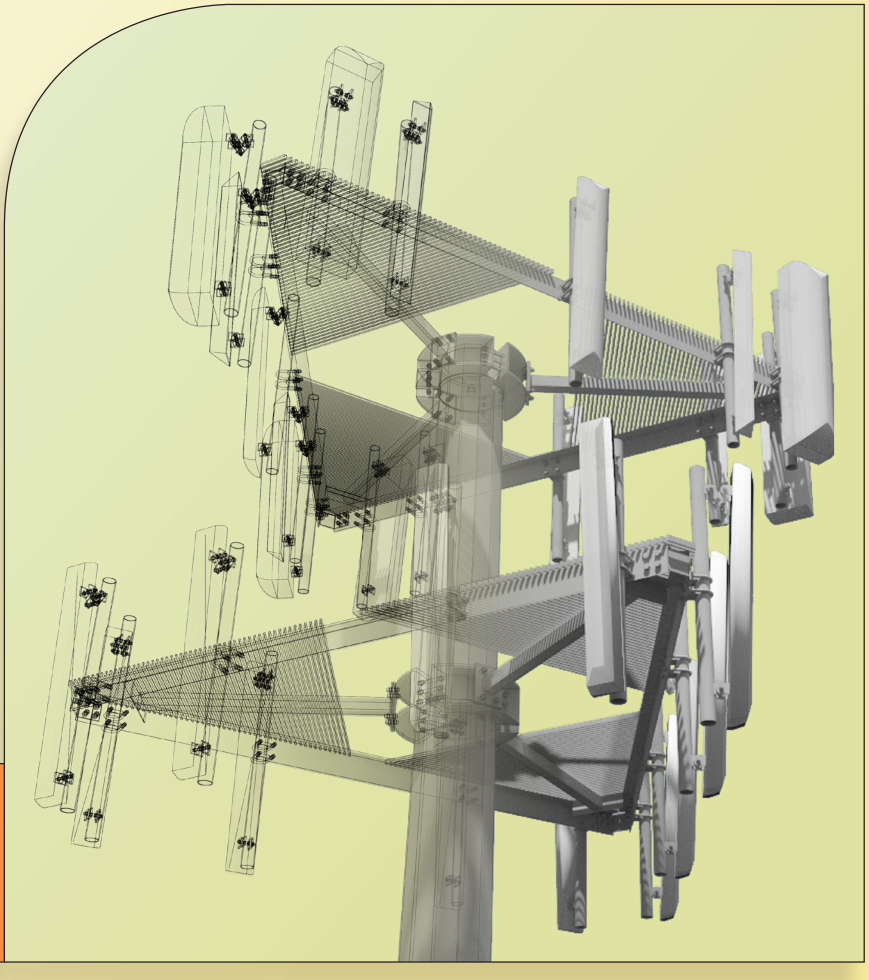
Visibility Analysis

CT1155C
BETHEL - SITE 1
62 & 64 CODFISH HILL ROAD
BETHEL CT



Prepared in February 2014 by:
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Prepared for North Atlantic Towers

NORTH ATLANTIC TOWERS

ALL-POINTS TECHNOLOGY CORPORATION

Project Introduction

North Atlantic Towers proposes to construct and operate a wireless telecommunications facility ("Facility") at 62-64 Codfish Hill Road in the Town of Bethel, Fairfield County, Connecticut (identified herein as the "Host Property"). All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate views associated with the proposed Facility with a two mile radius of the proposed site location ("Study Area"). North Atlantic Towers is considering two possible locations for placement of the Facility. This report documents conditions associated with Site 1.

Site Description and Setting

The Host Property is located north of Codfish Hill Road. The Bethel Assessor's Office identifies the Host Property as Map D65, Block 57, Lot 122. Access to the Host Property currently exists via a driveway off Codfish Hill Road which serves an existing residence. Site 1 is located in the eastern portion of the Host Property on the edge of a remote, elevated field accessible by a farm road.

The proposed Facility at Site 1 would consist of a 150-foot tall monopole within a fence-enclosed, gravel-base 75-foot by 75-foot equipment compound, at a ground elevation of approximately 595 feet above mean sea level ("AMSL"). The Facility would include sufficient room for multiple antennas, equipment shelters and supporting equipment.

The Study Area consists primarily of residential development, agricultural fields and forest, with limited commercial activities along the major transportation routes. In addition to the Town of Bethel, the eastern portion of the Study Area includes part of the neighboring municipality of Newtown.

METHODOLOGY

APT used the combination of a predictive computer model and in-field analysis to evaluate the visibility associated with the proposed Facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of potential visibility throughout the entire Study Area including private properties and other areas inaccessible for direct observations. The in-field analyses included a reconnaissance of the Study Area to record existing conditions, verify results of the model, inventory visible and nonvisible locations, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

Preliminary Computer Modeling

Two computer modeling tools are used to calculate those areas from which at least the top of the proposed Facility is estimated to be visible: IDRISI image analysis program (developed by Clark Labs, Clark University) and ArcGIS®, developed by Environmental Systems Research Institute, Inc. Project- and Study Area-specific data were incorporated into the computer model, including the Facility's location, height, and ground elevation, as well as the surrounding topography and existing vegetation which are two primary features that can block direct lines of sight. Information used in the model included LiDAR[1]-based digital elevation data and customized land use data layers developed specifically for this analysis. The LiDAR-based Digital Elevation Model ("DEM") represents topographic information for the state of Connecticut that was derived through the spatial interpolation of airborne LiDAR-based data collected in the year 2000 and has a horizontal resolution of ten (10) feet. In addition, multiple land use data layers were created from National Agricultural Imagery Program (USDA) aerial photography (1-foot resolution, flown in 2011) using IDRISI image processing tools. The IDRISI tools develop light reflective classes defined by statistical analysis of individual pixels, which are then grouped based on common reflective values such that distinctions can be made automatically between deciduous and coniferous tree species, as well as grassland, impervious surface areas, water and other distinct land use features. This information is manually cross-checked with the recent USGS topographic land characteristics to quality assure the imaging analysis.

The Study Area includes a total of approximately 8,042 acres. The tree canopy within the Study Area consists mainly of mixed deciduous hardwood species interspersed with scattered stands of conifers, and occupies approximately 6,645 acres (representing ±82% of the Study Area). Topography within the Study Area ranges in ground elevations from approximately 290 feet AMSL to 850 feet AMSL and is generally characterized as rolling to hilly terrain.

Once the data layers were entered, image processing tools were applied and overlaid onto USGS topographic base maps and aerial photographs to achieve an estimate of locations where the Facility might be visible. First, only the topography data layer (DEM) was incorporated to evaluate potential visibility with no intervening vegetative screening. The model is queried to determine where the top of the Facility can be seen from any point(s) within the Study Area, given the intervening existing topography. The initial omission of the forest cover data layer results in an excessive over-prediction, but provides an opportunity to identify and evaluate those areas with potentially direct sight lines toward the Facility.

Eliminating the tree canopy altogether, as performed in the preliminary analysis by assigning a 1-foot height value to this data layer, exaggerates areas of visibility because it assumes unobstructed sight lines everywhere but in those locations where intervening topography rises above the height of the proposed Facility. However, using this technique not only allows for an initial identification of direct sight lines, but also to gain some insight regarding seasonal views when the leaves are not on the trees[2]. This preliminary mapping is especially useful during the in-field activities (described below) to further evaluate "leaf-off" scenarios.

A purposely low average tree canopy height of 50 feet was then incorporated into the forest data layer and added to the DEM for a second iteration of the visibility map. The model is queried again to determine where the top of the Facility may be seen from any point(s) within the Study Area, given both the intervening existing topography and forest canopy. The results of the preliminary analysis provide a

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[1] LiDAR is an acronym for Light Detection and Ranging. It is a technology that utilized lasers to determine the distance to an object or surface. LiDAR is similar to radar, but incorporates laser pulses rather than sound waves. It measures the time delay between transmission and reflection of the laser pulse.

[2] Visibility varies seasonally with increased, albeit obstructed, views occurring during "leaf-off" conditions. Each individual Study Area includes mature vegetation with a unique composition and density of woodlands, with mast or pole timber and branching providing the majority of screening in leafless conditions. Because tree spacing, dimensions and branching patterns as well as the understory differ greatly over even small areas, creating an accurate Study Area-specific "leaf-off" tree density data layer covering a two-mile radius becomes unmanageable. Considering that a given Study Area has its own discrete forest characteristics, modeling for seasonal variations of visibility is problematic and, in our experience, even when incorporating conservative constraints into the model, the results tend to over-predict visibility in "leaf-off" conditions.

representation of those areas where portions of the Facility could potentially be visible to the human eye without the aid of magnification, based on a viewer eye-height of 5 feet above the ground and the combination of intervening topography and tree canopy (year-round) and tree trunks (seasonally, when the leaves are off the deciduous trees) using an average tree height of 50 feet. This iteration provides a conservative assessment of intervening vegetation for use during the in-field activities to compare the outcomes of the initial computer modeling with direct observations of the balloon float.

Additional data was reviewed and incorporated into the visibility analysis, including protected private and public open space, parks, recreational facilities, hiking trails, schools, and historic districts. Numerous trails systems are located within the Study Area. The nearest trail system to the Host Property is located with Collis P. Huntington State Park, approximately 1.75 miles to the south. Based on a review of publicly-available information, no designated scenic roadways are present within the Study Area.

In-Field Activities

To supplement and fine tune the results of the computer modeling efforts, APT completed in-field verification activities consisting of a balloon float, vehicular and pedestrian reconnaissance, and photo-documentation.

Balloon Float and Field Reconnaissance

A balloon float and field reconnaissance were conducted on November 30, 2013 to obtain photographs for use in this report. The balloon float consisted of raising an approximately four-foot diameter, red helium-filled balloon tethered to a string height of 150 feet above ground level ("AGL") at the proposed Facility site. Weather conditions were favorable for the in-field activities and included mostly sunny skies and calm winds (less than 3 miles per hour). Once the balloon was secured, APT conducted a Study Area reconnaissance by driving along the local and State roads and other publicly accessible locations to document and inventory where the balloon could be seen above/through the tree mast and canopy. Visual observations from the reconnaissance were also used to evaluate the results of the preliminary visibility mapping and identify any discrepancies in the initial modeling.

During the balloon float and in-field activities, several trees were randomly surveyed using a Suunto Tandem clinometer to ascertain their heights. The heights of trees adjacent to the site were field measured to document the surrounding canopy elevation. Numerous off-site locations were also selected to obtain tree canopy heights, including along roadways, wooded lots, and high- and low-lying areas to provide for the irregularities associated with different land characteristics and uses found within the Study Area. The average canopy height was developed based on these measurements and comparative observations, in this case approximately 65 feet AGL. Information obtained during the balloon float was subsequently incorporated into the computer model to refine the visibility map.

Photographic Documentation

During the field reconnaissance, observations of the balloon were recorded and photo-documented to inventory those areas where it was and was not visible. Photographs were obtained from several vantage points to document the view towards the Facility.

At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") equipment. Photographs were taken with a Nikon D-3000 digital camera body and Nikon 18 to 135 mm zoom lens, with the lens set to 50 mm. A 50 mm focal length best approximates the relation of sizes between objects similar to what the human eye might perceive.

> *"The lens that most closely approximates the view of the unaided human eye is known as the normal focal-length lens. For the 35 mm camera format, which gives a 24x36 mm image, the normal focal length is about 50 mm."*[3]

Final Visibility Mapping

Information obtained during the field reconnaissance was incorporated into the mapping data layers, including observations of the balloon float, the photo locations, areas that experienced recent land use changes and those places where the initial model was found to over-predict visibility. The revised average tree canopy height data using a conservative value of 65 feet AGL was merged with the DEM and added to the base ground elevations of the forested areas data layer. Once the additional data was integrated into the model, APT re-calculated the visibility of the proposed Facility from within the Study Area to produce the final visibility map.

Field verification is a necessary component for cross-checking the model's results, although it has limitations - chiefly, we are restricted to publicly accessible locations. The shaded areas of predicted visibility shown on the maps at the end of this report denote locations from within the Study Area which the proposed Facility may potentially be visible year-round (in yellow) above the tree canopy and/or seasonally, through the trees (during "leaf-off" conditions; depicted in orange). The Facility however may not necessarily be visible from all locations within those shaded areas. It is important to note that the computer model cannot account for mass density, the height, diameter and branching variability of the trees, or the degradation of views that occur with distance. In addition, each point – or pixel - represents about one meter (3.28 feet) in area, and thus is not predicting visibility from all viewpoints through all possible obstacles. Although large portions of the predicted viewshed may theoretically offer visibility of the Facility, because of these unavoidable limitations the quality of those views may not be sufficient for the human eye to recognize the tower or discriminate it from other surrounding objects. Visibility also varies seasonally with increased, albeit obstructed, views occurring during "leaf-off" conditions. Beyond the density of woodlands found within the given Study Area, each individual tree has its own unique trunk, pole timber and branching pattern characteristics that provide varying degrees of screening in leafless conditions which cannot be adequately modeled. Given the limitations inherent in modeling and field verification, the attached visibility maps generally over-predict the Facility's viewshed.

[3] Warren, Bruce. Photography, West Publishing Company, Eagan, MN, c. 1993, (page 70).

Photographic Simulations

Photographic simulations were generated to portray scaled renderings of the proposed Facility from twenty (20) representative locations where the proposed Facility would be visible either on a year-round or seasonal basis. Using field data, site plan information and 3-dimension (3D) modeling software, spatially referenced models of the site area and Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs[4].

Photo-documentation of the balloon float and photo-simulations of the proposed Facility are presented in the attachment at the end of this report. The balloon float photos provide visual reference points for the approximate height and location of the proposed Facility relative to the scene. The photo-simulations are intended to provide the reader with a general understanding of the different views that might be achieved of the Facility. It is important to consider that the places selected are typically representative of a "worst case" scenario because they were selected to present unobstructed view lines (wherever possible), are static in nature and do not necessarily fairly characterize the prevailing views from all locations within a given area. From several locations, moving a few feet in any direction will result in a far different perspective of the Facility than what it presented in the photograph. In several cases, a view of the Facility may be limited to the immediate area of the specific photo location; numerous views presented in the attachment demonstrate this (including, but not limited to photo locations 5, 6, 9, 18 and 20 for example).

For presentation purposes in this report, the photographs were taken with a 50 mm focal length and produced in an approximate 7-inch by 10.5-inch format. The simulations provide a representation of the Facility under similar settings as those encountered during the balloon float and reconnaissance. Views of the Facility can change substantially throughout the season and are dependent on environmental conditions, including (but not necessarily limited to) weather, light conditions, seasons, time of day, and the viewer location.

[4] As a final step, the accuracy and scale of select simulations are tested against photographs of similar existing facilities with recorded camera position, focal length, photo location, and tower location.

Photograph Locations

The table below summarizes characteristics of the photographs and simulations presented in the attachment to this report including a description of each location, view orientation, the distance from where the photo was taken relative to the proposed Facility and whether the balloon was visible or not. The photo locations are depicted on the photolog map and the visibility analysis maps provided as attachments to this report.

View	Location	Orientation	Dist. To Site	View Characteristics
1	Adjacent to #39 Shelly Road	South	±0.94 Mile	Seasonal
2	Adjacent to #10 Lime Kiln Court	South	±0.76 Mile	Seasonal
3	Adjacent to #3 Race Brook Drive	Southwest	±0.72 Mile	Seasonal
4	Boulder Creek Road cul-de-sac	Southwest	±0.92 Mile	Seasonal
5	Adjacent to #5 Rooster Ridge Road	Southwest	±0.86 Mile	Year-round
6	Adjacent to #10 Aunt Patty's Lane East	Northwest	±0.89 Mile	Year-round
7	Adjacent to #15 Twin Maple Drive	West	±0.24 Mile	Seasonal
8	Hillside Court cul-de-sac	South	±0.24 Mile	Seasonal
9	Adjacent to #33 Windaway Road	East	±0.33 Mile	Seasonal
10	Adjacent to #37 Codfish Hill Road	North	±0.25 Mile	Seasonal
11	Ichabod Road	Northeast	±0.42 Mile	Year-round
12	Adjacent to #12 Ichabod Road	Northeast	±0.55 Mile	Seasonal
13	Codfish Road and Wolf Pits Road	Northeast	±0.65 Mile	Year-round
14	Adjacent to #9 Wolf Pits Road	East	±0.74 Mile	Year-round
15	Governor's Lane	Northeast	±1.26 Miles	Seasonal
16	Adjacent to #62 Midway Drive	East	±1.21 Miles	Seasonal
17	Bethel High School	Southeast	±1.26 Miles	Year-round
18	Adjacent to #66 Linda Lane	Southeast	±0.60 Mile	Seasonal
19	Allen Way cul-de-sac	Southeast	±0.63 Mile	Seasonal
20	Adjacent to #7 Kellogg Road	Southeast	±0.68 Mile	Year-round

Visibility Analysis Results

Results of this analysis are graphically displayed on the visibility analysis maps provided in the attachment at the end of this report. The maps include a photolog, depicting the photo locations and corresponding simulation.

In general, the combination of rolling terrain and mature forest results in minimizing the overall visibility throughout the Study Area. Areas from where the Site 1 would be visible above the tree canopy year-round comprise a total of approximately 120 acres. When the leaves are off the trees, seasonal views through intervening tree trunks and branches are anticipated to occur over an additional ±492 acres. The land on which the proposed Facility site is located is a fairly broad hill that gently rises to heights of 50 to 100 feet above surrounding receptors and is separated from those areas by mature stands of mostly deciduous trees, providing minimal direct lines of sight.

Near views to the north and east (within 0.5 mile or less) would be mainly restricted to that time of the year when the leaves are off the intervening deciduous trees and heavily obstructed (see photos 7 and 8 as examples). Farther to the north, across Route 302, additional seasonal visibility may occur over areas straddling the Bethel-Newtown municipal boundary (photos 1 through 4). Small pockets of year-round visibility would occur in select, elevated open areas primarily at distances of more than 0.75 mile away (demonstrated in photos 5 and 6). At this distance, a Facility at Site 1 would be seen rising above the tree canopy anywhere from a few feet to nearly 50 feet.

Visibility to the south of the Host Property appears constrained to select locations within approximately 0.25 mile with minimal, seasonal views attained directly from Codfish Hill Road (see photo 10). Year-round views appear to extend over open fields to the southeast and southwest (photo 11, taken from Ichabod Road).

Westward, year-round views would be attained from some locations along a short section of Wolf Pits Road (photos 13 and 14 representing the approximate extend of visibility). The profile of the Facility at Site 1 could extend above the tree canopy in this area upwards of 60 feet. More distant elevated locations with east facing slopes may also have limited seasonal views of the Facility (photos 15 and 16). At higher elevations in this area, the Facility would benefit from the backdrop of rising topography to the east/northeast and be nestled into the hillside. At more than a mile away, the Bethel High School grounds would have year-round views of the Facility rising between 30 and 40 feet above the tree canopy, as represented in photo 17.

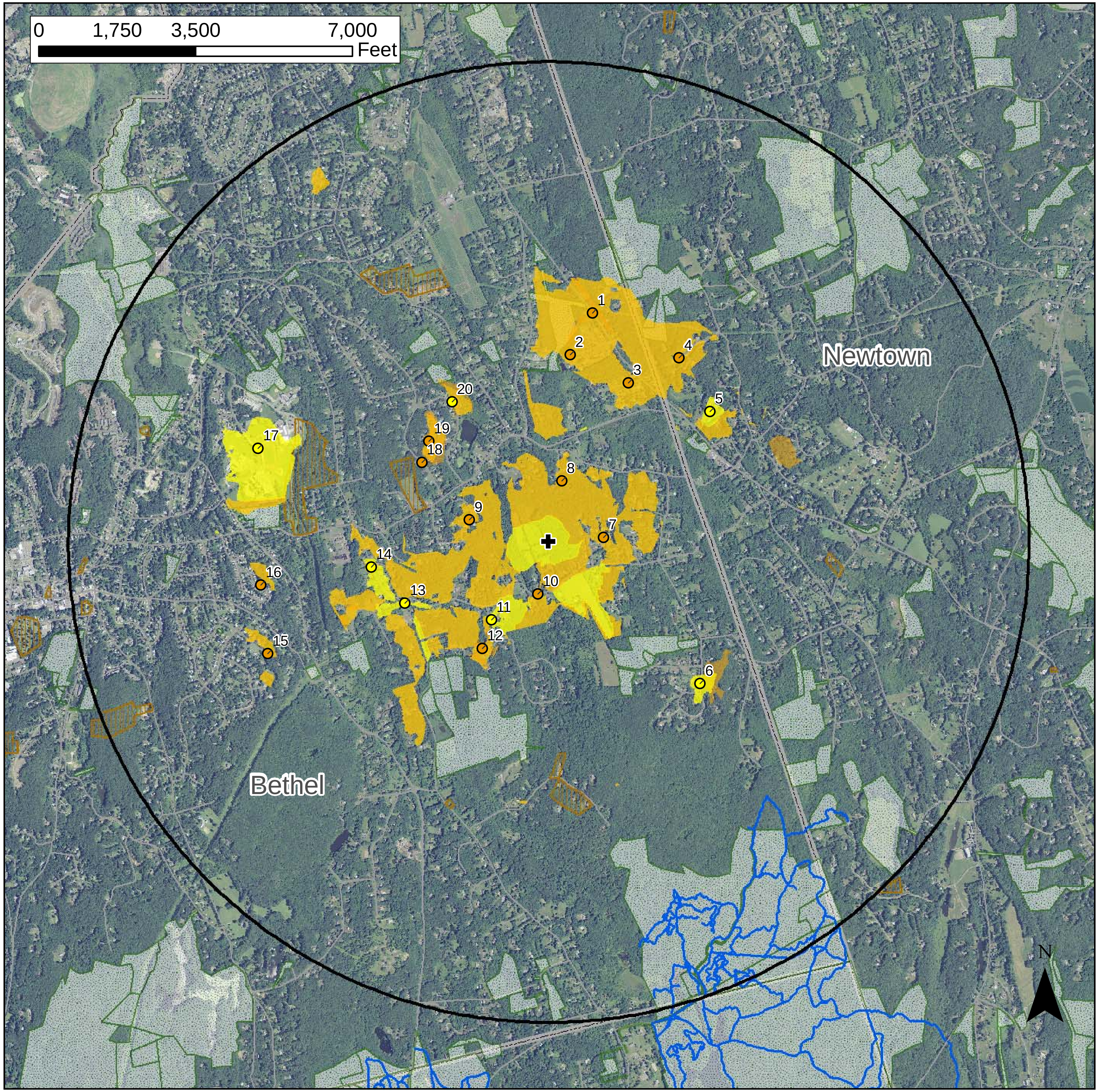
No views are anticipated from the trail systems at Collis P. Huntington State Park, located approximately 0.75 mile to the southeast of the Facility.

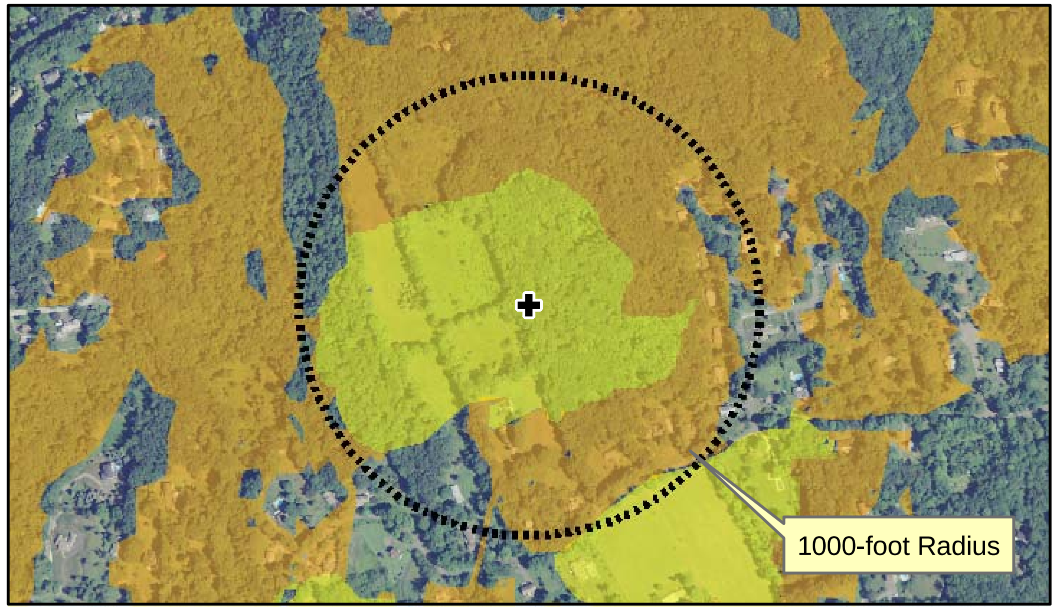
The visibility maps presented in the attachment to this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography and an assumed tree canopy height of 65 feet. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2012 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties beyond the Host Property was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

Proximity to Schools And Commercial Child Day Care Centers

No schools or commercial child day care centers are located within 250 feet of the Host Property. The nearest school is Bethel High School, located at 300 Whittlesey Drive, approximately 1.25 mile to the northwest. Year-round views of the Facility would be achieved from portions of the high school grounds (see photo 17 as an example). The nearest commercial child day care center (St. Mary's School) is located at 26 Dodgingtown Road, approximately 0.87 mile to the west. No views of the Facility are anticipated from this area.

ATTACHMENTS





Visibility Analysis – Aerial Base

Proposed Wireless Telecommunications Facility
Bethel CT1155C – Site 1
62-64 Codfish Hill Road, Bethel, CT

Proposed facility height is 150 feet AGL.
Existing tree canopy height estimated as 65 feet.
Study area encompasses a two-mile radius and
includes 8,042 acres of land.

Map compiled 12/3/2013

Map information field verified by APT on 11/30/2013.

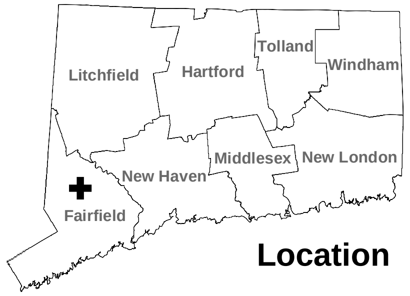
Only those resources located within the extent of the map are depicted. For a complete list of data sources consulted for this analysis, please refer to the Documentation Page.

Legend

- Proposed Tower

Photo Locations

- Seasonal Views
- Year-round Views
- Trails
- Predicted Seasonal Visibility (492 Ac.)
- Predicted Year-Round Visibility (120 Ac.)
- Towns
- 2-Mile Study Area
- Open Space
- Municipal Private Open Space



Location

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ALL-POINTS
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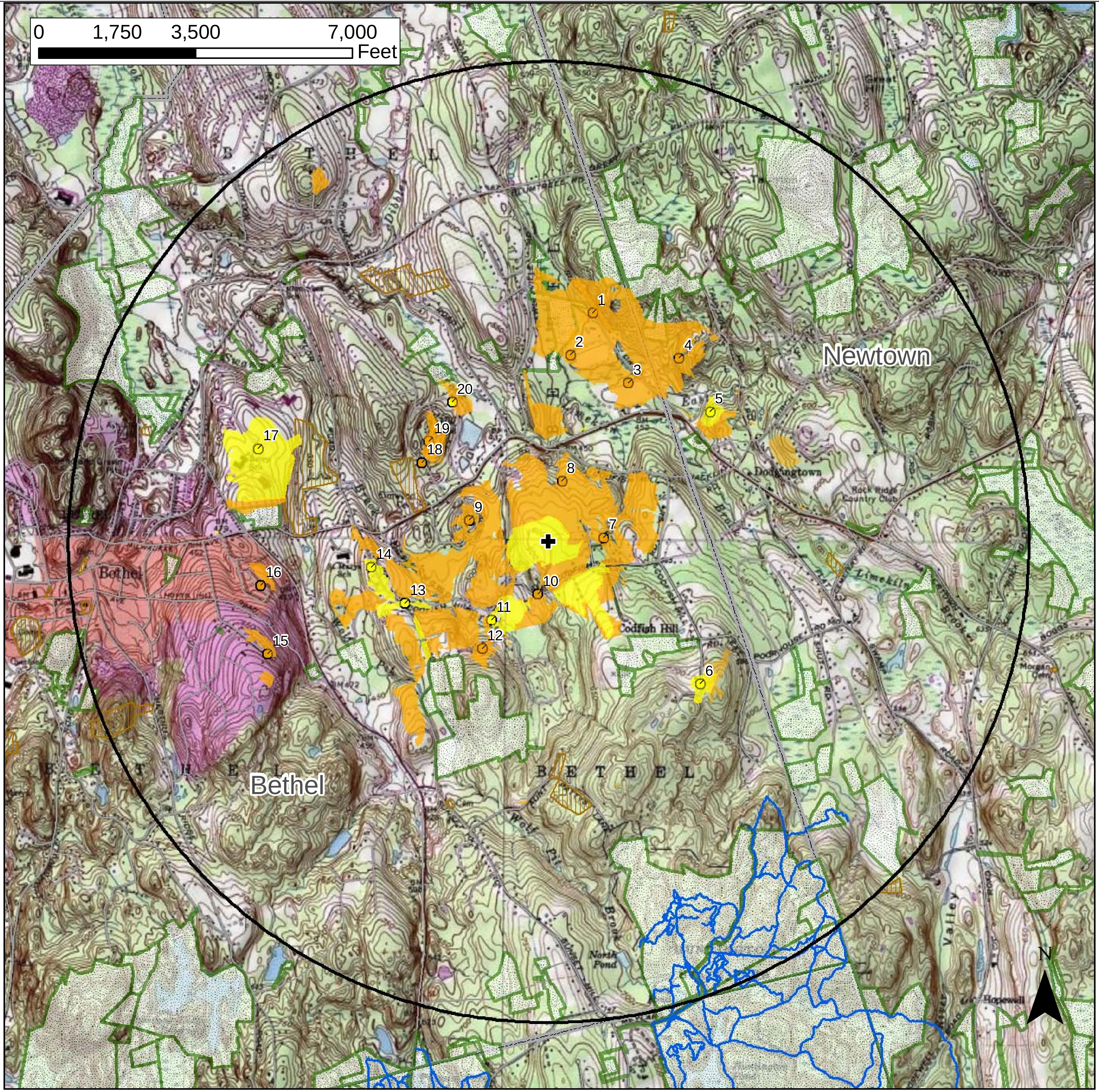
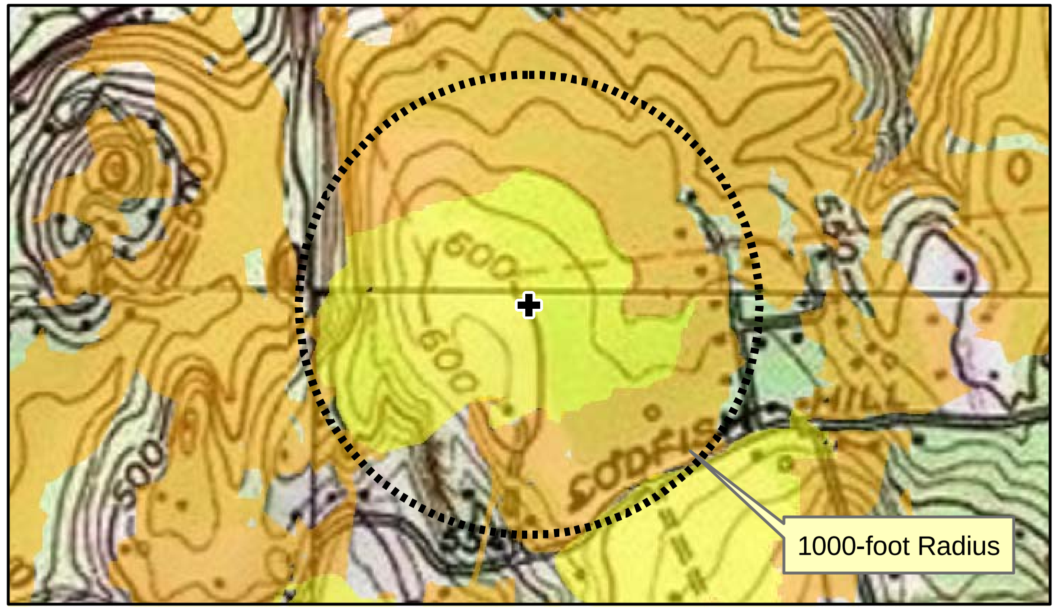
3 Saddlebrook Drive Killingworth, CT 06419
www.allpointstech.com





Visibility Analysis – Topo Base

Proposed Wireless Telecommunications Facility
Bethel CT1155C – Site 1
62-64 Codfish Hill Road, Bethel, CT

Proposed facility height is 150 feet AGL.
Existing tree canopy height estimated as 65 feet.
Study area encompasses a two-mile radius and
includes 8,042 acres of land.

Map compiled 12/3/2013

Map information field verified by APT on 11/30/2013.

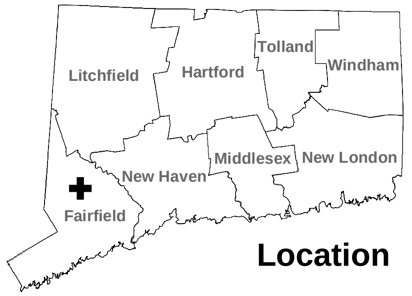
Only those resources located within the extent of the map are depicted. For a complete list of data sources consulted for this analysis, please refer to the Documentation Page.

Legend

- Proposed Tower

Photo Locations

- Seasonal Views
- Year-round Views
- Trails
- Predicted Seasonal Visibility (492 Ac.)
- Predicted Year-Round Visibility (120 Ac.)
- Towns
- 2-Mile Study Area
- Open Space
- Municipal Private Open Space



Location

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ALL-POINTS TECHNOLOGY CORPORATION
3 Saddlebrook Drive Killingworth, CT 06419
www.allpointstech.com

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**ADJACENT TO #39 SHELLY ROAD**	**SOUTH**	**+/- 0.94 MILE**	**SEASONAL**

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**ADJACENT TO #39 SHELLY ROAD**	**SOUTH**	**+/- 0.94 MILE**	**SEASONAL**

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**ADJACENT TO #10 LIME KILN COURT**	**SOUTH**	**+/- 0.76 MILE**	**SEASONAL**

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**ADJACENT TO #10 LIME KILN COURT**	**SOUTH**	**+/- 0.76 MILE**	**SEASONAL**

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**ADJACENT TO #3 RACE BROOK DRIVE**	**SOUTHWEST**	**+/- 0.72 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**ADJACENT TO #3 RACE BROOK DRIVE**	**SOUTHWEST**	**+/- 0.72 MILE**	**SEASONAL**

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**BOULDER CREEK ROAD CUL-DE-SAC**	**SOUTHWEST**	**+/- 0.92 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**BOULDER CREEK ROAD CUL-DE-SAC**	**SOUTHWEST**	**+/- 0.92 MILE**	**SEASONAL**

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**ADJACENT TO #5 ROOSTER RIDGE ROAD**	**SOUTHWEST**	**+/- 0.86 MILE**	**YEAR-ROUND**

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**ADJACENT TO #5 ROOSTER RIDGE ROAD**	**SOUTHWEST**	**+/- 0.86 MILE**	**YEAR-ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**ADJACENT TO #10 AUNT PATTY'S LANE EAST**	**NORTHWEST**	**+/- 0.89 MILE**	**YEAR-ROUND**

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**ADJACENT TO #10 AUNT PATTY'S LANE EAST**	**NORTHWEST**	**+/- 0.89 MILE**	**YEAR-ROUND**

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	ADJACENT TO #15 TWIN MAPLE DRIVE	WEST	+/- 0.24 MILE	SEASONAL

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	ADJACENT TO #15 TWIN MAPLE DRIVE	WEST	+/- 0.24 MILE	SEASONAL

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	HILLSIDE COURT CUL-DE-SAC	SOUTH	+/- 0.24 MILE	SEASONAL

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	HILLSIDE COURT CUL-DE-SAC	SOUTH	+/- 0.24 MILE	SEASONAL

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	ADJACENT TO #33 WINDAWAY ROAD	EAST	+/- 0.33 MILE	SEASONAL

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	**ADJACENT TO #33 WINDAWAY ROAD**	**EAST**	**+/- 0.33 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	ADJACENT TO #37 CODFISH HILL ROAD	NORTH	+/- 0.25 MILE	SEASONAL

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	**ADJACENT TO #37 CODFISH HILL ROAD**	**NORTH**	**+/- 0.25 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	ICHABOD ROAD	NORTHEAST	+/- 0.42 MILE	YEAR-ROUND

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	**ICHABOD ROAD**	**NORTHEAST**	**+/- 0.42 MILE**	**YEAR-ROUND**

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	ADJACENT TO #12 ICHABOD ROAD	NORTHEAST	+/- 0.55 MILE	SEASONAL

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	ADJACENT TO #12 ICHABOD ROAD	NORTHEAST	+/- 0.55 MILE	SEASONAL

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NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	**CODFISH HILL ROAD AND WOLF PITS ROAD**	**NORTHEAST**	**+/- 0.65 MILE**	**YEAR-ROUND**

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NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	CODFISH HILL ROAD AND WOLF PITS ROAD	NORTHEAST	+/- 0.65 MILE	YEAR-ROUND

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**ADJACENT TO #9 WOLFPITS ROAD**	**EAST**	**+/- 0.74 MILE**	**YEAR-ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**ADJACENT TO #9 WOLFPITS ROAD**	**EAST**	**+/- 0.74 MILE**	**YEAR-ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	GOVERNOR'S LANE	NORTHEAST	+/- 1.26 MILES	SEASONAL

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	GOVERNOR'S LANE	NORTHEAST	+/- 1.26 MILES	SEASONAL

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**ADJACENT TO #62 MIDWAY DRIVE**	**EAST**	**+/- 1.21 MILES**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**ADJACENT TO #62 MIDWAY DRIVE**	**EAST**	**+/- 1.21 MILES**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	BETHEL HIGH SCHOOL	EAST	+/- 1.26 MILES	YEAR-ROUND

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	**BETHEL HIGH SCHOOL**	**EAST**	**+/- 1.26 MILES**	**YEAR-ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	**ADJACENT TO #66 LINDA LANE**	**SOUTHEAST**	**+/- 0.60 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	**ADJACENT TO #66 LINDA LANE**	**SOUTHEAST**	**+/- 0.60 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	**ALLAN WAY CUL-DE-SAC**	**SOUTHEAST**	**+/- 0.63 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	**ALLAN WAY CUL-DE-SAC**	**SOUTHEAST**	**+/- 0.63 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**ADJACENT TO #7 KELLOGG ROAD**	**SOUTHEAST**	**+/- 0.68 MILE**	**YEAR-ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**ADJACENT TO #7 KELLOGG ROAD**	**SOUTHEAST**	**+/- 0.68 MILE**	**YEAR-ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

NORTH ATLANTIC TOWERS

DOCUMENTATION

SOURCES CONSULTED FOR VISBILITY ANALYSIS MAPS
62-64 Codfish Hill Road – Site 1
Bethel, Connecticut

Physical Geography / Background Data

Center for Land Use Education and Research, University of Connecticut (http://clear.uconn.edu)
*Land Use / Land Cover (2006)
*Coniferous and Deciduous Forest (2006)
*LiDAR data – topography (2000)
United States Geological Survey
*USGS topographic quadrangle maps – Bethel, Botsford, Newtown and Danbury (1984)
National Resource Conservation Service
*NAIP aerial photography (2012)
Heritage Consultants
^State Scenic Highways (based on Department of Transportation data, updated monthly)
^Municipal Scenic Roads (by website, phone and/or email/fax - current)

Cultural Resources
Heritage Consultants
^National Register
^ Local Survey Data

Dedicated Open Space & Recreation Areas

Connecticut Department of Energy and Environmental Protection (DEEP)
*DEEP Property (May 2007)
*Federal Open Space (1997)
*Municipal and Private Open Space (1997)
*DEEP Boat Launches (1994)
Connecticut Forest & Parks Association
^Connecticut Walk Book West – The Guide to the Blue-Blazed Hiking Trails of Western Connecticut, 19th Edition, 2006.

Other
^ConnDOT Scenic Strips (based on Department of Transportation data)

*Available to the public in GIS-compatible format (some require fees).
^ Data not available to general public in GIS format. Reviewed independently and, where applicable, GIS data later prepared specifically for this Study Area.

LIMITATIONS
The visibility analysis map(s) presented in this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography and an assumed tree canopy height of 65 feet. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2012 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties beyond the host Property was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The photo-simulations in this report are provided for visual representation only. Actual visibility depends on various environmental conditions, including (but not necessarily limited to) weather, season, time of day, and viewer location.