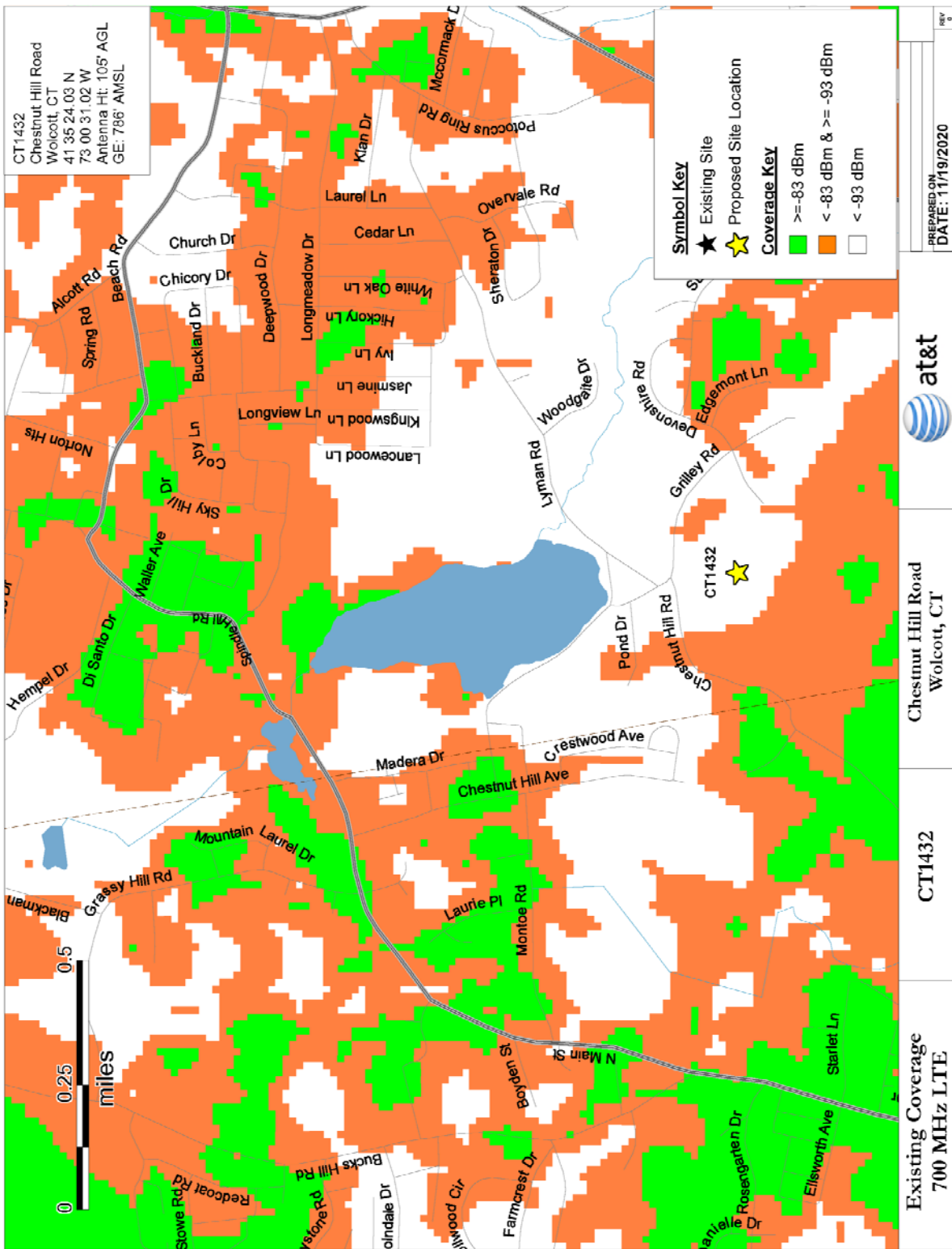


Attachment 1: CT1432 Area Terrain Map

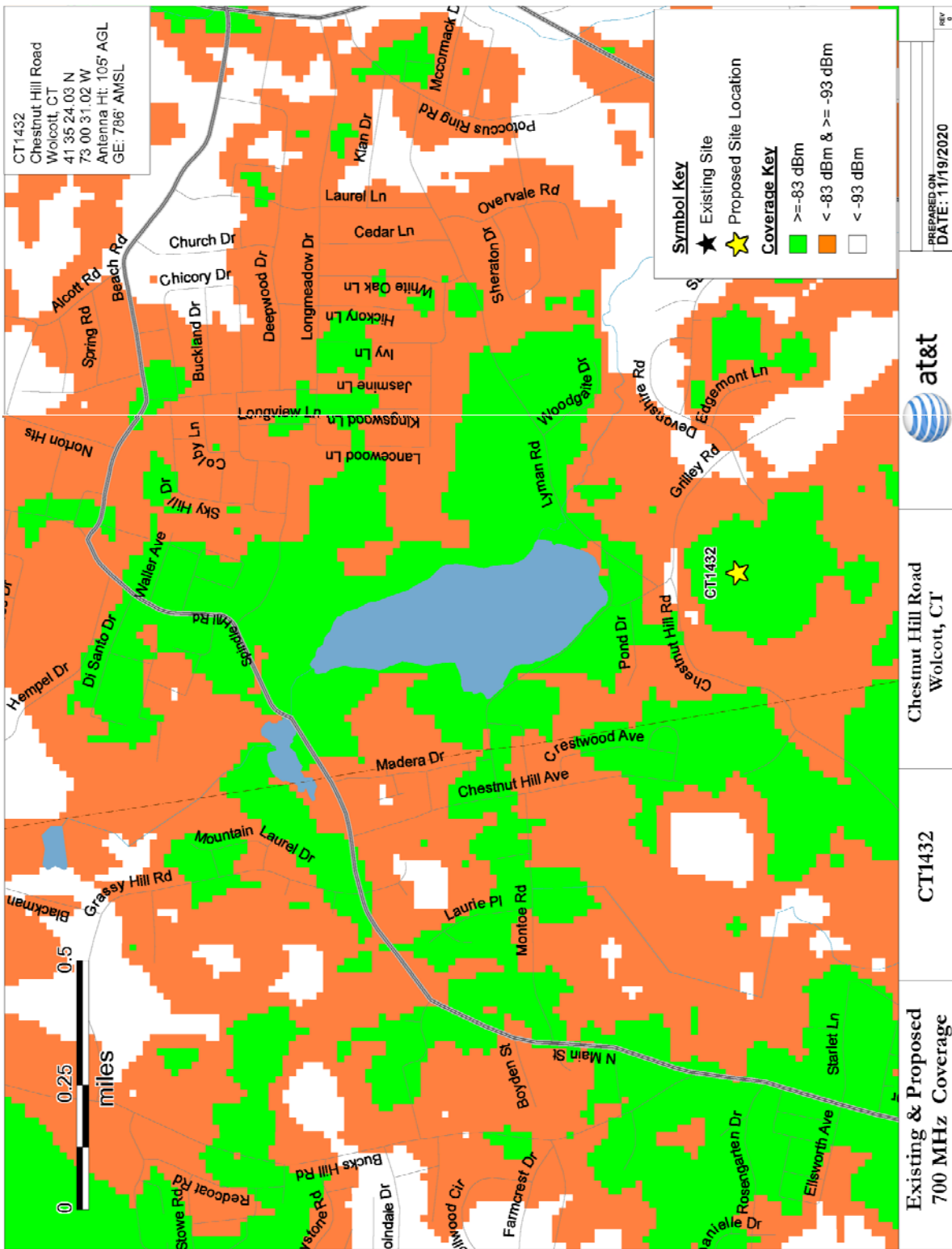
| Site Name | Address | City/State | Location | | Antenna Height (ft AGL) | Ground Elevation (feet) |
|-----------|----------------------|------------|----------|-----------|-------------------------|-------------------------|
| | | | Latitude | Longitude | | |
| CT1111 | 1233 Wolcott Road | Wolcott | 41.6216 | -72.9736 | 185 | 969 |
| CT1125 | 299 Sheffield Street | Waterbury | 41.5938 | -73.0507 | 137 | 459 |
| CT1005 | Garden Circle | Waterbury | 41.5707 | -73.0176 | 154 | 805 |
| CT1359 | 120 Hillside Avenue | Waterbury | 41.5619 | -73.0446 | 100 | 423 |



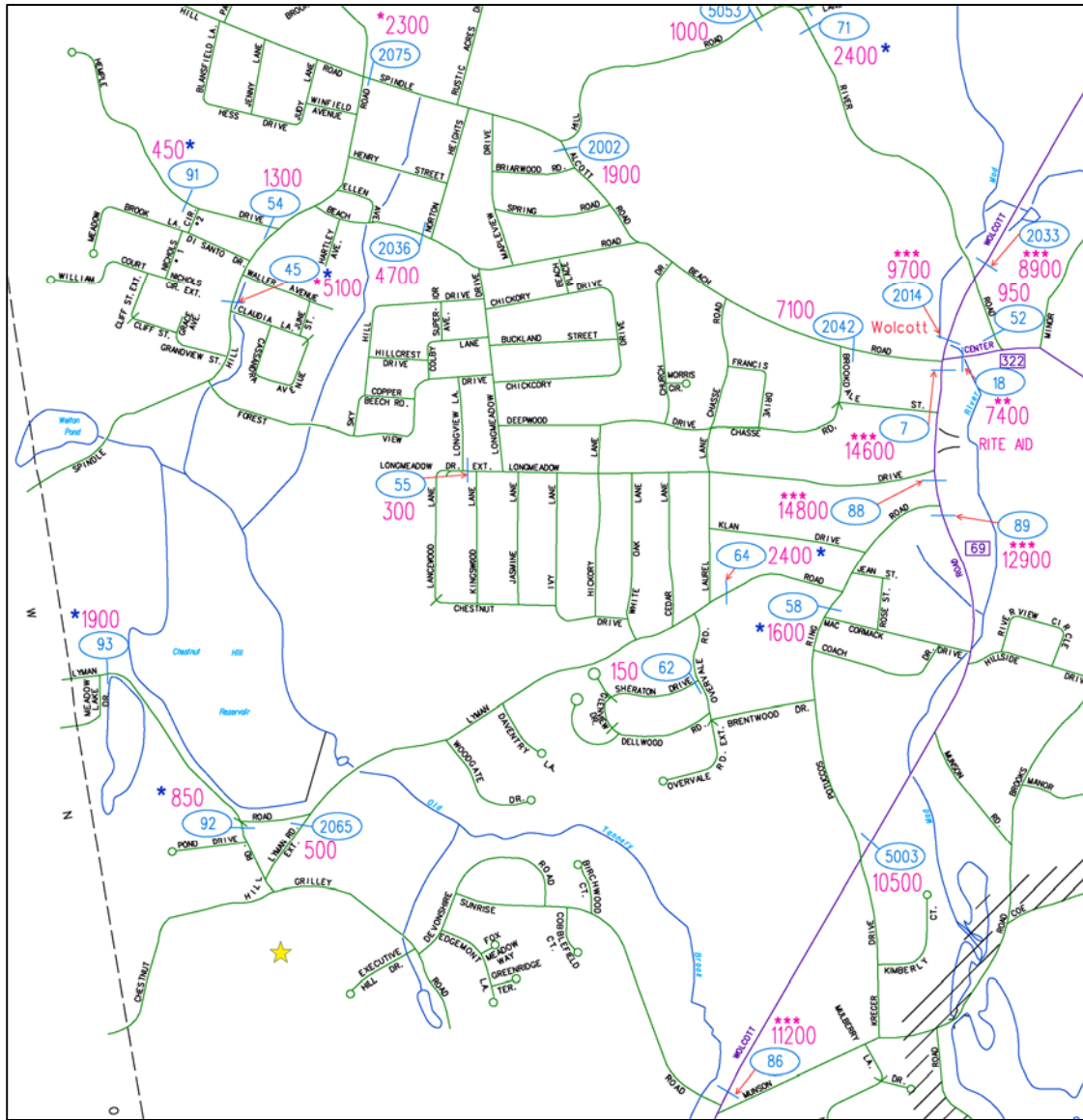
Attachment 2: CT1432 Neighbor Site Data



Attachment 3: CT1432 Existing 700 MHz LTE Coverage for the Current AT&T Network



Attachment 4: CT1432 Existing 700 MHz LTE Coverage with Proposed Site for the AT&T Network



Attachment 5: CT1432 Connecticut DOT Average Annual Daily Traffic Data – Wolcott

ATTACHMENT 4



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Calculated Radio Frequency Exposure



CT1432

Chestnut Hill Road, Wolcott, CT 06716

November 25, 2020

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of the AT&T antenna arrays on a new monopole tower located at Chestnut Hill Road in Wolcott, CT. The coordinates of the tower are 41° 35' 24.28" N, 73° 0' 31.02" W.

AT&T is proposing the following:

- 1) Install six (6) multi-band antennas (two per sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report considers the planned antenna configuration for AT&T¹ to derive the resulting % Maximum Permissible Exposure of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to AT&T's Radio Frequency Design Sheet updated 09/16/2020.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T equipment at the site. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

| Carrier | Antenna Height (Feet) | Operating Frequency (MHz) | ERP Per Transmitter (Watts) | Power Density (mw/cm ²) | Limit | % MPE |
|---------|-----------------------|---------------------------|-----------------------------|-------------------------------------|--------------|---------------|
| AT&T | 105 | 739 | 3156 | 0.0116 | 0.4927 | 2.35% |
| AT&T | 105 | 763 | 3541 | 0.0130 | 0.5087 | 2.56% |
| AT&T | 105 | 885 | 3883 | 0.0143 | 0.5900 | 2.42% |
| AT&T | 105 | 1900 | 5877 | 0.0216 | 1.0000 | 2.16% |
| AT&T | 105 | 2100 | 9665 | 0.0355 | 1.0000 | 3.55% |
| AT&T | 105 | 2300 | 6153 | 0.0226 | 1.0000 | 2.26% |
| | | | | | Total | 15.29% |

Table 1: Carrier Information

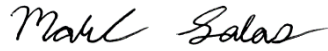
5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level is **15.29% of the FCC General Population/Uncontrolled limit.**

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, ANSI/IEEE Std. C95.1 and ANSI/IEEE Std. C95.3.



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November 25, 2020
Date



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November 25, 2020
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure²

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (E) (A/m) | Power Density (S) (mW/cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|---|
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842/f | 4.89/f | (900/f ²)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | - | - | f/300 | 6 |
| 1500-100,000 | - | - | 5 | 6 |

(B) Limits for General Population/Uncontrolled Exposure³

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (E) (A/m) | Power Density (S) (mW/cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f ²)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | - | - | f/1500 | 30 |
| 1500-100,000 | - | - | 1.0 | 30 |

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

² Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

³ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

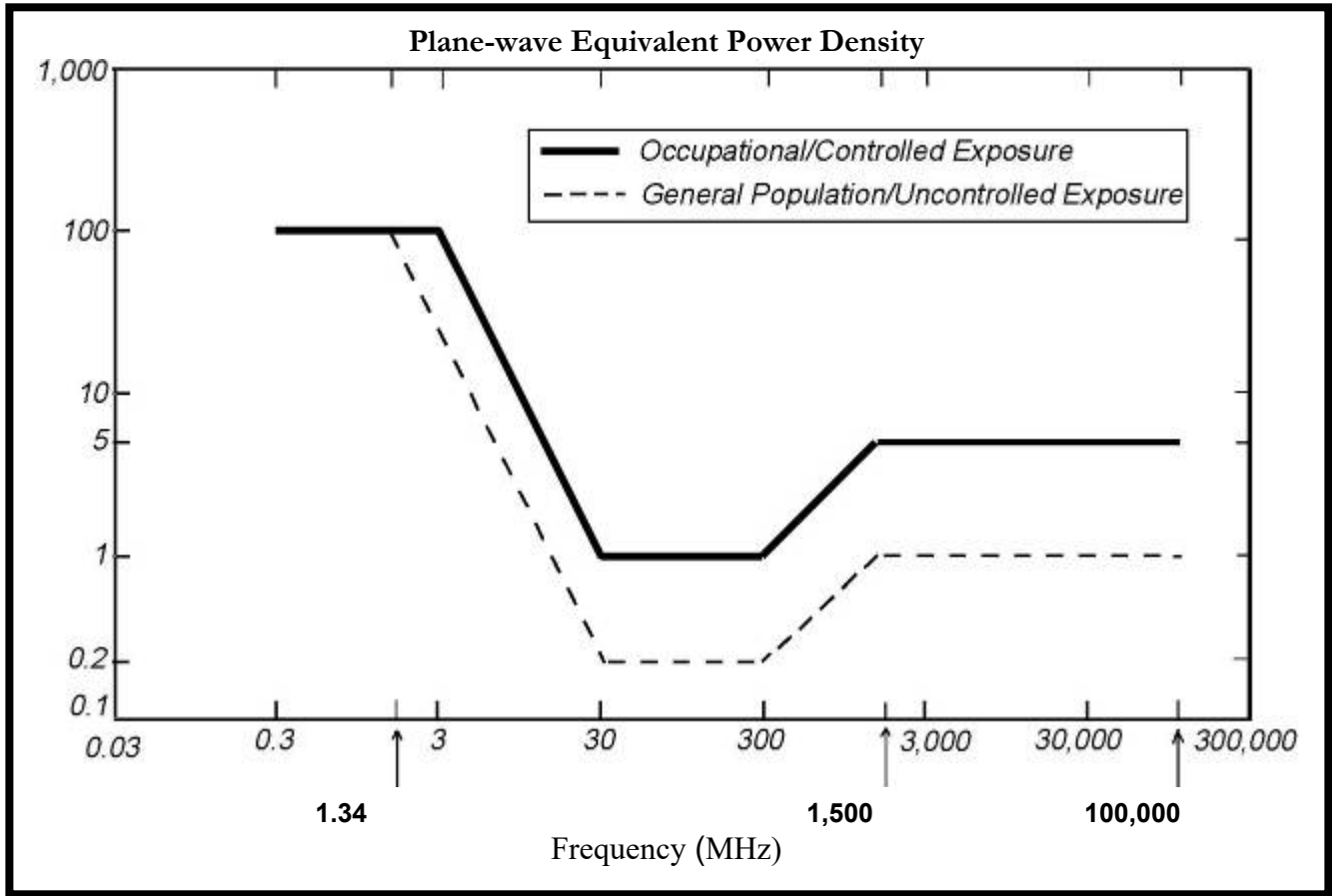
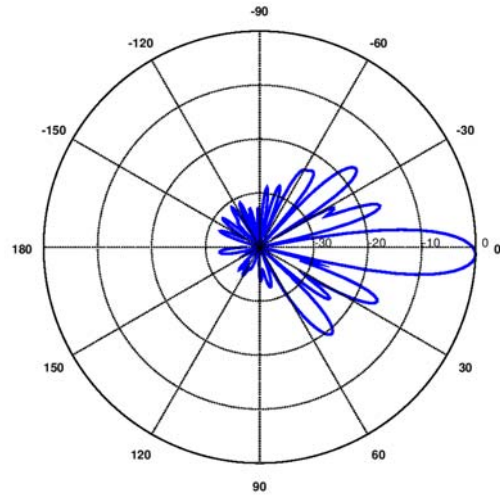


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

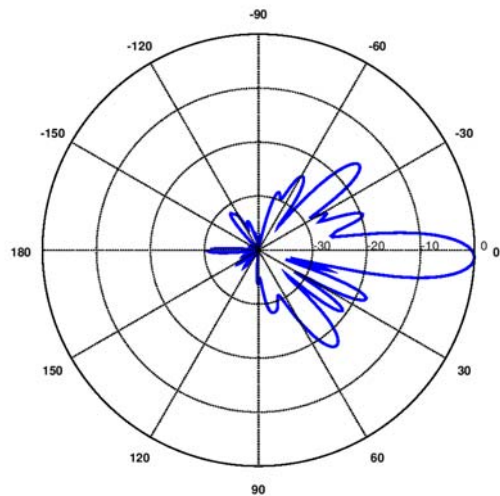
739 MHz

Manufacturer: CCI Products
 Model #: DMP65R-BU8D
 Frequency Band: 698-798 MHz
 Gain: 15.1 dBi
 Vertical Beamwidth: 9.5°
 Horizontal Beamwidth: 75°
 Polarization: Dual Linear 45°
 Size L x W x D: 96.0" x 20.7" x 7.7"



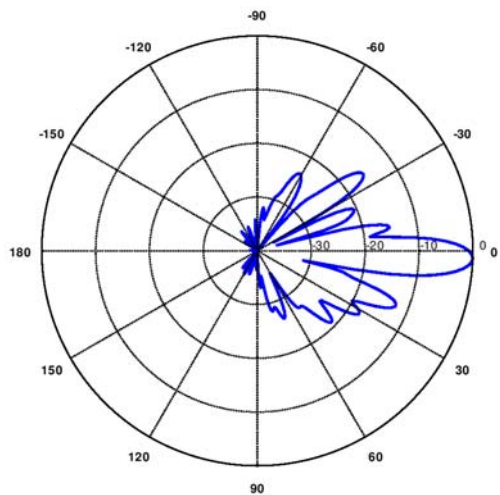
763 MHz

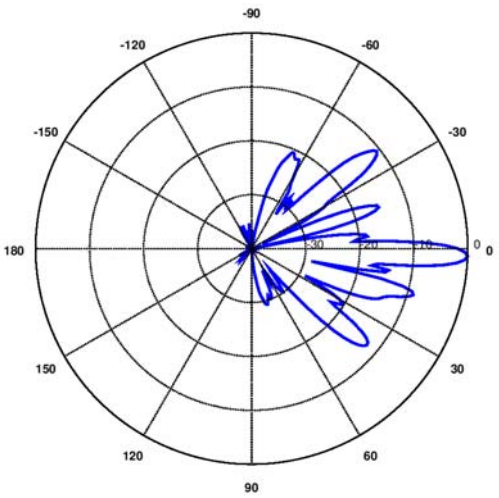
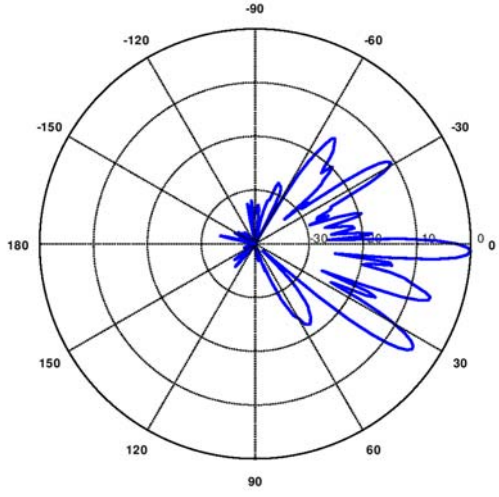
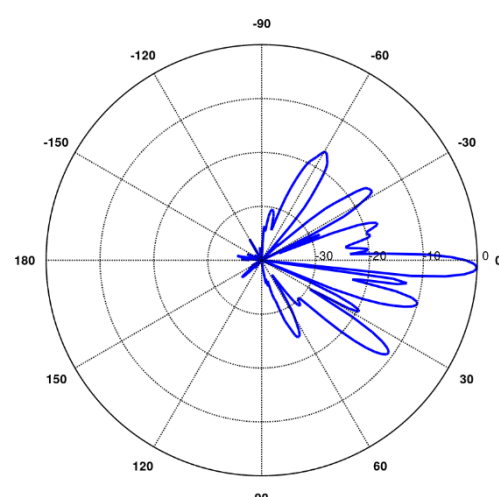
Manufacturer: CCI Products
 Model #: TPA65R-BU8D
 Frequency Band: 698 - 806MHz
 Gain: 15.6 dBi
 Vertical Beamwidth: 9.5°
 Horizontal Beamwidth: 74°
 Polarization: Dual Linear 45°
 Size L x W x D: 96.0" x 20.7" x 7.7"



885 MHz

Manufacturer: CCI Products
 Model #: DMP65R-BU8D
 Frequency Band: 824 - 896 MHz
 Gain: 16.0 dBi
 Vertical Beamwidth: 8.0°
 Horizontal Beamwidth: 64°
 Polarization: Dual Linear 45°
 Size L x W x D: 96.0" x 20.7" x 7.7"



| | |
|---|--|
| <p>1900 MHz</p> <p>Manufacturer: CCI Products Model #: DMP65R-BU8D Frequency Band: 1850-1990 MHz Gain: 17.8 dBi Vertical Beamwidth: 5.1° Horizontal Beamwidth: 68° Polarization: Dual Linear 45° Size L x W x D: 96.0" x 20.7" x 7.7"</p> |  |
| <p>2100 MHz</p> <p>Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 1920-2180 MHz Gain: 18.3 dBi Vertical Beamwidth: 4.7° Horizontal Beamwidth: 67° Polarization: Dual Linear 45° Size L x W x D: 96.0" x 20.7" x 7.7"</p> |  |
| <p>2300 MHz</p> <p>Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 2300 - 2400 MHz Gain: 18.0 dBi Vertical Beamwidth: 4.1° Horizontal Beamwidth: 62° Polarization: Dual Linear 45° Size L x W x D: 96.0" x 20.7" x 7.7"</p> |  |