ALL-POINTS TECHNOLOGY CORPORATION

VISIBILITY ANALYSIS

ORANGE NORTH
831 DERBY MILFORD ROAD
ORANGE, CONNECTICUT

Prepared for:

Verizon Wireless
99 East River Drive
East Hartford CT 06108

Prepared by:

All-Points technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

MAY 2014

PROJECT INTRODUCTION

Cellco Partnership d/b/a Verizon Wireless is pursuing a Certificate of Environmental Compatibility and Public Need from the Connecticut Siting Council ("Council") for the construction, maintenance and operation of a wireless communications facility ("Facility") on property located at 831 Derby Milford Road in Orange, Connecticut ("Host Property"). At the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate the potential visual impacts associated with the proposed Facility from within a two-mile radius ("Study Area"). In addition to the Town of Orange, portions of the Towns of Shelton (to the west), Derby, Ansonia and Woodbridge (north) are also included within the Study Area.

Site Description and Setting

The 34.5-acre Host Property is identified in Orange Assessor records as Map 77, Block 3, Lot 1 and listed as 831 Derby Milford Road. The proposed Facility would be located on a height of land, within an abandoned agricultural field, in the west central portion of the Host Property, at an approximate ground elevation of 145 feet Above Mean Sea Level ("AMSL"). The Facility would include a 100-foot tall steel monopole enclosed within a 50-foot by 50-foot fenced, gravel-base compound. A total of 12 directional panel antennas would be mounted at a center line elevation of 100 feet above ground level ("AGL"). As currently designed, the monopole and antennas would be painted brown. Verizon Wireless's consultations with the Town of Orange revealed the municipality's interest in considering an alternate stealth option design of a monopole resembling a pine tree. Regardless of its ultimate style, the monopole would accommodate up to four commercial service providers and municipal/regional emergency services equipment. Access to the Facility would be gained via a new 12-foot wide, ±450-foot long gravel drive extending eastward from Derby Milford Road. Underground utilities would originate from Derby Milford Road and follow the route of the new access out to the compound.

Land use within the immediate vicinity is primarily a mix of rural residential, agricultural and undeveloped forest. Commercial and industrial development (Shelton and Derby) occurs within the northwest portion of the Study Area. The Housatonic River flows in a north to south direction in the western portion of the Study Area.

The two-mile 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 4,525 acres (representing nearly 56% of the Study Area). Topography within the Study Area ranges in ground elevations from approximately 10 feet AMSL to 460 feet AMSL and is generally characterized as rolling to hilly terrain.

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 (one-foot resolution, flown in 2012) 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.

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.

[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.

Eliminating the tree canopy altogether, as performed in the preliminary analysis 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. This preliminary mapping is especially useful during the in-field activities (described below) to further evaluate "leaf-off" scenarios.

Visibility varies through the year as the leaves drop from deciduous trees. During "leaf on" conditions, individual trees that are grouped proximate to one another form a near opaque wall of vegetation that, once beyond a certain distance, cannot be seen through. Conversely, visibility increases seasonally with obstructed, views occurring during "leaf-off" conditions. Thus two forest data layers are created to represent both year-round ("leaf-on") and seasonal (leafless or "leaf-off") conditions. These data layers are incorporated into the model, analyzed separately and then merged to produce the visibility maps. Calculations resulting from the leaf-on forest data layer depict areas where at least the top of the Facility may be present above the intervening tree canopy. Similarly, computations from the "leaf-off" data layer also depict areas where the top of the Facility is predicted to be visible but it accounts for the increased transparency due to lack of vegetative screening. The 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. Beyond the density of woodlands found within the 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 precisely modeled. Because tree spacing, dimensions and branching patterns as well as the understory differ greatly over even small areas, the Study Area has its own discrete forest characteristics. To approximate seasonal visibility, a conservative set of values was incorporated into the model, including the assumptions that each deciduous tree is simply a vertical pole with no distinct branching pattern. Given these conservative assumptions, the resultant modeling still over-predicts visibility in "leaf-off" conditions but does provide a better representation than the initial map using topography only.

A purposely low average tree canopy height of 50 feet was then incorporated into the forest data layers and added to the DEM for a second iteration of the visibility map. The model was 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 data layers. The results of the preliminary analysis provide a 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.

As a final step, the forested areas were extracted from the areas of visibility, using a conservative assumption that a person standing within the forest will not be able to view the proposed Facility beyond a distance of approximately 500 feet. Depending on the density of the intervening tree canopy and understory of the surrounding woodlands, it is assumed that some locations within this distance could provide visibility of at least portions of the proposed Facility at any time of the year. In "leaf-on" conditions, this distance may be overly conservative for most locations. However, for purposes of this analysis, it was reasoned that forested land beyond 500 feet of the proposed Facility would consist of light-impenetrable trees of a uniform height.

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. The nearest trail to the Host Property is associated with the Derby Greenway, which extends southward along the eastern bank of the Housatonic River from its confluence with the Naugatuck River (nearly two miles to the northwest) to within approximately 0.5 mile of the proposed site where it terminates at the Derby-Orange-Shelton town lines. 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 March 5, 2014 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 100 feet above ground level ("AGL") at the proposed Facility location. Weather conditions were favorable for the in-field activities, with calm winds (less than 5 miles per hour) and overcast skies. 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 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 hand-held infrared laser range finder and 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 measurements and comparative observations, in this case approximately 60 feet AGL. Throughout Connecticut, the tree canopy height varies from about 55 feet to in excess of 80 feet (where eastern white pine becomes a dominant component of the forest type, average tree heights may be even slightly higher). This general uniformity is most likely the result of historic state-wide clear cutting of forests for charcoal production in the late 1800s and early 1900s. Approximately 69% of Connecticut's forests are characterized as mature[2].

[2] USDA Resource Bulletin NE-160, 2004.

Photographic Documentation

During the balloon float and field reconnaissance, APT drove the public roads within the Study Area and recorded observations, including photo-documentation, of those areas where the balloon was and was not visible. Photographs were obtained from several vantage points to document the views of a proposed Facility. The geographic coordinates of the camera's position at each photo location were logged using global positioning system ("GPS") equipment technology.

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 Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens, with lens set to 50 mm for all but one of the views presented herein. Photo point location 20 was taken using a 24 mm focal length in order to provide a greater depth of field for presentation in this report. Focal lengths ranging from 24 mm to 50 mm approximate views similar to that achieved by the human eye. However, two key aspects of an image can be directly affected by the specific focal length that is selected: field of view and relation of sizes between objects in the frame. A 24 mm focal length provides a wider field of view, representative of the extent the human eyes may see (including some peripheral vision), but the relation of sizes between objects at the edges of the photos can become minimally skewed. A 50 mm focal length has a narrower field of view than the human eye but the relation of sizes between objects is represented 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]"*

When taking photographs for these analyses, APT prefers a focal length of 50 mm; however there are times when wider views (requiring the use of the 24 mm lens setting, in this case) can better reflect "real world" viewing conditions by providing greater context to the scene. Regardless of the lens setting, the scale of the subject in the photograph (the balloon) and corresponding simulation (the Facility) remains proportional to its surroundings.

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 (60 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.

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

Photographic Simulations

Photographic simulations were generated of both a brown monopole and optional tree-style tower ("monopine") to portray scaled renderings of the proposed Facility from 19 of the 20 representative locations where the proposed Facility would be visible either on a year-round or seasonal basis. No simulation was prepared for photograph 6 because of the density of the intervening trees. 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.

As stated earlier, APT has elected to use a 50 mm focal length whenever possible; however, there are occasions when the use of a wider-angle lens setting is preferred. 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. When viewing in this format size, we believe it is important to provide the largest representational image while maintaining an accurate relation of sizes between objects within the frame of the photograph. View 20 was taken with a 24 mm focal length to balance preserving the integrity of the scene's setting while depicting the subject (the Facility location) in a way similar to what an observer might see, to the greatest extent possible.

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 publicly-accessible locations selected are typically representative of a "worst case" scenario. They were chosen 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 is presented in the photographs. In several cases, a view of the Facility may be limited to the immediate area of the specific photo location.

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.

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 the general characteristics of that view. The photo locations are depicted on the visibility analysis maps provided as attachments to this report.

View	Location	Orientation	Distance to Site	View Characteristics
1	Belmont Avenue at Coram Road (Shelton)	East	±1.09 Miles	Year-round
2	Laurel Heights at Coram Road (Shelton)	Northeast	±1.10 Miles	Year-round
3	Colony Street at Belmont Avenue (Shelton)	East	±0.84 Mile	Year-round
4	Riverview Cemetery (Shelton)	East	±0.75 Mile	Year-round
5	Temple Emanuel Cemetery (Shelton)	East	±0.67 Mile	Seasonal
6	Rainbow Trail	Southeast	±0.20 Mile	Seasonal
7	Garden Road	Southwest	±0.31 Mile	Year-round
8	Garden Road at Cold Spring Road	West	±0.27 Mile	Year-round
9	Brookside Drive	Northwest	±0.23 Mile	Year-round
10	Backyard of #834 Brookside Drive	Northwest	±0.20 Mile	Year-round
11	Glenbrook Road	North	±0.20 Mile	Year-round
12	East Slope Drive	North	±0.31 Mile	Seasonal
13	Derby Milford Road	North	±0.22 Mile	Seasonal
14	Derby Milford Road	North	±0.18 Mile	Seasonal
15	High Ridge Road at Quarter Mile Road	Northeast	±0.28 Mile	Seasonal
16	Quarter Mile Road	Northeast	±0.18 Mile	Year-round
17	Derby Milford Road	Northeast	±0.10 Mile	Year-round
18	Derby Milford Road	Northeast	±0.09 Mile	Year-round
19	Derby Milford Road	Northeast	±0.09 Mile	Seasonal
20	Congregation Beth El of Ansonia Cemetery*	East	±0.06 Mile	Seasonal

*24mm Lens used for this location

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 that depict the photo locations. Areas from where the proposed Facility would be visible above the tree canopy year-round comprise a total of approximately 46 acres. When the leaves are off the trees, seasonal views through intervening tree trunks and branches are anticipated to occur over some locations within an area of 300± acres.

In general, the combination of the relatively low height of the Facility, rolling terrain and mature forest results in minimizing the overall visibility throughout the Study Area, limiting views primarily to areas within approximately 0.5 mile or less of the Host Property. More distant views of the Facility may also be achieved from elevated areas about one mile away to the north (in Derby) and west (Shelton); see photographs 1 through 5 as representative examples.

The Host Property is separated from residential areas to the north and west by mature stands of mostly deciduous trees that serve to effectively obstruct direct lines of sight, even during those months of year when there is no foliage. Locations to the north are buffered by a dense tract of woods over 1,000± feet in width (see photograph 6, taken from the northern extent of seasonal visibility, as an example). Seasonal views are heavily screened by the intervening trees to both the north and do not extend into neighboring residential developments. Similarly, views to west would also be heavily obscured, however the High Ridge Road/Quarter Mile Road area is elevated above the sight and limited views of the Facility would be achieved from some select locations (see photos 15 and 16). To the south along Derby Milford Road, views would be limited seasonally to those times of year when the leaves are off the deciduous trees (see photos 12 through 14). Some year-round views would be obtained intermittently to the east/southeast, in the Brookside Drive-Glenbrook Road area, as documented in photos 9 and 11. APT was provided access to the property at 834 Brookside Drive, where a view from the backyard is represented in photograph 10. Views to the east are limited to open fields and a short stretch of Garden Road (see photos 7 and 8).

Proximity to Schools And Commercial Child Day Care Centers

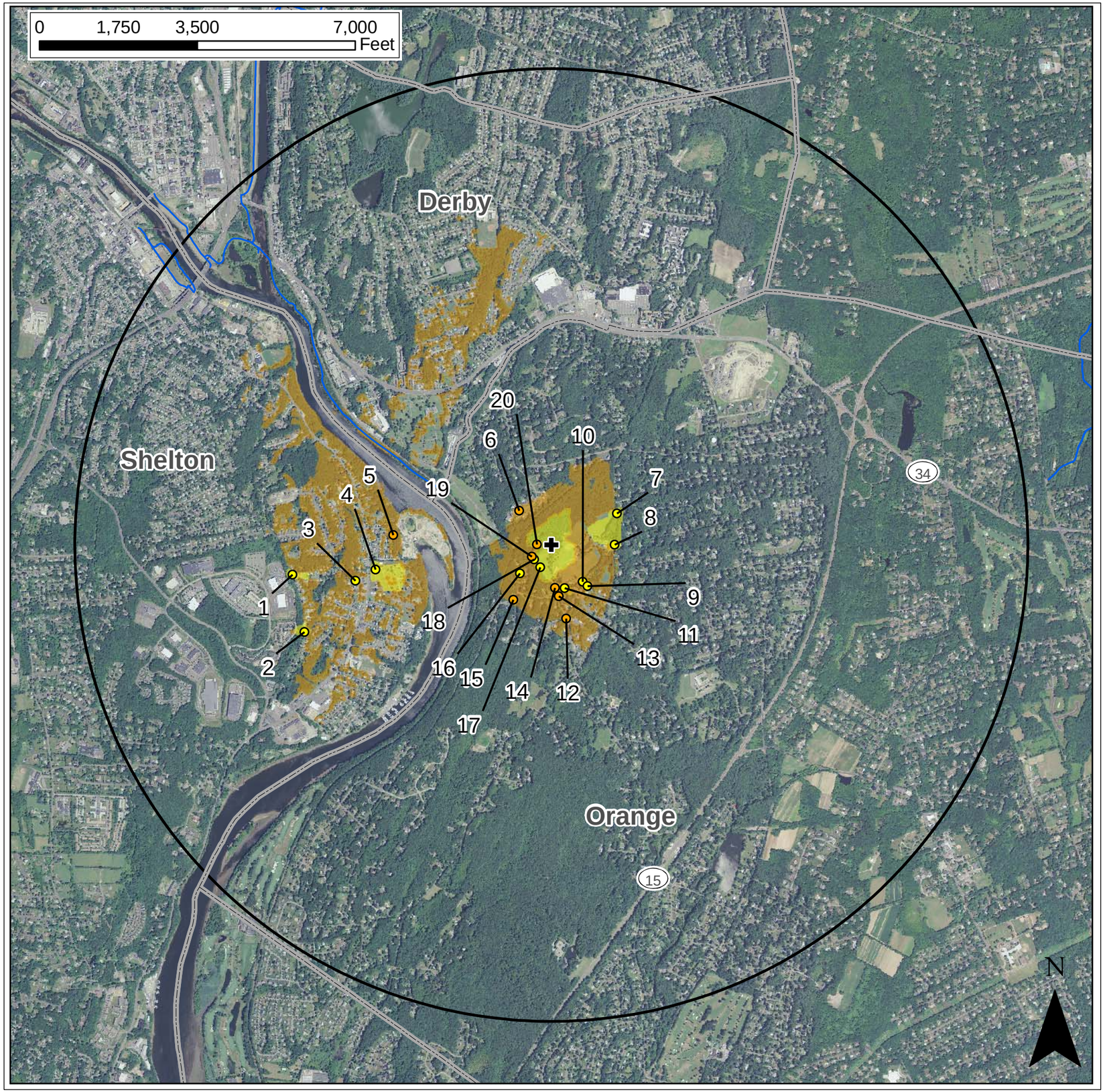
No schools or commercial child day care centers are located within 250 feet of the Host Property. The nearest school is the Turkey Hill School, located at 441 Turkey Hill Road in Orange, approximately 0.85 mile to the southeast. The nearest commercial child day care center is Little Academy, located at 250 River Road, in Shelton, approximately 0.80 mile to the west. No substantive views of the Facility are anticipated from either of these locations.

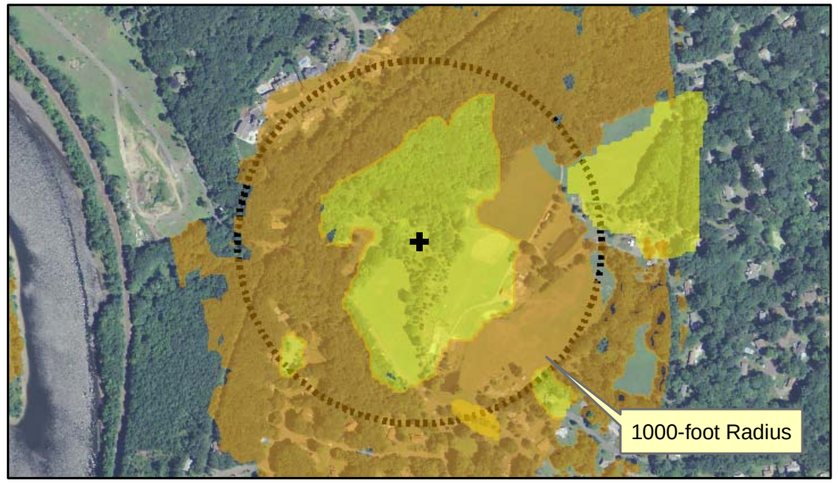
LIMITATIONS

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 60 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, with the exception of 834 Brookside Drive. 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 simulations provide a representation of the Facility under similar settings as those encountered during the balloon floats and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the balloon floats included clear skies and, combined with the leaf-off conditions, the photo-simulations presented in this report provide an accurate portrayal of the Facility during comparable conditions.

ATTACHMENTS





Visibility Analysis – Aerial Base

Proposed Wireless Telecommunications Facility
Orange North
831 Derby Milford Road, Orange, CT

Proposed facility height is 100 feet AGL.
Existing tree canopy height estimated as 60 feet.
Study area encompasses a two-mile radius and includes 8,042 acres of land.

Map compiled 4/9/2014

Map information field verified by APT on 03/05/2014.

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

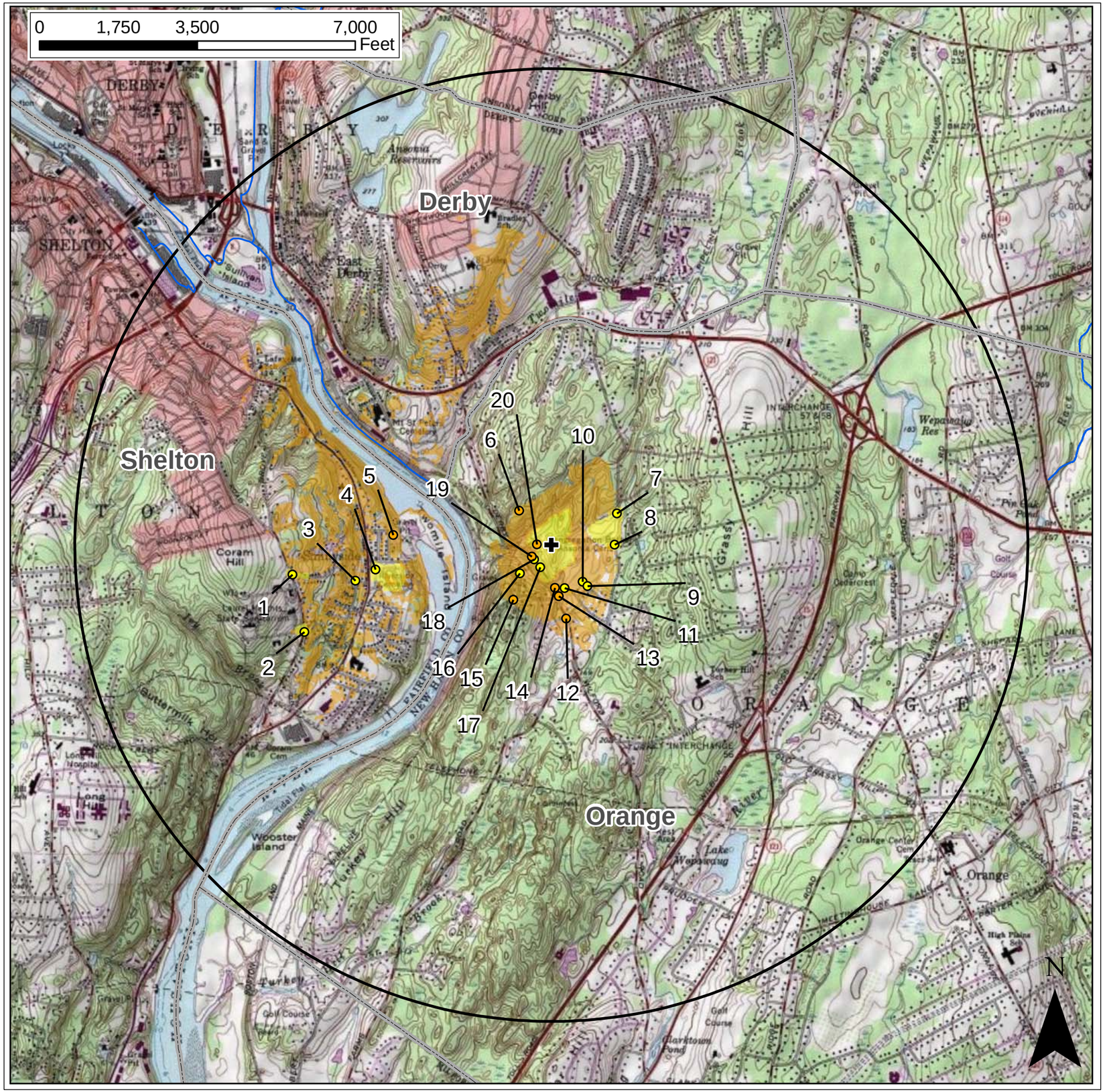
Photo Locations

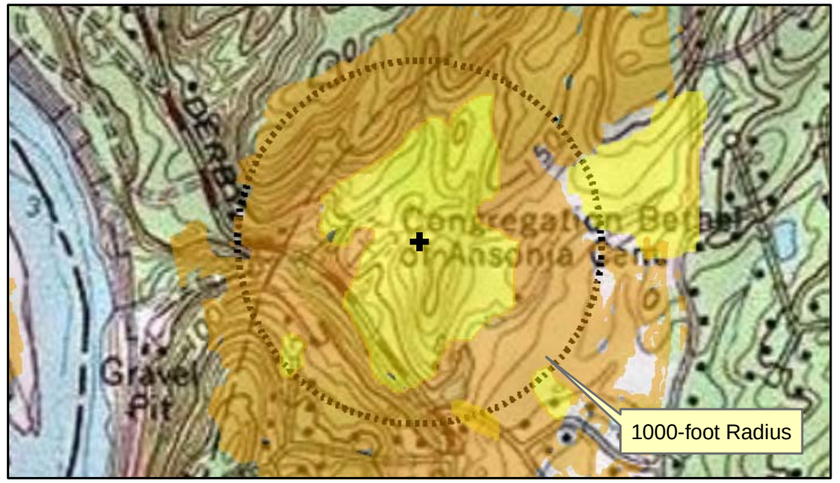
- Seasonal Views
- Year-round Views
- Trails
- Predicted Seasonal Visibility (300 Ac.)
- Predicted Year-Round Visibility (46 Ac.)
- Towns
- 2-Mile Study Area

Location

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless





Visibility Analysis – Topo Base

Proposed Wireless Telecommunications Facility
Orange North
831 Derby Milford Road, Orange, CT

Proposed facility height is 100 feet AGL.
Existing tree canopy height estimated as 60 feet.
Study area encompasses a two-mile radius and includes 8,042 acres of land.

Map compiled 4/9/2014

Map information field verified by APT on 03/05/2014.

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 (300 Ac.)
- Predicted Year-Round Visibility (46 Ac.)
- Towns
- 2-Mile Study Area

Location

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**BELMONT AVENUE AT CORAM ROAD**	**EAST**	**+/- 1.09 MILES**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**BELMONT AVENUE AT CORAM ROAD**	**EAST**	**+/- 1.09 MILES**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**BELMONT AVENUE AT CORAM ROAD**	**EAST**	**+/- 1.09 MILES**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**LAUREL HEIGHTS ROAD AT CORAM ROAD**	**NORTHEAST**	**+/- 1.10 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**LAUREL HEIGHTS ROAD AT CORAM ROAD**	**NORTHEAST**	**+/- 1.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**LAUREL HEIGHTS ROAD AT CORAM ROAD**	**NORTHEAST**	**+/- 1.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**COLONY STREET AT BELMONT AVENUE**	**EAST**	**+/- 0.84 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**COLONY STREET AT BELMONT AVENUE**	**EAST**	**+/- 0.84 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**COLONY STREET AT BELMONT AVENUE**	**EAST**	**+/- 0.84 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**RIVERVIEW CEMETERY**	**EAST**	**+/- 0.75 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**RIVERVIEW CEMETERY**	**EAST**	**+/- 0.75 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**RIVERVIEW CEMETERY**	**EAST**	**+/- 0.75 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**TEMPLE EMANUEL CEMETERY**	**EAST**	**+/- 0.67 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**TEMPLE EMANUEL CEMETERY**	**EAST**	**+/- 0.67 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**TEMPLE EMANUEL CEMETERY**	**EAST**	**+/- 0.67 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**RAINBOW TRAIL**	**SOUTHEAST**	**+/- 0.20 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**GARDEN ROAD**	**SOUTHWEST**	**+/- 0.31 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**GARDEN ROAD**	**SOUTHWEST**	**+/- 0.31 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**GARDEN ROAD**	**SOUTHWEST**	**+/- 0.31 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	**GARDEN ROAD AT COLD SPRING ROAD**	**WEST**	**+/- 0.27 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	**GARDEN ROAD AT COLD SPRING ROAD**	**WEST**	**+/- 0.27 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	**GARDEN ROAD AT COLD SPRING ROAD**	**WEST**	**+/- 0.27 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	**BROOKSIDE DRIVE**	**NORTHWEST**	**+/- 0.23 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	**BROOKSIDE DRIVE**	**NORTHWEST**	**+/- 0.23 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	**BROOKSIDE DRIVE**	**NORTHWEST**	**+/- 0.23 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	**BACKYARD OF #834 BROOKSIDE DRIVE**	**NORTHWEST**	**+/- 0.20 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	**BACKYARD OF #834 BROOKSIDE DRIVE**	**NORTHWEST**	**+/- 0.20 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	**BACKYARD OF #834 BROOKSIDE DRIVE**	**NORTHWEST**	**+/- 0.20 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	**GLENBROOK ROAD**	**WEST**	**+/- 0.20 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	**GLENBROOK ROAD**	**WEST**	**+/- 0.20 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	**GLENBROOK ROAD**	**WEST**	**+/- 0.20 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	**EAST SLOPE DRIVE**	**WEST**	**+/- 0.31 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	**EAST SLOPE DRIVE**	**WEST**	**+/- 0.31 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	**EAST SLOPE DRIVE**	**WEST**	**+/- 0.31 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	**DERBY MILFORD ROAD**	**WEST**	**+/- 0.22 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	**DERBY MILFORD ROAD**	**WEST**	**+/- 0.22 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	**DERBY MILFORD ROAD**	**WEST**	**+/- 0.22 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**DERBY MILFORD ROAD**	**NORTH**	**+/- 0.18 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**DERBY MILFORD ROAD**	**NORTH**	**+/- 0.18 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**DERBY MILFORD ROAD**	**NORTH**	**+/- 0.18 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	**HIGH RIDGE ROAD AT QUARTER MILE ROAD**	**NORTHEAST**	**+/- 0.28 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	**HIGH RIDGE ROAD AT QUARTER MILE ROAD**	**NORTHEAST**	**+/- 0.28 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	**HIGH RIDGE ROAD AT QUARTER MILE ROAD**	**NORTHEAST**	**+/- 0.28 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**QUARTER MILE ROAD**	**NORTHEAST**	**+/- 0.18 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**QUARTER MILE ROAD**	**NORTHEAST**	**+/- 0.18 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**QUARTER MILE ROAD**	**NORTHEAST**	**+/- 0.18 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.09 MILE**	**YEAR ROUND**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.09 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.09 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	DERBY MILFORD ROAD	NORTHEAST	+/- 0.09 MILE	SEASONAL

MONOPOLE

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.09 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	**DERBY MILFORD ROAD**	**NORTHEAST**	**+/- 0.09 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**CONGREGATION BETH EL OF ANSONIA CEMETERY (24mm Focal Length)**	**EAST**	**+/- 0.06 MILE**	**SEASONAL**

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**CONGREGATION BETH EL OF ANSONIA CEMETERY (24mm Focal Length)**	**EAST**	**+/- 0.06 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

SIMULATION

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**CONGREGATION BETH EL OF ANSONIA CEMETERY (24mm Focal Length)**	**EAST**	**+/- 0.06 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizonwireless

DOCUMENTATION

SOURCES CONSULTED FOR VISBILITY ANALYSIS MAPS
831 Derby Milford Road
Orange, 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 – Ansonia; New Haven (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 60 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.