

Proposed Wireless Telecommunications Facility

425 Litchfield Road (Route 202)
New Milford, Connecticut

Prepared for **Optasite Towers LLC**
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Westborough, MA 01581

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54 Tuttle Place
Middletown, CT 06457

June 2007

Visual Resource Evaluation

Optasite Towers LLC seeks approval from the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need to construct a wireless telecommunications facility ("Facility") to be located on property at 425 Litchfield Road ("host property") in the town of New Milford, Connecticut. This "Visual Resource Evaluation" was conducted to approximate the visibility of the proposed Facility within a two-mile radius of the Site ("Study Area"). The northeast portion of the Study Area includes a small section of the Town of Washington, Connecticut.

Project Introduction

The proposed Facility includes the installation of a 140-foot tall monopole and associated ground equipment to be located within a 70-foot by 70-foot fence enclosed compound area at its base. The monopole would be designed to accommodate up to four antenna arrays. Based on information provided by the Site engineers, Clough Harbour & Associates LLP, the proposed project area is located at approximately 640 feet above mean sea level (AMSL). Entry to the proposed Facility would initially follow an existing driveway located on the host property then continue to the project area in a westerly direction along a proposed 12-foot wide gravel access drive.

Site Description and Setting

Identified in the Town of New Milford land records as Map 80\Lot 1, the host property includes 28.48-acres of mostly undeveloped land. Three dilapidated barns, a number of abandoned vehicles and various construction-related debris are located on the eastern portion of the host property. The proposed Facility is situated within a wooded area roughly 600 feet northwest of Route 202. A photograph of the proposed project area is included in Attachment A of this report. Land use within the general vicinity of the host property is comprised of undeveloped woodlands, commercial establishments along Route 202, agricultural lands and medium-density residential development. Segments of Route 109 and Route 202 traverse various portions of the Study Area. In total, the Study Area contains roughly 55 linear miles of roadways.

The topography in the Study Area is generally characterized by rolling hills that range in ground elevation from approximately 325 feet AMSL to approximately 1,280 feet AMSL. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species. The tree canopy occupies approximately 6,376 acres of the 8,042-acre study area (79%). During the in-field activities associated with this analysis, an infrared laser range finder was used to accurately determine the average tree canopy height throughout the Study Area. Numerous trees were selected for measurement and the average tree canopy established, in this case 65 feet. Lastly, the Study Area features approximately 28 acres of surface water, which includes the Ella Foh's Camp Pond and portions of the East and West Aspetuck Rivers.



METHODOLOGY

To estimate the visibility associated with the proposed Facility, VHB incorporates a two-fold approach utilizing both a predictive computer model and in-field analysis. The predictive model is employed to assess potential visibility throughout the entire Study Area, including private property and/or otherwise inaccessible areas for field verification. A “balloon float” and Study Area drive-through reconnaissance are also conducted to obtain locational and height representations, back-check the initial computer model results and provide photographic documentation from publicly accessible areas. Results of both activities are analyzed and incorporated into the final viewshed map. A description of the methodologies used in the analysis is provided below.

Visibility Analysis

Using ESRI’s ArcView® Spatial Analyst, a computer modeling tool, the areas from where the proposed Facility is expected to be visible are calculated. This is based on information entered into the computer model, including Facility height, its ground elevation, the surrounding topography, existing vegetation and any significant structures/objects that may act to obstruct potential views. Data incorporated in the model includes 7.5 minute digital elevation models (DEMs) and a digital forest layer for the Study Area. The DEMs were produced by the United States Geological Survey (USGS) in 1982 at a 30 meter resolution. The forest layer was derived through on-screen digitizing in ArcView® GIS from 2004 digital orthophotos with 0.5-foot pixel resolutions.

Once the data are entered, a series of constraints are applied to the computer model to achieve an estimate of where the Facility will be visible. Initially, only topography is used as a visual constraint; the tree canopy is omitted to evaluate all areas of potential visibility without any vegetative screening. Although this is an overly conservative prediction, the initial omission of this layers provides a reference for comparison once the tree canopy is established and also assists in the evaluation of potential seasonal visibility of the proposed Facility. An estimated tree canopy height of 50 feet is then used to prepare a preliminary viewshed map for use during the Study Area reconnaissance. The average height of the tree canopy, in this case 65 feet, is determined in the field using a hand-held infra-red laser range finder. The forested areas within the Study Area were then overlaid on the DEM with a height of 65 feet added and the visibility calculated. The forested areas are then extracted from the areas of visibility, with the assumption that a person standing among the trees will not be able to view the Facility beyond a distance of approximately 500 feet. Depending on the density of the vegetation in these areas, it is assumed that some locations within this range will provide visibility of at least portions of the Facility based on where one is standing.

Also included on the map is a data layer, obtained from the Connecticut State Department of Environmental Protection (CTDEP), which depicts various land and water resources such as state parks and forests, recreational facilities, dedicated open space and CTDEP boat launches and other categories. This layer is useful in identifying potential visual impacts to any sensitive receptors that may be located within the Study Area. Lastly, based on a review of available data published by the Connecticut Department of Transportation and discussions with staff in New Milford and Washington, it was determined that portions of several locally designated scenic roadways traverse the Study Area. These roadways are depicted on the attached viewshed map and include Cherniske Road, Old Mill Road, Walker Brook Road, Crossmon Road, Sandpit Road and Wheaton Road.

A preliminary viewshed map is generated for use during the in-field activity in order to confirm that no significant land use changes have occurred since the aerial photographs used in this analysis were produced and to verify the results of the model in comparison to the balloon float. Information obtained during the reconnaissance is then incorporated into the final visibility map.

Balloon Float and Study Area Reconnaissance

On June 8, 2007 Vanasse Hangen Brustlin Inc., (VHB) conducted a balloon float at the proposed Facility in order to evaluate the potential viewshed within the Study Area. The balloon float consisted of tethering an approximate four-foot diameter, helium-filled weather balloon at the proposed Site location at a height of 140 feet. Once the balloon was aloft, VHB personnel drove the public road system in the Study Area to inventory those areas where the balloon was visible. During the balloon float, weather conditions were mostly sunny with occasional light breezes. Temperatures during the float ranged between 75 and 80 degrees Fahrenheit.

Photographic Documentation

During the balloon float, VHB staff conducted a drive-by reconnaissance along the roads located within the Study Area with an emphasis on nearby residential areas and other potential sensitive receptors in order to evaluate and refine the results of the preliminary viewshed map and to verify where the balloon was, and was not, visible above and/or through the tree canopy. The balloon was photographed from a number of different vantage points to document the actual view towards the proposed Facility. The locations of the photographs are depicted on a photolog documentation map contained in Attachment A and are described below:

1. View from Sandpit Road adjacent to house #1.
2. View from the end of Sandy Acres Lane.

3. View from Hearthstone Terrace adjacent to house #3.
4. View from Hillendale Drive Extension adjacent to house #39.
5. View from Upland Road adjacent to house #109.
6. View from Upland Road adjacent to house #77.
7. View from Upland Road adjacent to house #95.
8. View from Upland Road adjacent to house #117.
9. View from Wheaton Road east of Carlsons Grove.
10. View from Upland Road adjacent to house #21.
11. View from Wheaton Road adjacent to house #57.
12. View from Route 202 across from host property.
13. View from Route 202 north of host property.

Photographs of the balloon from the view points listed above were taken with a Panasonic Digital Camera DMC-FZ5, which has a lens focal length equivalent to a 35 mm camera with a 38 to 115 mm zoom. "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."¹ The optical zoom lens for the Panasonic DMC-FZ5 was set at a range of 50 mm to 70 mm for the purposes of this Visual Resource Evaluation.

The locations of the photographic points are recorded in the field using a hand held GPS receiver and are subsequently plotted on the maps contained in the attachments to this document.

Photographic Simulation

Photographic Simulations were generated for the thirteen locations identified above. The Photographic Simulations represent a scaled depiction of the proposed monopole from these locations. The height of the Facility is determined based on the location of the balloon in the photographs and a proportional monopole image is simulated into the photographs. The simulations are contained in Attachment A.



CONCLUSIONS

Based on this analysis, areas from where the proposed 140-foot monopole would be visible above the tree canopy comprise approximately 38 acres, or less than one percent of the 8,042-acre Study Area. As depicted on the attached viewshed map (Attachment B), most of the year-round visibility associated with the proposed Facility occurs to the east/northeast,

¹ Warren, Bruce. *Photography*, West Publishing Company, Eagan, MN, c. 1993, (page 70).

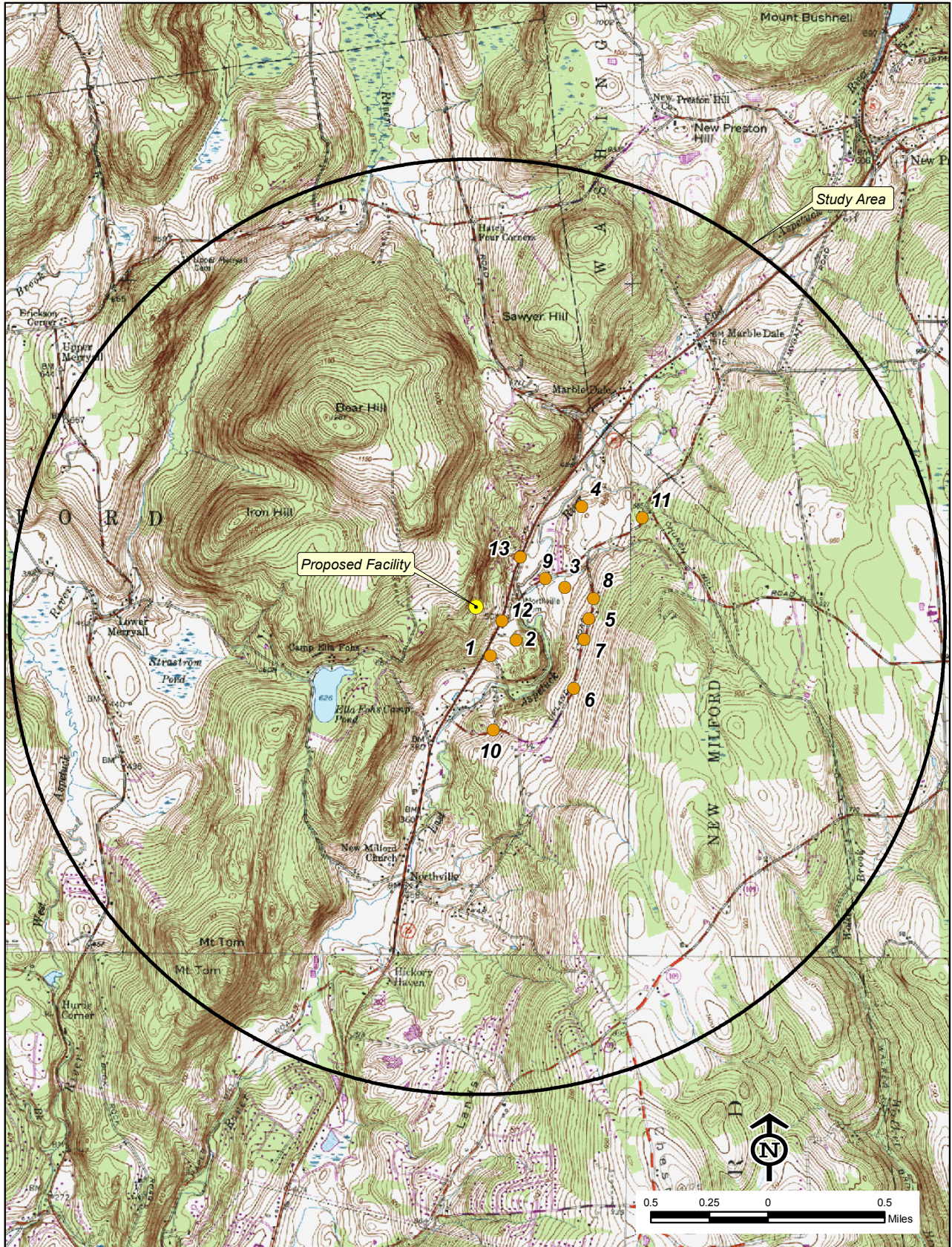
generally within 0.50 mile of the project area. This includes select portions of Route 202, Sandpit Road, Sandy Acres Lane, Wheaton Road, Hillendale Drive/Hillendale Drive Extension, Hearthstone Terrace and Upland Road where limited views of the proposed Facility are anticipated. As noted previously in this report, Sandpit Road is a locally designated scenic roadway. Potential year-round visibility from Sandpit Road would be limited to a small segment of the roadway just east of Route 202 (as depicted in View 1). In total, VHB estimates that at least partial views of the proposed Facility could be achieved from select portions of approximately 25 residential properties within the areas described above. Overall, year-round visibility associated with the proposed Facility would be largely minimized by the intervening topography and existing vegetation contained within the Study Area. This is particularly true of the higher elevations immediately west of the proposed Facility that serve to prohibit potential year-round views from the western half of the Study Area. The viewshed map also depicts additional areas where seasonal (i.e. during "leaf off" conditions) views through the trees are anticipated. These areas comprise approximately 18 additional acres and, similar to year-round visibility, are limited to the east of host property, generally within approximately 0.50 mile. This includes select portions of Old Mill Road, Sandpit Road, Wheaton Road, Upton Road and Crossman Road. Potential seasonal views from these roadways would be mostly obstructed by existing vegetation even during "leaf-off" conditions. In total, VHB anticipates that approximately 10 additional residences will achieve seasonal views of the proposed Facility from select portions of their respective properties.

Attachment A

Photolog Documentation Map, Project Area Photograph, Balloon Float Photographs and Photographic Simulations

Photolog Documentation

Town of
New Milford
Connecticut



Photographic Documentation

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

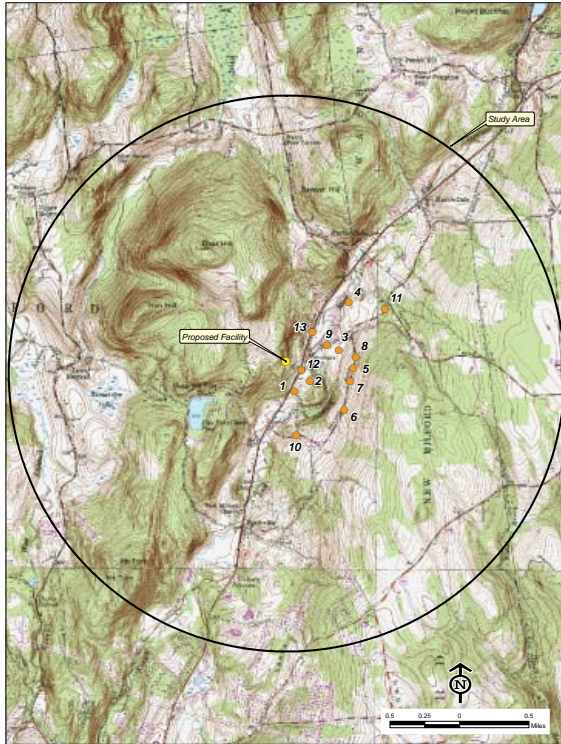
Monopole installation
with 4 carriers

PROPOSED PROJECT AREA

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Photographic Documentation and Simulation *View 1*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

Monopole installation
with 4 carriers

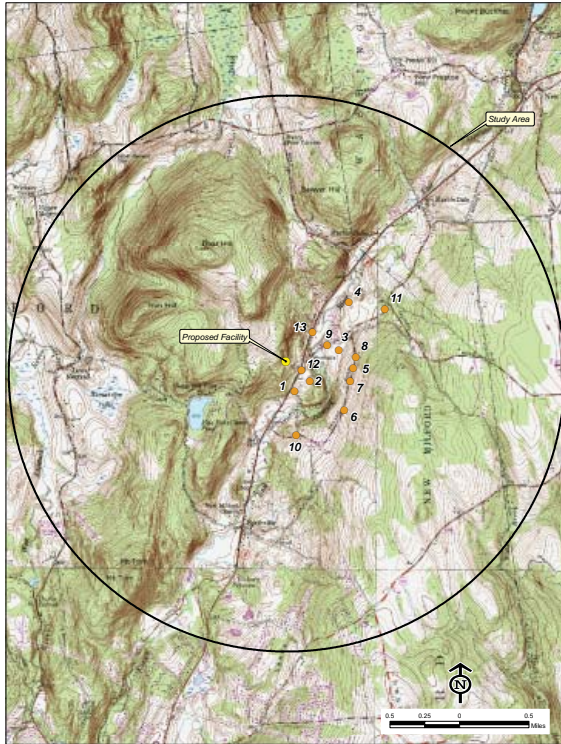


PHOTO TAKEN FROM SANDPIT ROAD ADJACENT TO HOUSE #1, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.22 MILE +/-

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Photographic Documentation and Simulation *View 2*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

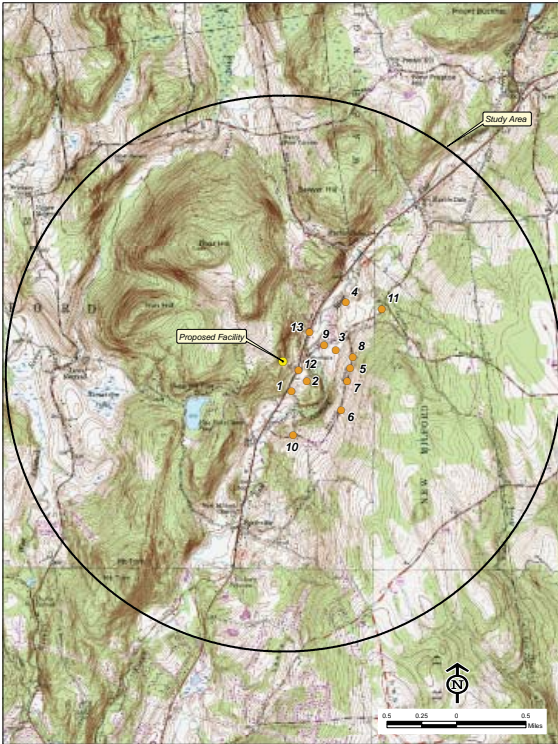
Monopole installation
with 4 carriers

PHOTO TAKEN FROM END OF SANDY ACRES LANE, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.22 MILE +/-

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Photographic Documentation and Simulation *View 3*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

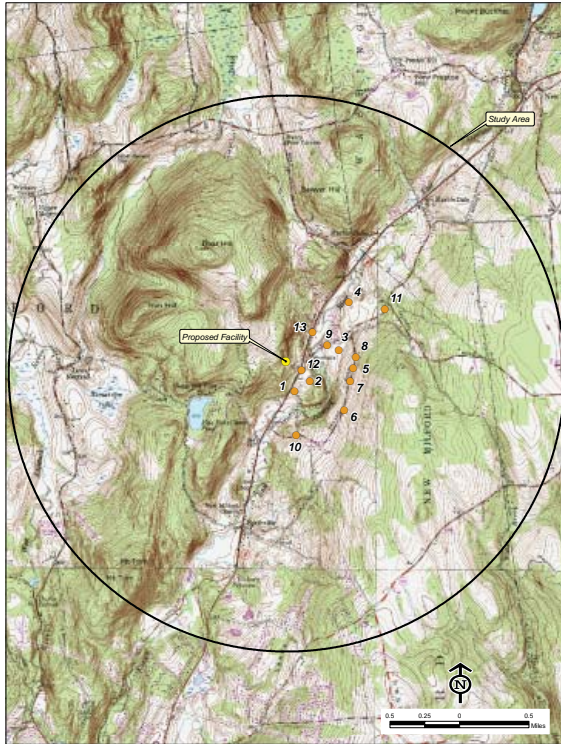
Monopole installation
with 4 carriers

PHOTO TAKEN FROM HEARTHSTONE TERRACE ADJACENT TO HOUSE #3, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.39 MILE +/-

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Photographic Documentation and Simulation *View 4*

Town of
New Milford
Connecticut



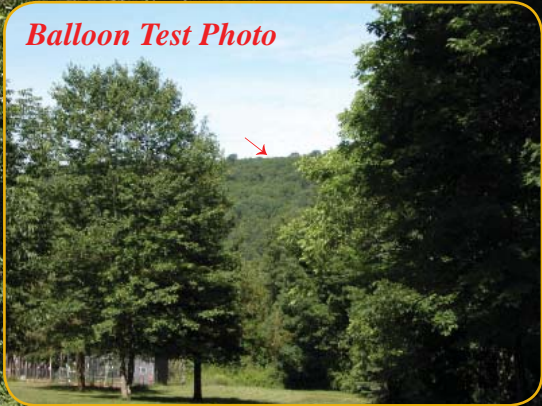
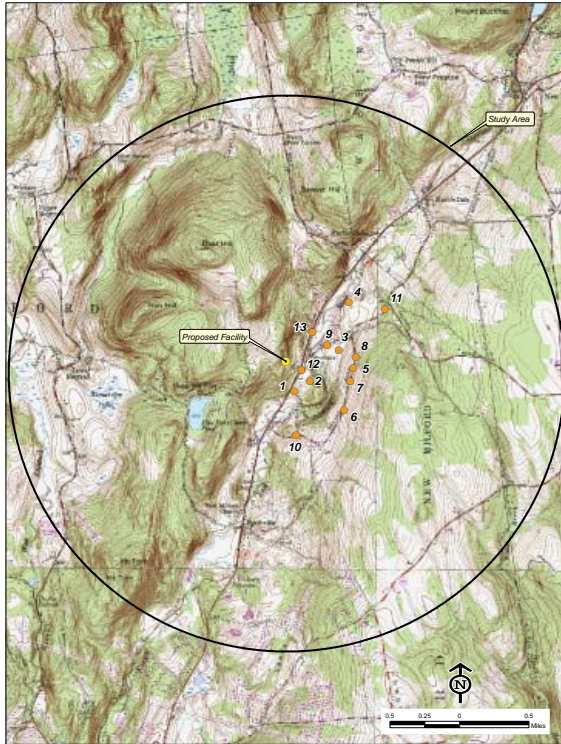
425 Litchfield Road
New Milford, CT

Monopole installation
with 4 carriers

**PHOTO TAKEN FROM HILLENDALE DRIVE EXTENSION ADJACENT TO HOUSE #39, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.63 MILE +/-**

Photographic Documentation and Simulation *View 5*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

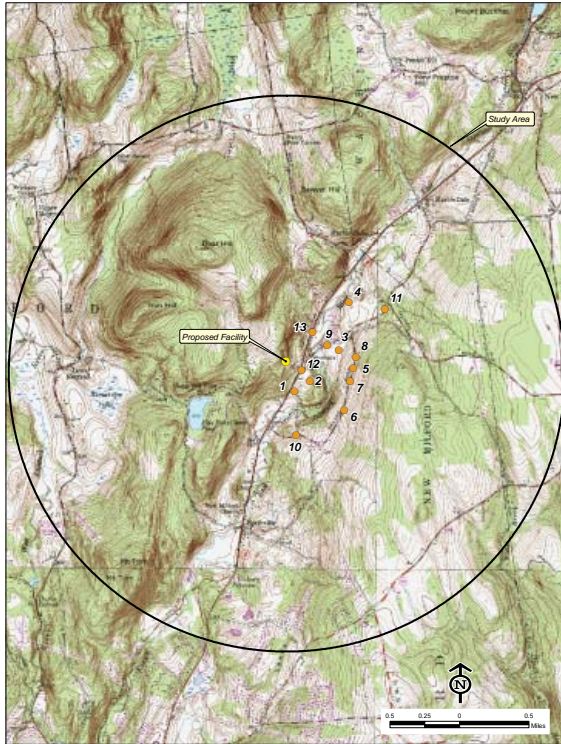
Monopole installation
with 4 carriers

PHOTO TAKEN FROM UPLAND ROAD ADJACENT TO HOUSE #109, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.49 MILE +/-

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Photographic Documentation and Simulation *View 6*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

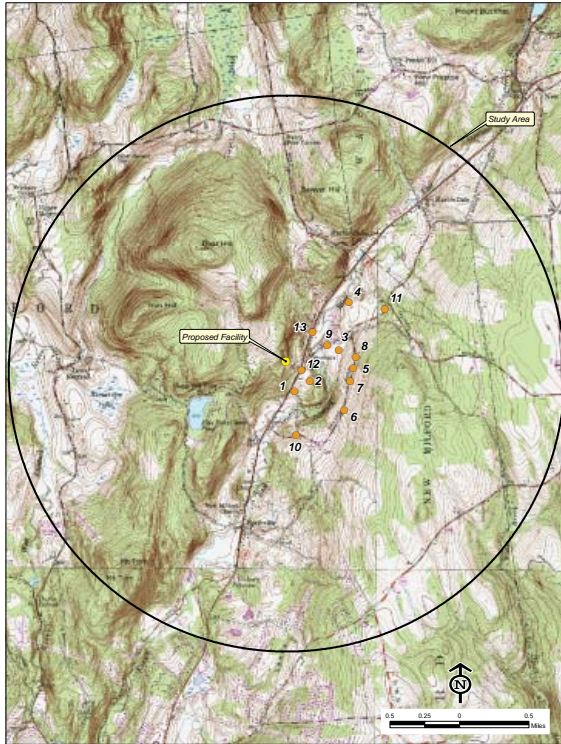
Monopole installation
with 4 carriers

PHOTO TAKEN FROM UPLAND ROAD ADJACENT TO HOUSE #77, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.55 MILE +/-

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Photographic Documentation and Simulation *View 7*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

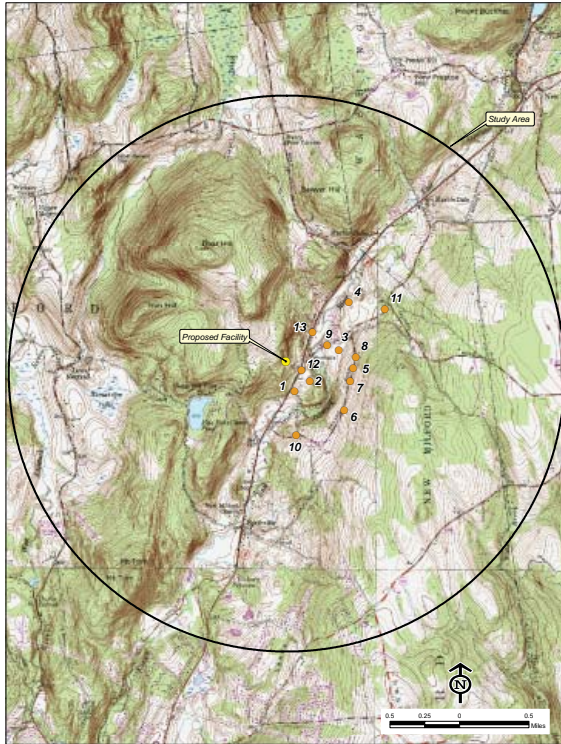
Monopole installation
with 4 carriers

PHOTO TAKEN FROM UPLAND ROAD ADJACENT TO HOUSE #95, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.49 MILE +/-

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Photographic Documentation and Simulation *View 8*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

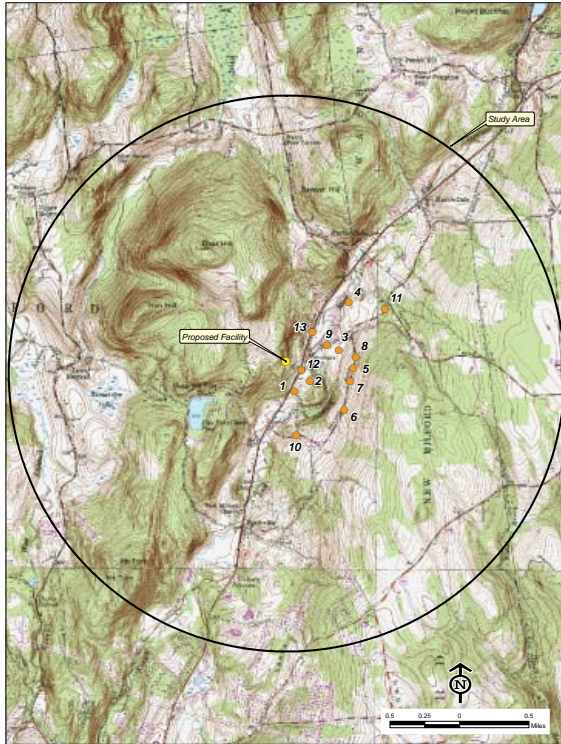
Monopole installation
with 4 carriers

PHOTO TAKEN FROM UPLAND ROAD ADJACENT TO HOUSE #117, LOOKING WEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.50 MILE +/-

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Photographic Documentation and Simulation *View 9*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

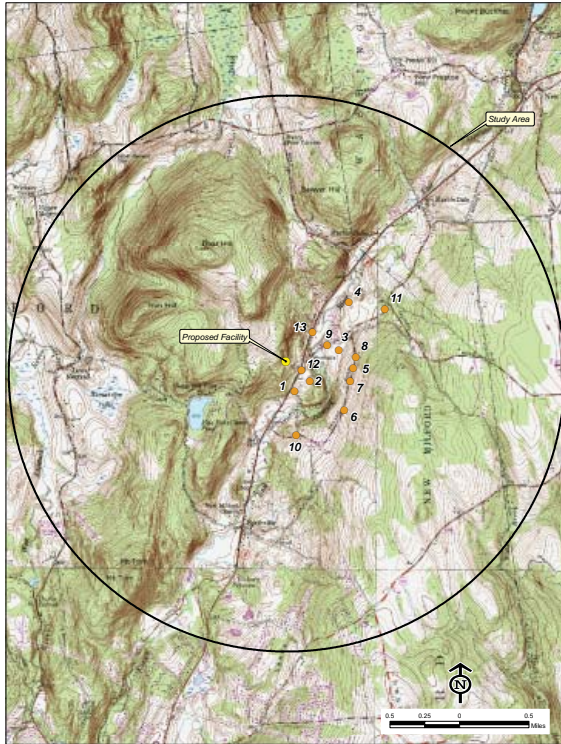
Monopole installation
with 4 carriers

PHOTO TAKEN FROM WHEATON ROAD EAST OF CARLSONS GROVE, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.32 MILE +/-

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Photographic Documentation and Simulation *View 10*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

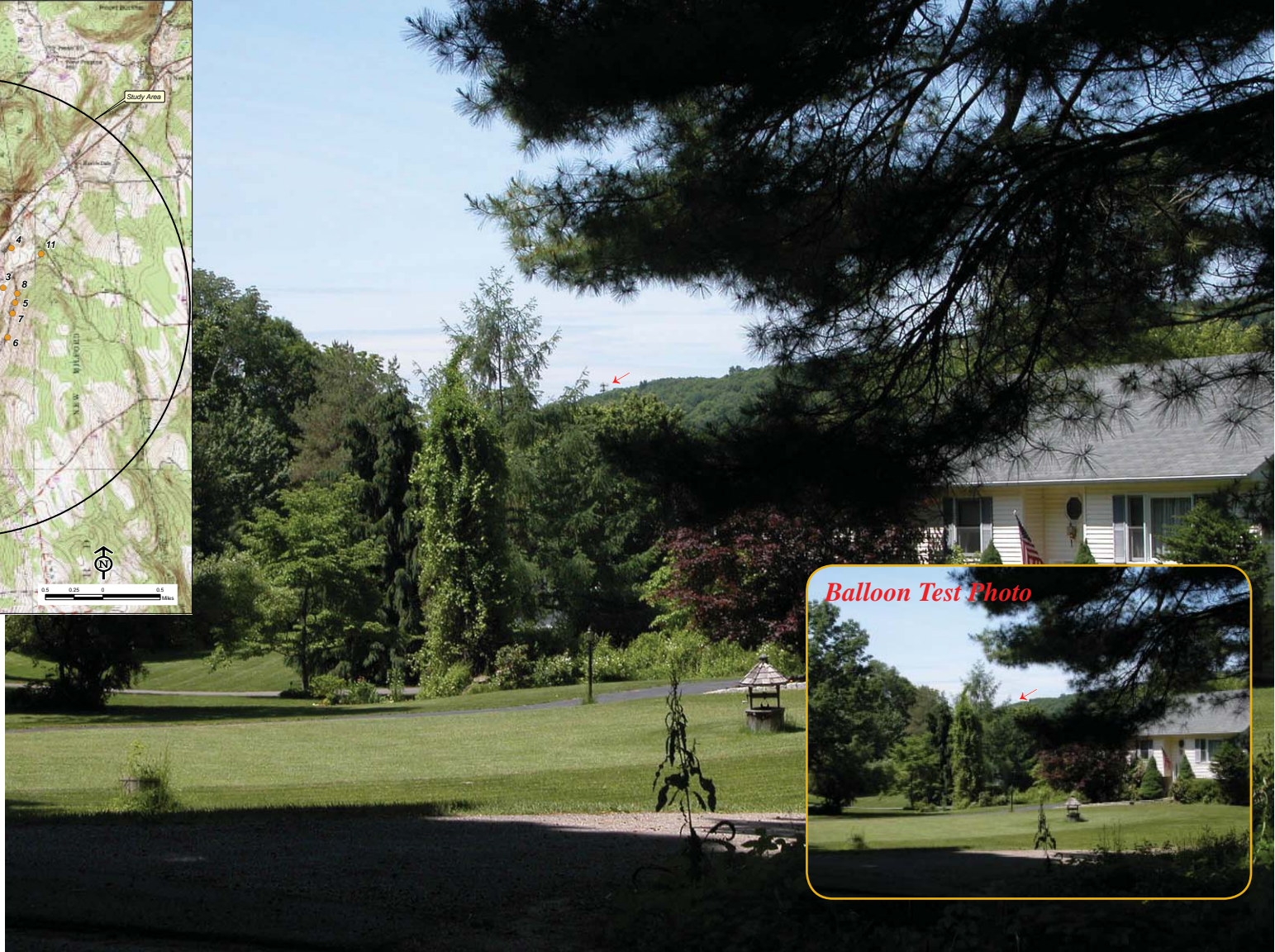
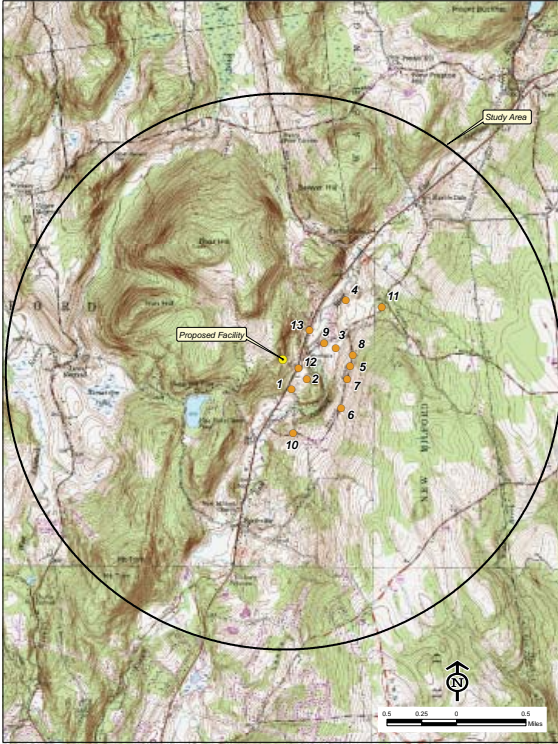
Monopole installation
with 4 carriers

PHOTO TAKEN FROM UPLAND ROAD ADJACENT TO HOUSE #21, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.54 MILE +/-

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Photographic Documentation and Simulation *View 11*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

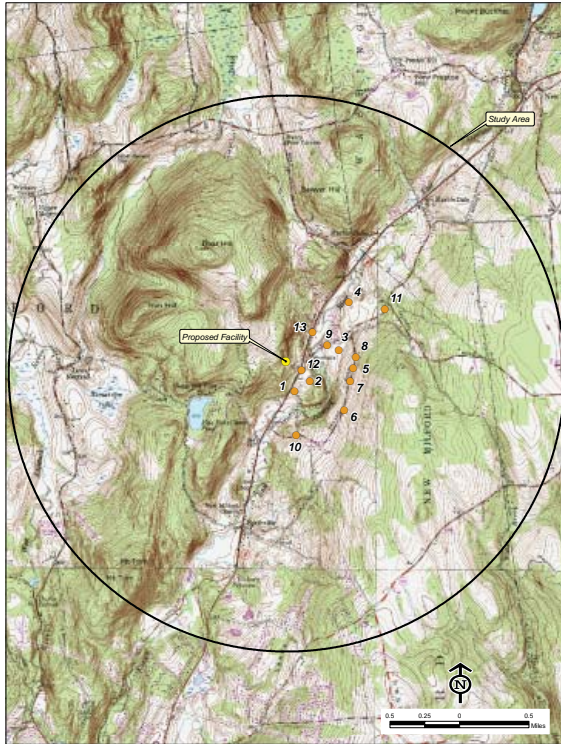
Monopole installation
with 4 carriers

PHOTO TAKEN FROM WHEATON ROAD ADJACENT TO HOUSE #57, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.80 MILE +/-

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Photographic Documentation and Simulation *View 12*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

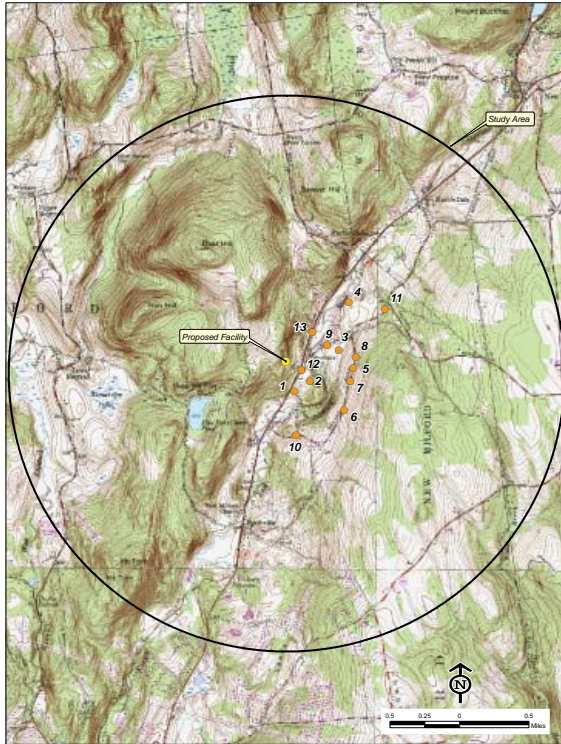
Monopole installation
with 4 carriers

PHOTO TAKEN FROM ROUTE 202 ACROSS FROM HOST PROPERTY, LOOKING NORTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.12 MILE +/-

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Photographic Documentation and Simulation *View 13*

Town of
New Milford
Connecticut



425 Litchfield Road
New Milford, CT

Monopole installation
with 4 carriers



PHOTO TAKEN FROM ROUTE 202, NORTH OF HOST PROPERTY, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.28 MILE +/-

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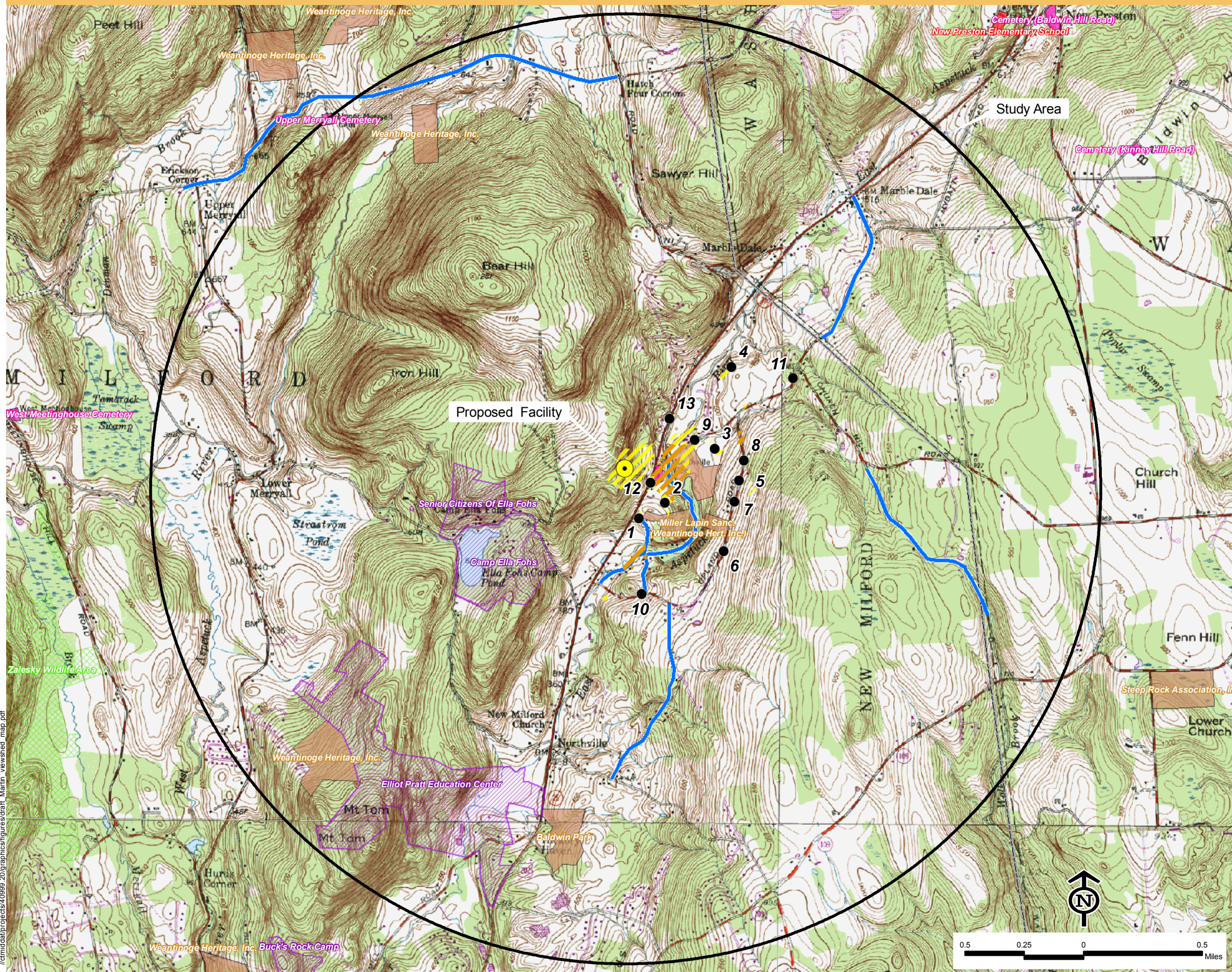
Attachment B

Viewshed Map

Viewshed Map

Topography and Forest Cover as Constraints

Town of
New Milford
Connecticut



Proposed Optasite Towers LLC Telecommunications Facility 425 Litchfield Road (Route 202) New Milford, Connecticut

NOTE:

- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 140 feet.
- Existing tree canopy height estimated at 65 feet.

DATA SOURCES:

- National Elevation Dataset (NED) with 30 meter resolution produced by the USGS, 1982
- Forest areas derived from 2004 digital orthophotos with 0.5-foot pixel resolution; digitized by VHB, 2007
- Base map comprised of Kent, New Milford, New Preston, and Roxbury USGS Quadrangle Maps
- Protected properties data layer provided CTDEP, 2003
- Scenic Roads layer derived from available State and Local listings.

Map Compiled June 2007

Legend

<ul style="list-style-type: none"> Proposed Monopole Location (Includes select areas of visibility approximately 500 feet around facility) Photographs - June 8, 2007 Balloon visible above trees Year Round Visibility (Approximately 38 Acres) Anticipated Seasonal Visibility (Approximately 18 Acres) 	<ul style="list-style-type: none"> Protected Properties (CT DEP) <ul style="list-style-type: none"> State Forest State Park DEP Owned Waterbody State Park Scenic Reserve Historic Preserve Natural Area Preserve Fish Hatchery Flood Control Other State Park Trail Water Access Wildlife Area Wildlife Sanctuary Protected Properties (Municipal) <ul style="list-style-type: none"> Cemetery Preservation Conservation Existing Preserved Open Space Recreation General Recreation School Uncategorized Protected Properties (Federal) <ul style="list-style-type: none"> DEP Boat Launches Scenic Road (State and Local) Town Line Protected Properties (Federal)
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