

Proposed Wireless Telecommunications Facility

First Assembly of God Church
651 Paddock Avenue
Meriden, Connecticut

Prepared for **Optasite, Inc.**
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Westborough, MA 01581

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54 Tuttle Place
Middletown, CT 06457

August 2006

Visual Resource Evaluation

Optasite, Inc. 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 within the City of Meriden, 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").

Project Introduction

The proposed Facility includes the construction of a 120-foot tall, brown monopole with flush-mounted antenna panels and associated ground equipment to be located within a fenced enclosure at the base of the tower. Based on information provided by the project engineer, URS Corporation, the proposed project area is located at approximately 325 feet Above Mean Sea Level (AMSL). Access to the proposed Facility would be provided via a proposed gravel access drive that would extend to the proposed compound in a northwest direction from an existing parking area accessible from Paddock Avenue.

Site Description and Setting

The proposed Facility is situated on an open, undeveloped portion of property located at 651 Paddock Avenue ("host property") in the City of Meriden, Connecticut. The host property consists of approximately 3.89 acres of land and is currently occupied by the First Assembly of God Church and its associated parking area (see Photolog Documentation map contained in Attachment A). Land use within the general vicinity of the host property is comprised of medium-density residential parcels and highway infrastructure associated with both Interstate 91 and the Wilbur Cross Parkway (Route 15). In addition to Interstate 91 and Route 15, portions of the Study Area are traversed by Interstate 691, Route 5, Route 66 and Route 150. In total, the Study Area contains roughly 138 linear miles of roadways.

The topography in the Study Area is generally characterized by rolling hills that range in ground elevation from approximately 200 feet AMSL to over 750 feet AMSL along the Beseck Mountain ridgeline located nearly two miles east of the proposed Facility. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species. The tree canopy occupies approximately 3,005 acres of the 8,042-acre study area (54%). 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 50 feet. In total, the Study Area features approximately 127 acres of surface water.



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 a 0.5-foot pixel resolution.

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 was 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 these 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. A conservative tree canopy height of less than 50 feet is then used to prepare a preliminary viewshed map for use during the Study Area reconnaissance. The forested areas within the Study Area were then overlaid on the DEM with a measured tree height of 50 feet added, the visibility calculated and incorporated into the final Viewshed map. 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. Lastly, this analysis was conducted in 30-foot increments from 120 feet down to 40 feet and the results consolidated into a single thematic layer in order to determine the approximate amount of the tower structure that would be visible from any given location.

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 among other categories. This layer is useful in identifying potential visual impacts to any sensitive receptors that may be located within the Study Area. The map also depicts segments of the Mattabesett Trail that traverse the eastern portion of the Study Area. These segments of the trail were digitized and incorporated into the viewshed map based on information provided in the *Connecticut Walk Book, 18th Edition*. Lastly, based on a review of available data published by the Connecticut Department of Transportation and discussions with staff in Meriden and Wallingford, it was determined that there are no state or locally designated scenic roadways contained within the Study Area.

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 2004 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 August 9, 2006 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 raising and maintaining a helium-filled weather balloon at the proposed Site location tethered to a height of 120 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 sunny. The temperature was approximately 95 degrees with calm winds.

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 and orientations of the photos are described below:

1. View from Paddock Avenue approaching proposed Facility (adjacent to house #536), looking southwest.
2. View from Elmwood Drive adjacent to house #138, looking northeast.

3. View from Elmwood Drive at Tulip Drive, looking north.
4. View from Clover Street adjacent to house #30, looking north.
5. View from Tulip Drive adjacent to house #8, looking northeast.
6. View from Rice Road at Prann Court, looking southeast.
7. View from Prann Court adjacent to house #125, looking southeast.
8. View from Prann Court adjacent to house #86, looking southeast.
9. View from Whitney Drive adjacent to house #33, looking southeast.
10. View from Whitney Drive adjacent to house #57, looking southeast.
11. View from Miller Avenue adjacent to house #185, looking east.
12. View from Sandy Lane adjacent to house #35, looking northwest.
13. View from Overlook Road adjacent to house #45, looking south.
14. View from Schwink Drive at Milici Circle, looking south.
15. View from Research Drive Parkway at entrance to #355, looking southwest.
16. View from Thorpe Avenue, looking west.

Photographs of the balloon from the view points listed above were taken with a Nikon Digital Camera COOLPIX 5700, 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 Nikon COOLPIX 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 sixteen 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 B.

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



CONCLUSIONS

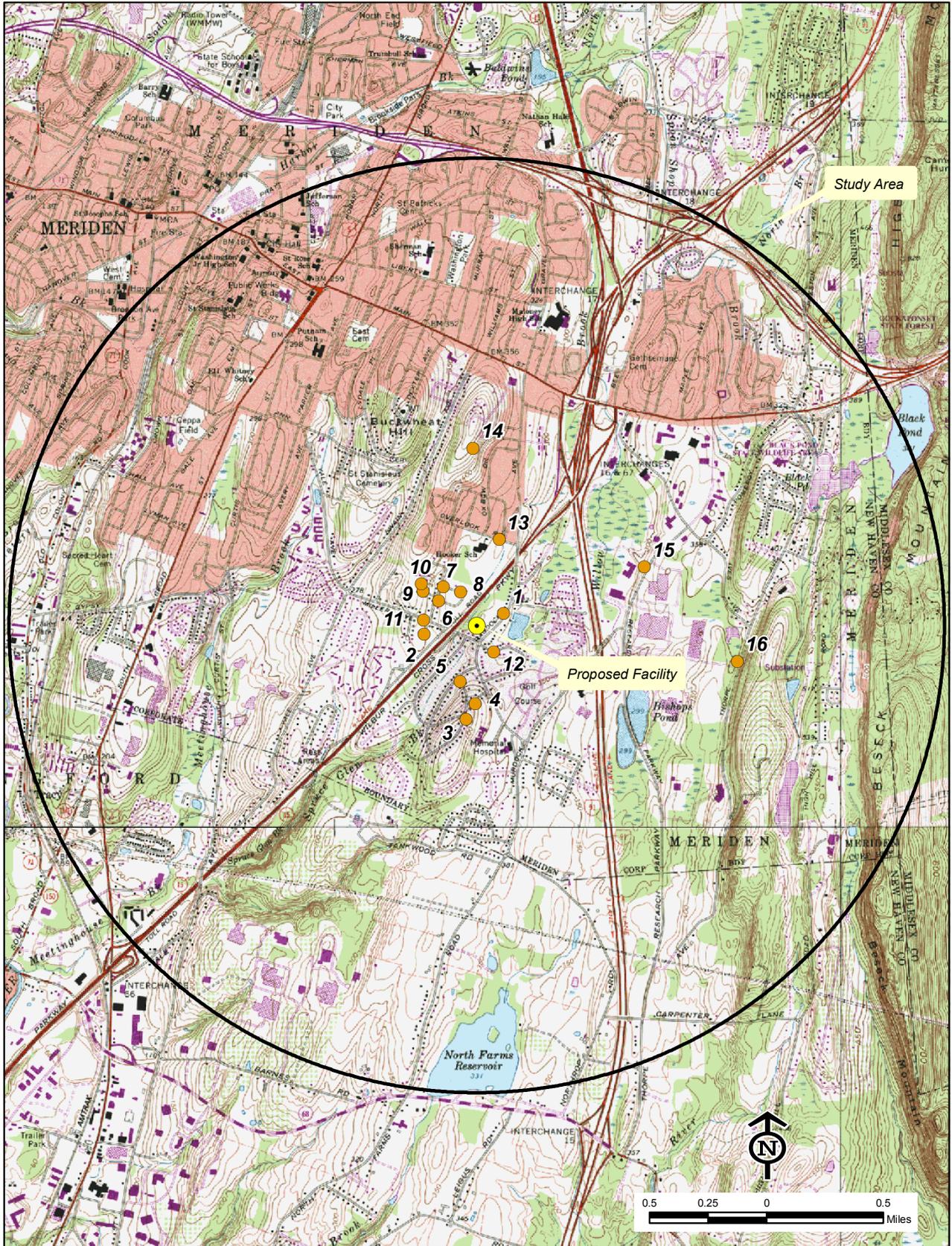
Based on this analysis, areas from where the proposed 120-foot monopole would be visible above the tree canopy comprise approximately 137 acres, or only 1.7 percent of the 8,042 acre Study Area. In general, much of the anticipated year-round visibility depicted on the viewshed map occurs within an approximate 0.5-mile radius surrounding the proposed Facility. Several additional areas of visibility, located between 0.75 and 1-mile, are also identified to the north, east and southeast with a relatively large area of visibility located nearly two miles east of the proposed Facility over open areas along and adjacent to the Beseck Mountain ridgeline. Distant views of the proposed Facility may be achieved from select portions of the Mattabesett Trail that traverse the Beseck Mountain ridgeline located near the eastern limits of the Study Area. The majority of views associated with the proposed Facility are expected to feature upper portions of the monopole structure. VHB estimates that approximately 42 residences within the Study Area will have partial year round views of the proposed monopole above the existing tree line. Existing street trees and the landscape vegetation found among the residential areas located within the general vicinity of the host property serve to minimize the visual effects of the proposed monopole while taller commercial and industrial buildings act as visual buffers in areas further from the proposed Facility. Additionally, the design of the proposed Facility, a brown, flush-mounted monopole, will further serve to minimize the potential visual effects from within the Study Area. This is particularly true for the areas of potential visibility that may occur along portions of the Mattabesett Trail where the brown color of the proposed Facility will allow it to better blend in with its surroundings in comparison to a typical galvanized steel monopole with 12 to 14-foot wide antenna platforms. The viewshed map also depicts several additional areas where seasonal (i.e. during “leaf off” conditions) views through the trees are anticipated. These areas comprise approximately 96 additional acres and are mostly limited to the immediate vicinity of the host property, within approximately 0.25 mile. In total, VHB anticipates that approximately 48 residences will achieve seasonal views of the proposed Facility from select portions of their respective properties. This is a function of the high concentration of residential properties located near the proposed Facility where deciduous trees provide much of the visual screening during “leaf-on” conditions.

Attachment A

Photolog Documentation Map, Balloon Float Photographs and Photographic Simulations

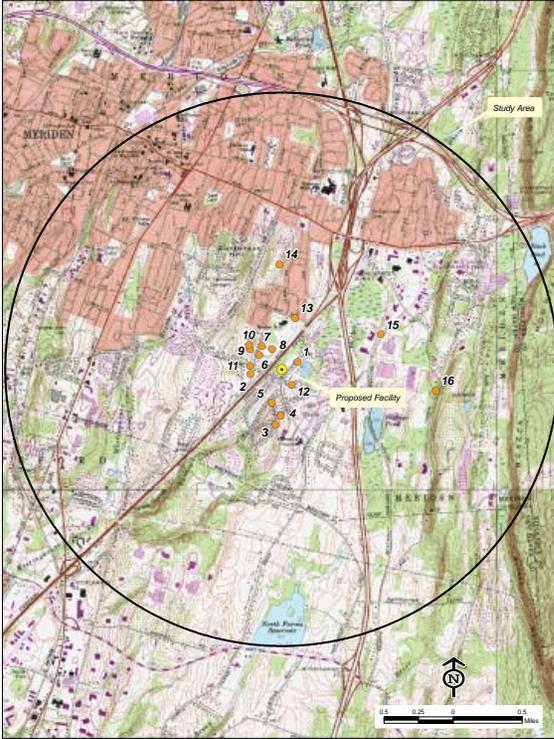
Photolog Documentation

City of
Meriden
Connecticut



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Photographic Documentation and Simulation *View 1*



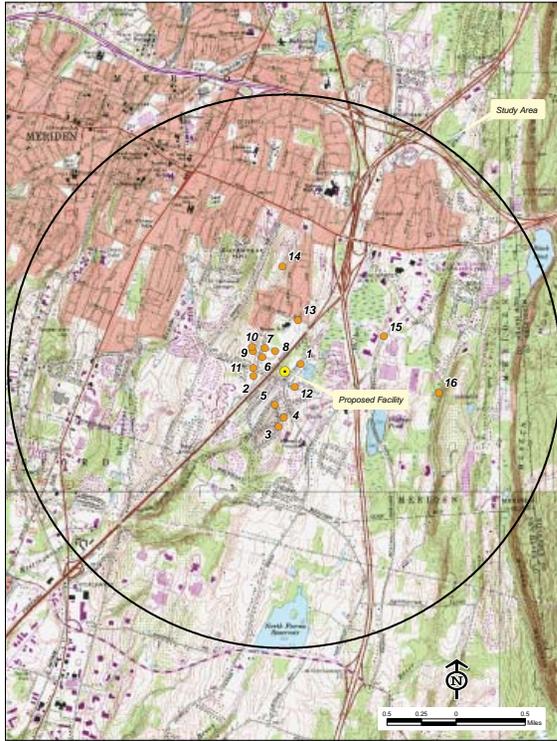
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

**PHOTO TAKEN FROM PADDOCK AVENUE APPROACHING PROPOSED FACILITY (ADJACENT TO HOUSE #563),
LOOKING SOUTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.13 MILE +/-

Photographic Documentation and Simulation *View 2*



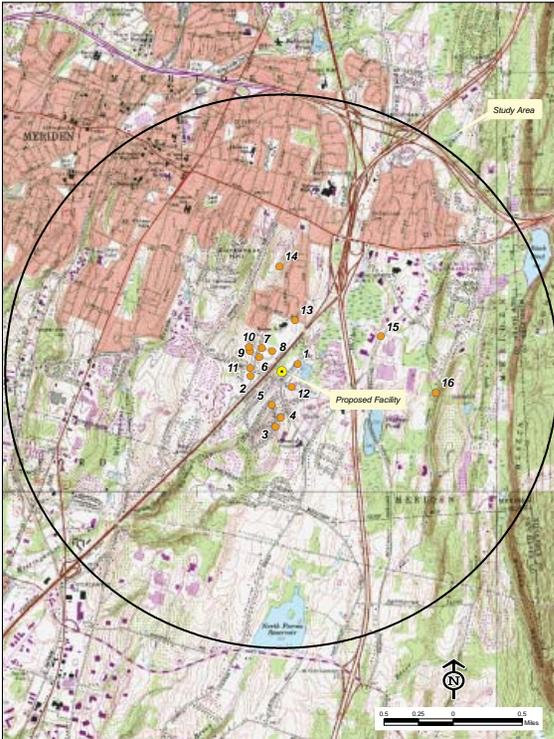
Balloon Test Photo

First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM ELMWOOD DRIVE ADJACENT TO HOUSE #138, LOOKING NORTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.23 MILE +/-

Photographic Documentation and Simulation *View 3*

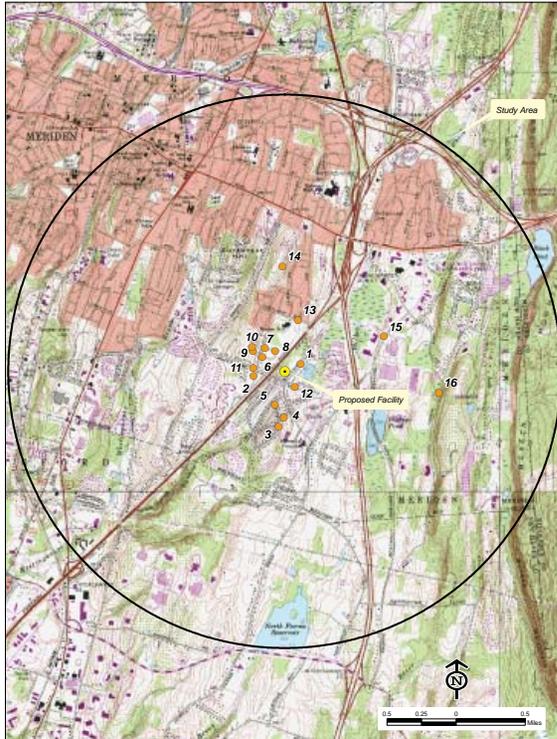


First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM ELMWOOD DRIVE AT TULIP DRIVE, LOOKING NORTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.32 MILE +/-

Photographic Documentation and Simulation *View 4*



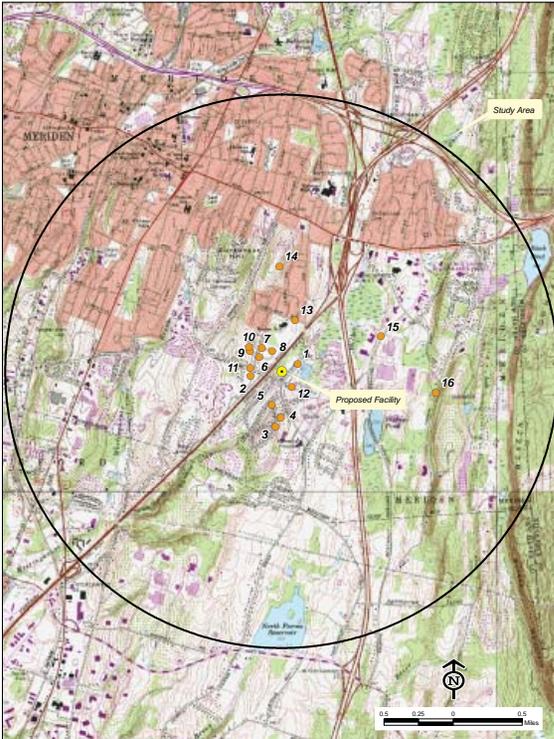
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation



PHOTO TAKEN FROM CLOVER STREET ADJACENT TO HOUSE #30, LOOKING NORTH
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.24 MILE +/-

Photographic Documentation and Simulation *View 5*

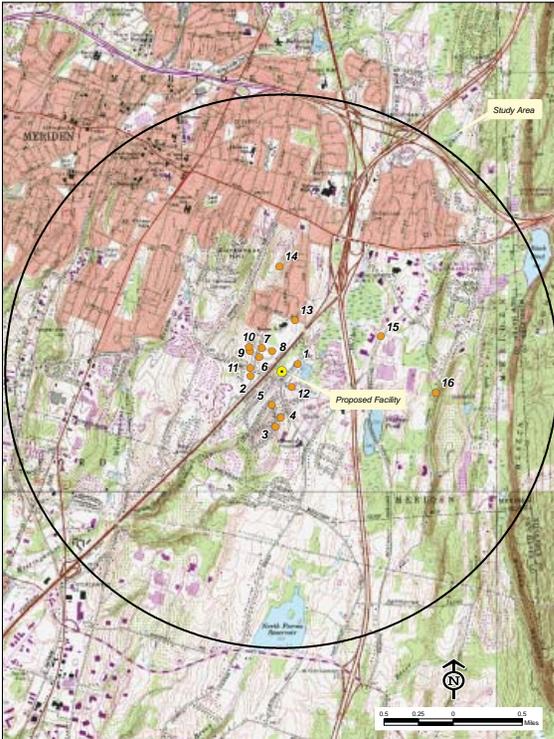


First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM TULIP DRIVE ADJACENT TO HOUSE #8, LOOKING NORTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.20 MILE +/-

Photographic Documentation and Simulation *View 6*



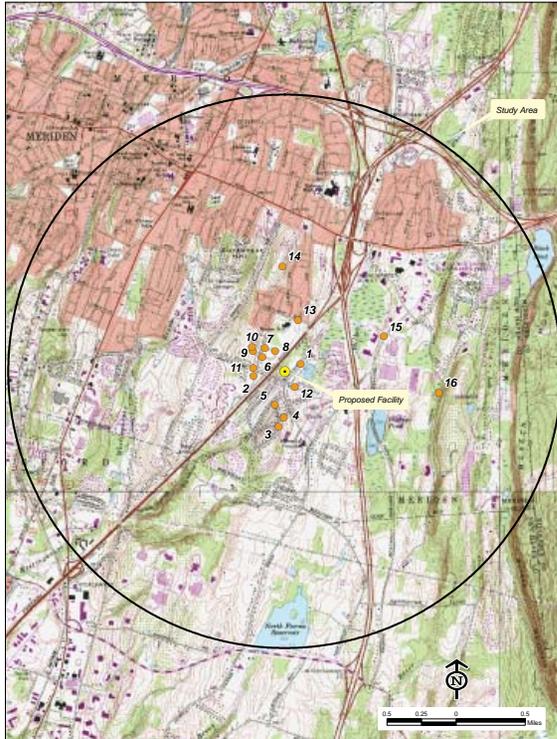
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation



PHOTO TAKEN FROM RICE ROAD AT PRANN COURT, LOOKING SOUTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.22 MILE +/-

Photographic Documentation and Simulation View 7



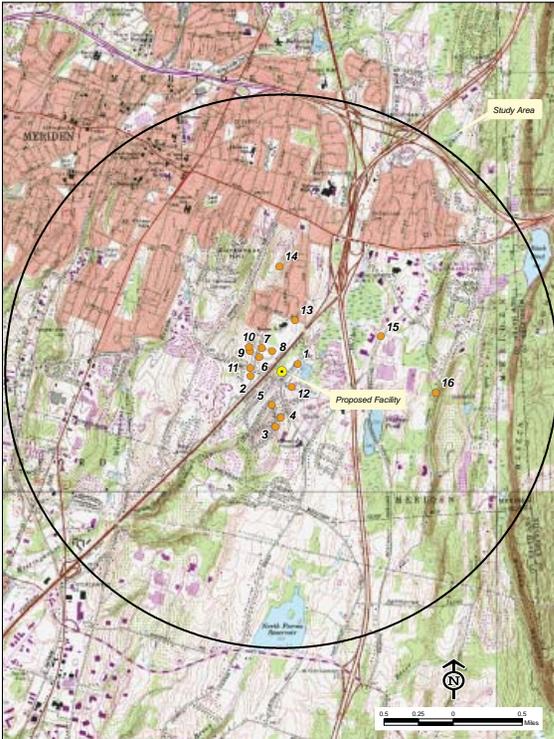
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation



PHOTO TAKEN FROM PRANN COURT ADJACENT TO HOUSE #125, LOOKING SOUTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.16 MILE +/-

Photographic Documentation and Simulation View 8

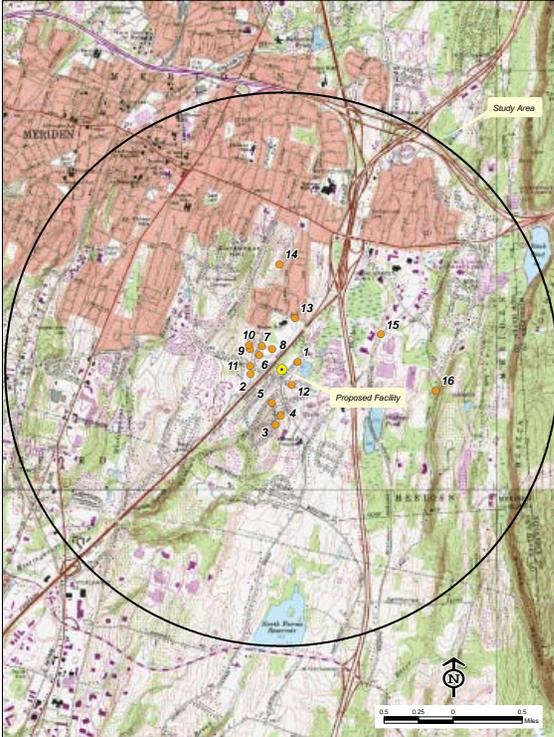


First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM PRANN COURT ADJACENT TO HOUSE #86, LOOKING SOUTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.17 MILE +/-

Photographic Documentation and Simulation *View 9*



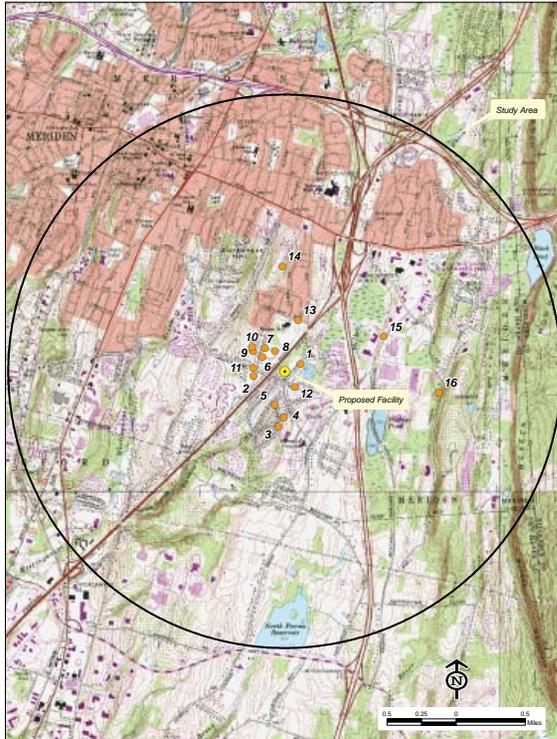
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation



PHOTO TAKEN FROM WHITNEY DRIVE ADJACENT TO HOUSE #33, LOOKING SOUTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.28 MILE +/-

Photographic Documentation and Simulation *View 10*

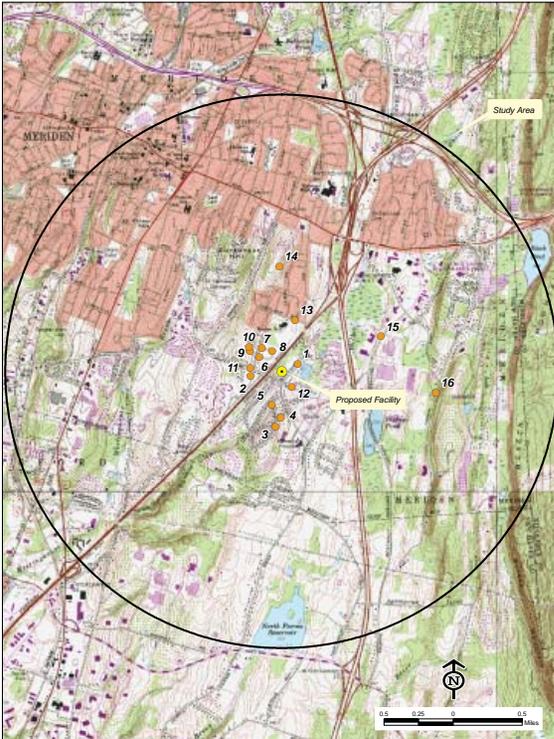


First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM WHITNEY DRIVE ADJACENT TO HOUSE #57, LOOKING SOUTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.30 MILE +/-

Photographic Documentation and Simulation *View 11*



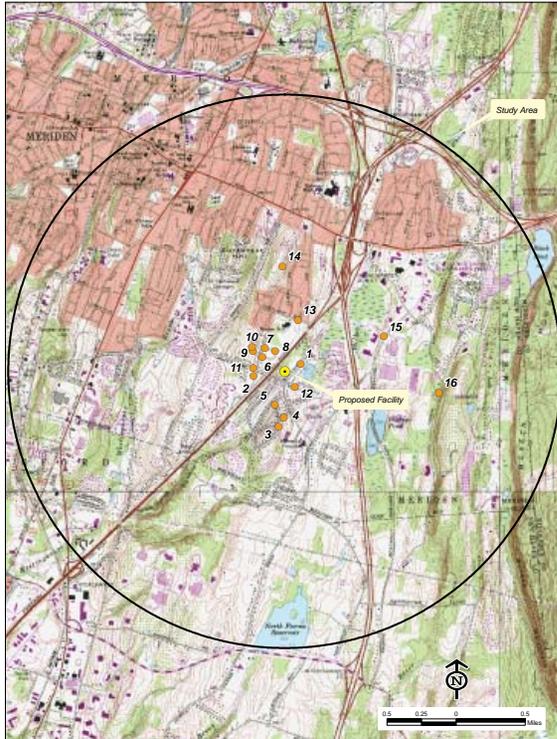
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM MILLER AVENUE ADJACENT TO HOUSE #185, LOOKING EAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.23 MILE +/-

Photographic Documentation and Simulation *View 12*

City of
Meriden
Connecticut



First Assembly of God
651 Paddock Avenue
Meriden, CT

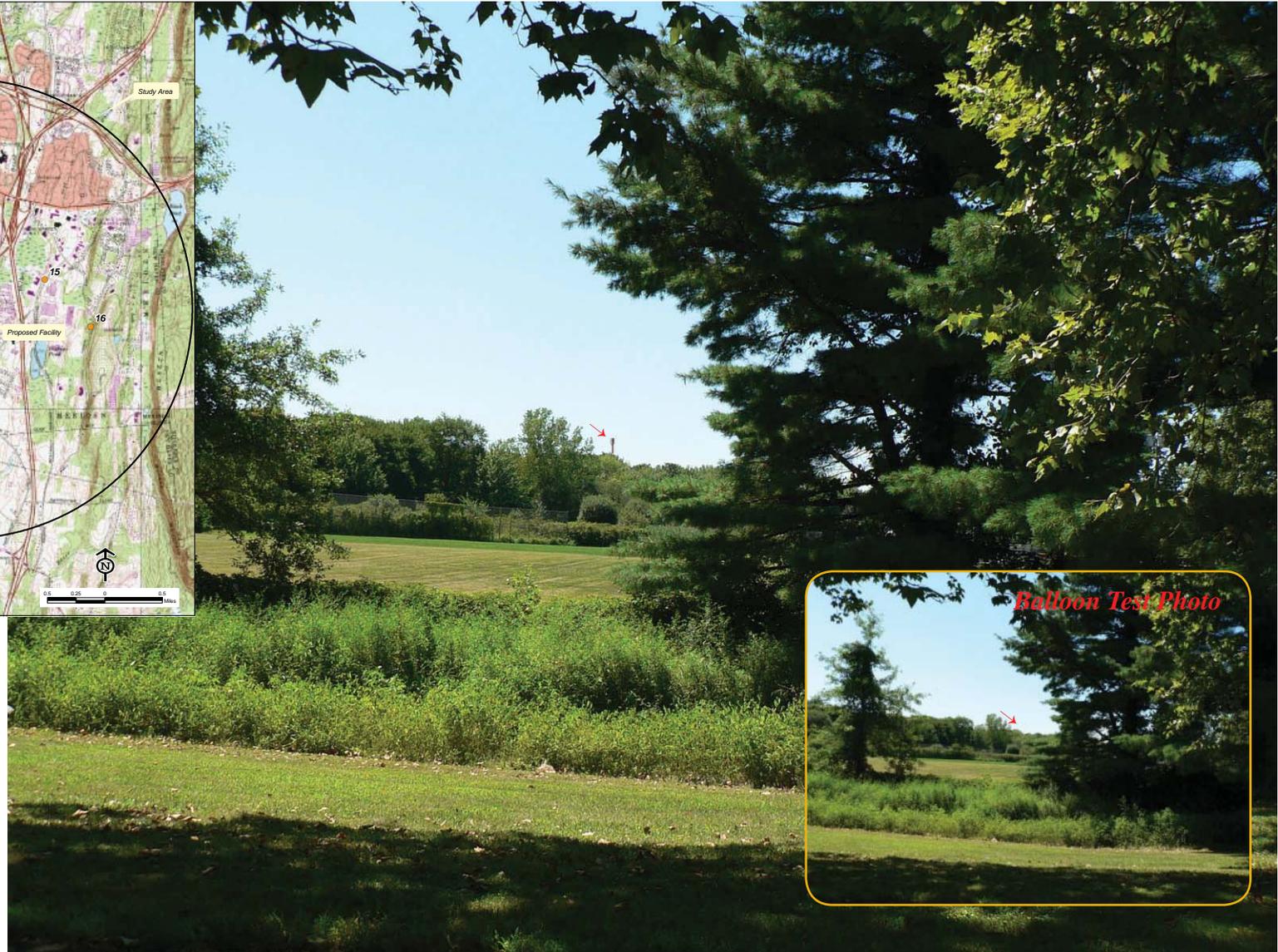
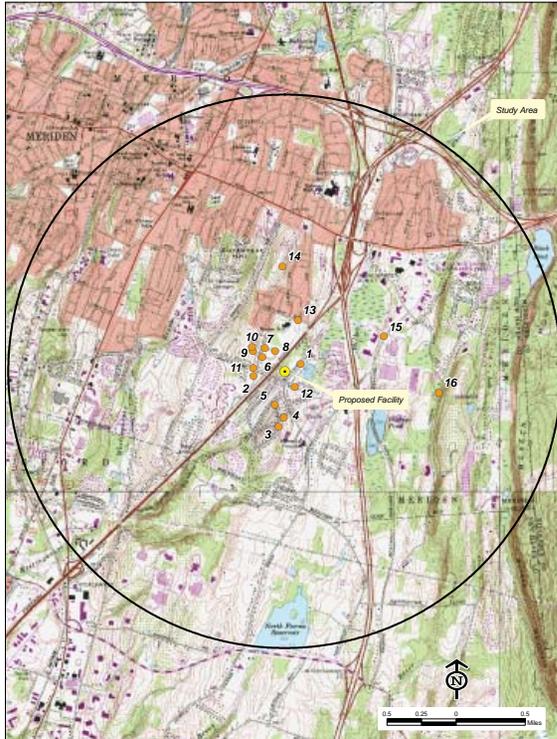
Flush-mounted
monopole installation

PHOTO TAKEN FROM SANDY LANE ADJACENT TO HOUSE #35, LOOKING NORTHWEST - BALLOON IS VISIBLE THROUGH TREES

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.13 MILE +/-

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Photographic Documentation and Simulation *View 13*

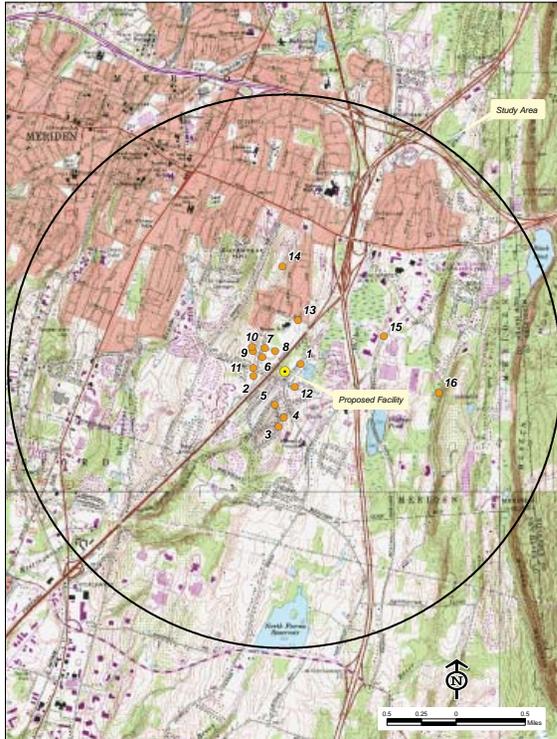


First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM OVERLOOK ROAD ADJACENT TO HOUSE #45, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.39 MILE +/-

Photographic Documentation and Simulation *View 14*

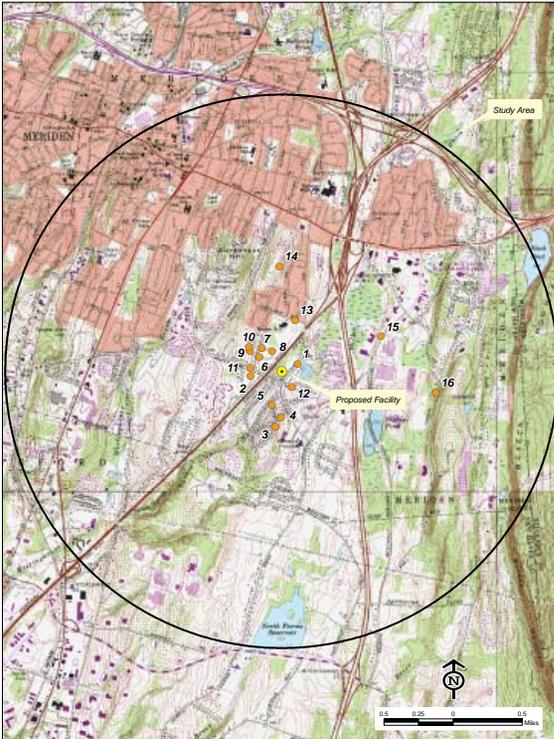


First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM SCHWINK DRIVE AT MILICI CIRCLE, LOOKING SOUTH
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.76 MILE +/-

Photographic Documentation and Simulation *View 15*



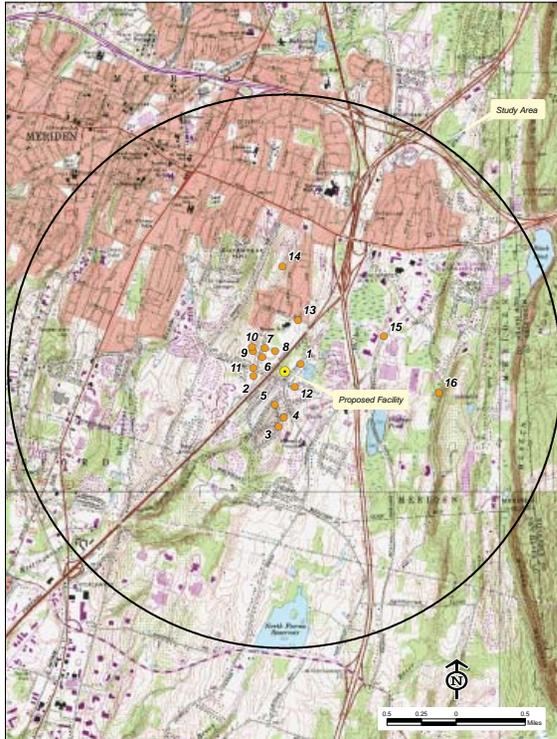
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation



PHOTO TAKEN FROM RESEARCH PARKWAY AT ENTRANCE TO #355, LOOKING SOUTHWEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.76 MILE +/-

Photographic Documentation and Simulation *View 16*



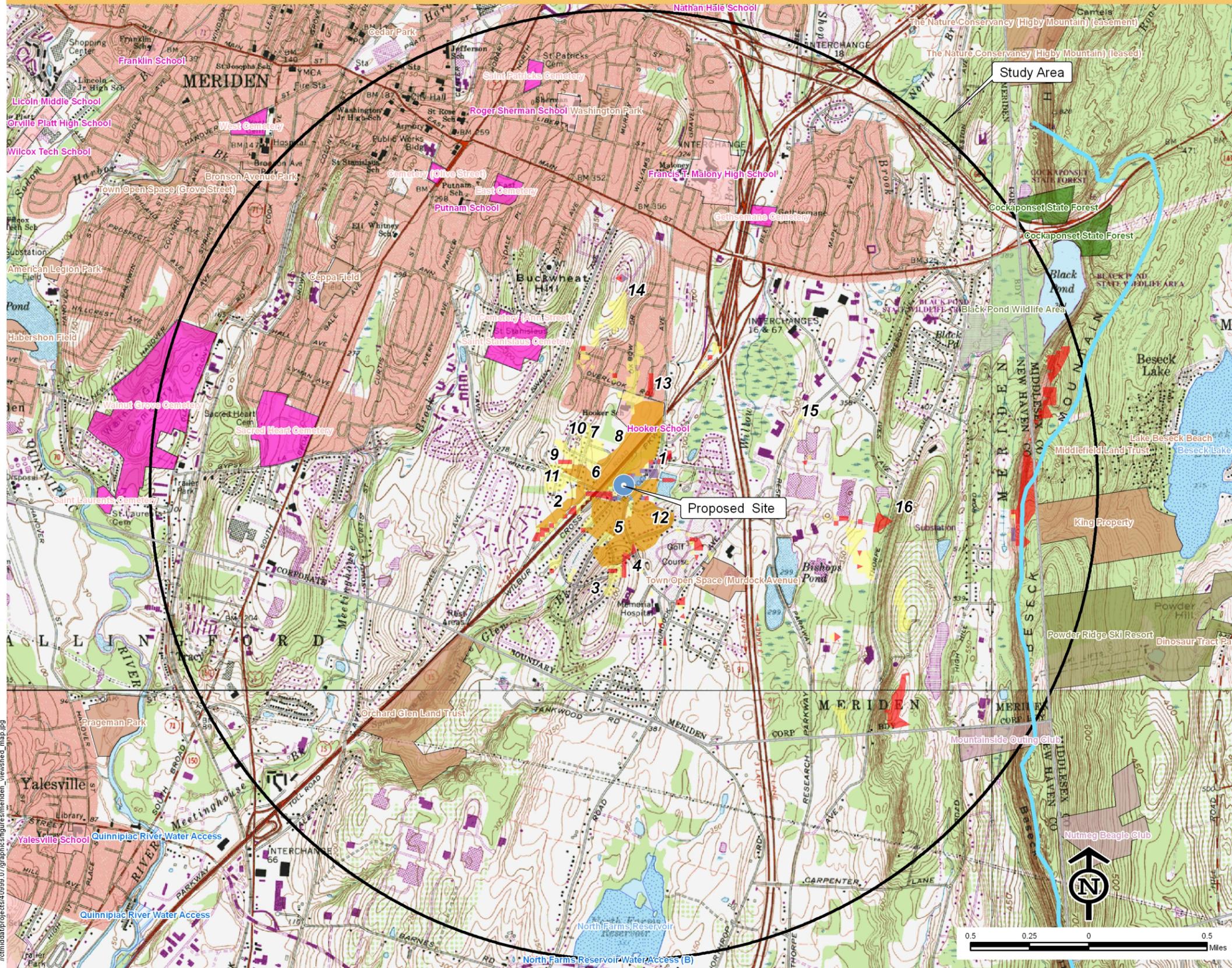
First Assembly of God
651 Paddock Avenue
Meriden, CT

Flush-mounted
monopole installation

PHOTO TAKEN FROM THORPE AVENUE, LOOKING WEST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 1.12 MILES +/-

Attachment B

Viewshed Map



Proposed Telecommunications Facility First Assembly of God Church 651 Paddock Road Meriden, Connecticut

NOTE:

- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 120 feet.
- Existing tree canopy height estimated at 50 feet.

DATA SOURCES:

- 7.5 minute digital elevation model (DEM) 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, 2006
- Base map comprised of Durham, Meriden, Middletown and Wallingford USGS Quadrangle Maps
- Protected properties data layer provided CTDEP, 2003
- Scenic Roads layer derived from available State and Local listings.

Map Compiled August 2006

Legend

<ul style="list-style-type: none"> Proposed Monopole Location (Includes area of visibility approximately 500 feet around facility) Photos - August 9, 2006 Balloon visible above the trees Anticipated Seasonal Visibility (Approximately 96 Acres) 	<ul style="list-style-type: none"> Protected Properties (CT DEP) 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
<p>Total Year-Round Visibility Approximately 137 Acres Within The 3,042-Acre Study Area</p>	<ul style="list-style-type: none"> DEP Boat Launches Scenic Road (State and Local) Mattabesett Trail (CT Blue Blaze) Town Line Protected Properties (Federal)
<p>Approx. % of Tower Visible (Year-Round)</p> <ul style="list-style-type: none"> Upper 25% to Tree Line View - 72 Acres 50% - 52 Acres 75% - 4 Acres Entire Facility Visible - 4 Acres 	<ul style="list-style-type: none"> Protected Properties (Municipal) Cemetery Preservation Conservation Existing Preserved Open Space Recreation General Recreation School Uncategorized