

ATTACHMENT 4C

Proposed Wireless Telecommunications Facility

Branford
171 Short Beach Road
Branford, Connecticut

Prepared for



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

September 2010

Visual Resource Evaluation

North Atlantic 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”) on property located at 171 Short Beach Road (identified herein as the “host property”), in the Town of Branford, Connecticut. This Visual Resource Evaluation was conducted to evaluate the visibility of the Facility within a two-mile radius of the proposed Site location (“Study Area”). The western portion of Study Area includes land located within the neighboring municipality of East Haven, Connecticut. Attachment A contains a map that depicts the proposed location of the Facility and the limits of the Study Area.

Project Introduction

The proposed Facility includes the installation of a 120-foot tall monopole tower with associated ground equipment to be located at its base. Both the monopole and ground equipment would be situated within a fence-enclosed compound. The proposed Facility would be located at a ground elevation of approximately 58 feet Above Mean Sea Level (AMSL). Access to the Facility would be provided via the existing host property driveway located off Short Beach Road. A photograph of the proposed project area is included in Attachment A.

Site Description and Setting

Identified in the Town of Branford land records as Map C10/Lot 002/Block 00009, the host property consists of approximately 0.87 acres of land and is currently occupied by a 7,000 square foot, single story commercial building and associated parking area. Land use within the general vicinity of the host property is mainly comprised of medium-density residential development and several light industrial establishments. Segments of US Route 1, Route 100, Route 142, Route 146 and Interstate 95 are contained within the Study Area. In total, the Study Area features approximately 121 linear miles of roadways.

The topography within the Study Area is generally characterized by gently rolling hills with ground elevations that range from sea level to approximately 150 feet AMSL. The Study Area contains approximately 2,853 acres of surface water, including portions of Long Island Sound, Lake Saltonstall, the Branford River and the Farm River. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species that occupy approximately 2,210 acres of the 8,042-acre study area (27%). The average tree canopy height throughout the Study Area was estimated to be approximately 50 feet.



METHODOLOGY

To evaluate the visibility associated with the proposed Facility, VHB used the combination of a predictive computer model and in-field analysis. The predictive model provided a

preliminary assessment of potential visibility throughout the entire study area, including private property and other areas inaccessible for direct observations. A “balloon float” and Study Area reconnaissance were subsequently conducted for field verification to back-check the initial computer modeling results, obtain location and height representations, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

Visibility Analysis

VHB uses ArcGIS® Spatial Analyst, a computer modeling tool developed by Environmental Systems Research Institute, Inc., to calculate the areas from which at least the top of the proposed Facility is expected to be visible. Project- and Study Area-specific data were incorporated into the computer model, including Facility height, its ground elevation, underlying and surrounding topography and existing vegetation. Information used in the model included Connecticut LiDAR¹-based digital elevation data and a digital forest (or tree canopy) layer developed for the Study Area. The LiDAR-based Digital Elevation Model (DEM) represents ten-foot spatial resolution elevation 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. The LiDAR-based data was edited in 2007 made available by the University of Connecticut through its Center for Land Use Education and Research (CLEAR). To create the forest layer, mature trees and woodland areas depicted on aerial photographs (ranging in dates from 2004 to 2008) were manually digitized (hand traced) in ArcGIS®, creating a geographic data layer for inclusion in the computer model. The black and white, digital aerial photographs, obtained from the Connecticut Department of Transportation, were flown in the spring of 2004 and selected for use in this analysis because of their image quality and depiction of pre-leaf emergence (i.e., “leaf-off”) conditions. These photographs are half-foot pixel resolution. The more recent aerial photographs (2006 and 2008) were overlaid and evaluated to identify any new development resulting in the removal of trees.

Once the specific data layers were entered, the ArcGIS® Spatial Analyst Viewshed tool was applied to achieve an estimate of locations where the proposed Facility could be visible. First, only topography was used as a possible visual constraint; the tree canopy was omitted to evaluate potential visibility with no intervening vegetative screening. The initial omission of this data layer resulted in an excessively conservative prediction, but it provided an opportunity to identify areas within potential direct lines of sight of the Facility.

The forest data layer was then overlaid and built into the DEM, using a conservative average tree canopy height of 40 feet, to establish a baseline assessment of intervening vegetation. The resultant preliminary viewshed map was used during the in-field activities (described further below) to compare the outcome of the initial computer modeling with observations of

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.

the balloon float to identify deviations. Information obtained from the field reconnaissance was ultimately incorporated into the model to refine the viewshed map.

The average tree canopy height was also refined based on information collected in the field using a combination of a hand-held laser range finder, clinometer and comparative observations. The revised average tree canopy height, in this case 50 feet, was then incorporated into the model and the results displayed on the viewshed map. The forested areas were overlaid on the DEM with a height of 50 feet added to the base elevation and the visibility from within the Study Area calculated.

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.

Also included in the model and viewshed map are data layers, obtained from the Connecticut State Department of Environmental Protection (CTDEP), which depicts various land and water resources such as state parks and forests, trails, recreational facilities, protected municipal and private open space, schools, CTDEP boat launches, and other land use categories. In addition, VHB also obtained digital GIS data from the Town of Branford that depicts portions of several Town hiking trails located within the Study Area. Lastly, based on a review of information published by both the State of Connecticut Department of Transportation and the Town of Branford, it was determined that the portion of Route 146 that traverses the Study Area is a state-designated scenic roadway.

Balloon Float and Study Area Reconnaissance

Vanasse Hangen Brustlin Inc., (VHB) conducted balloon floats at the proposed Facility on two separate occasions, including July 20, 2010 and August 13, 2010 to further evaluate the potential viewshed within the Study Area. The balloon floats consisted of raising and maintaining helium-filled balloons at the proposed site location at a height of 120 feet. A red, approximate four-foot diameter balloon was used for the July 20th float and a yellow, 5.5-foot diameter balloon was used for the August 13th float. During the July 20, 2010 balloon float, VHB staff conducted a drive-by reconnaissance along the public roads located within the Study Area to evaluate the results of the preliminary viewshed map, inventory where the balloon was, and was not, visible and to obtain photographic documentation. Weather conditions during the July 20th balloon float included temperatures of approximately 85 degrees Fahrenheit, mostly sunny skies and calm winds. The August 13, 2010 balloon float was conducted to further assess potential visibility from Long Island Sound. During the

August 13th balloon float, the temperature was approximately 90 degrees Fahrenheit with calm wind conditions and partly sunny skies.

Photographic Documentation

During the in-field activities, the balloon was photographed from a number of different vantage points to document the actual view towards the proposed Facility. Several locations where the balloon was not visible are also included to provide documentation from representative areas within the Study Area. The locations of the photos are described below:

View	Location	Orientation	Dist. To Site	Visibility
1	Adjacent to #156 Short Beach Road	Southwest	± 0.06-Mile	Year-Round
2	Adjacent to #180 Short Beach Road	North	± 0.09-Mile	Year-Round
3	Adjacent to #505 Shore Drive	Northeast	± 0.13-Mile	Year-Round
4	Adjacent to #1 Lanphiers Cove Road	North	± 0.17-Mile	Year-Round
5	Adjacent to #18 Lanphiers Cove Road	Northwest	± 0.20-Mile	Year-Round
6	Adjacent to #4 Brocketts Lane	West	± 0.12-Mile	Year-Round
7	Double Beach Road	North	± 0.36-Mile	Year-Round
8	Harbor Street Water Access	Northwest	± 0.70-Mile	Year-Round
9	Parker Memorial Park	West	± 0.52-Mile	Year-Round
10	Adjacent to #230 Harbor Street	Southwest	± 0.91-Mile	Year-Round
11	Block Island Road	West	± 1.34-Mile	Year-Round
12	Adjacent to #25 Sunset Beach Road	Northwest	± 1.35-Mile	Year-Round
13	Adjacent to #72 Spinnaker Run	Northwest	± 1.19-Mile	Year-Round
14	Adjacent to #186 Clark Avenue	Northeast	± 0.99-Mile	Non-Visible
15	Adjacent to #244 Shore Drive	Northeast	± 0.56-Mile	Non-Visible
16	Adjacent to #17 Nicole Road	Southwest	± 0.39-Mile	Non-Visible
17	Long Island Sound	Northwest	± 0.66-Mile	Year-Round
18	Long Island Sound	Northwest	± 0.65-Mile	Year-Round
19	Long Island Sound	Northwest	± 0.93-Mile	Year-Round
20	Long Island Sound	Northwest	± 1.17-Mile	Year-Round
21	Long Island Sound	Northwest	± 1.64-Mile	Year-Round
22	Long Island Sound	Northeast	± 1.33-Mile	Year-Round

Photographs of the balloon from the view points listed above were taken with a Nikon D-80 digital camera body and Nikon 18 to 135 mm zoom lens. For the purposes of this report, the lens was set to 50mm. "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."²

² Warren, Bruce. *Photography*, West Publishing Company, Eagan, MN, c. 1993, (page 70).

The locations of the photographic points were recorded in the field using a GPS-enabled tablet computer and subsequently plotted on the maps contained in the attachments to this document.

Photographic Simulation

Photographic simulations were generated for the representative locations where the balloon was visible during the in-field activities. The photographic simulations portray a scaled rendering of the proposed Facility from these locations, with four wireless service providers represented. Using field data, site plan information and 3-dimension (3D) modeling software, a spatially referenced model of the site area was generated. Geographic coordinates (latitude and longitude) were collected in the field for all of the photograph locations via GPS and later used to generate 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. The balloon was included in the photographs to provide a visual marker and to cross-reference the height and proportions of the proposed Facility. A photolog map and the simulations are contained in Attachment A.

CONCLUSIONS

Based on this analysis, areas from where the proposed 120-foot tall Facility would be visible above the tree canopy comprise approximately 2,025 acres. As depicted on the attached viewshed map, the majority of year-round visibility would occur along Short Beach Road within the immediate vicinity of the host property (generally within 0.25-mile) and over open water on Long Island Sound (Views 17 through 22). Year-round visibility on Long Island Sound accounts for approximately 2,000 acres of the 2,025-acre total (99%). Year-round views are also anticipated from select portions of Block Island Road, Brocketts Lane, Double Beach Road, Harbor Street, Lanphiers Cove Road, Shore Drive, Spinnaker Run, Sunset Beach Road and from the immediate shoreline within the general vicinity of Etzal Road, Ferry Lane, Little Bay Road, River Road, Turtle Bay Drive and Wakefield Road. As evidenced by the attached photographic documentation, photographic simulations and viewshed map, potential views from these areas would generally be limited both in terms of their overall extent and degree to which the proposed Facility would be visible above the surrounding tree canopy. VHB estimates that at least partial year-round views of the proposed Facility may be achieved from portions of approximately 54 residential properties located within the Study Area. The locations of these properties are identified in the table provided below.

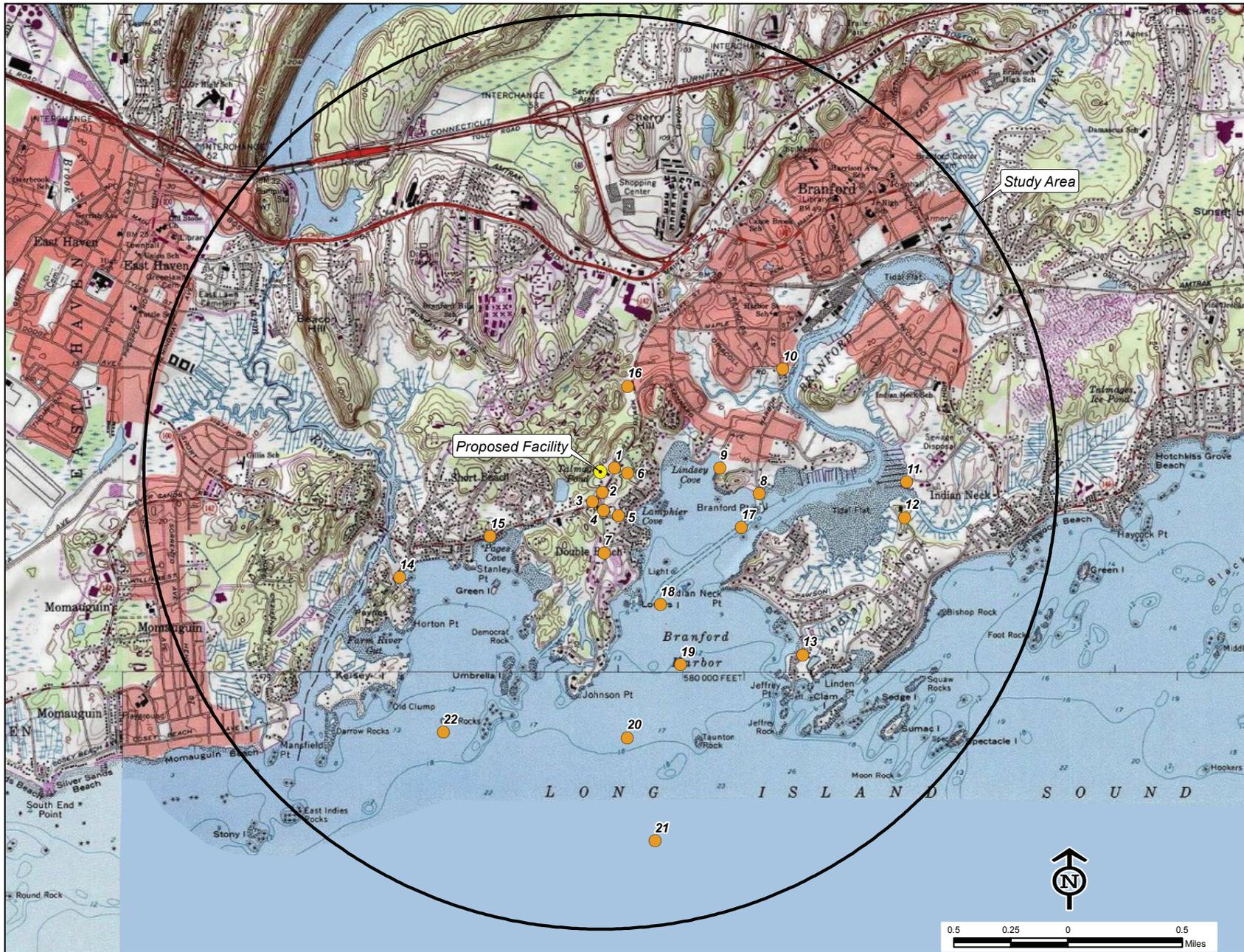
The viewshed map also depicts several additional areas where seasonal (i.e. during "leaf off" conditions) views are anticipated. These areas comprise approximately 19 additional acres and are located within the immediate vicinity of the proposed Facility, including select portions of Brocketts Lane, Double Beach Road, Short Beach Road, Shore Drive, Howard Avenue and Lanphiers Cove Road. VHB estimates that limited seasonal views of the proposed Facility may be achieved from portions of approximately 29 additional residential properties within the Study Area, the locations of which are summarized in the table below.

Location	Number of Residential Properties With Potential Year-Round Visibility	Number of Residential Properties With Potential Seasonal Visibility
Brocketts Lane	1	3
Double Beach Road	1	1
Etzal Road	5	-
Ferry Lane	2	-
Harbor Street	2	-
Howard Avenue	-	8
Lanphiers Cove Road	3	5
Little Bay Road	4	-
River Road	4	-
Shore Drive	-	2
Short Beach Road	11	7
Spinnaker Road	6	-
Sunset Beach Road	9	-
Turtle Bay Drive	5	3
Wakefield Road	1	-
TOTAL:	54	29

Attachment A

Study Area Map, Project Area Photograph, Balloon Float Photographs, and Photographic Simulations

PHOTOLOG MAP



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PROPOSED PROJECT AREA

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	ADJACENT TO #156 SHORT BEACH ROAD	SOUTHWEST	0.06 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	ADJACENT TO #156 SHORT BEACH ROAD	SOUTHWEST	0.06 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	ADJACENT TO #180 SHORT BEACH ROAD	NORTH	0.09 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	ADJACENT TO #180 SHORT BEACH ROAD	NORTH	0.09 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	ADJACENT TO #505 SHORE DRIVE	NORTHEAST	0.13 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	ADJACENT TO #505 SHORE DRIVE	NORTHEAST	0.13 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	ADJACENT TO #1 LANPHIERS COVE ROAD	NORTH	0.17 MILE +/-	YEAR-ROUND

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PHOTOGRAPHIC SIMULATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	ADJACENT TO #1 LANPHIERS COVE ROAD	NORTH	0.17 MILE +/-	YEAR-ROUND

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PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	ADJACENT #18 LANPHIERS COVE ROAD	NORTHWEST	0.20 MILE +/-	YEAR-ROUND



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	ADJACENT #18 LANPHIERS COVE ROAD	NORTHWEST	0.20 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	ADJACENT TO #4 BROCKETTS LANE	WEST	0.12 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	ADJACENT TO #4 BROCKETTS LANE	WEST	0.12 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	DOUBLE BEACH ROAD	NORTH	0.36 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	DOUBLE BEACH ROAD	NORTH	0.36 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	HARBOR STREET WATER ACCESS	NORTHWEST	0.70 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	HARBOR STREET WATER ACCESS	NORTHWEST	0.70 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	PARKER MEMORIAL PARK	WEST	0.52 MILE +/-	YEAR-ROUND



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	PARKER MEMORIAL PARK	WEST	0.52 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	ADJACENT TO #230 HARBOR STREET	SOUTHWEST	0.91 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	ADJACENT TO #230 HARBOR STREET	SOUTHWEST	0.91 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	BLOCK ISLAND ROAD	WEST	1.34 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	BLOCK ISLAND ROAD	WEST	1.34 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	ADJACENT TO #25 SUNSET BEACH ROAD	NORTHWEST	1.35 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	ADJACENT TO #25 SUNSET BEACH ROAD	NORTHWEST	1.35 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	ADJACENT TO #72 SPINNAKER RUN	NORTHWEST	1.19 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	ADJACENT TO #72 SPINNAKER RUN	NORTHWEST	1.19 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	ADJACENT TO #186 CLARK AVENUE	NORTHEAST	0.99 MILE +/-	NON-VISIBLE

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	ADJACENT TO #244 SHORE DRIVE	NORTHEAST	0.56 MILE +/-	NON-VISIBLE

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	ADJACENT TO #17 NICOLE ROAD	SOUTHWEST	0.39 MILE +/-	NON-VISIBLE

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PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	LONG ISLAND SOUND	NORTHWEST	0.66 MILE +/-	YEAR-ROUND

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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	LONG ISLAND SOUND	NORTHWEST	0.66 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	LONG ISLAND SOUND	NORTHWEST	0.65 MILE +/-	YEAR-ROUND



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	LONG ISLAND SOUND	NORTHWEST	0.65 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	LONG ISLAND SOUND	NORTHWEST	0.93 MILE +/-	YEAR-ROUND

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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	LONG ISLAND SOUND	NORTHWEST	0.93 MILE +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	LONG ISLAND SOUND	NORTHWEST	1.17 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	LONG ISLAND SOUND	NORTHWEST	1.17 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	LONG ISLAND SOUND	NORTHWEST	1.64 MILES +/-	YEAR-ROUND

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PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	LONG ISLAND SOUND	NORTHWEST	1.64 MILES +/-	YEAR-ROUND

PHOTOGRAPHIC DOCUMENTATION



VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	LONG ISLAND SOUND	NORTHEAST	1.33 MILES +/-	YEAR-ROUND

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PHOTOGRAPHIC SIMULATION



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VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	LONG ISLAND SOUND	NORTHEAST	1.33 MILES +/-	YEAR-ROUND

Attachment B

Viewshed Map

Viewshed Analysis
North Atlantic Towers LLC
Proposed Telecommunications Facility
Branford
171 Short Beach Road
Branford, Connecticut

NOTE:
 - Viewshed analysis conducted using ESRI's Spatial Analyst.
 - Proposed Facility height is 120 feet.
 - Existing tree canopy height estimated at 50 feet.
 - Study Area is comprised of a two-mile radius surrounding the proposed facility and includes 8,042 acres of land.

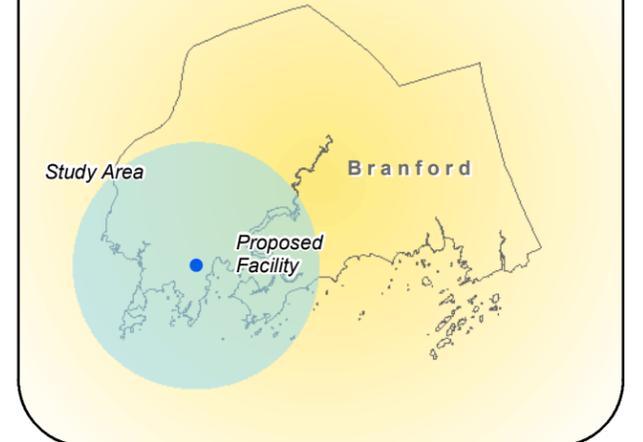
DATA SOURCES:
 - Digital elevation model (DEM) derived from Connecticut LiDAR-based Digital Elevation Data (collected in 2000) with a 10-foot spatial resolution produced by the University of Connecticut and the Center for Land Use Education and Research (CLEAR); 2007
 - Forest areas derived from 2008 digital orthophotos with 1-meter pixel resolution; digitized by VHB, 2010
 - Base map comprised of Branford (1984), New Haven (1984), and Woodmont (1971) USGS Quadrangle Maps
 - Municipal and Private Open Space data layer provided by CT DEP, 1997
 - Federal Open Space data layer provided by CT DEP, 2004
 - CT DEP Property data layer provided by CT DEP, April 2010
 - CT DEP Protected Open Space Mapping (POSM) data layer provided by CT DEP, Dec 2009
 - CT DEP boat launches data layer provided by CT DEP, Dec 2009
 - Scenic Roads layer derived from available State and Local listings

Map Compiled September, 2010

Legend

-  Proposed Tower Location
-  Balloon is not visible
-  Balloon visible above trees
-  Seasonal Visibility (Approximately 19 acres)
-  Year-Round Visibility Area (Approximately 2,025 acres)
-  Protected Municipal and Private Open Space (CT DEP, 1997)
-  Cemetery
-  Preservation
-  Conservation
-  Existing Preserved Open Space
-  Recreation
-  General Recreation
-  School
-  Uncategorized
-  CT DEP Property (CT DEP, April 2010)
-  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 Open Space Mapping (POSM) Area (CT DEP, Dec 2009)
-  Federal Open Space (CT DEP, 2004)
-  Boat Launches (CT DEP, Dec 2009)
-  Scenic Road (State and Local)
-  Branford Hiking Trails
-  Town Line

Inset Map
Town of Branford



/c:/mtdat/projects/00938_057/graphics/figures/Preliminary_Viewshed_Map_Branford.pdf





Vanasse Hangen Brustlin, Inc.

54 Tuttle Place
Middletown, Connecticut 06457
860 632-1500
FAX 860 632-7879

Memorandum

To: Lucia Chiochio, Esq.
CUDDY & FEDER LLP
445 Hamilton Avenue, 14th Floor
White Plains, New York 10601

Date: January 6, 2011

Project No.: 40938.05

From: Mike Libertine

Re: 171 Short Beach Road
Branford, Connecticut

The purpose of this memorandum and accompanying photographs/simulations is to provide you with some considerations for potential stealthing options associated with North Atlantic Towers' proposed wireless telecommunications facility at 171 Short Beach Road in Branford, Connecticut.

As currently proposed, the facility would consist of a 120-foot tall steel monopole with triangular mounts to support wireless telecommunications antennas. We understand that the Town of Branford has inquired about possible alternate design considerations that could be incorporated to help minimize potential visual effects of the facility.

The primary consideration when evaluating camouflaging or stealth techniques for these facilities is the option's context with its surrounding environment. Stealth facilities work best when they can blend in as seamlessly as possible with surrounding land uses, structures and vegetation.

The accompanying photographs depict the currently proposed design and several feasible alternatives, including:

- The use of T-Arm antenna mounts in lieu of the traditional triangular mounts, while maintaining the steel monopole which weathers to a dull grey, and minimizing some of the perceived bulk of the horizontal appurtenances.
- Painting the monopole brown and incorporating flush-mounted antennas, further minimizing the horizontal appurtenances.

- Introducing a “mono-pine” design that resembles a coniferous tree where the antennas would be located within the branching.
- Using a traditional monopole (which could be painted virtually any color) with internally-mounted antennas, thus eliminating any external appurtenances.

Three additional stealth options are presented on the last page. While these are technically feasible to construct, it is our opinion that they would be out of context with the surrounding environment.

Potential Stealth Options

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SUBMITTED TO:



SUBMITTED BY:



Monopole: Full Platforms



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Monopole: T-Arms



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Monopole: Close Contact Arrays



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Monopine



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Stealth Flagpole (No Flag)



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Additional Stealth Options



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