# *Proposed Wireless Telecommunications Facility*

## Bloomfield Blue Hills
## 811 Blue Hills Avenue
## Bloomfield, Connecticut

Prepared for 

Prepared by **VHB/Vanasse Hangen Brustlin, Inc.**
**54 Tuttle Place**
**Middletown, CT 06457**

April 2007

# Visual Resource Evaluation

Cellco Partnership, d/b/a Verizon Wireless, 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 811 Blue Hills Avenue within the Town of Bloomfield, Connecticut ("host property"). 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 110-foot tall, stealth flagpole and associated ground equipment to be located within a fenced enclosure at the base of the tower. The flagpole will be partially constructed of a radio frequency transparent material within which the proposed antenna panels and cabling will be encased Based on information provided by the project engineer, URS Corporation, the proposed project area is located at approximately 164 feet Above Mean Sea Level (AMSL). Access to the proposed Facility would be achieved via a proposed, 12-foot wide gravel driveway beginning at the terminus of Edgewood Avenue

## Site Description and Setting

The host property consists of approximately 8.8 acres of land and is identified in the Town of Bloomfield records as Map 89-2/Lot 3002 (see Photolog Documentation map contained in Attachment A). The proposed Facility would be located on the southern portion of the host property which is currently undeveloped and consists of both wooded and open land The northern portion of the parcel is currently occupied by an active warehousing facility and associated parking lot. Land use within the general vicinity of the host property is comprised of The Blue Hills Volunteer Fire Department located roughly 130 feet to the northeast; commercial and industrial parcels located to the north and west along Blue Hills Avenue and Britton Drive, respectively, and commercial and residential development to the south and east. In addition, segments of several state-numbered routes traverse the Study Area. This includes portions of Route 159, Route 178, Route 185, Route 187 (Blue Hills Avenue), Route 189 and Route 218. The Study Area contains a total of approximately 138 linear miles of roadways.

The topography in the Study Area is generally characterized by rolling hills that range in ground elevation from approximately 25 feet AMSL to approximately 180 feet AMSL. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species The tree canopy occupies approximately 3,498 acres of the 8,042-acre study area (43%). 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 31 acres of surface water which mostly includes portions of the North Branch River.

■

## 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 2000 and 2005 digital orthophotos with 1-meter and 2-meter pixel resolutions, respectively.

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 50 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 50 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 among 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 municipal staff in Bloomfield and Hartford, 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 2000 and 2005 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 March 28, 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 raising and maintaining a helium-filled weather balloon at the proposed Site location at a height of 110 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 overcast. The temperature was approximately 55 degrees with occasional breezes.

## 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 Edgewood Avenue adjacent to the proposed Facility, looking northwest.
2. View from Merriam Avenue east of Blue Hills Avenue, looking northwest.

3. View from Britton Drive east of Douglas Street, looking southeast
4. View Britton Drive, looking south.
5. View from Blue Hills Avenue north of Britton Drive, looking southwest.
6. View from Hubbard Street adjacent to house #3, looking northeast.
7. View from Elizabeth Avenue east of Blue Hills Avenue, looking southwest

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 seven locations identified above. The Photographic Simulations represent a scaled depiction of the proposed flagpole from these locations. The height of the Facility is determined based on the location of the balloon in the photographs and a proportional flagpole image is simulated into the photographs. The simulations are contained in Attachment B.

■

## CONCLUSIONS

Based on this analysis, areas from where the proposed 110-foot flagpole would be visible above the tree canopy comprise approximately 33 acres, or less than one half of one percent of the 8,042-acre Study Area. As depicted on the attached viewshed map, year-round visibility associated with the proposed flagpole is generally limited to the immediate vicinity of the project area (within .025-mile from the Site or less). An additional area of year-round visibility located roughly 0.95-mile to the southwest is also depicted on the map. This area is located on private property and as such could not be field verified during the balloon float. VHB estimates that approximately 16 residences within the Study Area will have partial, year round views of the proposed flagpole above the existing tree line. These properties are located within approximately 1,000 feet of the proposed flagpole along Merriam Avenue, Elizabeth Avenue and Hubbard Street. Overall, potential views of the proposed Facility would be limited by the existing vegetation and landscaping (specimen trees and shrubbery) found throughout the Study Area as well as the presence of taller commercial and/or

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

industrial buildings located adjacent to the host property. Moreover, the design of the proposed Facility (a 110-foot tall flagpole) would also minimize the potential visual effects from within the Study Area The viewshed map also depicts several additional areas where seasonal (i.e., during "leaf off" conditions) views through the trees are anticipated. These areas are located within the immediate vicinity of the proposed Facility and comprise approximately 44 additional acres In total, VHB estimates that seasonal views would be achieved from select portions of approximately 30 residences within the Study Area, the majority of which are located within the immediate vicinity of the proposed Facility (± 1,000 feet)

# Attachment A

# Photolog Documentation Map, Balloon Float Photographs and Photographic Simulations

# Attachment B

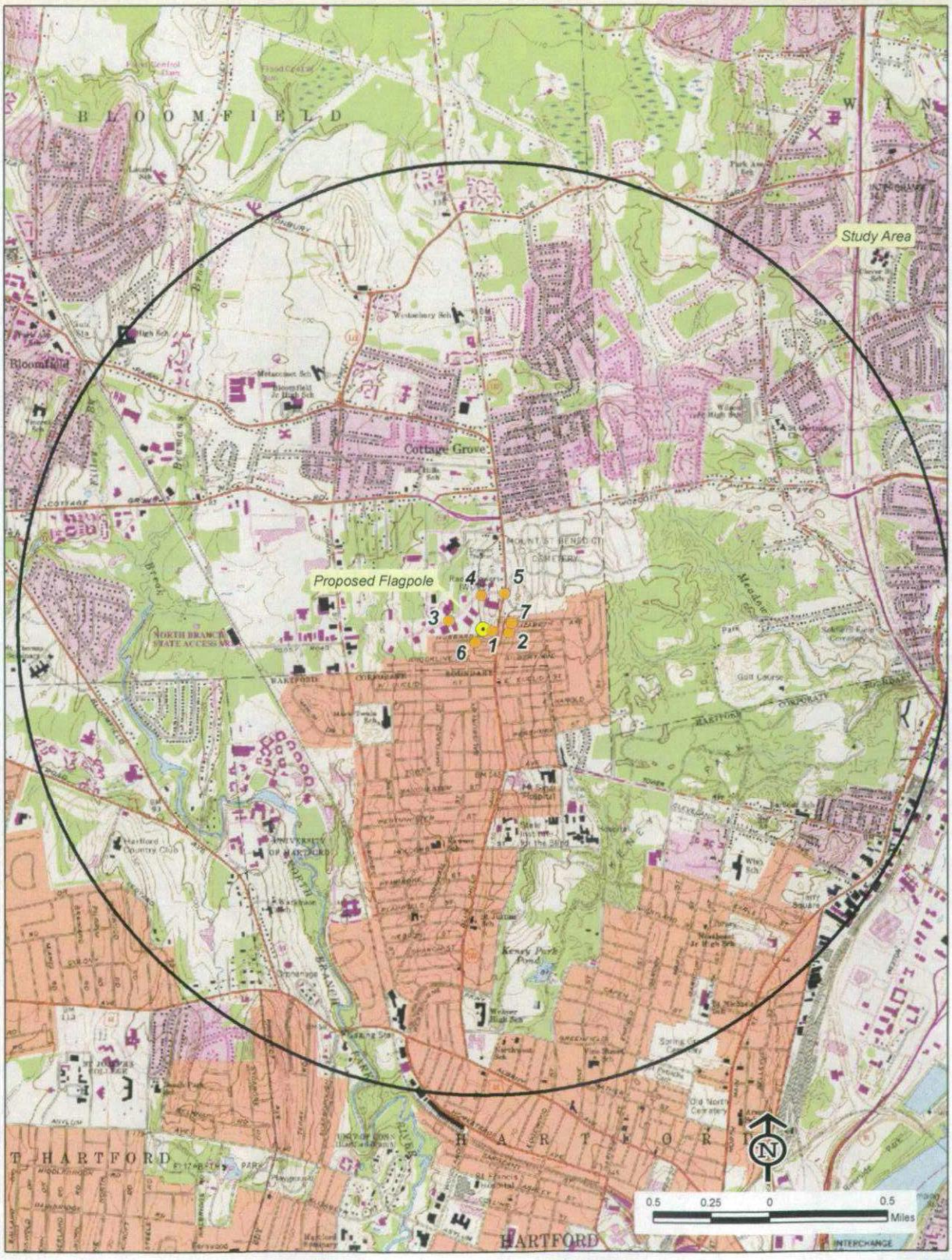
# Viewshed Map

# Attachment A

# Photolog Documentation Map, Balloon Float Photographs and Photographic Simulations

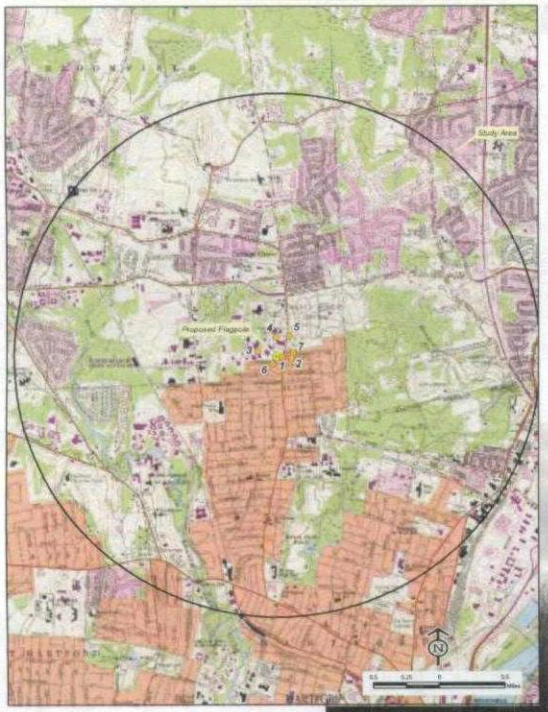
# Photolog Documentation

Town of
**Bloomfield**
Connecticut



# Photographic Documentation and Simulation *View 1*

Town of
**Bloomfield**
Connecticut




811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation


**PHOTO TAKEN FROM EDGEWOOD AVENUE ADJACENT TO PROPOSED FACILITY, LOOKING NORTHWEST**

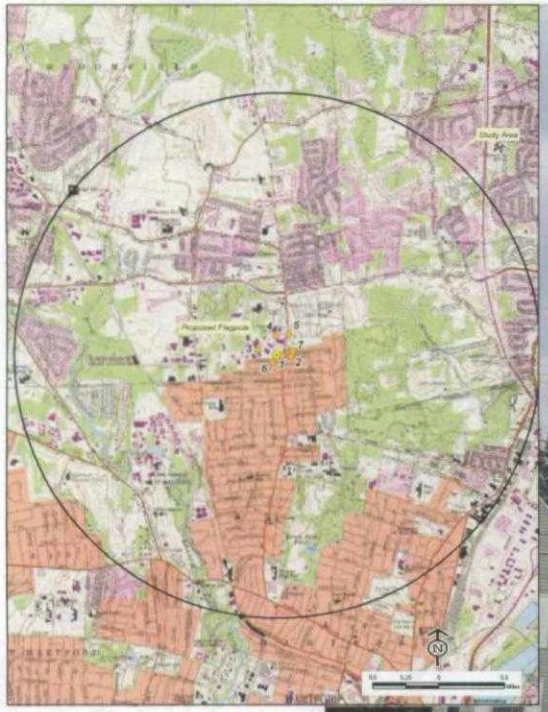
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 200 FEET +/-

verizon wireless

Vanasse Hangen Brustlin, Inc.

# Photographic Documentation and Simulation *View 2*

Town of
**Bloomfield**
Connecticut




811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation

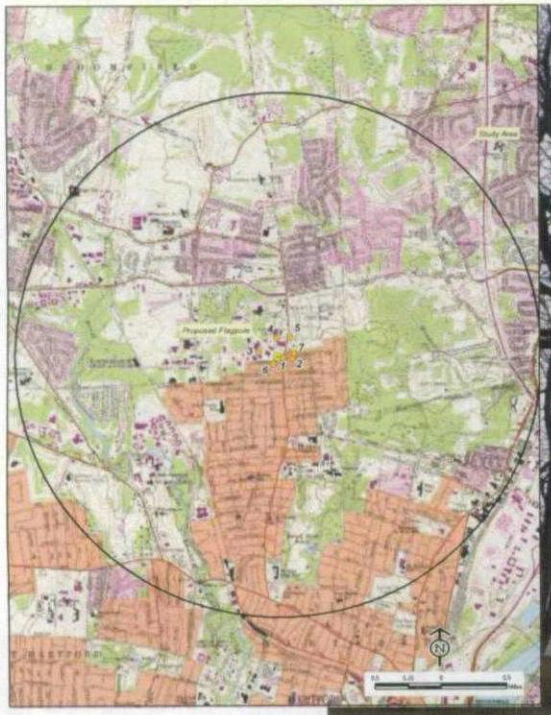

**PHOTO TAKEN FROM MERRIAM AVENUE EAST OF BLUE HILLS AVENUE, LOOKING NORTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 400 FEET +/-

Vanasse Hangen Brustlin, Inc.

# Photographic Documentation and Simulation *View 3*

Town of
**Bloomfield**
Connecticut




811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation

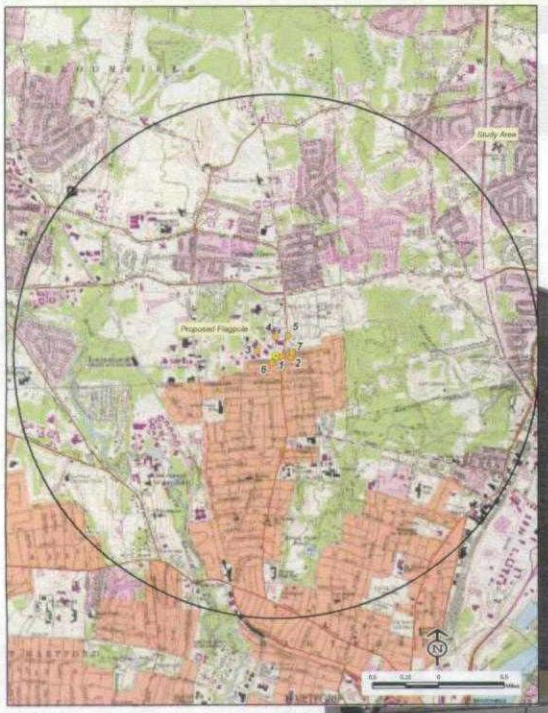
**PHOTO TAKEN FROM BRITTON DRIVE EAST OF DOUGLAS STREET, LOOKING SOUTHEAST - BALLOON IS VISIBLE THROUGH TREES**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.16 MILE +/-

Vanasse Hangen Brustlin, Inc.

# Photographic Documentation and Simulation *View 4*

Town of
**Bloomfield**
Connecticut




811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation

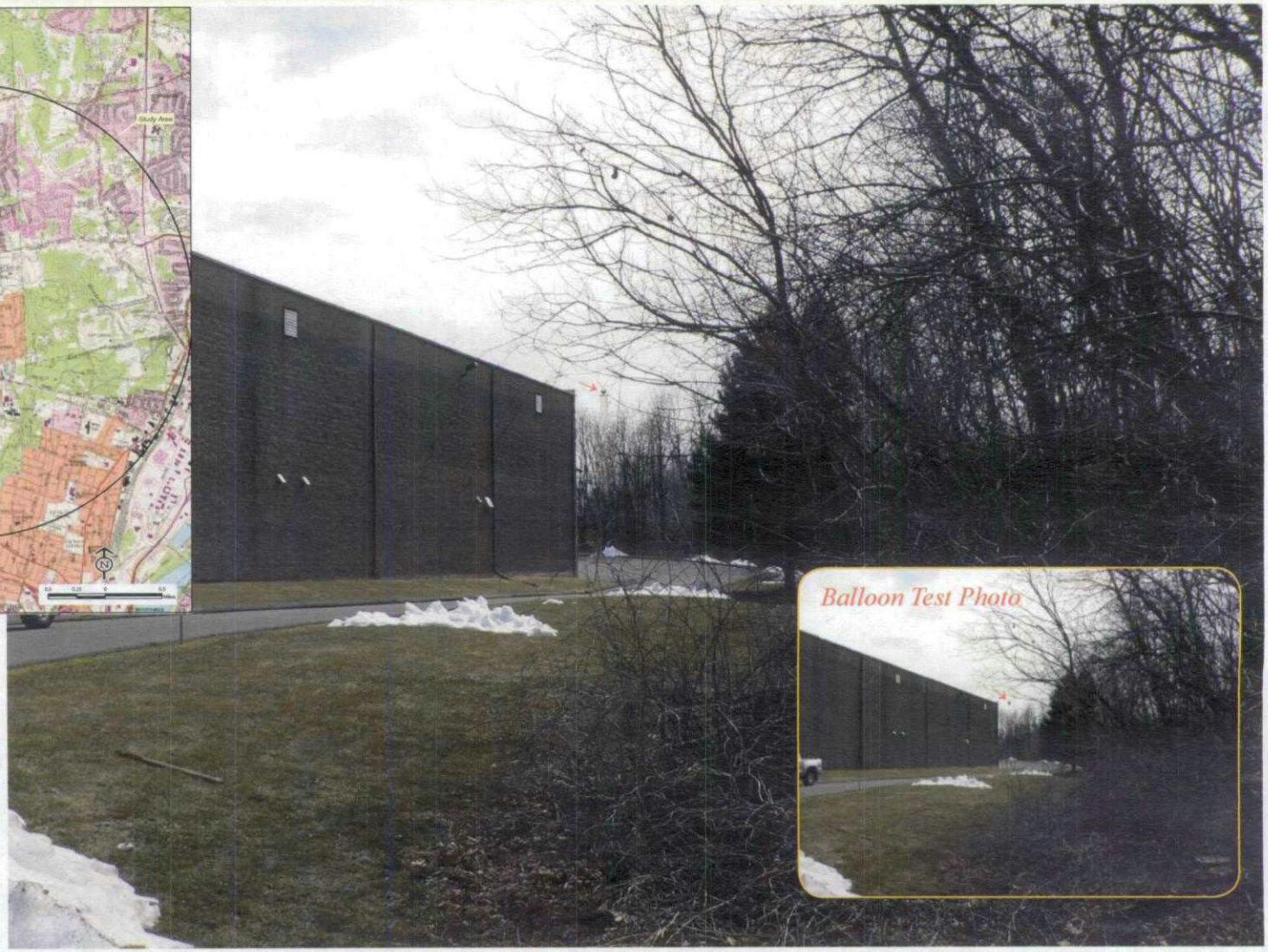



**PHOTO TAKEN FROM BRITTON DRIVE, LOOKING SOUTH - BALLOON IS VISIBLE THROUGH TREES**

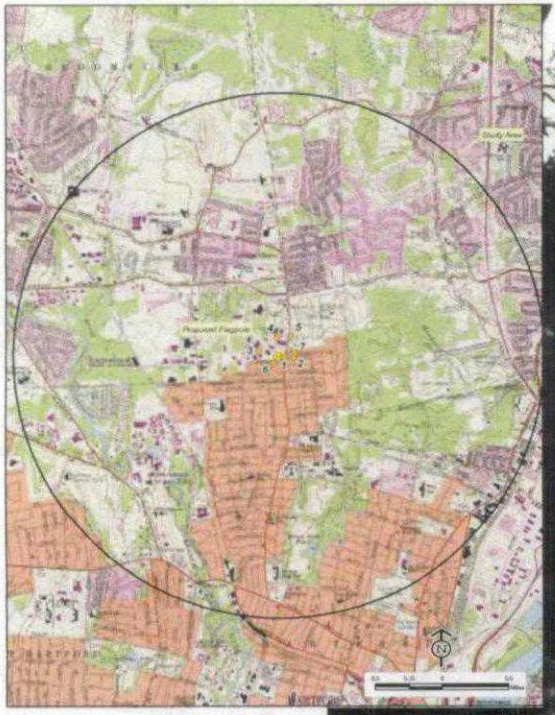
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.14 MILE +/-

Vanasse Hangen Brustlin, Inc.

ctmiddal\proj\41240.19\graphics\figures\41240.19_sims.indd

# Photographic Documentation and Simulation *View 5*

Town of
**Bloomfield**
Connecticut



811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation

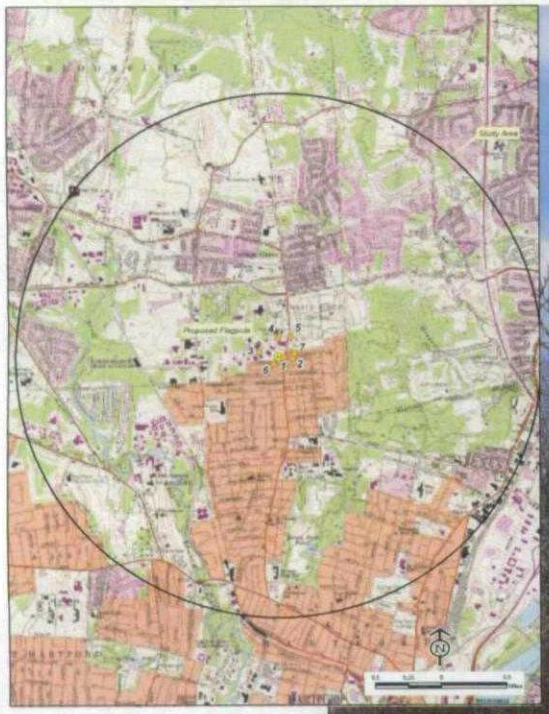

**PHOTO TAKEN FROM BLUE HILLS AVENUE NORTH OF BRITTON DRIVE, LOOKING SOUTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.17 MILE +/-

Vanasse Hangen Brustlin, Inc.

# Photographic Documentation and Simulation *View 6*

Town of
**Bloomfield**
Connecticut



811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation


**PHOTO TAKEN FROM HUBBARD STREET ADJACENT TO HOUSE #3, LOOKING NORTHEAST - BALLOON IS VISIBLE THROUGH TREES**

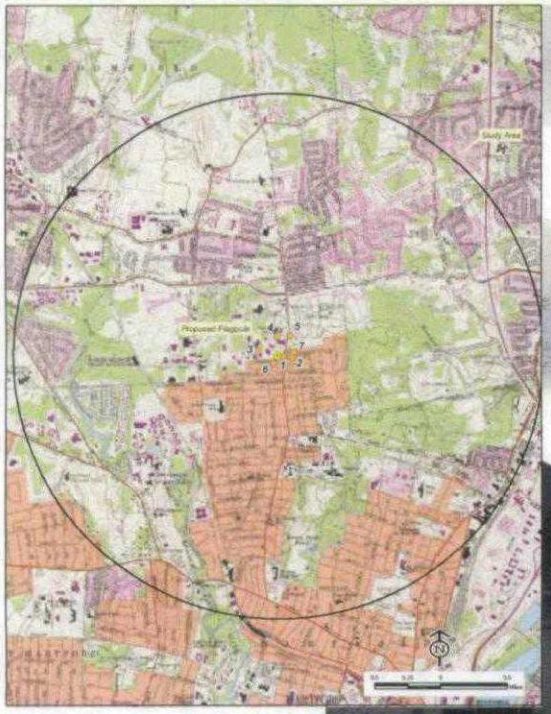
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 400 FEET +/-

verizon wireless

VHB Vanasse Hangen Brustlin, Inc.

# Photographic Documentation and Simulation *View 7*

Town of
**Bloomfield**
Connecticut



811 Blue Hills Avenue
Bloomfield, Connecticut

Flagpole installation

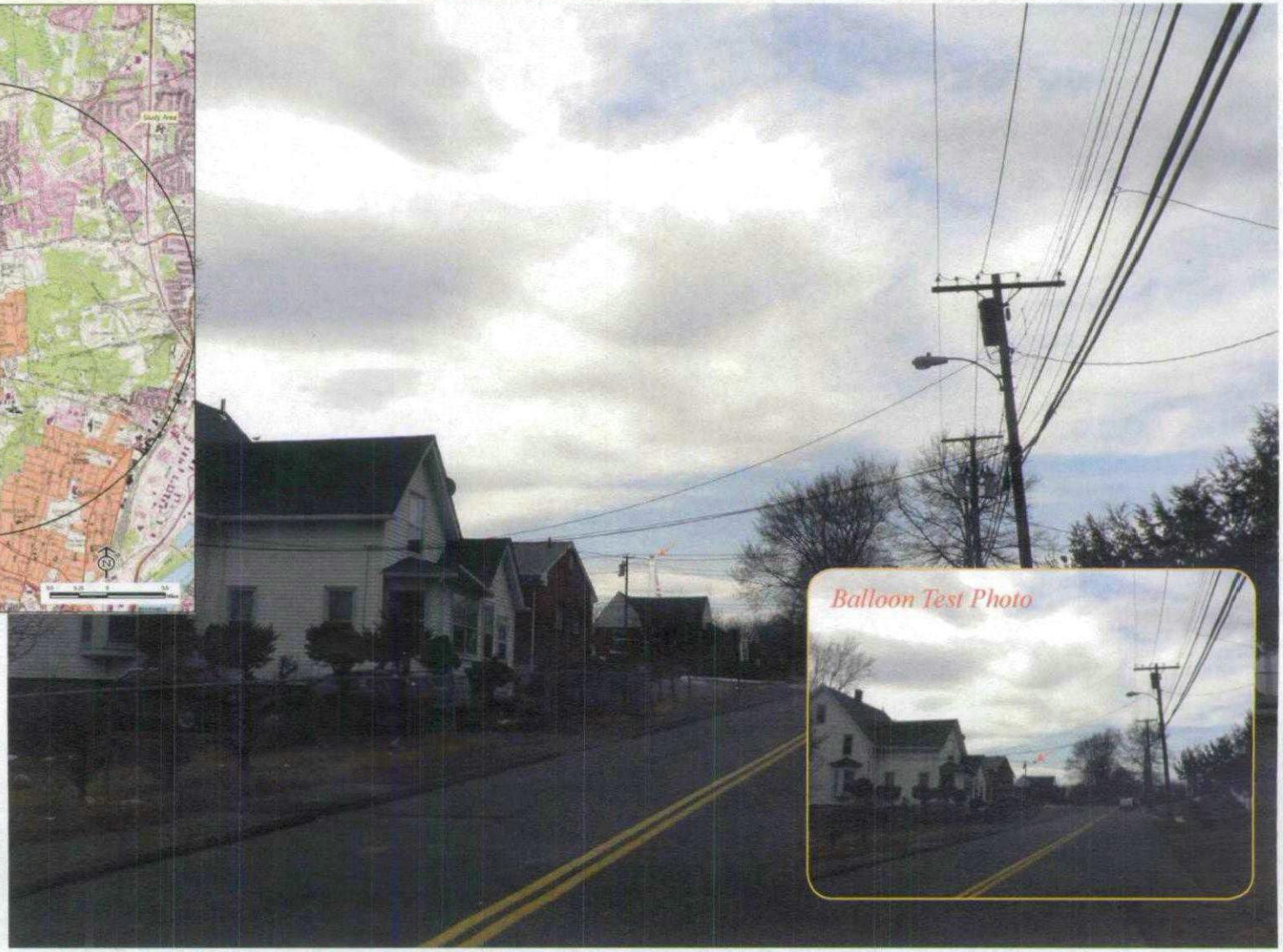



**PHOTO TAKEN FROM ELIZABETH AVENUE EAST OF BLUE HILLS AVENUE, LOOKING SOUTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.12 MILE +/-

verizon wireless

Vanasse Hangen Brustlin, Inc.

ctmiddlefprojs\41240.19\graphics\figures\41240.19_sims.indd

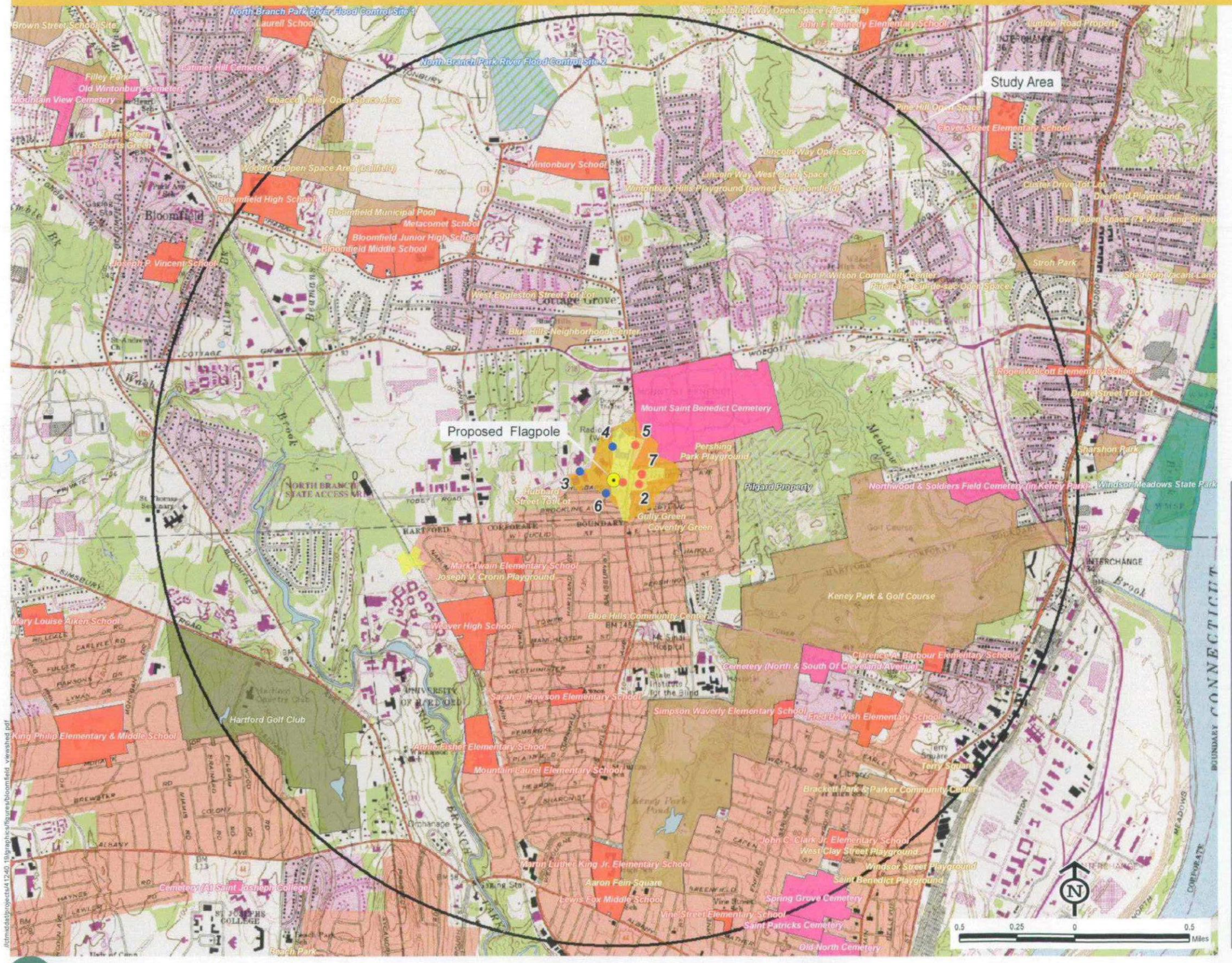
# Attachment B

# Viewshed Map

# Viewshed Map

## Topography and Forest Cover as Constraints

Town of
Bloomfield
Connecticut



# Proposed Verizon Wireless Telecommunications Facility
## Bloomfield Blue Hills
## 811 Blue Hills Avenue
## Bloomfield, Connecticut

NOTE:
- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 110 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 2000 digital orthophotos with 1-meter pixel resolution; digitized by VHB, 2007
- Base map comprised of Hartford North USGS Quadrangle Map
- Protected properties data layer provided CTDEP, 2003
- Scenic Roads layer derived from available State and Local listings.

Map Compiled April 2007

### Legend

⊙ Proposed Flagpole Location (Includes areas of visibility approximately 500 feet around facility)

Photographs - March 28, 2007
- ● Balloon visible above trees
- ● Balloon visible through trees

🟨 Year Round Visibility (Approximately 33 Acres)

🟧 Anticipated Seasonal Visibility (Approximately 44 Acres)

Protected Properties (Municipal)
- 🟪 Cemetery
- ▨ Preservation
- 🟨 Conservation
- 🟫 Existing Preserved Open Space
- 🟩 Recreation
- 🟫 General Recreation
- 🟥 School
- ▨ Uncategorized

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

★ DEP Boat Launches

— Scenic Road (State and Local)

— Town Line

▨ Protected Properties (Federal)

VHB Vanasse Hangen Brustlin, Inc.
Transportation | Land Development | Environmental Services