

*Proposed Wireless
Telecommunications Facility*

CT54XC768

186 Black Rock Turnpike
Redding, Connecticut

Prepared for



Prepared by

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October 2006

Visual Resource Evaluation

Sprint PCS seeks approval from the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need to construct a telecommunications "Facility" on property located at 186 Black Rock Turnpike (Route 58) in Redding, Connecticut ("host property"). This "Visual Resource Evaluation" was conducted to approximate the visibility of the proposed Facility within a two-mile radius ("Study Area").

Project Introduction

Development of the proposed Facility would include replacing an existing 75-foot tall self-supporting lattice tower with a 120-foot tall steel monopole. Associated ground equipment would be located within a fenced enclosure at the base of the tower structure. The proposed project area (the "Site") is located at approximately 655 feet above mean Sea level (AMSL). Access to the Site compound would be provided via an existing parking area located on the host property.

Site Description and Setting

The host property is currently occupied by the Redding Ridge Firehouse, an existing driveway/parking area and the 75-foot tall lattice tower (see Photolog Documentation map contained in Attachment A). The proposed monopole would be located approximately 15 feet east of the existing tower structure. Land use within the general vicinity of the host property is mainly comprised of low-density, residential parcels. Portions of Route 58 and Route 107 are contained within the Study Area. In total, the Study Area contains roughly 50 linear miles of vehicular roadways.

The topography in the Study Area is generally characterized by gently rolling hills that range in ground elevation from approximately 350 feet AMSL along the banks of the Aspetuck River east of Valley Road to approximately 800 feet AMSL atop Sunset Hill to the north. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species interspersed with stands of mature evergreens. The tree canopy occupies approximately 7,023 acres of the 8,042-acre study area (87%). 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. In addition, the Study Area features approximately 29 acres of surface water.

METHODOLOGY

To estimate the visibility associated with a 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 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 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 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 is determined in the field using a hand-held infra-red laser range finder. The average tree canopy height is incorporated into the final viewshed map; in this case, 65 feet was identified as the average tree canopy height. 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. Lastly, this analysis was conducted in 30-foot increments from 120 feet down to 30 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 above the tree canopy 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 parks, forests, recreational areas, dedicated open space and other categories. This layer is useful in identifying potential visual impacts to any sensitive receptors located within the Study Area. In addition, based on a review of available data published by the Connecticut Department of Transportation and discussions with town staff in Redding, it was determined that there are several locally-designated scenic roadways located within the Study Area. These include Cross Highway, John Read Road, Old Hattertown Road, Pine Tree Road, Poverty Hollow Road and Sherman Turnpike.

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 October 17, 2006 Vanasse Hangen Brustlin Inc., (VHB) conducted a balloon float at the proposed site location to evaluate the potential viewshed within the Study Area. The balloon float consisted of raising and maintaining an approximate four-foot diameter, helium-filled weather balloon at the proposed Site location at 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 overcast. The temperature was approximately 55 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 several 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 Black Rock Turnpike (Route 58) at Silver Smith Lane, looking southeast.
2. View from Black Rock Turnpike (Route 58) south of host property, looking northeast.

3. View from Black Rock Turnpike (Route 58) across from Redding Ridge Cemetery, looking northeast.
4. View from Black Rock Turnpike (Route 58) adjacent to house #161, looking north.

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." 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 four 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 120-foot tall replacement structure would be visible above the tree canopy comprise only 6 acres, or less than one half of one percent of the 8,042 acre Study Area. As depicted on the viewshed map (contained in Attachment B), the majority of the visibility associated with the proposed Facility occurs along Black Rock Turnpike within the immediate vicinity of the host property (as was photo documented during the balloon float). Areas of year-round visibility along Black Rock Turnpike extend approximately 0.18 mile to the south of the proposed Facility and roughly 200 feet to the north. Generally, these areas currently feature views of the existing 75-foot tall lattice tower located on the host property. Several small areas of visibility on private properties located to the north of the proposed Facility are also depicted on the viewshed. No visibility is anticipated from any of the locally-designated scenic roads in Redding. The limited visibility associated with the proposed monopole is largely attributed to the

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

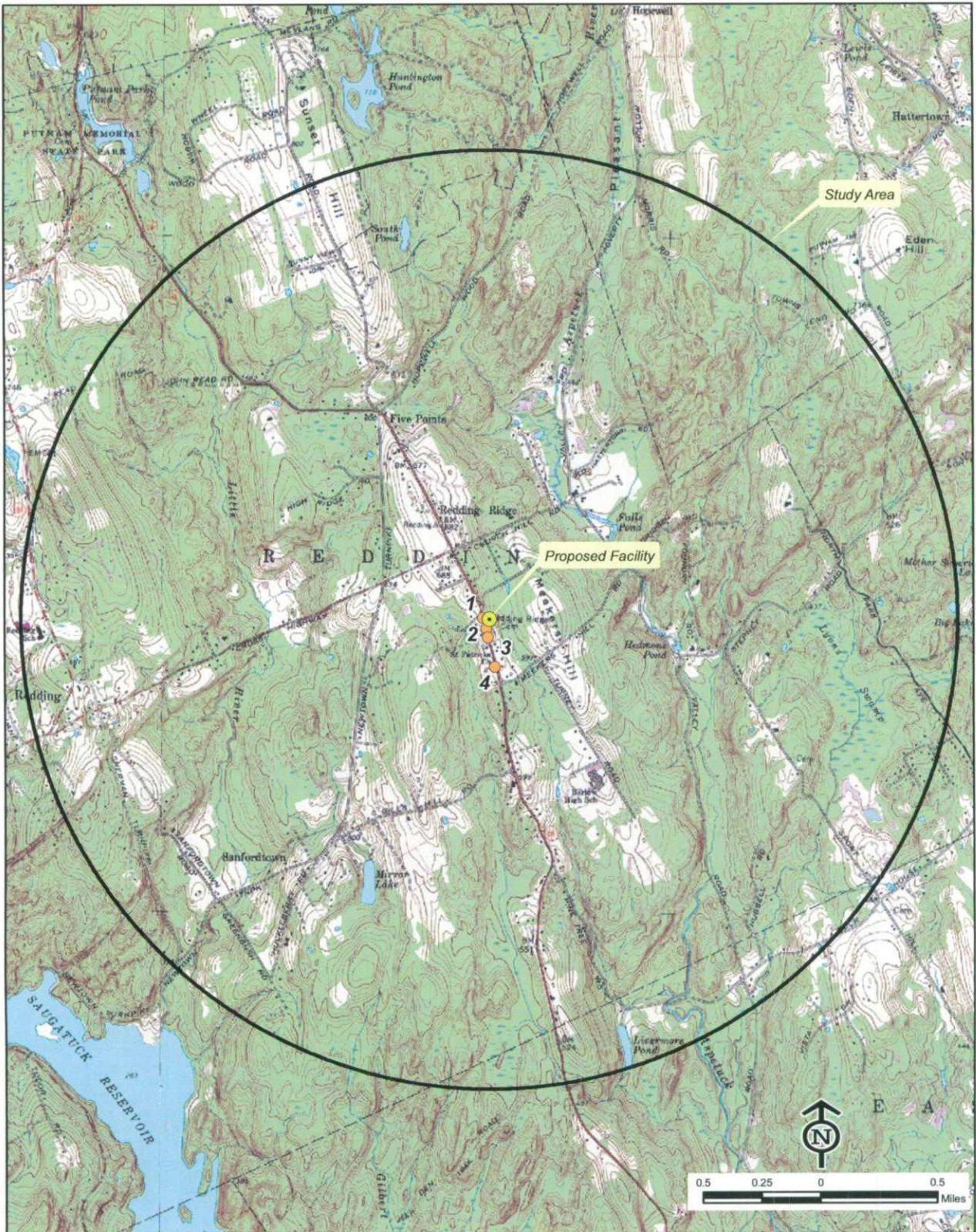
abundance of mature woodlands and the rolling topography found throughout the Study Area. VHB estimates that approximately 9 residences within the Study Area would have at least partial year round views of the proposed Facility. The viewshed map also depicts several additional areas where seasonal (i.e. during "leaf off" conditions) views through the trees are anticipated. These areas comprise approximately 51 additional acres and are also limited to the immediate vicinity of the host property; mainly along and adjacent to the Black Rock Turnpike roadway corridor. Generally, areas of seasonal visibility are expected to extend approximately 0.14 mile north of the host property and roughly 0.28 mile to the south. In total, VHB estimates that approximately 12 residences within the Study Area would have limited seasonal views of the proposed Facility from their respective properties. Many of these properties currently include views of the existing Facility.

Attachment A

Photolog Documentation Map, Balloon Float Photographs and Photographic Simulations

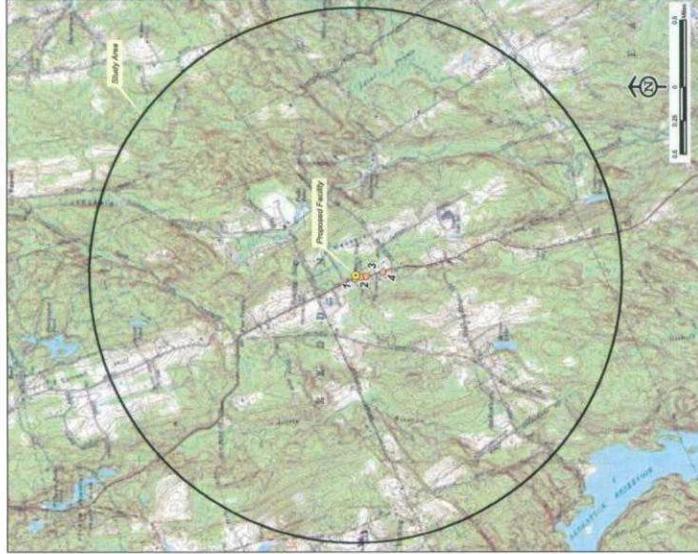
Photolog Documentation

Town of
Redding
Connecticut



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Photographic Documentation and Simulation View 1



186 Black Rock Turnpike
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Monopole installation

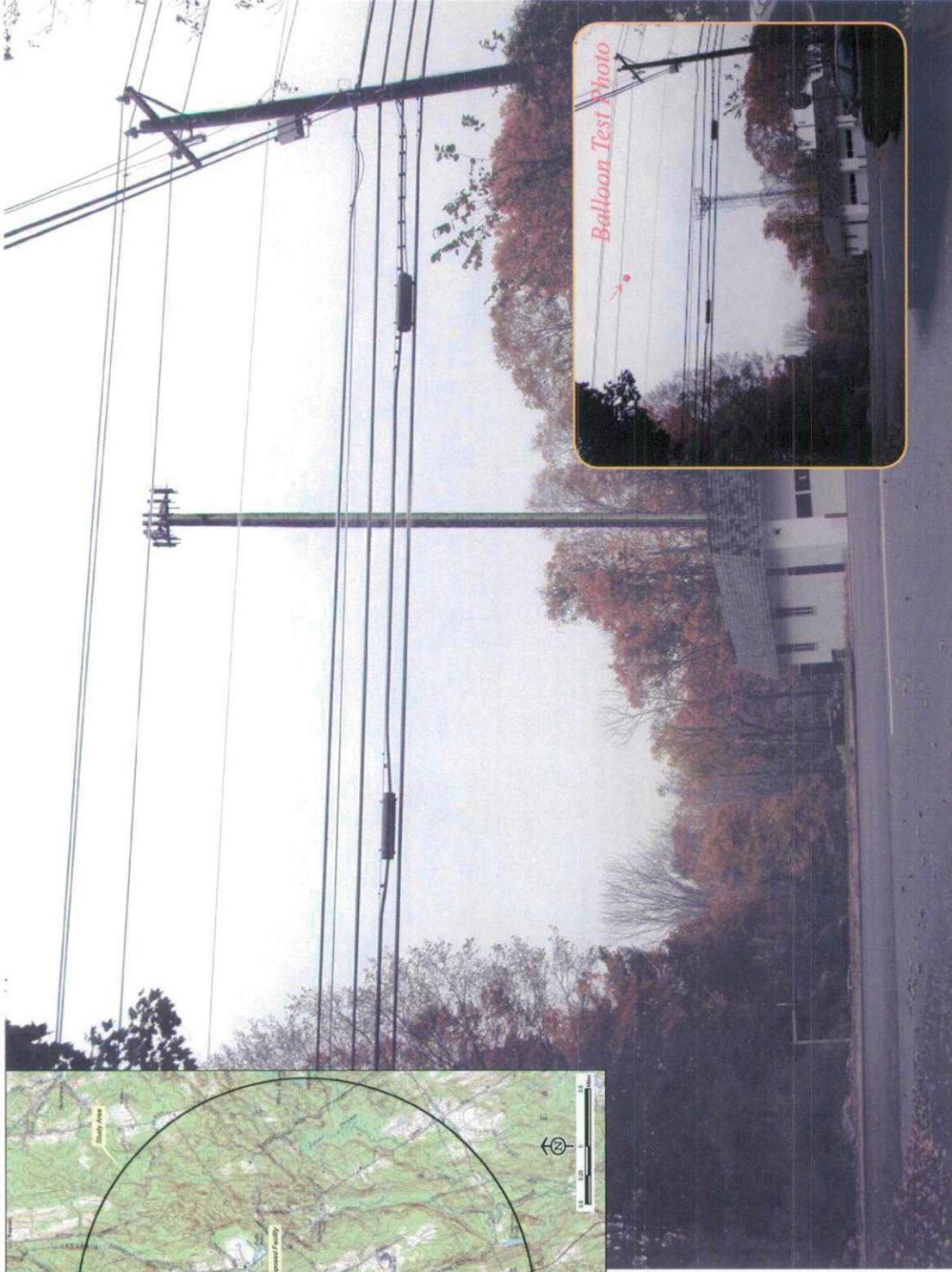
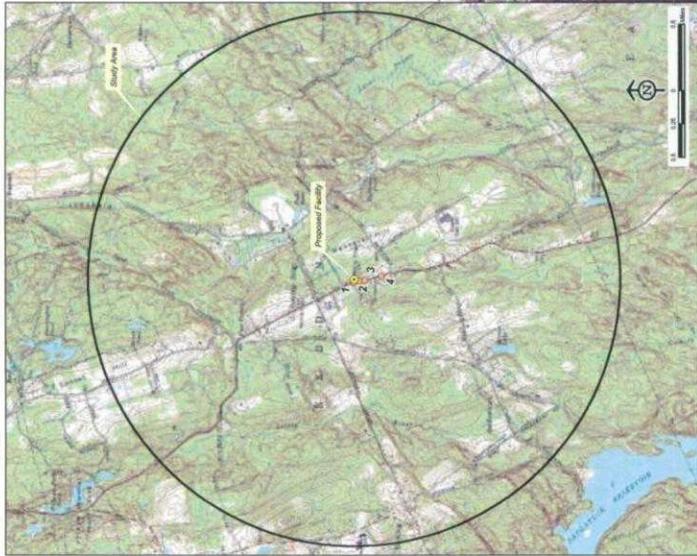


PHOTO TAKEN FROM BLACK ROCK TURNPIKE (ROUTE 58) AT SILVERSMITH LANE, LOOKING SOUTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 180 FEET +/-

Photographic Documentation and Simulation View 2



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Monopole installation



PHOTO TAKEN FROM BLACK ROCK TURNPIKE (ROUTE 58) SOUTH OF HOST PROPERTY, LOOKING NORTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 235 FEET +/-

Photographic Documentation and Simulation View 3



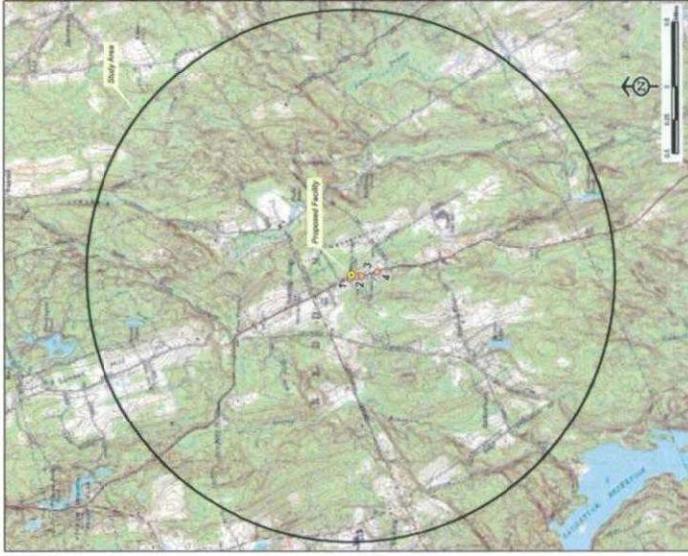
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Monopole installation



PHOTO TAKEN FROM BLACK ROCK TURNPIKE (ROUTE 58) ACROSS FROM REDDING RIDGE CEMETERY, LOOKING NORTHEAST
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 420 FEET +/-

Photographic Documentation and Simulation View 4



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Monopole installation

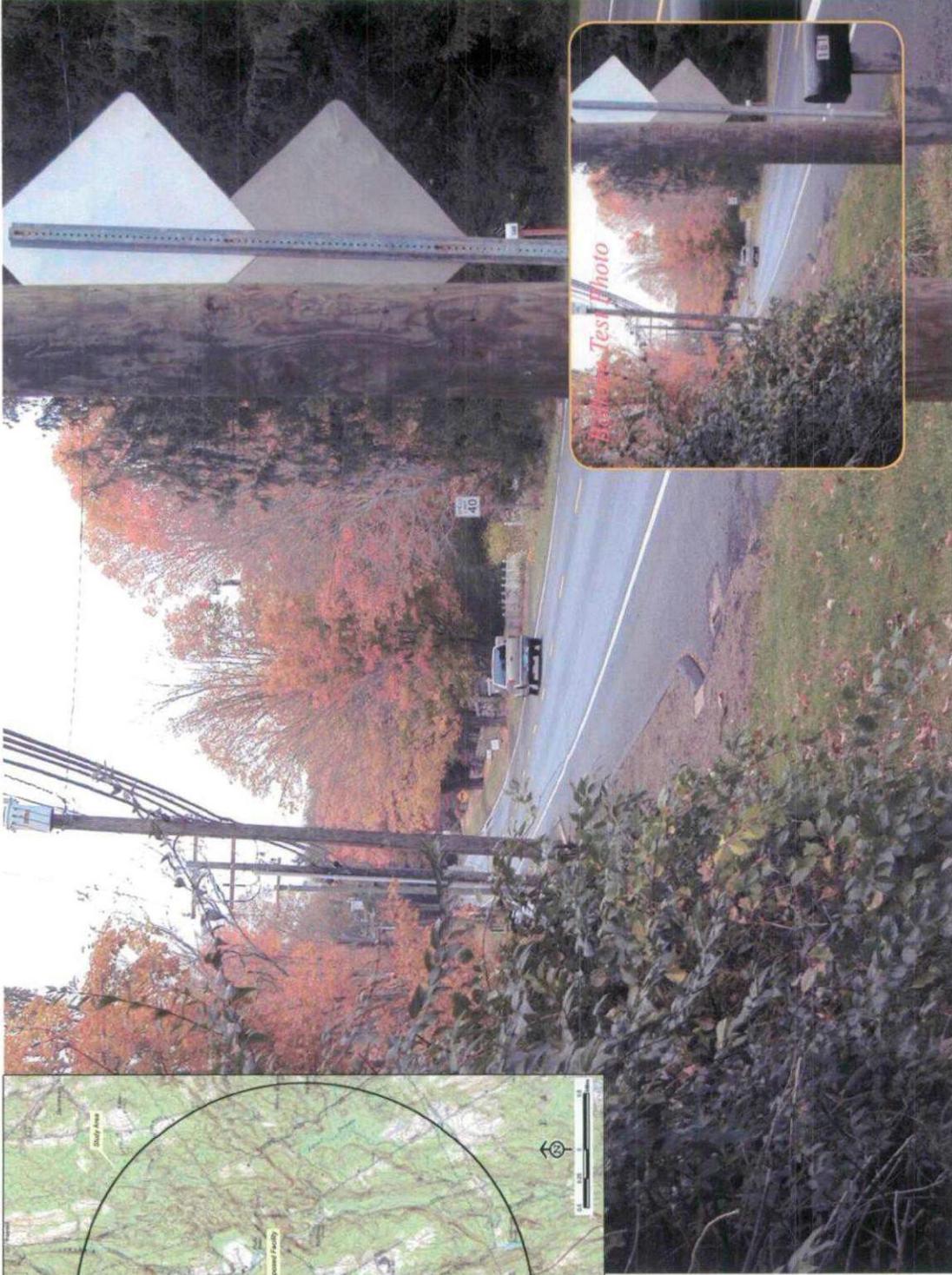


PHOTO TAKEN FROM BLACK ROCK TURNPIKE (ROUTE 58) ADJACENT TO HOUSE #161, LOOKING NORTH
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 1,000 FEET +/-

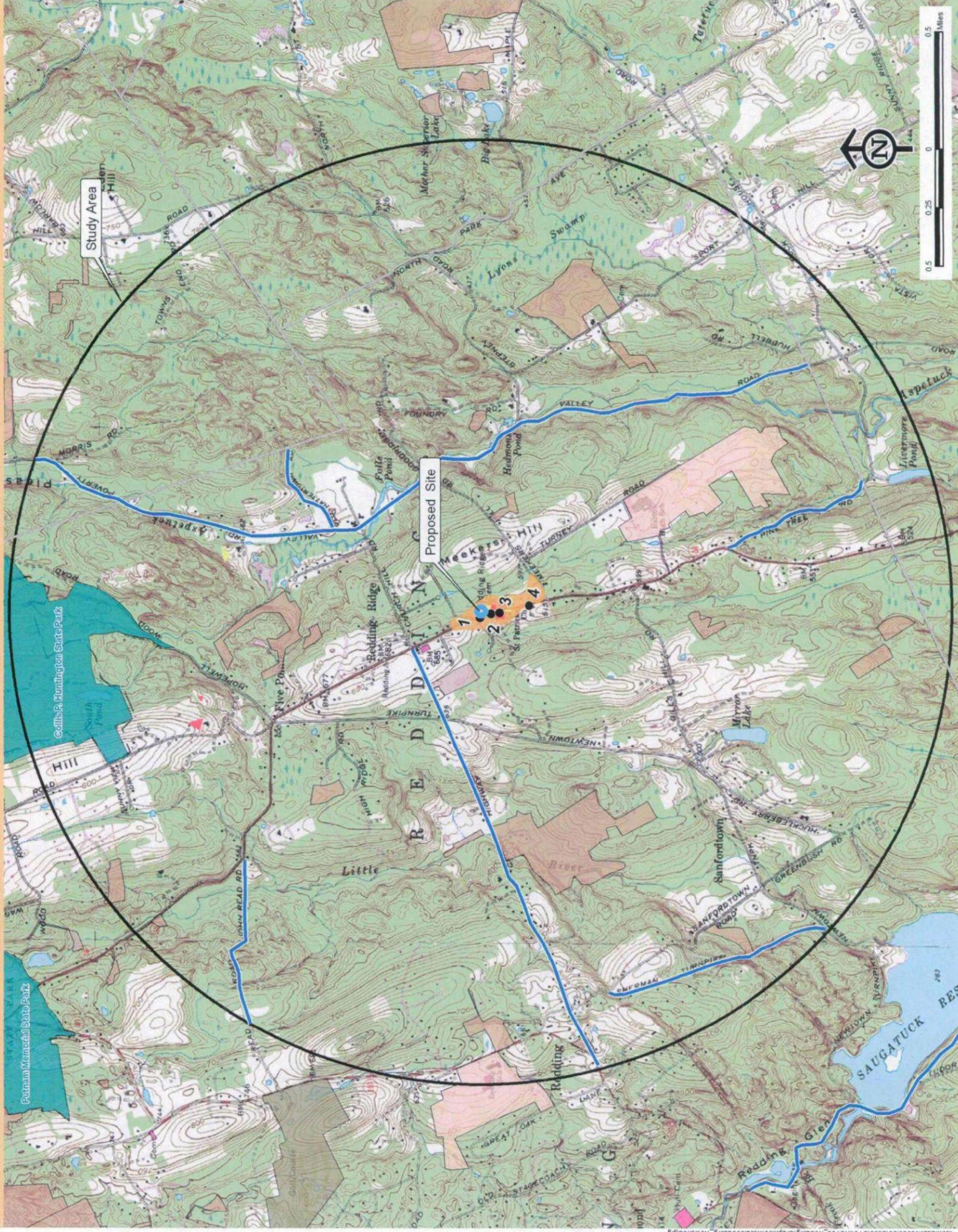
Attachment B

Viewshed Map

Viewshed Map

Topography and Forest Cover as Constraints

Town of
Redding
Connecticut



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NOTE:

- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 120 feet.
- Existing tree canopy height estimated at 65 feet.

DATA SOURCES:

- 7.5 minute digital elevation model (DEM) with 30 meter resolution produced by the USGS, 1982
- Forest areas derived from 1990 and 2004 digital orthophotos with 1-meter and 0.5-foot pixel resolution, respectively; digitized by VHB, 2006
- Base map comprised of Bethel and Bostford USGS Quadrangle Maps
- Protected properties data layer provided CTDEP, 2003
- Scenic Roads layer derived from available State and Local listings.

Map Compiled October 2006

