STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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

DOCKET NO. 452

November 19, 2014

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

Q1. When were the search rings for Homeland Towers, LLC (HT) and New Cingular Wireless, PCS, LLC (AT&T) collectively the Applicant (Applicant) established? Provide the approximate radii of HT's and AT&T's search rings for this area. Provide the longitude and latitude coordinates of the centers of the search rings.

A1. *HT began their search activities for a suitable tower location in January 2012. HT concentrated their search along Route 44 in the vicinity of the Salisbury School with an approximate ½ mile search radius. The latitude and longitude coordinates for the center of HT's search area are 42° 0'1.47"N/ 73°23'28.31"W.*

AT&T began their search activities in August 2013. AT&T concentrated their search along Route 44 in the vicinity of Prospect Mountain Road and Taconic Road with an approximate ½ mile search radius. The latitude and longitude coordinates for the center of AT&T's search area are 41.99775 N/-73.405784 W.

Q2. Of the letters sent to abutting property owners, how many certified mail receipts were received? If any receipts were not returned, which owner(s) did not receive their notice(s)? Were any additional attempts made to contact those property owners?

A2. *All certified mail receipts for the notice sent to abutting property owners were received.*

Q3. Is EIA/TIA-222 version F (EIA version F) the current mandatory (minimum) standard in Connecticut because the Connecticut State Building Code currently adopts the 2003 International Building Code (2003 IBC) and the 2003 IBC adopts EIA version F?

A3. *TIA/EIA-222-F is the governing standard in the State of Connecticut for tower design because the CT Building Code is based on the 2003 International Building Code. Sections 1609.1.1 and 3108.4 of the CT Building Code specifically cite that wind loads for antenna and antenna supporting structures are exempt from the Code and are governed by TIA/EIA 222. In Section 35 of the Code References the 222 Rev-F is*

specifically cited as governing. Until the State adopts the 2006 IBC w/ 2007 Amendment or 2009 or 2012 IBC Code basis, TIA/EIA 222 REV F is the applicable standard. Notwithstanding, HT will design the tower for both the REV F and REV G versions and use the more stringent of the two design standards.

Q4. Would the tower be expandable in height beyond the originally proposed height?

A4. *The proposal includes a "stealth monopine" designed tower facility, consisting of a 150-foot tall monopole topped with an additional 7 feet of faux branches to resemble a pine tree, bringing the overall height to approximately 157' AGL. As with any monopole structure, the tower can be designed to accommodate future expansion, if necessary.*

Q5. What type of antenna mounts would be used for AT&T's proposed antennas, e.g. low-profile platform mount?

A5. *The antennas are proposed to be mounted with t-arm mounts.*

Q6. Besides the proposed panel antennas, would AT&T install any remote radio heads or diplexers or other equipment on its antenna mounts? Explain.

A6. *Yes. In addition to the 12 8-foot panel antennas, AT&T will install 21 RRU's and 6 surge suppressors.*

Q7. What is the grade of the proposed access road? (Average grade, maximum grade or range of grades is acceptable.)

A7. *The final compound elevation is set at an average of approximately 893'AMSL. The approximately 500-foot long proposed access drive originating off the existing boat house service road and following the existing dirt pathway begins at an elevation of approximately 866' AMSL and terminates at the proposed compound with an average slope of 5.4%.*

Q8. Which frequencies are AT&T licensed to utilize in Litchfield County?

A8. *AT&T's licenses applicable to Litchfield County are as follows:*

KNKN589	*Cellular B-Band*
WPSL626	*PCS A3 Block*
WQGD528	*AWS A Block*
WPWV376	*700 Lower C*
WQIZ617	*700 Lower E*
WQJU671	*700 Lower B*

Q9. Which frequency band services would AT&T install at the proposed site, e.g. 700 MHz, 850 MHz, 1900 MHz, etc? Would all of these frequencies be provided initially, or would some be provided initially and others deployed in the future at this particular site? Explain.

A9. *All three bands will be on the air when the site enters service.*

Q10. Of the existing sites noted on page 9 of the Radio Frequency Analysis Report (RF Report), indicate which ones that the proposed site would interact with to hand off signals. If AT&T's proposed antennas would interact with any other sites not listed, include those also. Also include the tower/structure heights of such facilities.

A10. *Given the rugged topography and scarce coverage in this region, all the sites listed are potential handoff sites. There are no other sites that are potential handoff sites.*

Q11. Would the proposed tower provide any additional coverage to Mount Riga State Park in northern Salisbury? If yes, provide coverage plots of that area and indicate how the proposed tower height and ten feet shorter would affect coverage to the park.

A11. *Each of the propagation maps provided in Attachment 1 show the boundaries of Mount Riga State Park. The propagation maps in Attachment 1 include existing coverage and proposed coverage from the Facility at 146' and 136' antenna centerline AGL. As shown in the attached propagation maps, AT&T's existing site CT1251 provides service to Mount Riga State Park and they also demonstrate that the proposed Facility will not provide additional coverage to Mount Riga State Park.*

Q12. Would the proposed tower provide any coverage to the water (not land) areas of Twin Lakes (i.e. Lakes Washinee and Washining)? If yes, provide coverage plots of that area and indicate how the proposed height and ten feet shorter would affect the coverage to the lakes.

A12. *Each of the propagation maps provided in Attachment 2 show the boundaries of the water areas of Twin Lakes. The propagation maps in Attachment 2 include existing coverage and proposed coverage from the Facility at 146' and 136' antenna centerline AGL. As shown in the attached propagation maps, the proposed Facility will provide reliable service to the water areas of Twin Lakes.*

Q13. Would any blasting be required to develop the site?

A13. *Blasting is not anticipated. Should bedrock be encountered within the confines of the utility trenching or tower foundation construction area, wedging and mechanical hoe-ram rock removal techniques would be implemented within reason prior to any blasting activities.*

Q14. Is the proposed site located within a 100-year or 500-year flood zone?

A14. *The site is located within a Zone X designated area - outside the 100-yr and 500-yr flood zones.*

Q15. Would AT&T's equipment shelter have a light fixture installed on the outside wall? What type of lighting would be utilized? When would the light be on?

A15. *Yes. A motion sensor activated 100W (typical) exterior passage light fixture would be provided on the equipment shelter.*

Q16. Would the proposed compound fence have barbed wire?

A16. *No. The proposed compound fence will not include barbed wire.*

Q17. What measures are proposed for the site to ensure security and deter vandalism? (This would include but not be limited to alarms, gates, locks, etc.)

A17. *In addition to the gated and locked compound, AT&T's shelter is locked and remotely monitored for intrusion 24 hours a day. The fence surrounding the compound is an anti-climb weave chain link fence.*

Q18. Will the proposed facility support text-to-911 service? Is additional equipment required for this purpose?

A18. *AT&T and this facility will be able to support text-to-911 service once this functionality is supported and requested by the Public Safety Answering Point (PSAP). AT&T is not aware that this functionality has yet been requested for this area.*

Q19. Are you aware of any Public Safety Answering Points in the area of the proposed site that are able to accept text-to-911?

A19. *Please see A18 above.*

Q20. Would the proposed site be needed for coverage, capacity, or both? Explain.

A20. *Both. 700 and 850 MHz will be used primarily for coverage, 1900 MHz will provide extra capacity.*

Q21. Are all frequencies used to transmit voice and data?

A21. *Yes, voice and data are on all frequencies.*

Q22. What is the lowest height at which AT&T's antennas could achieve its coverage objectives from either of the proposed sites?

A22. *To achieve as much coverage as possible from a site in such a rural area, the coverage objective for this area can be achieved at 146 feet AGL.*

Q23. What is the lowest signal strength at which AT&T designs its system? For in-vehicle coverage? For in-building coverage?

A23. *For 700 MHz LTE, the design criteria are -83 and -93 dBm. For PCS LTE, the design criteria are -86 and -96 dBm. For 850 MHz, the coverage criteria are -74 and -82 dBm.*

Q24. What is the existing signal strength within the area AT&T is seeking to cover from this site?

A24. *For 700 MHz, the signal strength in the gap is between -93 dBm and -120 dBm. For PCS LTE, that frequency will be deployed in the near future on existing sites. Signal strength in the gap that will be left by deploying PCS LTE on the existing sites is between -96 dBm and -120 dBm.*

Q25. Does AT&T have any statistics on dropped calls and/or ineffective attempts in the vicinity of the proposed site at each frequency used by AT&T? Break this down by street name and include the town(s) that the streets are located in.

A25. *AT&T's dropped call data for the area where reliable service is needed, while proprietary, indicates 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.*

Q26. Provide the lengths of the existing coverage gaps on major roads that AT&T is seeking to cover from the proposed site at each frequency used by AT&T. Break this down by street name and include the town(s) that the streets are located in.

A26. *The road coverage gap as defined in the RF report is contained entirely within the Town of Salisbury. 850 MHz Road Gap is substantially the same as 700 MHz. The lengths of the existing coverage gaps on major roads and secondary roads are provided in the tables below.*

PCS Gap - Main Roads

Street Name	Length (miles)
Belden St	0.26
Canaan Rd	2.86
E Main St	0.27
Salisbury Rd	0.63
State Hwy 41	1.07
Under Mountain Rd	3.24

PCS Gap - Secondary Roads

Street Name	Length (miles)
Akin Ln	0.05
Beaver Dam Rd	1.01
Berkshire Dr	0.24
Between The Lakes Rd	2.35
Bloomer Ln	0.09
Bunker Hill Rd	1.31
Cedar Crest Rd	0.30
Cedar Ln	0.16
Channel Rd	0.20
Cobble Rd	0.27
Cooper Hill Rd	0.53
Deep Woods Rd	0.49
Deer St	0.06
Elman Dr	0.02
Factory St	0.45
Fernwood Ln	0.11
Foot Hills Rd	0.32
Greene Ave	0.34
Hammertown Rd	0.94
Harris Ln	1.36
Hemlock Ln	0.34
Housatonic Ave	0.11
Housatonic River Rd	0.71
Iron Bound Rd	0.08
Isola Bella Ln	0.50
Lamotte Rd	0.26
Lawrence St	0.11
Lincoln City Rd	0.05
Lions Head Development	0.16
Locust St	0.05
Logan Rd	0.66
Morgan Ln	0.13
Mount Riga Rd	2.33
Mount Tom Rd	0.69
N Beaver Dam Rd	0.57
New High St	0.14
O Hara Ln	0.15
On The Rocks Rd	0.24
Pine Tree Rdg	0.25
Preston Ln	0.49
Prospect Mountain Rd	0.77

Street Name	Length (miles)
Ravine Ridge Rd	0.33
Raymond Ave	0.01
Riga Ln	0.10
Rocky Ln	0.79
Rustic Pl	0.15
Scoville Ore Mine Rd	1.21
Scoville Rd	0.28
Selleck Hill Rd	0.60
Slater Rd	0.13
South Shore Rd	0.99
State Boat Ramp Access Rd	0.19
Sunrise Ridge Ln	0.33
Taconic Rd	3.25
Twin Lakes Rd	3.75
Upper Cobble Rd	0.46
Valley View Ln	0.22
Wardell Rd	0.10
Washinee Heights Rd	0.78
Washinee Wood Dr	0.17
Weatogue Rd	0.07
West Shore Rd	0.20
Westmount Rd	0.35
Wicks Rd	0.20
Wildcat Hollow Rd	1.34
Williams Rd	0.41
Windy Hill Rd	0.09

700 MHz Gap - Main Roads

Street Name	Length (miles)
Belden St	0.14
Canaan Rd	2.07
E Main St	0.18
Salisbury Rd	0.05
State Hwy 41	1.07
Under Mountain Rd	3.13

700 MHz Gap – Secondary Roads

Street Name	Length (miles)
Akin Ln	0.05
Beaver Dam Rd	1.01
Berkshire Dr	0.24
Between The Lakes Rd	2.15
Bloomer Ln	0.09
Bunker Hill Rd	1.12
Cedar Crest Rd	0.30
Channel Rd	0.20
Cobble Rd	0.16
Cooper Hill Rd	0.53
Deep Woods Rd	0.49
Deer St	0.05
Factory St	0.38
Fernwood Ln	0.11
Foot Hills Rd	0.32
Hammertown Rd	0.94
Harris Ln	1.26
Hemlock Ln	0.34
Housatonic River Rd	0.30
Iron Bound Rd	0.08
Isola Bella Ln	0.49
Lamotte Rd	0.26
Lawrence St	0.04
Lincoln City Rd	0.05
Lions Head Development	0.02
Locust St	0.04
Logan Rd	0.66
Morgan Ln	0.13
Mount Riga Rd	2.20
Mount Tom Rd	0.69
N Beaver Dam Rd	0.57
O Hara Ln	0.15
On The Rocks Rd	0.24
Pine Tree Rdg	0.25
Preston Ln	0.49
Prospect Mountain Rd	0.77
Ravine Ridge Rd	0.33
Riga Ln	0.07
Rocky Ln	0.79
Rustic Pl	0.15

Street Name	Length (miles)
Scoville Ore Mine Rd	1.10
Scoville Rd	0.28
Selleck Hill Rd	0.41
Slater Rd	0.13
South Shore Rd	0.99
State Boat Ramp Access Rd	0.19
Sunrise Ridge Ln	0.07
Taconic Rd	3.22
Twin Lakes Rd	3.47
Upper Cobble Rd	0.44
Valley View Ln	0.22
Wardell Rd	0.10
Washinee Heights Rd	0.75
Washinee Wood Dr	0.17
Weatogue Rd	0.02
West Shore Rd	0.20
Westmount Rd	0.29
Wicks Rd	0.20
Wildcat Hollow Rd	1.24
Williams Rd	0.37
Windy Hill Rd	0.09

Q27. Provide the lengths of the existing coverage gaps on secondary roads that AT&T is seeking to cover from the proposed site at each frequency used by AT&T. Break this down by street name and include the town(s) that the streets are located in.

A27. *Please see A.26.*

Q28. What is the total (not incremental) predicted coverage footprint from the proposed site (in square miles), at each frequency used by AT&T? Provide such data for the proposed antenna height and ten feet shorter.

A28. *The total predicted coverage footprint from the proposed Facility at each frequency used by AT&T are included in the tables below.*

700 MHz @ 146			700 MHz @ 136		
Full Area	-83	4.52		-83	4.31
	-93	9.85		-93	9.31

1900 MHz @ 146			1900 MHz @ 136		
Full Area	-86	2.42		-86	2.21
	-96	6.19		-96	5.71

850 MHz @ 146			850 MHz @ 136		
Full Area	-74	4.95		-74	4.73
	-82	9.22		-82	8.72

Q29. In the RF Report under Tab 1 of the Application, AT&T included an existing coverage plot and an existing and proposed coverage plot for 700MHz and 1900 MHz. Provide similar plots for 850 MHz or other frequencies as applicable.

A29. *Please see the propagation maps included in Attachment 3.*

Q30. Provide propagation maps showing existing plus proposed coverage at an antenna height that is ten feet shorter than proposed 700 MHz, 850 MHz, 1900 MHz, or as applicable.

A30. *Please see the propagation maps included in Attachment 4.*

Q31. Provide the lengths of the coverage that AT&T would provide along primary roads from the proposed site at the proposed frequencies, e.g. 700 MHz, 850 MHz, 1900 MHz, or as applicable. Also provide such data assuming that the tower is ten feet shorter.

A31. *The requested information is provided in the tables below.*

700 MHz @ 146			700 MHz @ 136		
Area	-83	2.89	Area	-83	2.82
	-93	5.38		-93	5.28
Pops	-83	78	Pops	-83	69
	-93	188		-93	171
Roads	-93	11.22	Roads	-93	10.85
Main		1.71			1.53
Secondary		9.51			9.32

1900 MHz @ 146			1900 MHz @ 136		
Area	-86	2.01	Area	-86	1.99
	-96	3.61		-96	3.60
Pops	-86	55	Pops	-86	44
	-96	116		-96	103
Roads	-96	5.87	Roads	-96	5.80
Main		1.15			1.05
Secondary		4.72			4.75

850 MHz @ 146			850 MHz @ 136		
Area	-74	3.46	Area	-74	3.26
	-82	5.22		-82	4.93
Pops	-74	80	Pops	-74	76
	-82	169		-82	163
Roads	-82	10.45	Roads	-82	9.92
Main		1.58			1.47
Secondary		8.87			8.44

Q32. Provide the lengths of the coverage that AT&T would provide along secondary roads from the proposed site at the proposed frequencies, e.g. 700 MHz, 850 MHz, 1900 MHz, or as applicable. Also provide such data assuming that the tower is ten feet shorter.

A32. *Please see A.31.*

Q33. If the worst-case power density analysis under Tab 7 of the Application was performed without the nominal 10 dB off-beam pattern loss, would the total percent maximum permissible exposure be approximately 24.1 percent?

A33. *Yes. Adding 10 dB is the same as multiplying by 10.*

Q34. Page 5 of the RF Report provides the population living within the incremental coverage area for 700 MHz and 1900 MHz. Provide similar data for 850 MHz or other frequencies as applicable.

A34. *Please see A.31.*

Q35. Is the applicant proposing to install a backup generator only large enough for AT&T's needs this time? If yes, would the Applicant consider reserving space in the fenced compound for a future shared generator should additional carriers co-locate on the tower?

A35. *AT&T is proposing to install a 50 kW backup generator only for AT&T's needs. HT would consider reserving space within the fenced compound for the possible deployment of a larger shared generator should another carrier decide to deploy one in the future.*

Q36. What is the fuel source for the proposed backup generator? What is the size of the generator in kilowatts? Provide the estimated run time for the generator based on its fuel tank capacity.

A36. *AT&T will install a 50 kW diesel powered generator. The estimated run time is approximately 48 hours based upon a 100% load and 200 gallons of fuel available. At a 50% load, run time would be approximately 86 hours.*

Q37. Would there be any interruption in service between the time power goes out and the generator comes online? For example, would AT&T provide battery backup to prevent a reboot condition and provide seamless power until the generator starts? If AT&T has a battery backup system, how many hours could it supply power in the event that the generator fails to start?

A37. *AT&T will have a battery backup required to prevent the facility from experiencing a "re-boot" condition during the generator start-up delay period thus allowing for continued or "seamless" provision of service where signal levels allow. The battery backup system provides power to the facility for approximately 4 to 6 hours.*

Q38. What size backup generator fuel tank would be necessary to satisfy a potential need for a minimum of 48 hours of runtime for AT&T? What size generator and fuel tank would be needed if two carriers were to share the generator and both required 48 hours of runtime? What if the generator were also shared with Town/emergency equipment?

A38. *At this time, AT&T is proposing a 210 gallon backup generator fuel tank which will provide approximately 48 hours of run time for AT&T based upon a 100% load and 200 gallons of fuel available (it is estimated that approximately 10 gallons are used for regular generator testing). Because each carrier has their own demands for backup power based on how much amperage their equipment draws and without knowing a carrier's specific design standards and as they all differ, HT is unable to provide an answer as to what size fuel tank would be needed if two carriers were to share the generator and both require 48 hours of runtime. HT has not received any specifications on Town/emergency equipment to date and is therefore unable to "guess" as to what size generator would be needed should they share a generator. HT does not own, construct or maintain shared generators as part of its tower ownership business.*

Q39. What size concrete pad or equivalent would be needed to accommodate a backup generator for AT&T approximately 50 kW in capacity? What size concrete pad or equivalent would be needed to accommodate a shared backup generator approximately 200kW in capacity?

A39. *A 4'x11' concrete pad would be required to support the proposed AT&T 50kW back-up emergency generator. A 200kW diesel generator requires an approximately 6'x 16'concrete pad.*

Q40. Please provide the cost of a 50 kW backup generator. Please provide the cost of a 200kW shared backup generator.

A40. *The approximate cost of a 50 kW generator is $30,000. The approximate cost of a 200 kW generator is $60,000. These costs are generator costs only and do not include any additional electrical equipment that may be required for a shared generator, or shipping costs, installation costs, additional fuel costs or added long term maintenance.*

Q41. Has AT&T considered using a fuel cell as a backup power source for the proposed site? Explain.

A41. *As set forth in the Siting Council's Feasibility Study in Docket 432 (Feasibility study of backup power requirements for telecommunications towers and antennas pursuant to Public Act 12-148), the type of backup power chosen for use at a facility is determined by facility constraints (such as space, weight restrictions, lease arrangements, zoning codes), environmental limitations and liabilities, capital and operating/maintenance costs, network functionality and fuel availability. Given the significant costs associated with fuel cells, they are not considered a viable option as a backup power source at this time.*

Q42. Identify the safety standards and/or codes by which equipment, machinery, or technology would be used or operated at the proposed facility.

A42. *OSHA and ET docket 93-62 and 47 CFR parts 1,2,15,42 and 97 as well as OET Bulletin 65, Edition 97-01.*

Q43. Is the proposed site near an "Important Bird Area" as designated by the National Audubon Society?

A43. *No. The closest IBA to the host Property is the White Memorial Foundation in Litchfield and Morris located approximately 20.7 miles to the southwest. Please see the Avian Resources Evaluation report provided as Attachment 5 for additional information.*

Q44. Would AT&T'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?

A44. *Yes, the proposed facility would comply with these recommendations. Please see the Avian Resources Evaluation report provided as Attachment 5 for additional specifics.*

Q45. Sheet SP-2 shows an average tree canopy of approximately 85 feet high. However, the Viewshed Map shows an existing tree canopy height of approximately 65 feet. Is the average tree height over a two-mile radius closer to 65 feet, and the trees adjacent to the tower are taller and average 85 feet, or was the viewshed analysis performed at 65 feet to be conservative? Explain.

A45. *The assumptions in the question are correct. The 85-foot tall average tree canopy height called out in Sheet SP-2 represents the immediate area surrounding the proposed site location. The 65-foot tall average tree canopy height used in the visibility analysis was established based on measurements taken selectively throughout the 2-mile study area. The average canopy height in the study area was in fact a bit taller than 65 feet but we prefer to take a conservative approach to account for locations where we do not have access for visual confirmation.*

Q46. What, if any, other stealth tower design options would be feasible to employ at this site?

A46. *A monopine structure is specifically proposed for this site. It is an appropriate concealment option for this site given the undulating topography and abundance of conifer species in the area.*

Q47. Given the taper of the faux tree material, would the top antenna platform (i.e. AT&T's platform) still be sufficiently covered by the faux tree branches? Specifically, how long are the tree branches at the approximately 146-foot level of the tower, and as a comparison, how far away from the tower do AT&T's antennas and antenna mounts extend?

A47. *The AT&T antenna array is typically mounted on 3' t-arm standoffs. The branching receptors at the top of the tower are typically 6' – 8' long and vary in density. Additional branch receptors can be incorporated into the platform and antenna socks can also be incorporated to increase concealment capabilities.*

Q48. Could the antennas and antenna mounts be painted to blend in with the color or the faux tree branch material?

A48. *Yes, if and where exposed.*

Q49. Describe the views of the tower from the walking trails in the Edith Scoville Memorial Sanctuary.

A49. *The Edith Scoville Memorial Sanctuary abuts the Salisbury School property. As noted in the Visibility Analysis report included with the Application, limited seasonal views may be achieved from some locations along portions of the eastern-most trails within the Sanctuary, which extend to within approximately 0.3 mile of the proposed site (represented in Photo 4 of the Visibility Analysis, between two foot paths). Such views would be through intervening deciduous trees and the facility would not extend above the canopy in these areas. As seen in Photo 4 of the Visibility Analysis, some locations could view the majority of the monopine, but at these distances and perspective it would not be overtly distinguishable as a telecommunications facility. As visitors move further west within the Sanctuary, views become increasingly obstructed and ultimately drop out approximately 0.5 mile away from the proposed site. Note that Photo 5 in the Visibility Analysis was taken beyond the wooded land at the east end of the Sanctuary at the edge of the school's open playing fields. The proposed relocation of the tower would not substantially alter these views.*

Q50. Approximately how many residences would have seasonal and year-round visibility of the proposed tower. Provide the streets names if available.

A50. *Minimal residential views are anticipated. We estimate less than 10 residences might have year-round views of some portions of the facility, including a few along Twin Lakes Road (at 2 miles or beyond), Taconic Road (approximately 1.5 miles to the northwest), and Between the Lakes Road (approximately 1.6± miles northeast). At these distances, the facility would be barely recognizable as anything other than tree among the canopy. Seasonally, limited views of the monopine could be achieved from another 10-12 residential properties, including those along the roads identified above as well as select locations off the southern end of Between the Lakes Road near its intersection with Canaan Road (within 0.75 mile), and possibly off Weatogue Road nearly two miles away. Note that residential halls and faculty residences are located on the Salisbury School campus where some year-rounds views are also likely.*

Q51. The viewshed map shows some year-round visibility over the southern portion of Lake Washinee. Describe the view of the proposed tower from predicted yellow shaded area of Lake Washinee. Are Lake Washinee and/or Lake Washining used for recreation?

A51. *We anticipate that some views of the monopine from Lake Washinee could extend anywhere from a few feet to upwards of 40 feet above the existing tree canopy, based on the distance from the site and the rising topography towards the facility. Both lakes are used for recreational activities, including boating and fishing.*

Q52. Provide the current status of the State Historic Preservation Office Consultation.

A52. *HT's consultant, APT is currently preparing consultation documents for submission to the SHPO. Due to the identification of a culturally sensitive area proximate to the site, additional field investigations were undertaken resulting in the compound and tower shift detailed in the Supplemental Submission. All this material is currently being compiled to provide a complete picture for the SHPO in its review. We anticipate submitting a review package with the revised tower location on or about November 24, 2014. A desk-top review of historic resources data indicates that no sites listed on the National Register of Historic Places are located within the viewshed of proposed Facility. Please see the Cultural Resources Screen included in Attachment 10 of the Application.*

Q53. What is the cumulative noise level that the Applicant expects at the nearest property line from the proposed facility taking into account AT&T's two air conditioning units attached to its equipment shelter? Would the expected noise levels comply with applicable standards? If no, indicate which noise mitigation measure(s) may be employed to ensure compliance.

A53. *The cumulative noise level expected at the eastern property line is less than <45 dBA and complies with the State noise ordinance standards.*

Q54. Please provide a Functions and Values assessment for Wetland No. 2.

A54. *Please see the Functions and Values Assessment report in Attachment 6.*

CERTIFICATE OF SERVICE

I hereby certify that on this day, an original and fifteen copies of the foregoing was sent electronically and by overnight mail to the Connecticut Siting Council and to:

Town of Salisbury
Curtis Rand, First Selectman
Jim Dresser, Selectman
Katherine Kiefer, Selectman
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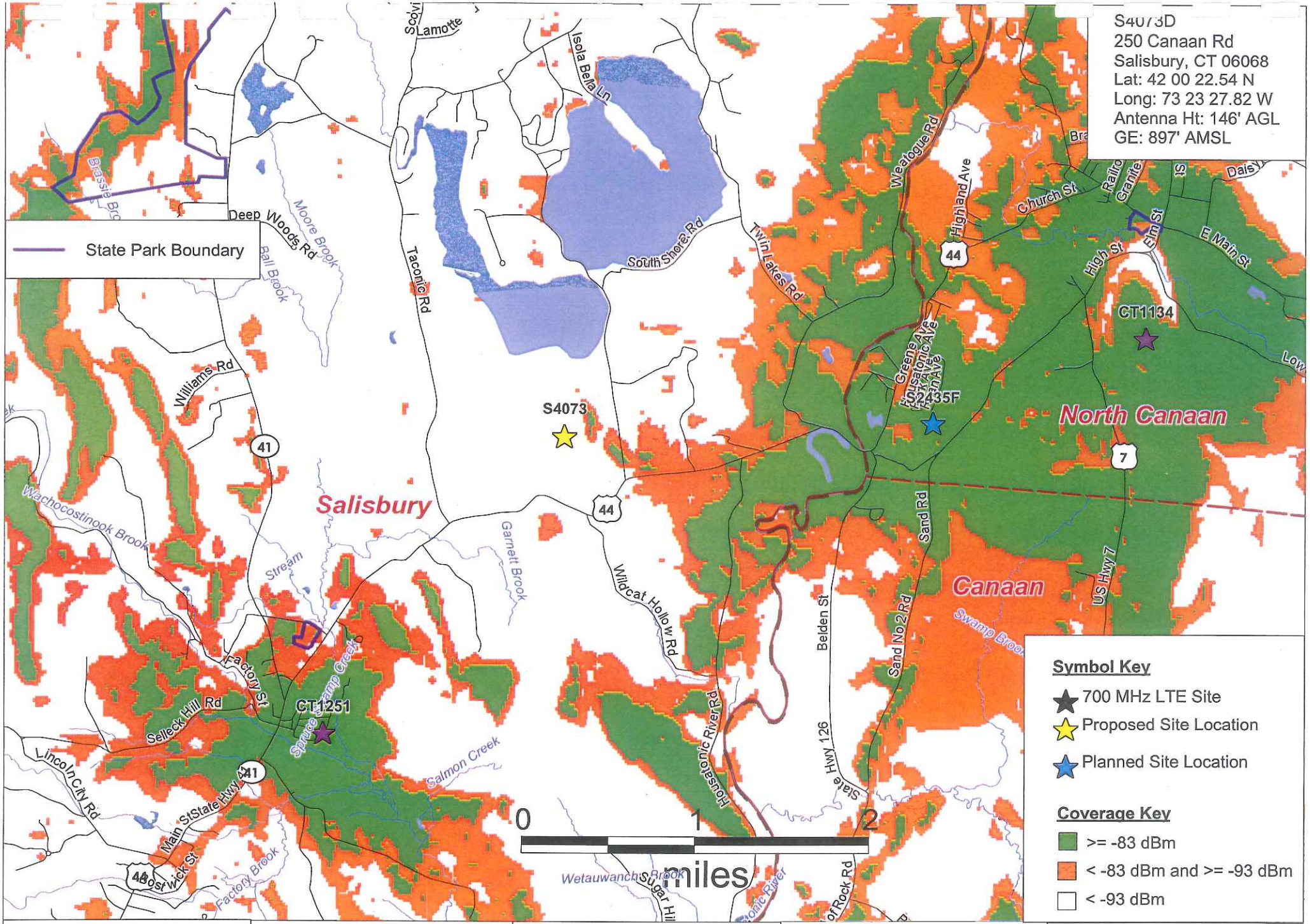
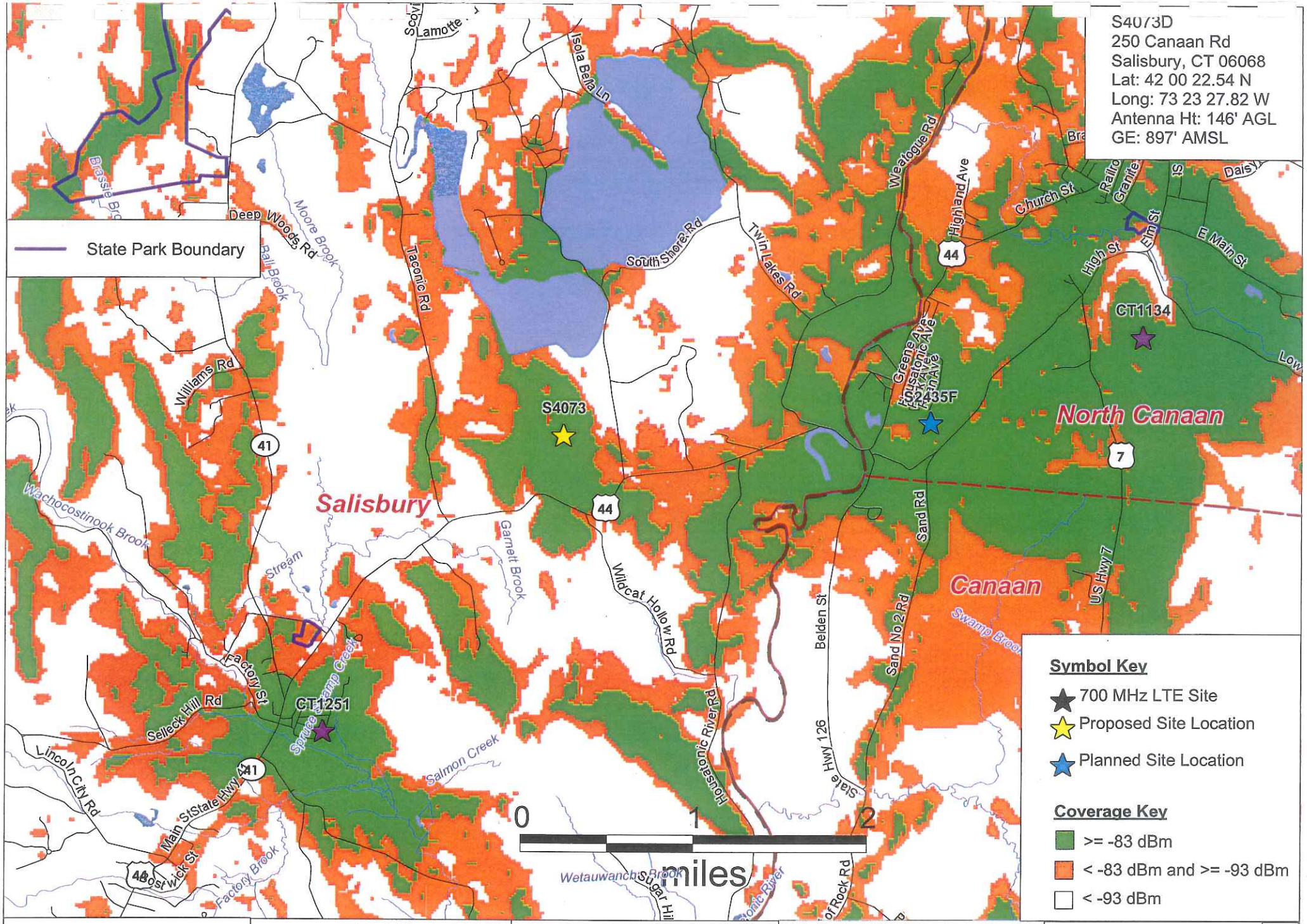
Dated: November 19, 2014

Lucia Chiocchio

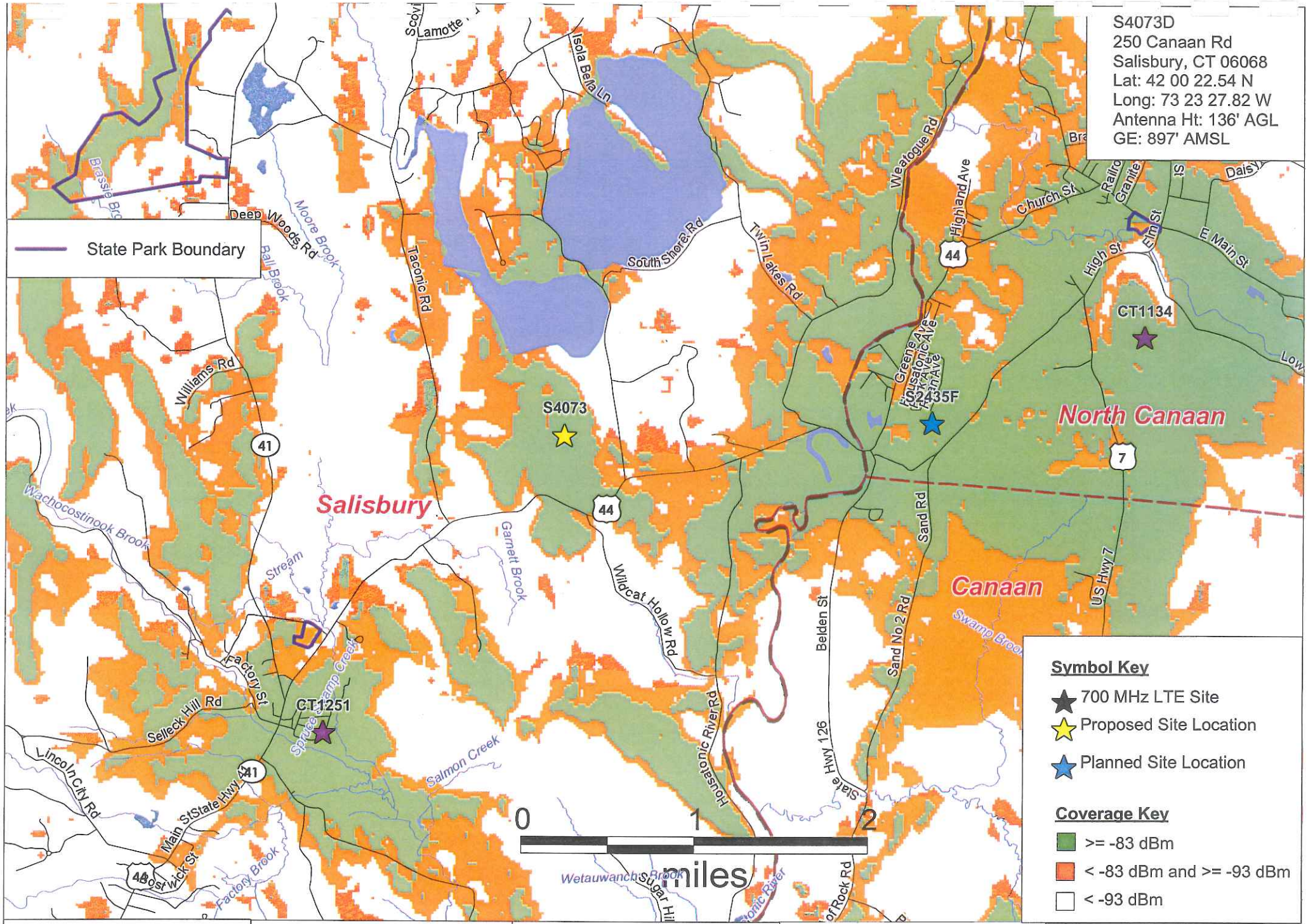
cc: Ray Vergati, Homeland Towers
Michele Briggs, AT&T
Christopher B. Fisher, Esq.



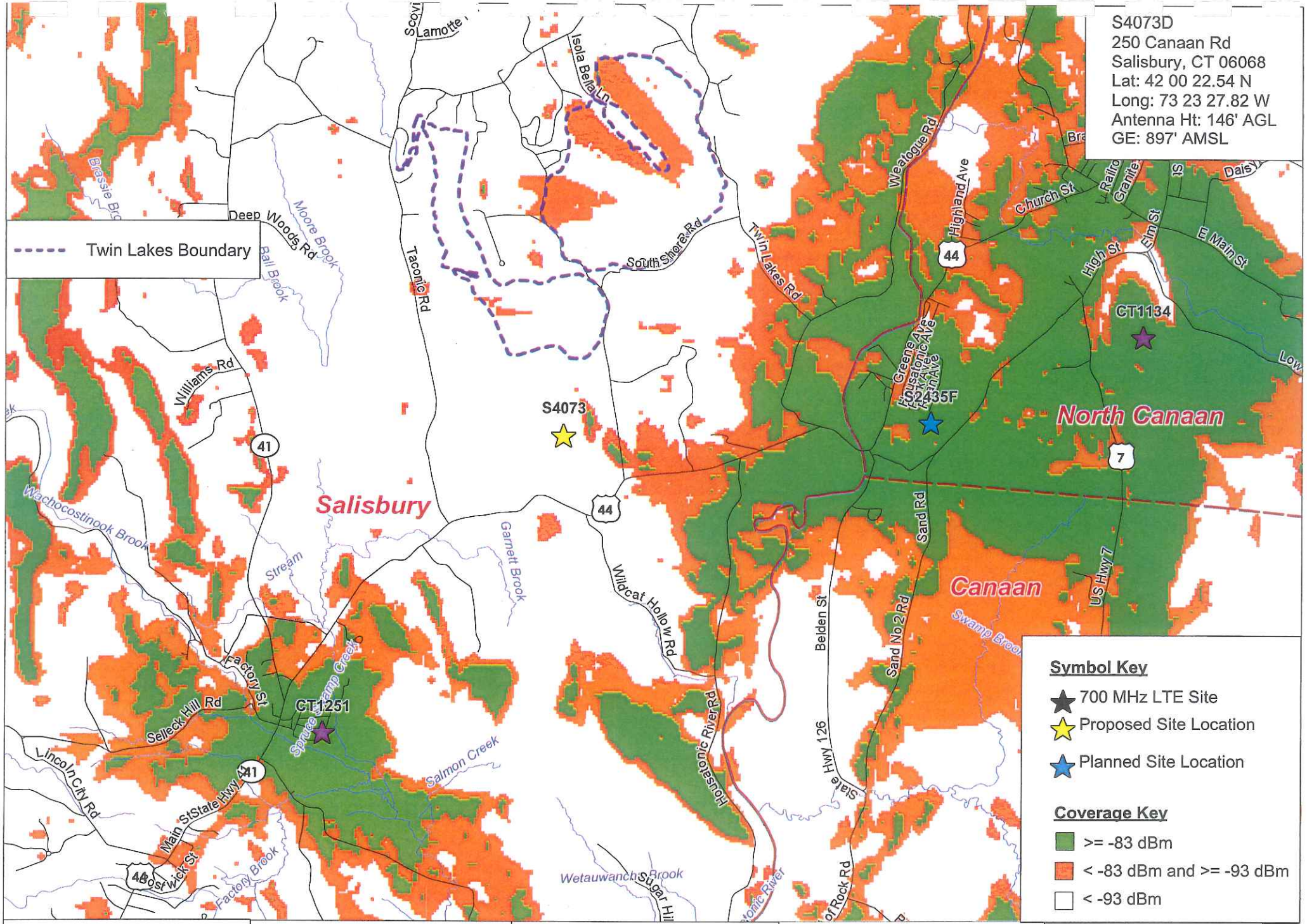
Existing Coverage 700 MHz LTE	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/14/2014 REV 0

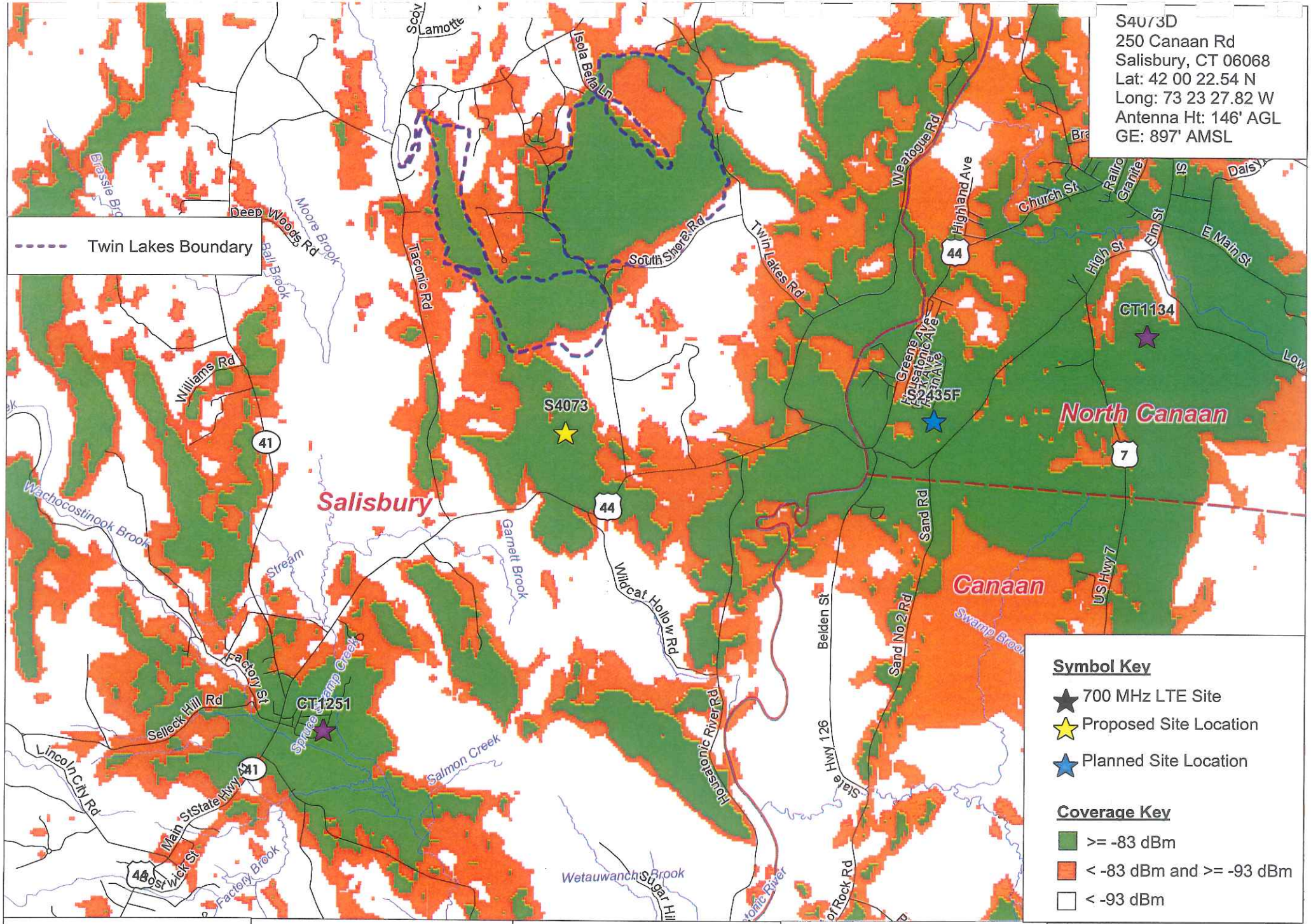


Existing & Proposed @ 146 Coverage 700 MHz LTE	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/14/2014 REV 0

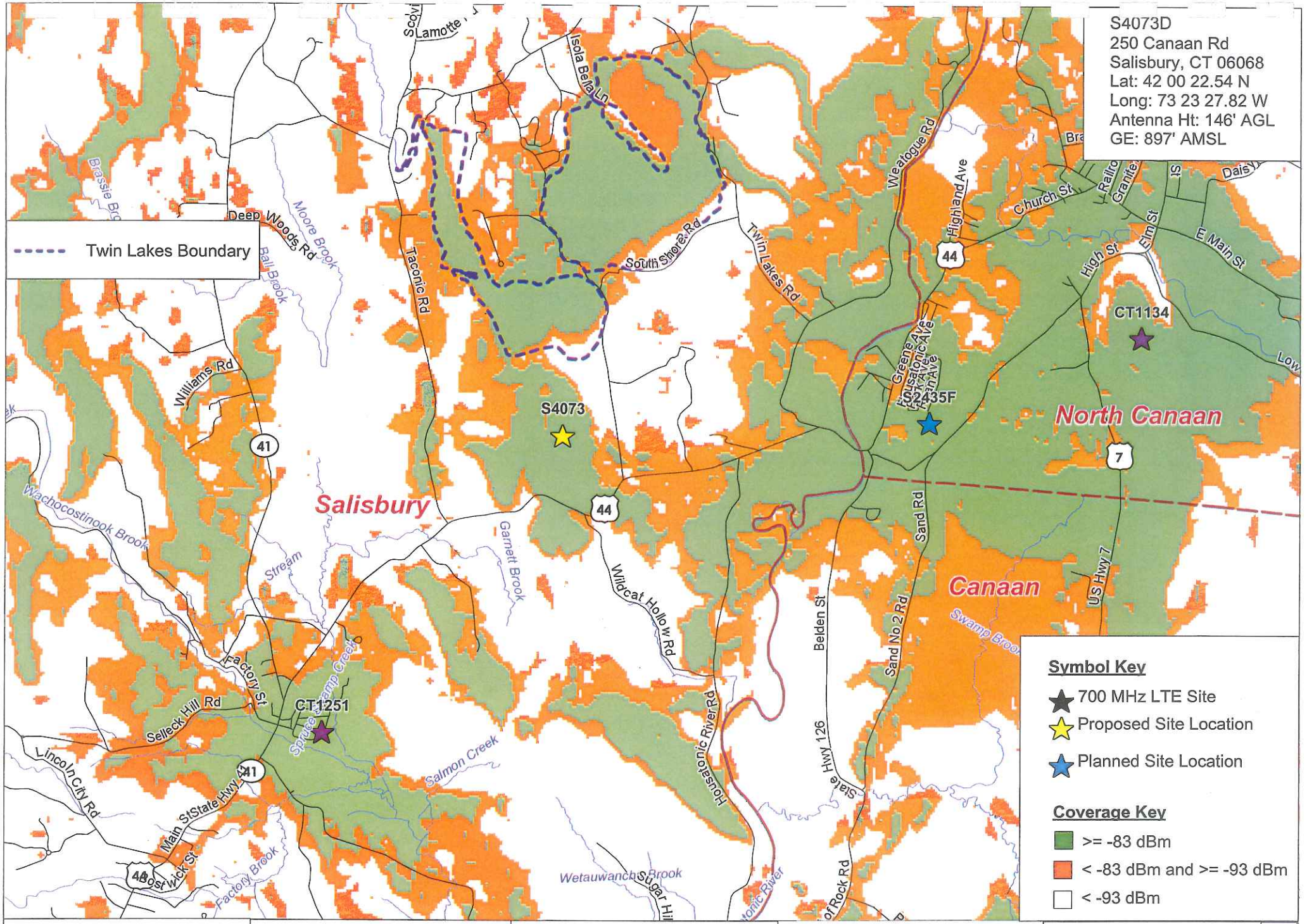


Existing & Proposed @ 136 Coverage 700 MHz LTE	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/14/2014 REV 0

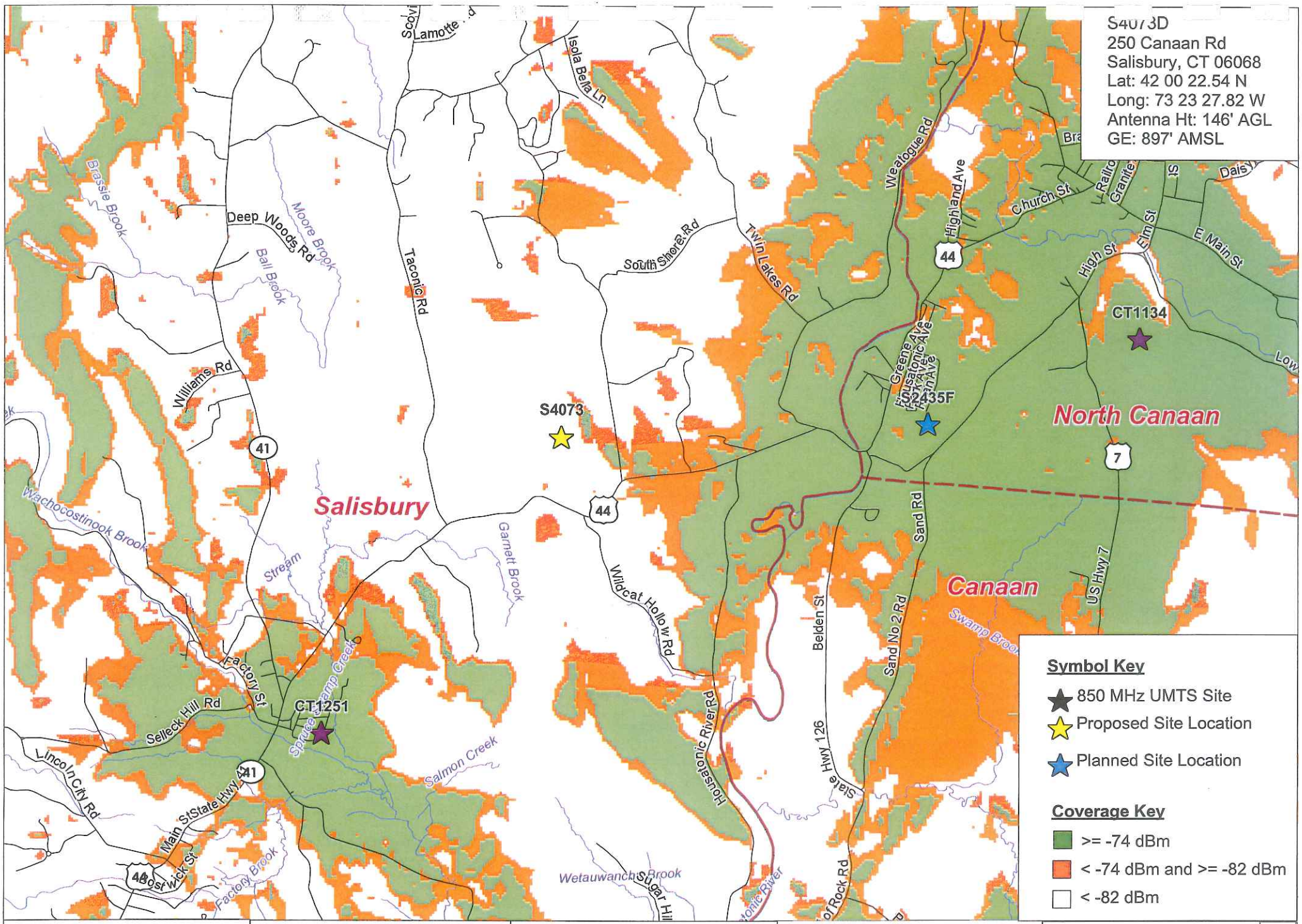

S4073D
250 Canaan Rd
Salisbury, CT 06068
Lat: 42 00 22.54 N
Long: 73 23 27.82 W
Antenna Ht: 146' AGL
GE: 897' AMSL
Twin Lakes Boundary
S4073
S2435F
CT1134
CT1251
Salisbury
North Canaan
Canaan
Symbol Key
700 MHz LTE Site
Proposed Site Location
Planned Site Location
Coverage Key
>= -83 dBm
< -83 dBm and >= -93 dBm
< -93 dBm
Existing Coverage
700 MHz LTE
Salisbury
250 Canaan Rd
Salisbury, CT 06068
at&t
PREPARED ON
DATE: 11/14/2014
REV 0



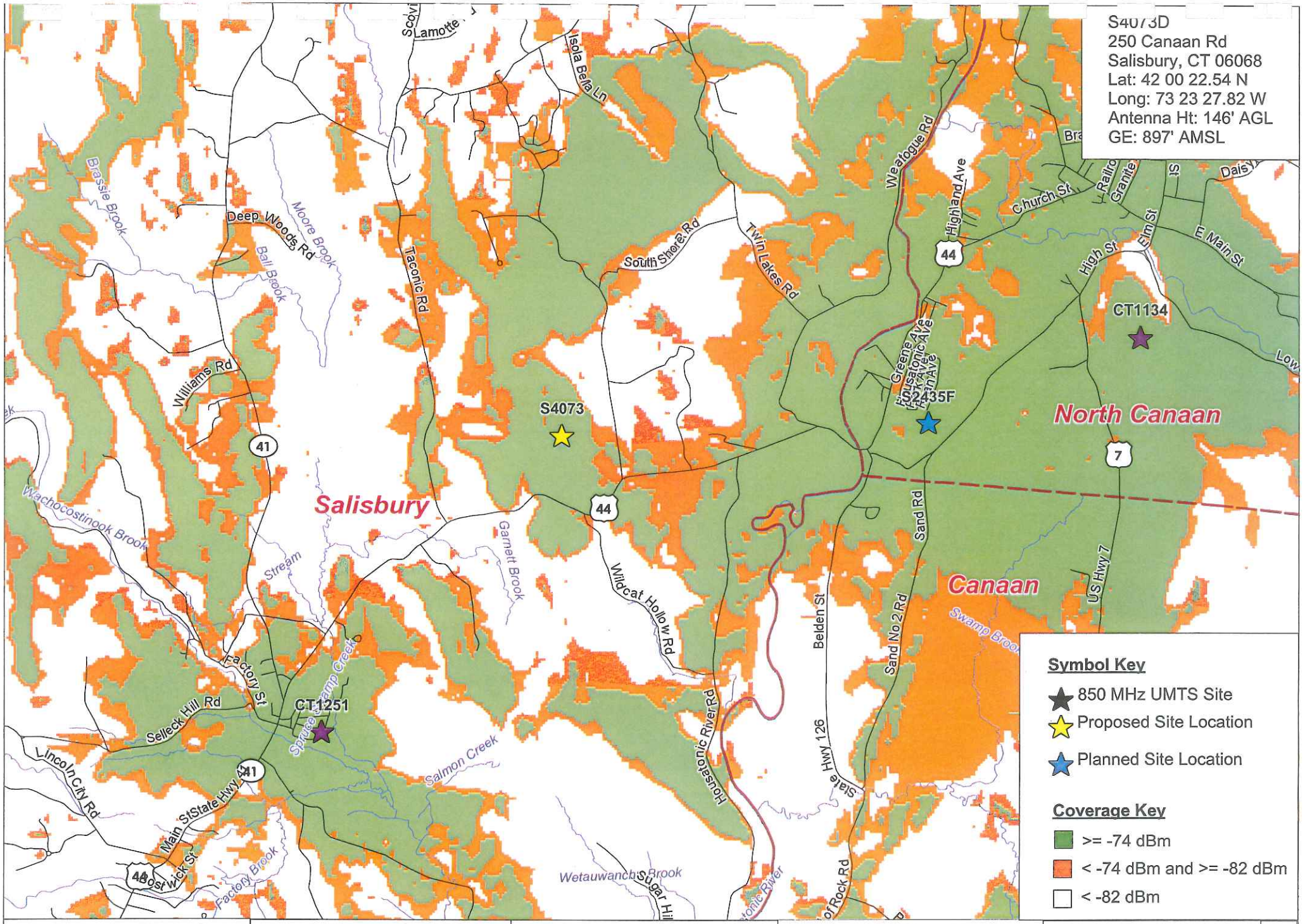
Existing & Proposed @ 146 Coverage 700 MHz LTE	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/14/2014 REV 0



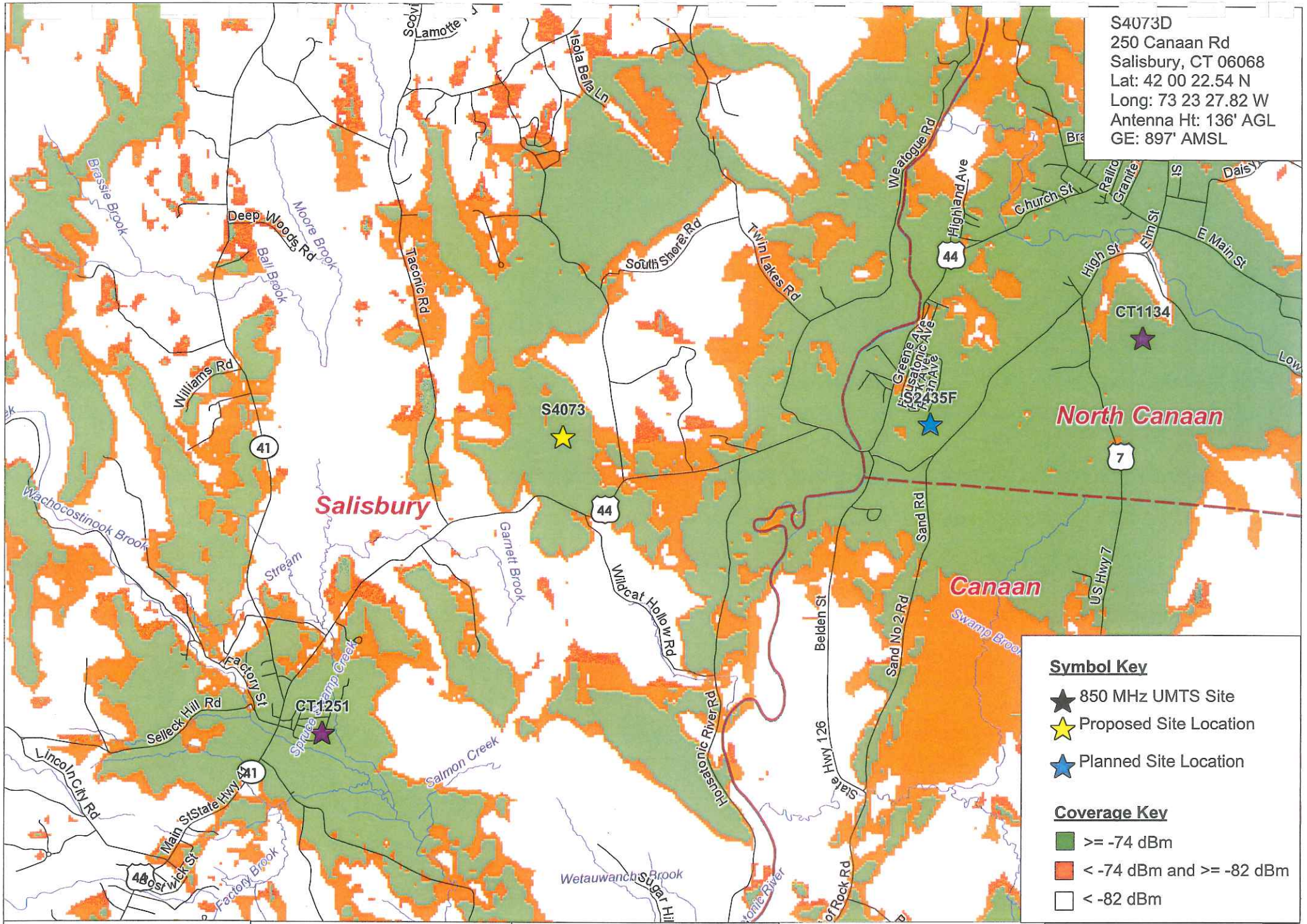
Existing & Proposed @ 136 Coverage 700 MHz LTE	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/14/2014 REV 0



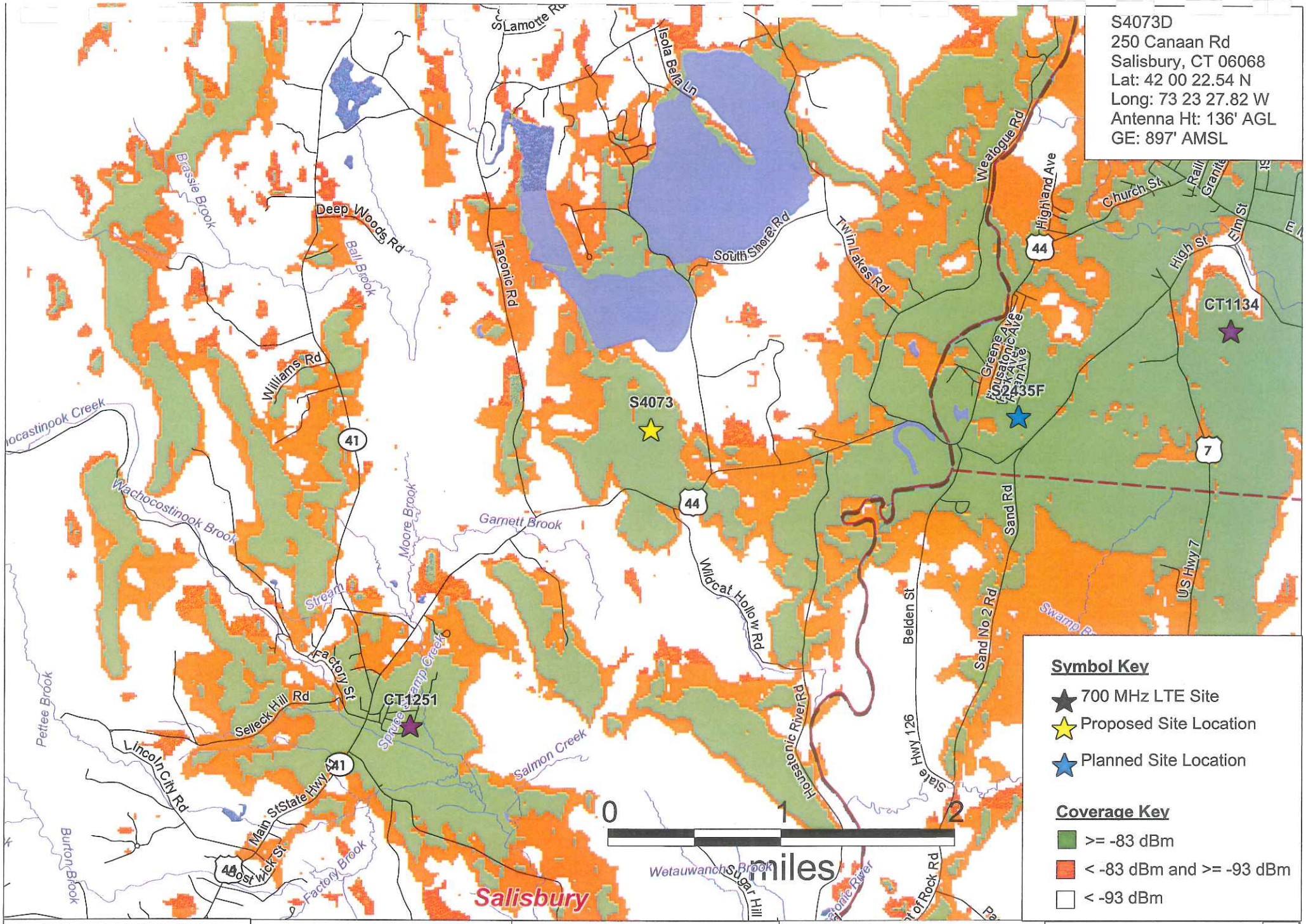
Existing Coverage 850 MHz UMTS	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/17/2014 REV 0



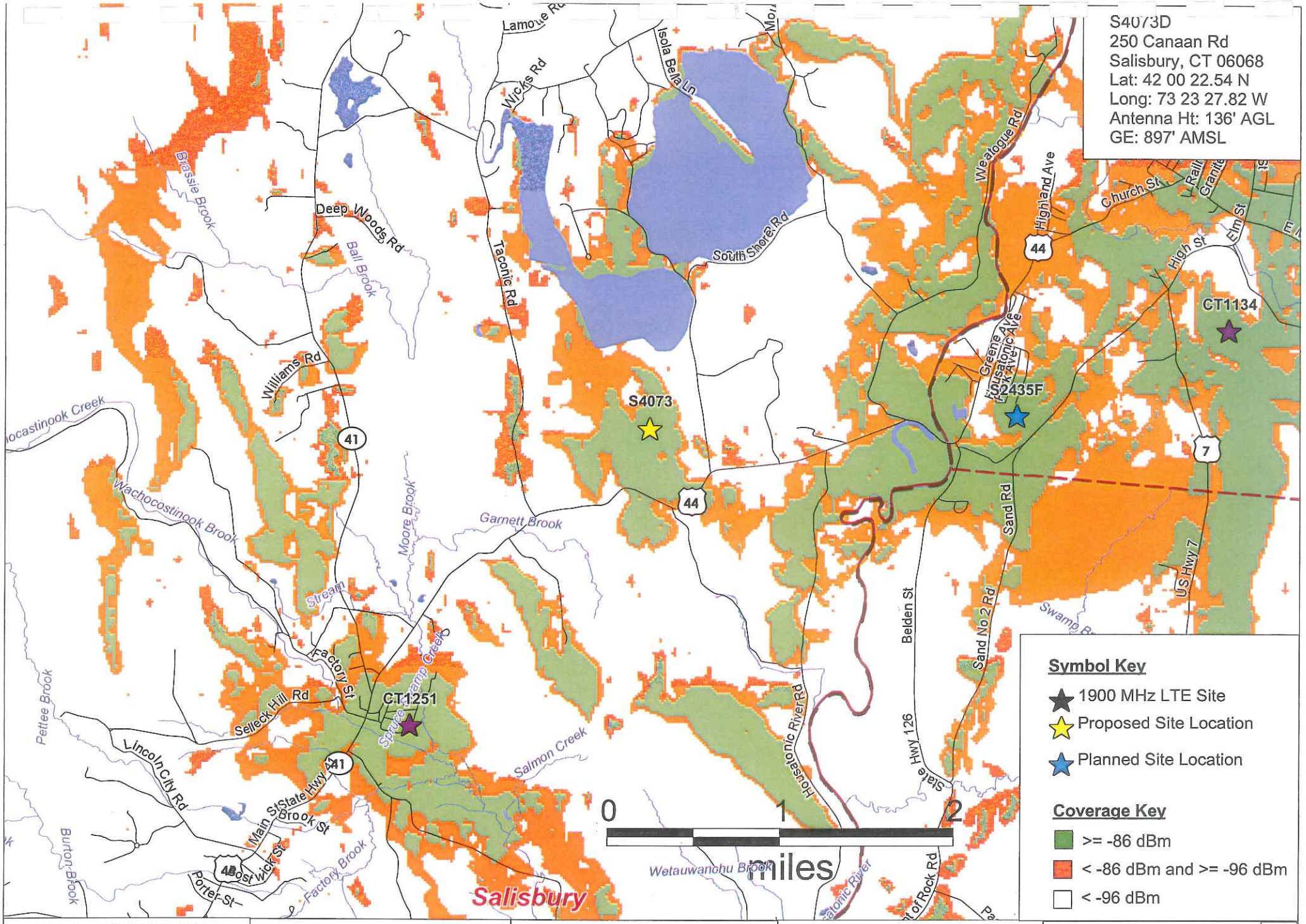
Existing & Proposed @ 146 Coverage 850 MHz UMTS	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/17/2014 REV 0



Existing & Proposed @ 136 Coverage 850 MHz UMTS	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/17/2014 REV 0



Existing 700 MHz LTE Coverage with Proposed Site at 136' AGL	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/10/2014 REV 0



Existing 1900 MHz LTE Coverage with Proposed Site at 136' AGL	Salisbury	250 Canaan Rd Salisbury, CT 06068	at&t	PREPARED ON DATE: 11/10/2014 REV 0

ALL-POINTS TECHNOLOGY CORPORATION

AVIAN RESOURCES EVALUATION

Date: November 14, 2014

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

APT Project No.: CT283173

Re: Siting Council Docket No. 452 – Salisbury
250 Canaan Road
Salisbury, Connecticut

Homeland Towers, LLC ("Homeland") proposes to construct a new wireless telecommunications Facility ("Facility") on the Salisbury School property located at 250 Canaan Road in Salisbury, Connecticut (the "host Property"), identified as Tax Assessor Parcel ID # 16-5. The area proposed for the Facility is located in an undeveloped mature upland forest area on the 169.3± acre school parcel just north of the maintenance building and east of athletic fields. Access to the Facility is proposed to follow an existing paved and gravel road, which ultimately travels to the far north end of the school's property ending at the south shore of Washinee Lake at the Dick Curtis Boathouse. A 510± foot extension would veer eastward from the southern portion of this existing drive, in the form of a new 12-foot wide gravel access that generally follows an existing woods road, providing access to the proposed Facility. Homeland proposes to install a 150-foot tall monopole designed to resemble a pine tree (referred to as a "monopine") to conceal antennas and supporting apparatus; an additional 7-foot extension would be added to the top of the monopine to create a tapered tree-top shape to bring the total monopine height to 157 feet above ground level ("AGL"). Ground equipment would be enclosed within a 60-foot by 70-foot gravel compound area surrounded with an 8-foot tall chain link fence.

This evaluation is provided in response to *Pre-hearing Questions Set One* submitted by the Connecticut Siting Council (the "Council") for Docket No. 452, specifically:

- Question #43 – *Is the proposed tower located within an "Important Bird Area" as designated by the National Audubon Society?*

- Question #44 – *Would AT&T'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 host Property. Information within an approximate 3-mile radius of the host Property is graphically depicted on the attached Avian Resources Map. Some of the avian data referenced herein are not located in proximity to the project area and are therefore not visible on the referenced map due to its scale. However, in those cases the distances separating the host property from the resources are identified in the discussions below.

Proximity to Important Bird Areas

The National Audubon Society has identified 27 Important Bird Areas ("IBAs") in the state of Connecticut. IBAs are sites that provide essential habitat for breeding, wintering, and/or migrating birds. To achieve this designation, an IBA must support species of conservation concern, restricted-range species, species vulnerable due to concentration in one general habitat type or biome, or species vulnerable due to their occurrence at high densities as a result of their congregatory behavior[1]. The closest IBA to the host Property is the White Memorial Foundation in Litchfield and Morris located approximately 20.7 miles to the southwest. White Memorial Foundation is home to The White Memorial Conservation Center, an environmental education center and nature museum location in the heart of the 4,000-acre wildlife sanctuary. Due to its distance from the host Property, this IBA would not experience an adverse impact resulting from the proposed development of the Facility.

Supporting Migratory Bird Data

Beyond Audubon's IBAs, the following analysis and attached graphics also identify several additional avian resources and their proximities to the host Property. Although these data sources may not represent habitat indicative of important bird areas, they may indicate possible bird concentrations[2] or migratory pathways.

Critical Habitat

Connecticut Critical Habitats depict the classification and distribution of 25 rare and specialized wildlife habitats in the state. It represents a compilation of ecological information collected over many years by state agencies, conservation organizations and individuals. Critical habitats range in size from areas less than one acre to areas that are tens of acres in extent. The Connecticut Critical Habitats information can serve to highlight ecologically significant areas and to target areas of species diversity for land conservation and protection but may not necessarily be indicative of habitat for bird species. The nearest Critical Habitat to the proposed Facility is a palustrine non-forested rich fen area, denoted as the West Twin Lake - Washining Lake located approximately 0.9 mile to the northwest; please note that this Critical Habitat is actually located on the west shore of Washinee Lake (East Twin Lake is named

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

[2] The term "bird concentrations" is related to the USFWS *Revised Voluntary Guidelines for communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning* (September 27, 2013) analysis beginning on page 7 of this document

Washining Lake). Based on the distance separating this resource from the proposed Facility, no adverse impacts are anticipated.

Avian Survey Routes and Points

Breeding Bird Survey Route

The North American Breeding Bird Survey is a cooperative effort between various agencies and volunteer groups to monitor the status and trends of North American bird populations. Routes are randomly located to sample habitats that are representative of an entire region. Each year during the height of the avian breeding season (June for most of the United States) participants skilled in avian identification collect bird population data along roadside survey routes. Each survey route is approximately 24.5 miles long and contains 50 stops located at 0.5-mile intervals. At each stop, a three-minute count is conducted. During each count, every bird seen or heard within a 0.25-mile radius is recorded. The resulting data is used by conservation managers, scientists, and the general public to estimate population trends and relative abundances and to assess bird conservation priorities. The nearest survey route to the host Property is the Sherman Breeding Bird Survey Route (Route #18009) located approximately 11 miles to the southwest. This ±25-mile long bird survey route begins near Lake Mauweehoo in Sherman on Route 37 and generally winds its way north through the northwest corner of New Milford and Kent before terminating in Sharon. 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, Bald Peak, is located in Salisbury, approximately 3.8 miles due west of the proposed Facility.

Most hawks migrate during the day (diurnal) to take advantage of two theorized benefits: (1) diurnal migration allows for the use of updrafts or rising columns of air called thermals to gain lift without flapping thereby reducing energy loss; and, (2) day migrants can search for prey and forage as they migrate. Therefore, no adverse impacts to migrating hawks are anticipated with development of the Facility, based on the 3.8± mile separation distance to a migrating raptor concentration (Bald Peak) and hawk migration behavior occurring during the daytime under favorable weather conditions when thermals form.

Bald Eagle Survey Route

Bald Eagle survey routes consist of locations of midwinter Bald Eagle counts along major river systems in Connecticut from 1986 to 2005 with an update provided in 2008. This survey was initiated in 1979 by the National Wildlife Federation. This database includes information on statewide, regional and national trends. Survey routes are included in the database only if they were surveyed consistently in at least four years and where at least four eagles were counted in a single year. A Bald Eagle Site survey route is located in the Town of Salisbury along the Housatonic River approximately 1.25 miles due east of the host Property.

Bald Eagle migration patterns are complex, dependent on age of the individual, climate (particularly during the winter) and availability of food.[3] Adult birds typically migrate alone and generally as needed when food becomes unavailable, although concentrations of migrants can occur at communal feeding and roost sites. Migration typically occurs during the middle of day (10:30–17:00) as thermals provide for opportunities to soar up with limited energetic expense; Bald Eagle migration altitudes are estimated to average 1,500–3,050 m by ground observers.[4] Four adults tracked by fixed-wing aircraft in Montana averaged 98 km/d during spring migration and migrated at 200–600 m above ground (McClelland et al. 1996).[5]

Therefore, no adverse impacts to migrating Bald Eagle are anticipated with development of the Facility, based on the relatively short (157-foot) height of the Facility, separation distance and eagle migratory patterns during the daytime under favorable weather conditions when thermals form.

Flyways

The project area is located in Litchfield County, approximately 60 miles north of Long Island Sound. The Connecticut coast lies within the Atlantic Flyway, one of four generally recognized regional primary migratory bird flyways (Mississippi, Central and Pacific being the others). This regional flyway is used by migratory birds travelling to and from summering and wintering grounds. The Atlantic Flyway is particularly important for many species of migratory waterfowl and shorebirds, and Connecticut's coast serves as vital stopover habitat. Migratory land birds also stop along coastal habitats before making their way inland. Smaller inland migratory flyways ("secondary flyways) are often concentrated along major riparian areas as birds use these valuable stopover habitats to rest and refuel as they make their way

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

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

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

further inland to their preferred breeding habitats. The Connecticut Migratory Bird Stopover Habitat Project (Stokowski, 2002)[6] identified potential flyways along the Housatonic, Naugatuck, Thames, and Connecticut Rivers. This study paralleled a similar earlier study conducted by the Silvio O. Conte National Fish & Wildlife Refuge (Neotropical Migrant Bird Stopover Habitat Survey[7]), which consisted of collection of migratory bird data along the Connecticut River and the following major Connecticut River tributaries: Farmington, Hockanum, Scantic, Park, Mattabesset, Salmon, and Eight Mile Rivers. Of these potential flyways, the nearest to the host Property is the Housatonic River, located approximately 1.25 miles to the east. These major riparian corridors may provide secondary flyways as they likely offer more food and protection than more exposed upland sites, particularly during the spring migration[8].

Siting of tower structures within flyways can be of concern, particularly for tall towers (>300 feet tall) 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 (>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)[9]. The proposed Facility is not this type of tower, being an unlit, unguyed monopole structure rising to only 157 feet in height. More recent studies of short communication towers (<300 feet) reveal that they rarely kill migratory birds[10]. 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)[11].

No adverse impacts to migrating bird species are anticipated with the Project, based on the significant distance separating the host Property from the Atlantic Flyway. Potential impacts to migrating bird species using the Housatonic River as a potential flyway are mitigated by the proposed Facility's short (157-foot) height and the fact that it would be unlit and unguyed.

Waterfowl Focus Areas

The Atlantic Coast Joint Venture ("ACJV") is an affiliation of federal, state, regional and local partners working together to address bird conservation planning along the Atlantic Flyway. The ACJV has identified waterfowl focus areas recognizing the most important habitats for

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

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

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

[9] 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.

[10] 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.

[11] 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.

waterfowl along the Atlantic Flyway. Connecticut contains several of these waterfowl focus areas. The nearest waterfowl focus area to the host Property is the Connecticut River and Tidal Wetlands Complex area, located approximately 46.2 miles to the southeast. Please refer to the attached Connecticut Waterfowl Focus Areas Map. Potential impacts to migrating waterfowl bird species using the Housatonic River as a flyway are mitigated by the proposed Facility's short (157-foot) height, separation distance and the fact that it would be unlit and unguyed.

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 Salisbury. The nearest migratory waterfowl area (Bantam Lake in Litchfield, CT) is located approximately 21.7 miles to the south of the proposed Facility. The associated species are identified as bufflehead, Canada goose, mallard, green wing teal and wood duck. Based on its significant distance to the host Property, no impacts to migratory waterfowl habitat are anticipated to result from development of the proposed Facility.

CTDEEP Natural Diversity Data Base

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

The NDDB maps represent approximate locations of endangered, threatened and special concern species and significant natural communities in Connecticut. The locations of species and natural communities depicted on the maps are based on data collected over the years by CTDEEP staff, scientists, conservation groups, and landowners. In some cases an occurrence represents a location derived from literature, museum records and/or specimens. These data are compiled and maintained in the NDDB. The general locations of species and communities are symbolized as shaded areas on the maps. Exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowner's rights whenever species occur on private property.

According to an August 10, 2014 letter from the CTDEEP NDDB, State-listed bat species occur in the vicinity of the proposed Facility. CTDEEP recommends that "Tree cutting should be conducted from November 1 through March 30 to ensure that bats are safely situated in their hibernacula."

USFWS Communications Towers Compliance

In 2013, the U.S Fish and Wildlife Service ("USFWS") prepared its *Revised Voluntary Guidelines for communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning*[12], which recommends the 13 voluntary guidelines below. These voluntary guidelines are designed to assist tower companies in developing their communication systems in a way which minimizes the risk to migratory birds and threatened and endangered species. With respect to Council's question 44, APT offers the following responses for each of the recommended actions which are abridged from the original document below.

1. *Collocation of the communications equipment on an existing communication tower or other structure (e.g., billboard, water and transmission tower, distribution pole, or building mount) is strongly recommended. Depending on tower load factors and communication needs, from 6 to 10 providers should collocate on an existing tower or structure.*

   Collocation opportunities on existing towers, buildings or non-tower structures are not available in the area while achieving the required radio frequency ("RF") coverage objectives of AT&T.

2. *If collocation is not feasible and a new tower or towers are to be constructed, it is strongly recommended that the new tower(s) should be not more than 199 feet AGL, and that construction techniques should not require wires. Such towers should be unlighted if Federal Administration ("FAA") regulations and lighting standards permit. If lighting is required, no red-steady lights should be used. USFWS considers towers that are unlit, unguyed, monopole or lattice, and less than 200 feet AGL to be the environmentally preferred "gold standard".*

   The proposed Facility would consist of a 157-foot monopine structure which requires neither guy wires nor lighting and is therefore consistent with USFWS' environmentally preferred "gold standard".

3. *If constructing multiple towers, the cumulative impacts of all the towers to migratory birds – especially to Birds of Conservation Concern*[13] *and threatened and endangered species, as well as the impacts of each individual tower, should be considered during development of a project.*

   Multiple towers are not proposed as part of this project.

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[12] Manville, A.M., Ph.D., C.W.B. Suggestions Based on Previous USFWS Recommendations to FCC Regarding WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking, "Effects of Communication Towers on Migratory Birds" (2007), Docket No. 08-61, FCC's Antenna Structure Registration Program (2011), Service 2012 Wind Energy Guidelines, and Service 2013 Eagle Conservation Plan Guidance. September 27, 2013.

[13] U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VA. 85 pp. http://www.fws.gov/migratorybirds/>

4. *The topography of the proposed tower site and surrounding habitat should be clearly noted, especially in regard to surrounding hills, mountains, mountain passes, ridge lines, rivers, lakes, wetlands, and other habitat types used by raptors, Birds of Conservation Concern, and state and federally listed species, and other birds of concern. Active raptor nests, especially those of Bald Eagles, should be noted, including known or suspected distances from proposed tower sites to nest locations.*

   The topography of the proposed tower location and surrounding habitat is provided in the attached Avian Resources Map. No Bald Eagle nests, foraging areas or roost sites are known to be located within 660 feet of the proposed Facility.[14] A Bald Eagle survey route associated with the Housatonic River, which would provide foraging and roosting habitat and potential nesting habitat, is located approximately 1.25 miles southeast of the proposed Facility.

5. *If at all possible, new towers should be sited within existing "antenna farms" (i.e., clusters of towers), in degraded areas (e.g., strip mines or other heavily industrialized areas), in commercial agricultural lands, in Superfund sites, or other areas where bird habitat is poor or marginal. Towers should not be sited in or near wetlands, or other known bird concentration areas (e.g., state or Federal refuges, staging areas, rookeries, and Important Bird Areas), in known migratory or daily movement flyways, areas of breeding concentration, in habitat of threatened or endangered species, or key habitats for Birds of Conservation Concern. Additionally, towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.*

   There are no existing "antenna farms", degraded or commercial areas in the vicinity of the proposed tower location that would satisfy the RF coverage objectives. The proposed Facility is not within wetlands, known bird concentration area, migratory or daily movement flyway or key habitats for Birds of Conservation Concern. According to an August 10, 2014 letter from the CTDEEP NDDB, State-listed bat species occur in the vicinity of the proposed Facility. CTDEEP recommends that "Tree cutting should be conducted from November 1 through March 30 to ensure that bats are safely situated in their hibernacula." Homeland would perform tree clearing work during the CTDEEP's recommended seasonal period.

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

6. *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 use of solid (non-flashing) warning lights at night should be avoided to minimize bird fatalities.*

   The proposed Facility height (157 feet AGL) is less than 199 feet and would not require any aviation safety lighting.

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[14] U.S. Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. United States Department of Interior, Fish and Wildlife Service, 23 pp. http://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf

7. *Tower designs using guy wires for support, which are proposed to be located in known raptor or waterbird concentration areas, daily movement routes, major diurnal migratory bird movement routes, staging areas, or stopover sites, should have daytime visual markers or bird deterrent devices installed 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.

8. *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, disturbance, and the creation of barriers, and to reduce above ground obstacles to birds in flight.*

   The proposed Facility is sited, designed, and would be constructed to accommodate proposed equipment and to allow for future collocations within the smallest footprint possible. The proposed Facility location is proximate to existing development associated with the Salisbury School (existing gravel drive, maintenance building and athletic fields) and will use an existing woods road for access to the proposed Facility to minimize tree clearing. Therefore, the proposed Homeland development will minimize habitat fragmentation to the large core forest block that occupies the northeast portion of the host Property.

9. *If, prior to tower design, siting and construction, it has been determined that a significant number of breeding, feeding, or roosting birds, especially of Birds of Conservation Concern, state or federally-listed bird species, and eagles are known to habitually use the proposed tower construction area, relocation to an alternate site is highly recommended. If this is not an option, seasonal; restrictions on construction may be advisable in order to avoid disturbance, site and nest abandonment, especially during breeding, rearing and other periods of high bird activity.*

   Significant numbers of breeding, feeding, or roosting Birds of Conservation Concern or eagles are not known to habitually use the proposed tower construction areas at the host Property. According to an August 10, 2014 letter from the CTDEEP NDDB, State-listed bat species occur in the vicinity of the proposed Facility. CTDEEP recommends that "Tree cutting should be conducted from November 1 through March 30 to ensure that bats are safely situated in their hibernacula." Homeland would perform tree clearing work during the CTDEEP's recommended seasonal period. This seasonal restriction for tree clearing would also avoid potential disturbance during periods of high bird activity if construction activities should occur during the peak nesting period of April 15 through July 15[15].

10. *Security lighting for on-ground facilities, equipment and infrastructure should be motion- or heat-sensitive, down-shielded, and of a minimum intensity to reduce nighttime bird attraction and eliminate constant nighttime illumination, but still allow for safe nighttime access to the site.*[16][17]

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

[16] Manville, A.M., II. 2011. Comments of the U.S. Fish and Wildlife Service's Division of Migratory Bird Management Filed Electronically on WT Docket No. 08-61 and WT Docket No. 03-187, Regarding the Environmental Effects of the Federal Communication's Antenna Structure Registration Program. January 14, 2011. 12 pp.

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

11. *Representatives from the USFWS or researchers from the Research Subcommittee of the Communication Tower Working Group ("CTWG") should be allowed access to the site to evaluate bird use; conduct dead-bird searches; place above ground net catchments below the towers; and to perform studies using 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 written notification to and approval by Homeland, USFWS or CTWG research personnel would be allowed access to the proposed Facility to conduct evaluations.

12. *Towers no longer in use, not re-licensed by the FCC for 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, not re-licenses by the FCC for use, or determined to be obsolete, it would be removed within 12 months of cessation of use.

13. *In order to obtain information on the usefulness of these guidelines in preventing bird strikes and better understanding impacts from habitat fragmentation, please advise USFWS personnel of the final location and specifications of the proposed tower, and which measures recommended in these guidelines were implemented.*

    The location and specification of the proposed Facility have been provided in this report and accompanying maps. A detailed review of implemented measures recommended in the *Revised Voluntary Guidance for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning* (September 27, 2013) are provided herein. The proposed Facility is not proximate to an Important Bird Area and would generally comply with the USFWS guidelines for minimizing the potential impacts to birds being an unlit, unguyed monopole structure only 157 feet in height. APT recommends that a copy of this report be submitted to USFWS if the proposed Facility is constructed. Should the final location and specification of the proposed Facility be modified as part of the siting process, this report will be updated accordingly.

Summary and Conclusions

In response to the council's inquiries with respect to avian-related concerns, APT has determined through this desk-top evaluation that the proposed Facility is not proximate to an Important Bird Area or other significant avian resource areas. In addition, the proposed Facility would comply with the USFWS guidelines for minimizing the potential to adversely impact migratory bird species. As a result, no migratory bird species are anticipated to be impacted by Homeland's proposed development provided tree clearing is conducted between November 1st and March 30th per the CTDEEP's recommendations

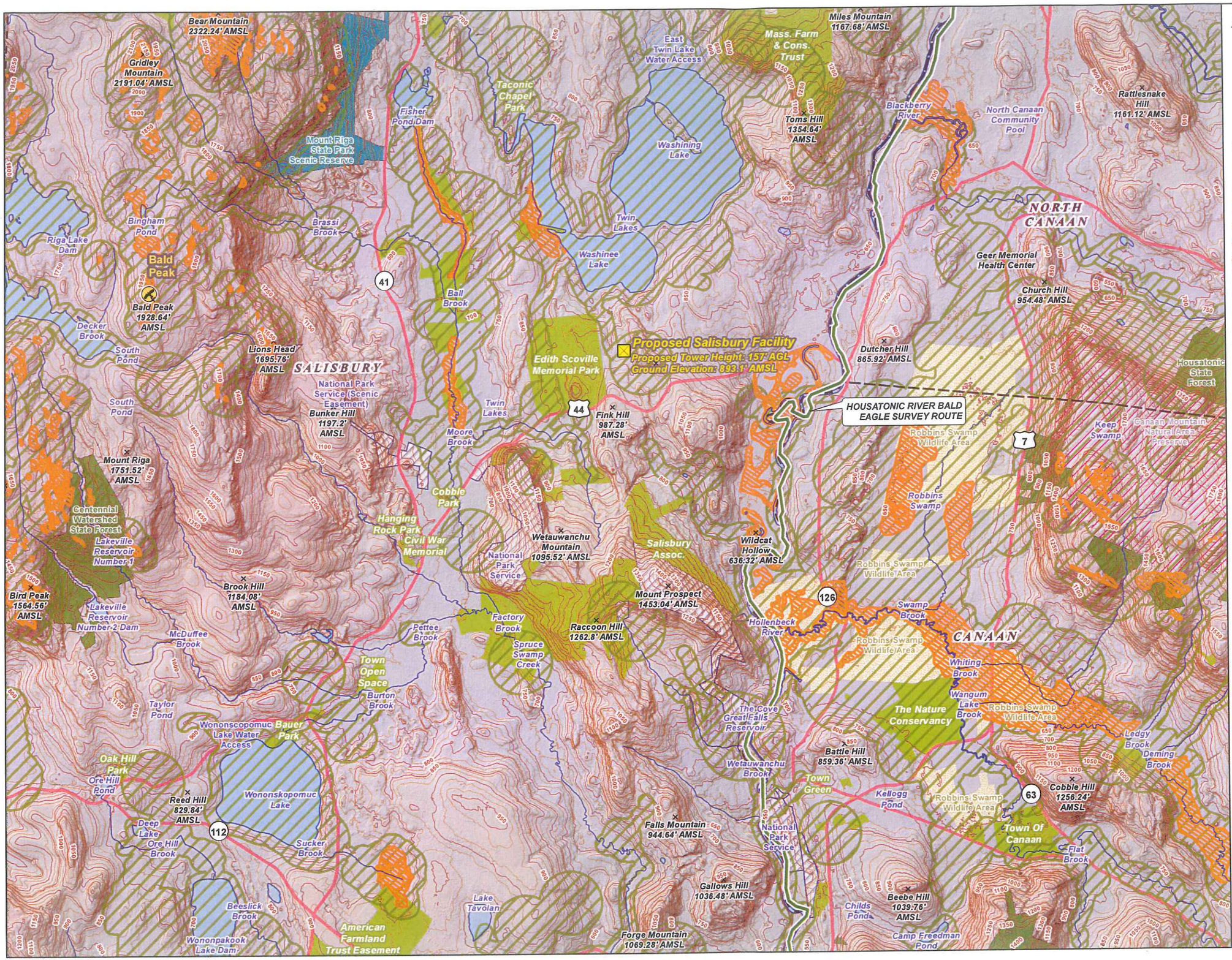
[17] U.S. Fish and Wildlife Service. 2012. U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines. March, 82 pp.

Figures

- Avian Resources Map
- Connecticut Waterfowl Focus Areas Map

Avian Resources Map

Proposed Wireless
Telecommunications Facility
Salisbury
250 Canaan Road
Salisbury, Connecticut



Legend

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

CT DEP Property (CT DEEP, 12/2010)

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

*None within mapped extents

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

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

Map Date: November 2014

N
W E
S

0.5 0.25 0 0.5 Miles

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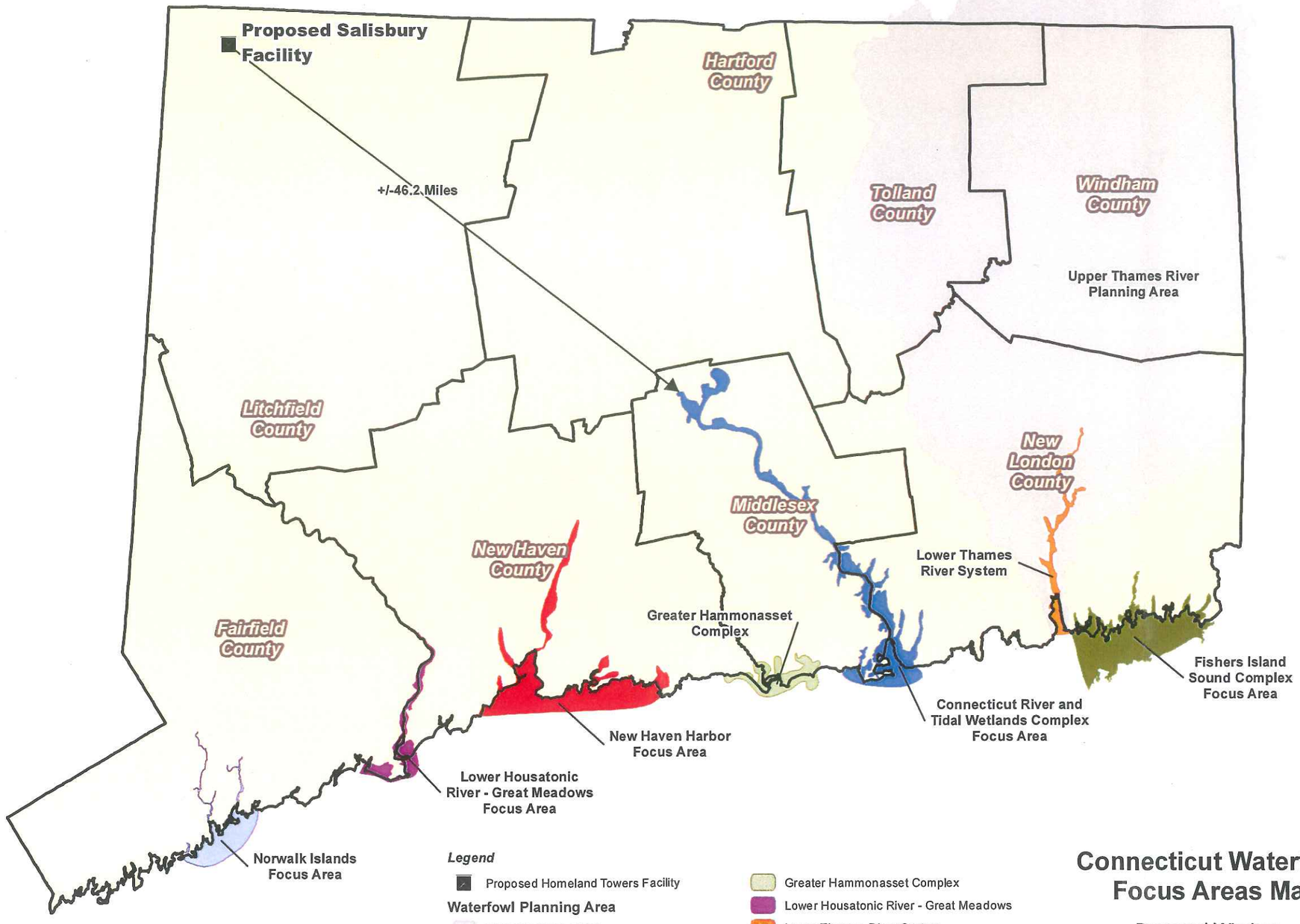
HOMELAND TOWERS

C:\GIS\Projects\Homeland_Towers\Salisbury CT\mxd\Avian_Resources Shaded Relief.mxd

C:\GIS\Projects\Homeland_Towers\SalisburyCT\mxd\Waterfowl Focus Areas Map.mxd



Legend

- Proposed Homeland Towers Facility

Waterfowl Planning Area

- Upper Thames River

Waterfowl Focus Areas

- Connecticut River and Tidal Wetlands Complex
- Fishers Island Sound Complex
- Greater Hammonasset Complex
- Lower Housatonic River - Great Meadows
- Lower Thames River System
- New Haven Harbor
- Norwalk Islands

N W E S

10 5 0 10 Miles

Connecticut Waterfowl Focus Areas Map

Proposed Wireless Telecommunications Facility
Salisbury
250 Canaan Road
Salisbury, Connecticut

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HOMELAND TOWERS

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

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WETLAND EVALUATION REPORT

November 14, 2014

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

APT Project No.: CT283173

Re: Response to Interrogatory #54
CT Siting Council Docket 452
Proposed Homeland Towers Facility
250 Canaan Road
Salisbury, Connecticut

Homeland Towers, LLC and New Cingular Wireless PCS, LLC have a pending application with the Connecticut Siting Council ("Council") for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility ("Facility") located at 250 Canaan Road, in Salisbury, Connecticut ("Site" or "Subject Property"). The Council's pre-hearing question number 54 requested a functions and values assessment of one of the nearby wetland areas identified as Wetland 2. The following evaluation of functions and values supported by Wetland 2 is provided herein by All-Points Technology Corporation, P.C. ("APT").

Site and Wetland Descriptions:

The Subject Property, identified as the Salisbury School in Salisbury, Connecticut, consists of an approximately 169-acre parcel. The area proposed for the wireless communications Facility is located in an undeveloped upland forest area on the school property just north of a maintenance building and east of athletic fields. Access to the Facility is proposed to initially follow a portion of an existing paved and gravel road that travels to the far north end of the school's property, ultimately ending at the south shore of Washinee Lake at the Dick Curtis Boathouse. A 510± foot extension would veer eastward from this drive, in the form of a new 12-foot wide gravel access that generally follows an existing woods road, to provide access to the proposed Facility.

Two wetland areas were delineated in relation to this project, consisting of a hillside seep forested wetland system associated with intermittent watercourse (Wetland 1) that flows to the north and an unnamed perennial watercourse with bordering forest wetland (Wetland 2) that generally flows to the west near the proposed access. Wetland 2 is the subject of this evaluation, as requested by pre-hearing question number 54. Details of the wetland investigation are provided in APT's Wetland Investigation report, dated May 27, 2014, provided as Attachment 6 in the previously submitted Application to the Council.

Wetland Evaluation

There are many methods of evaluating wetlands, all incorporating different parameters to assess these resources. This study uses The *Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach issued by the US Army Corps of Engineers New England District ("COE NED"), September 1999.* This evaluation provides a qualitative approach in which wetland functions can be considered Principal, Secondary, or

unlikely to be provided at a significant level. Functions and values can be principal if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. The COE NED recommends that wetland values and functions be determined through "best professional judgment" based on a qualitative description of the physical attributes of wetlands and the functions and values exhibited.

The degree to which a wetland provides each of these functions is determined by one or more of the following factors: landscape position, substrate, hydrology, vegetation, history of disturbance, and size. Each wetland may provide one or more of the listed functions at Principal levels.

The determining factors that affect the level of function provided by a wetland can often be broken into two categories. The effectiveness of a wetland to provide a specified function is generally dependent on factors within the wetland whereas the opportunity to provide a function is often influenced by the wetland's position in the landscape and adjacent land uses. For example, a depressed wetland with a restricted outlet may be considered highly effective in trapping sediment due to the long residence time of runoff water passing through the system. If this wetland is located in gently sloping woodland, however, there is no significant source of sediment in the runoff therefore the wetland is considered to have a small opportunity of providing this function.

Table 1 provides a summary of functions and values supported by Wetland 2. A detailed description of Wetland 2, including the Principal and Secondary functions and values associated with this wetland, is provided below.

Table 1
Wetlands Functions and Values Summary

Wetland I.D. Number	Groundwater Recharge/ Discharge	Floodflow Alteration	Fish & Shellfish Habitat	Sediment/Toxicant/ Pathogen Retention	Nutrient Removal/Retention/ Transformation	Production Export	Sediment/Shoreline Stabilization	Wildlife Habitat	Recreation	Educational/Scientific Value	Uniqueness/Heritage	Visual Quality/Aesthetics	Endangered Species Habitat
2	P	P	S	P	P	P	P	S	S	S	S	S	S
P = Principal Function/Value													
S = Secondary Function/Value													
- = Not a Significant Function/Value													

Wetland 2 is associated with an unnamed perennial watercourse that is generally characterized by seasonally saturated groundwater discharge areas with some portions of the immediately bordering wetland to the stream as an alluvial riparian system. The unnamed perennial watercourse flows to the west, then turns north at an existing culvert crossing associated with the Salisbury School's gravel road that leads to the Dick Curtis Boathouse on Washinee Lake. Washinee Lake is ±0.5 mile north of the stream culvert crossing. Wetland 2 supports palustrine forested areas, which provide good shading of the stream. Portions of the stream are steeply incised and show signs of bank erosion. The watershed for this stream includes portions of Route 44 and the Salisbury School campus. Relatively wide bordering wetlands are associated with the stream system east of the existing culvert crossing while the west side has relatively narrow bordering wetlands as the stream gradient increases. A summary of the functions and values of Wetland 2 is provided below. A Wetland Function-Value Evaluation Summary Table and accompanying Field/Office Wetland Function-Value Evaluation Form for this wetland are enclosed.

Biological Functions

Fish habitat, considered a Secondary function, appears to be supported by the unnamed perennial stream based on observation of fin fish (e.g., small fry/minnows/shiners of unknown species) made during the wetland delineation.

This wetland system provides wildlife habitat function at a Secondary level. This function is not supported at a Principal level due to the proximity to Salisbury School facilities and the associated high level of human activity along with apparent hydrology impacts from stormwater runoff from Route 44 and the Salisbury School campus. The proximity to other wetland systems and Washinee Lake to the north does enhance the wildlife habitat function of this wetland system although the Site's existing development and Route 44 results in habitat fragmentation that disrupts possible biological connectivity to other nearby wetland habitats to the south.

Production export is provided at a Principal level from this wetland. Nutrient export occurs within the wetland system and transport is facilitated by the interior perennial watercourse. Also, this wetland supports relatively diverse vegetation and wildlife food sources.

Hydrologic Functions

This wetland provides floodflow alteration at a Principal level. As the perennial watercourse enters the western end of the wetland prior to the school's gravel access drive and culvert, the gradient of the stream lessens and the bordering wetland area broadens to allow for attenuation of flood waters carried by the stream. These areas have good opportunity for floodwater attenuation as the watershed for this stream includes portions of Route 44 and the Salisbury School campus which includes stormwater inputs.

This wetland system provides groundwater discharge/recharge functions at a Principal level as it contributes to the base flow of the interior perennial stream and contributes to recharge of the shallow glacial till aquifer.

Water Quality Functions

This wetland supports sediment, toxicant, and pathogen retention functions at a Principal level, particularly during high flow storm events. Smaller storm events likely pass relatively quickly through the incised channel of stream with limited treatment. The developed nature of the watershed provides a source for these contaminants, providing the wetland an opportunity to support this function. This wetland provides nutrient removal/nutrient retention/transformation function at a Principal level due to the dense herbaceous wetland vegetation.

Sediment/shoreline stabilization functions are supported by this wetland at a Principal level as a result of relatively dense vegetation along the banks of the stream.

Societal Values

The wetland system does provide recreational value in a Secondary capacity as the wetland area since the wetland is easily accessible on the school's property. Similarly, educational value is supported in a Secondary capacity due to the diversity of wetland habitats, although invasive shrub species in the understory detract from being able to provide this value at a Principal level.

The Uniqueness/Heritage value considers the special value of a wetland in context with the overall landscape, cultural features, and rarity of wetland/habitat type in the local area. This wetland/habitat type is relatively common in the local area, including habitats located upstream and downstream from this wetland area. Therefore, this value is supported by this wetland in a Secondary capacity. The visual/aesthetics values is supported in a Secondary capacity since no scenic vistas are provided to this forested wetland and school facilities are within the wetland's view scape. According to DEEP NDDB records, State-listed bat species occur in the vicinity of the proposed Facility. Summer nesting and roosting habitat preferences of bat species is associated with trees with loose, rough bark such as maples, hickories and oaks and large trees with cavities. Such habitat is not wetland dependent and is often times

typically associated with mature upland forested areas. Therefore, this wetland is considered to provide listed species habitat value in a Secondary capacity due to its possible association with State-listed bat species although it is not considered to provide this value at a Principal level since the preferred habitat type is more strongly associated with the surrounding mature forested uplands.

Wetland Impact Analysis

An analysis of the proposed Homeland Towers development was previously provided in APT's Wetland Investigation report. The conclusions and recommendations contained in that report remain unchanged following an analysis of the functions and values supported by Wetland 2. It is APT's opinion that the proposed Homeland Towers development will not result in a likely adverse impact to the functions and values supported by Wetland 2 provided the recommendations noted in APT's Wetland Investigation report are implemented.

If you have any questions regarding the above-referenced information, please feel free to contact me by telephone at (860) 663-1697 ext. 201 or via email at dgustafson@allpointstech.com.

Sincerely,

All-Points Technology Corporation, P.C.

Dean Gustafson
Senior Wetland Scientist

Enclosures

Wetland Function-Value Evaluation Summary Table

&

Field/Office Wetland Function-Value Evaluation Form

Wetland Function-Value Evaluation Summary Table

Total area of wetland	8± ac.	Human Made?	No	Is wetland part of a wildlife corridor?	Yes	or a "habitat Island"?	No		Wetland ID	Wetland 2 (WF 2-01 to 2-40 & 2-50 to 2-61)	
Adjacent land use	Undeveloped mature forest, developed - institutional			Distance to nearest roadway or other development		adjacent to Salisbury School maintenance building & athletic fields			Latitude/ Longitude	42°0'20.14"N, 73°23'31.17"W	
Dominant wetland systems present	PFO			Contiguous undeveloped buffer zone present		No			Prepared by	D. Gustafson	Date 11/14/14
Is the wetland a separate hydraulic system?	No	If not, where does the wetland lie in the drainage basin?				lower perennial			Wetland Impact Type:	None	Area None
How many Tributaries contribute to the wetland?	Unnamed perennial stream	Wildlife & vegetation diversity/abundance	Yes						Corps manual wetland delineation Completed?	Yes	

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Values(s)	Comments
Groundwater Recharge/Discharge	✓	☐	6-8, 12, 13, 15	P	wetland contributes to base flow/recharge of unnamed perennial watercourse
Floodflow Alteration	✓	☐	1-3, 5-11, 13, 14, 16-18	P	Forested wetland provides flood storage capacity
Fish and Shellfish Habitat	✓	☐	1, 2, 4, 7-10, 12, 14-17	S	fisheries habitat is supported by the unnamed perennial stream
Sediment/Toxicant Retention	✓	☐	1-12, 14-16	P	Pricipal function is associated with forested wetlands bordering on perennial stream
Nutrient Removal	✓	☐	1, 3-5, 7-14	P	Forested wetland supports nutrient removal, retention and transformation
Production Export	✓	☐	1, 2, 4-8, 10-13	P	function is maximized by an abundance of vegetative inputs and direct outlet downstream
Sediment/Shoreline Stabilization	✓	☐	1-4, 6-9, 12, 14	P	stream banks stabilized by relatively dense woody vegetation
Wildlife Habitat	✓	☐	4-9, 12, 14, 18-21	S	Complex of stream and forested habitat support diversity of wildlife; surrounding developments detracts from function
Recreation	✓	☐	4-6, 10-12	S	public access restricted (private school)
Educational/Scientific Value	✓	☐	1, 3, 5, 8-11, 13, 14	S	public access restricted (private school)
Uniqueness/Heritage	✓	☐	5-11, 17-19, 22, 24, 27	S	public access restricted (private school)
Visual Quality/Aesthetics	✓	☐	8-11	S	public access restricted (private school)
Endangered Species Habitat	✓	☐	1	S	State-listed bat species at Site
Other	☐	✓			

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

ALL-POINTS TECHNOLOGY CORPORATION

3 Saddlebrook Drive
Killingworth, Connecticut 06419
860 663-1697

Field / Office Wetland Function-Value Evaluation Form

Date(s):	September 24, 2014		Project Location:	250 Canaan Road Salisbury, CT	
Inspector(s):	Dean Gustafson, PSS		Wetland ID:	Wetland 2 (2-01 to 2-40 & 2-50 to 2-61)	
Corps Delineation:	Yes ✓	No ☐	CT Delineation	Yes ✓	No ☐
Wetland Area:	8± acres		Proposed Impact:	Type:None	Area: None
Created Wetland:	Yes ☐	No ✓	Adjacent Land Use:	Undeveloped Forest & Institutional	
Dominate System:	PFO & Open Water		Nearest Roadway:	Canaan Road (Route 44)	
Wildlife Corridor:	Yes ✓	No ☐	Habitat Island:	Yes ☐	No ✓
Tributaries:	unnamed watercourse		Buffer Condition:	Undeveloped - Forested & Institutional	
Site Photo(s):	April 13, 2014 photos		Species List(s):	Refer to 05/27/14 Wetlands Investigation Report	
Wetland 2 is a forested wetland system associated with an unnamed perennial watercourse that flows to the west, then turns north at an existing culvert crossing associated with the Salisbury School's gravel road that leads to the Dick Curtis Boathouse on Washinee Lake. Washinee Lake is ±0.5 mile north of the stream culvert crossing.					

GROUNDWATER RECHARGE/DISCHARGE FUNCTION

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

FLOODFLOW ALTERATION FUNCTION

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

FISH AND SHELLFISH HABITAT (FRESHWATER) FUNCTION

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

FISH AND SHELLFISH HABITAT (MARINE) FUNCTION

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

SEDIMENT/TOXICANT/PATHOGEN RETENTION FUNCTION

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

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION FUNCTION

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

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
12. Waterflow through this wetland is diffuse.	✓	☐	☐
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.	✓	☐	☐
14. Water moves slowly through this wetland.	✓	☐	☐
Comments: Wetland area provides nutrient removal/retention/transformation function			

PRODUCTION EXPORT (Nutrient) FUNCTION

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

SEDIMENT/SHORELINE STABILIZATION FUNCTION

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

WILDLIFE HABITAT FUNCTION

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

RECREATION (Consumptive and Non-Consumptive) VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is part of a recreation area, park, forest, or refuge.	☐	✓	☐
2. Fishing is available within or from the wetland.	☐	✓	☐
3. Hunting is permitted in the wetland.	☐	✓	☐
4. Hiking occurs or has potential to occur within the wetland.	✓	☐	☐
5. Wetland is a valuable wildlife habitat.	✓	☐	☐
6. The watercourse, pond, or lake associated with the wetland is unpolluted.	✓	☐	☐
7. High visual/aesthetic quality of this potential recreation site.	☐	✓	☐
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.	☐	✓	☐
9. Watercourse associated w/ wetland is wide & deep enough to accommodate canoeing and/or non-powered boating.	☐	✓	☐
10. Off-road public parking available at the potential recreation site.	✓	☐	☐
11. Accessibility and travel ease is present at this site.	✓	☐	☐
12. The wetland is within a short drive or safe walk from highly populated public and private areas	✓	☐	✓
Comments: public access is limited by the Salisbury School (private)			

EDUCATIONAL/SCIENTIFIC VALUE

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

UNIQUENESS/HERITAGE VALUE

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

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

VISUAL QUALITY/AESTHETICS VALUE

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

ENDANGERED SPECIES HABITAT VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland contains or is known to contain threatened or endangered species.	✓	☐	☐
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.	☐	✓	☐
Comments: CTDEEP confirmed State-listed bats exists at site; however, not necessarily associated with wetland habitat			