



*Vanasse Hangen Brustlin, Inc.*

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

**Memorandum**

To: Ms. Alexandria Carter  
Verizon Wireless  
99 East River Drive  
East Hartford, CT 06108

Date: September 2, 2011

Project No.: 41479.55

From: Mike Libertine

Re: Comparative Visual Analysis  
87 West Quasset Road  
Woodstock, Connecticut

---

The Connecticut Siting Council Docket 415 includes a proposal by Cellco Partnership, d.b.a. Verizon Wireless, for a Certificate of Environmental Compatibility and Public Need associated with the construction of a 150-foot tall wireless telecommunications tower on property at 87 West Quasset Road (identified herein as the "host property"), in the Town of Woodstock, Connecticut. American Tower Corporation ("ATC") currently owns and maintains a 140-foot tall lattice tower located in the southeast corner of the host property. As part of the proceedings of Docket 415, ATC has proposed to replace its existing tower with a 140-foot tall monopole structure ("replacement Facility") approximately 20 feet to the north of the current tower location. In order for Verizon Wireless to use the ATC replacement Facility, it would require installation of its antennas at an increased centerline height of 160 feet.

Vanasse Hangen Brustlin, Inc. ("VHB") conducted a comparative visual analysis to evaluate the visibility of the proposed replacement Facility with that of the proposed Verizon Wireless Facility (documented in VHB's November 2010 Visual Resource Evaluation ("VRE") Report that was included in the Application, Exhibit 1 of Docket 415).

Similar methodologies as those presented in the 2010 VRE report were employed by VHB to assess the viewshed associated with the replacement Facility; that is, the combination of a predictive computer model and in-field analysis. The predictive model provided a preliminary assessment of potential visibility throughout the 2-mile "Study Area," including private property and other areas inaccessible for direct observations. A "balloon float" and Study Area reconnaissance were then conducted for field verification to back-check the initial computer modeling results, to obtain location and height representations, and to provide photographic documentation from publicly accessible areas.

On August 18, 2011 VHB conducted a balloon float by raising and maintaining an approximate five-foot diameter, helium-filled balloon approximately 12 feet to the southwest of the proposed replacement Facility site location at a height of 160 feet. Once the balloon was secured VHB staff conducted a drive-by reconnaissance along the public roads located within the Study Area to inventory those areas where the balloon was visible. The balloon was photographed from a number of different vantage points to document the actual view towards the replacement Facility. Eighteen (18) of the photographs were taken from locations that were originally included in the 2010 VRE report to provide a relative comparison of views from common points. Note that the photo locations are similar; however, in most cases the specific orientation is different as a result of the distance/direction between the proposed Verizon Wireless site and that of the proposed ATC replacement Facility. The locations of the photos are described below:

2010					
View	VRE View	Location	Orientation	Distance	Visibility
1	1	Intersection of Quasset Hill Road and West Quasset Road	Southwest	± 0.14-Mile	Year-Round
2	2	Adjacent to #80 West Quasset Road	West	± 0.03-Mile	Year-Round
3	3	West Quasset Road	Northeast	± 0.73-Mile	Year-Round
4	4	Adjacent to #289 West Quasset Road	Northeast	± 0.77-Mile	Year-Round
5	5	Adjacent to #330 West Quasset Road	Northeast	± 0.84-Mile	Year-Round
6	6	West Quasset Road	Northeast	± 0.50-Mile	Year-Round
7	7	Adjacent to #485 West Quasset Road	Southeast	± 0.48-Mile	Not Visible
8	8	Adjacent to #114 New Sweden Road	Southeast	± 0.47-Mile	Not Visible
9	9	Route 171	Southeast	± 0.80-Mile	Not Visible
10	10	Adjacent to #253 Old Hall Road	South	± 0.76-Mile	Not Visible
11	11	Adjacent to #33 Meehan Road	Southeast	± 0.87-Mile	Year-Round
12	12	Meehan Road	Southeast	± 1.03-Mile	Year-Round
13	13	Adjacent to #27 Loyola Road	Northwest	± 0.44-Mile	Not Visible
14	14	Adjacent to #22 Shore Road	Northwest	± 0.43-Mile	Year-Round
15	15	Adjacent to #36 Shore Road	Northwest	± 0.38-Mile	Year-Round
16	-	End of Shore Road	West	± 0.36-Mile	Year-Round
17	-	Adjacent to #109 East Quasset Road	Southwest	± 0.37-Mile	Year-Round
18	-	Adjacent to #83 East Quasset Road	Southwest	± 0.39-Mile	Year-Round
19	18	Adjacent to #191 East Quasset Road	Northwest	± 0.52-Mile	Year-Round
20	19	Sheldon Road North of East Quasset Road	Northwest	± 0.63-Mile	Year-Round
21	20	East Quasset Road at Quasset Cemetery	Southwest	± 0.42-Mile	Not Visible
22	-	Quasset Road	Southwest	± 0.36-Mile	Year-Round
23	-	Adjacent to #99 East Quasset Road	North	± 0.09-Mile	Year-Round

Photographs of the balloon from the viewpoints listed above were taken with a Nikon D-3000 digital camera body and Nikon 18 to 135 mm zoom lens. For the purposes of this report, the lens was set to 50mm with the exceptions of View 2 and View 23 where a setting of 24 mm was utilized to provide a greater depth of field. 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 simulations were generated to portray a scaled rendering of the replacement Facility with four wireless service providers represented (note the existing lattice tower has been removed from the simulations). 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 used during the in-field activities to provide a visual marker and to cross-reference the height and proportions of the replacement Facility. A photolog map, the photo simulations and the viewshed map are contained as attachments to this document.

As depicted on the attached viewshed map, the majority of year-round visibility associated with the replacement Facility would occur over Wappaquasset Pond (private access), including its immediate eastern shoreline; open, undeveloped portions of the host property; and several nearby agricultural fields (located generally within one mile). Year-round views are also anticipated from portions of West Quasset Road, Quasset Hill Road, East Quasset Road, Shore Drive, Meehan Road, Loyola Road and Sheldon Road. It is important to note that the existing 140-foot tall lattice tower is currently visible from the vast majority of locations where the proposed replacement Facility would be seen, particularly along portions of Shore Road, East Quasset Road, and Loyola Road. That said the overall viewshed associated with the existing tower does not dramatically increase in terms of its footprint. However, as evidenced by the photographs attached to this report, the existing tower is slimmer than the proposed replacement monopole and the lattice structure's open-weave construction tends to soften its silhouette when viewed from distances of about 0.25 mile and beyond. In comparison, given its monopole design, the replacement Facility would certainly appear a more dominant feature on the landscape than what currently exists.

The visibility of a 160-foot tall replacement Facility in the southeast corner of the host property compared to Verizon Wireless' proposed 150-foot tall tower in the central portion of the parcel is relatively similar in terms of total area and number of residential properties with potential views. The primary distinction between the Verizon Wireless proposal and the ATC replacement Facility lies in the towers' specific locations, with the Verizon Wireless site being more centrally situated in a remote area of the host property, over 700 feet to the northwest of the existing ATC tower. The ATC location is immediately off West Quasset Road in close proximity to several neighbors. The Verizon Wireless location provides significant distance from these neighboring properties and offers vegetative buffer in all directions. This distinction is most evident in photographs 1, 2 and 3. In addition, views of the ATC replacement Facility would appear more prominent from locations along the eastern shore of Wappaquasset Pond resulting from its closer proximity and aspect; note for example in photos 14 (herein and the 2010 VRE report) how much taller the replacement Facility rises above the tree canopy compared to the Verizon Wireless proposal.

Based on this comparative analysis, I believe that the Verizon Wireless proposal presents a more viable option than the ATC replacement Facility because it is less visually intrusive on neighboring properties and the Wappaquasset Pond area. Moreover, its central location on the host property provides increased distances and buffer between neighboring properties. My experience with the Siting Council on several recent dockets also supports this position, where applicants have been asked to reevaluate site locations on larger parcels with the purpose of increasing the separation distance from neighboring properties and minimizing the visual impact on nearby receptors. In my opinion, the Verizon Wireless proposal meets that intent.

Enclosure



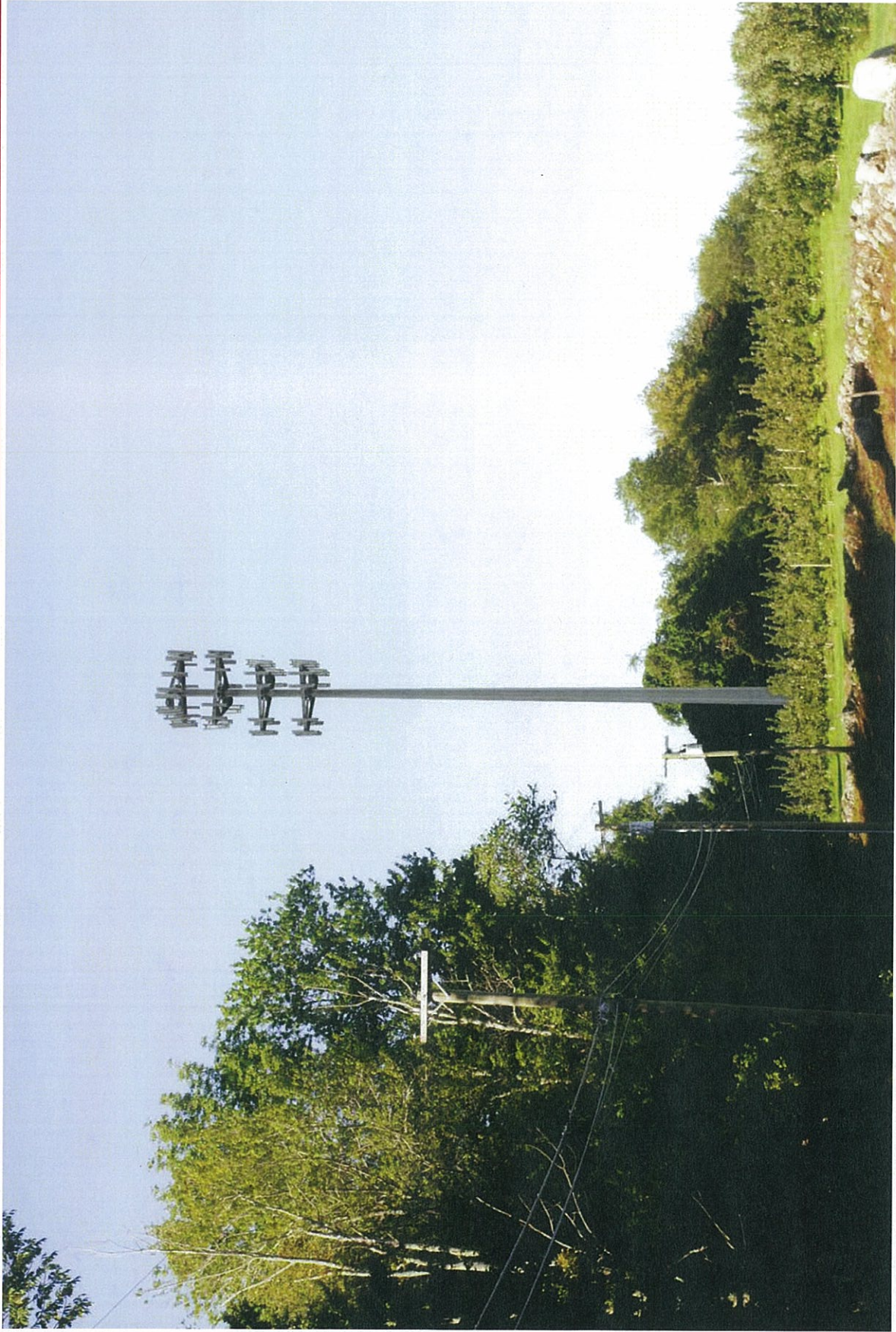
# | Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos.mxd

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	INTERSECTION OF QUASSET HILL ROAD AND WEST QUASSET ROAD	SOUTHWEST	0.14 MILE +/-	YEAR-ROUND

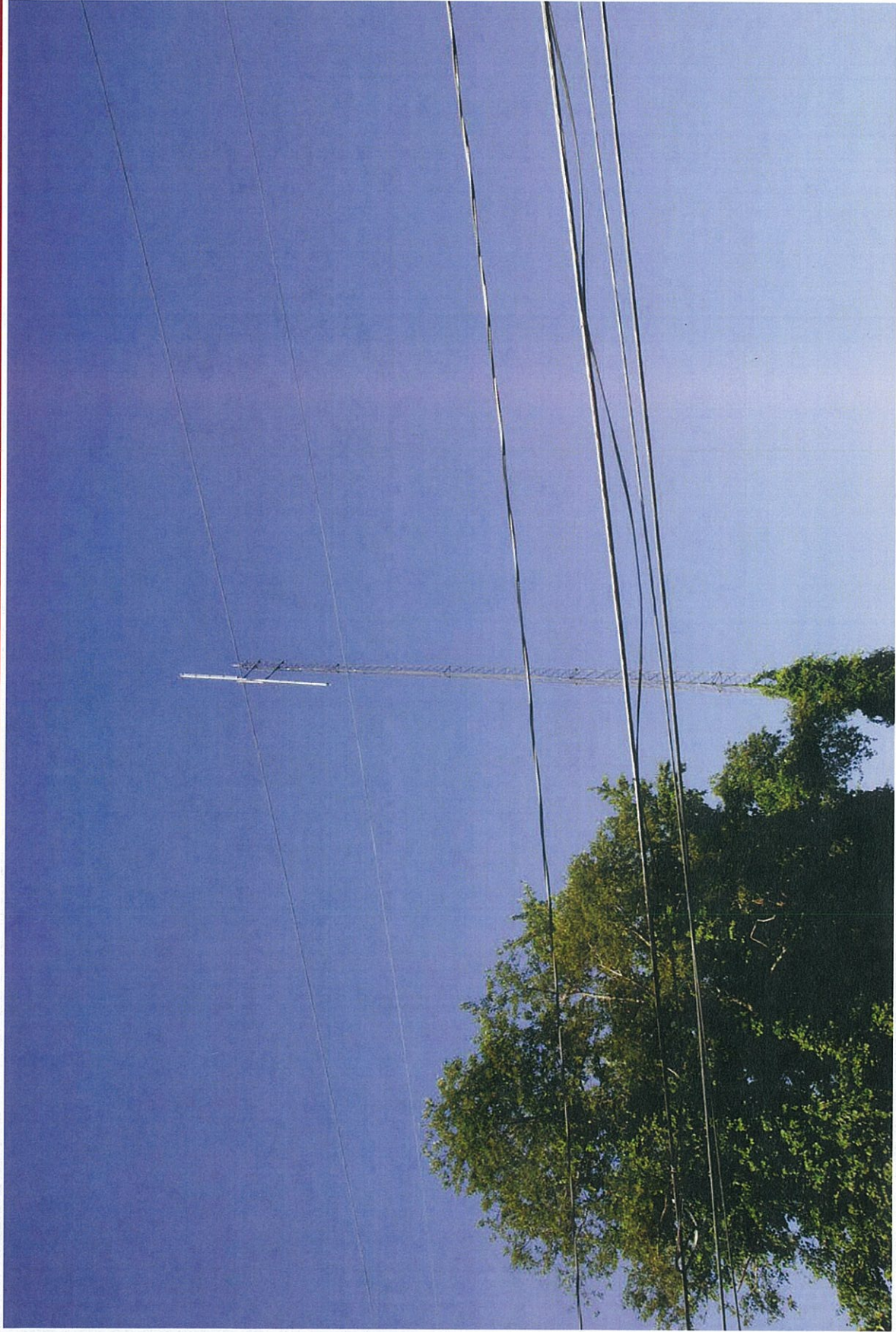
# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_PhotoSim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	INTERSECTION OF QUASSET HILL ROAD AND WEST QUASSET ROAD	SOUTHWEST	0.14 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479.55\graphics\FIGURES\1479.55\_Photos.mxd

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	ADJACENT TO #80 WEST QUASSET ROAD (24mm focal length)	WEST	0.03 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	ADJACENT TO #80 WEST QUASSET ROAD (24mm focal length)	WEST	0.03 MILE +/-	YEAR-ROUND



# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photo3.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	WEST QUASSET ROAD	NORTHEAST	0.73 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\41479\_55\graphics\F\GURES\41479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	WEST QUASSET ROAD	NORTHEAST	0.73 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479.55\graphics\FIGURES\1479.55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	ADJACENT TO #289 WEST QUASSET ROAD	NORTHEAST	0.77 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_PhotoSim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	ADJACENT TO #289 WEST QUASSET ROAD	NORTHEAST	0.77 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	ADJACENT TO #330 WEST QUASSET ROAD	NORTHEAST	0.84 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\F\GURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	ADJACENT TO #330 WEST QUASSET ROAD	NORTHEAST	0.84 MILE +/-	YEAR-ROUND



# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	WEST QUASSET ROAD	NORTHEAST	0.50 MILE +/-	YEAR-ROUND

# Photographic Simulation

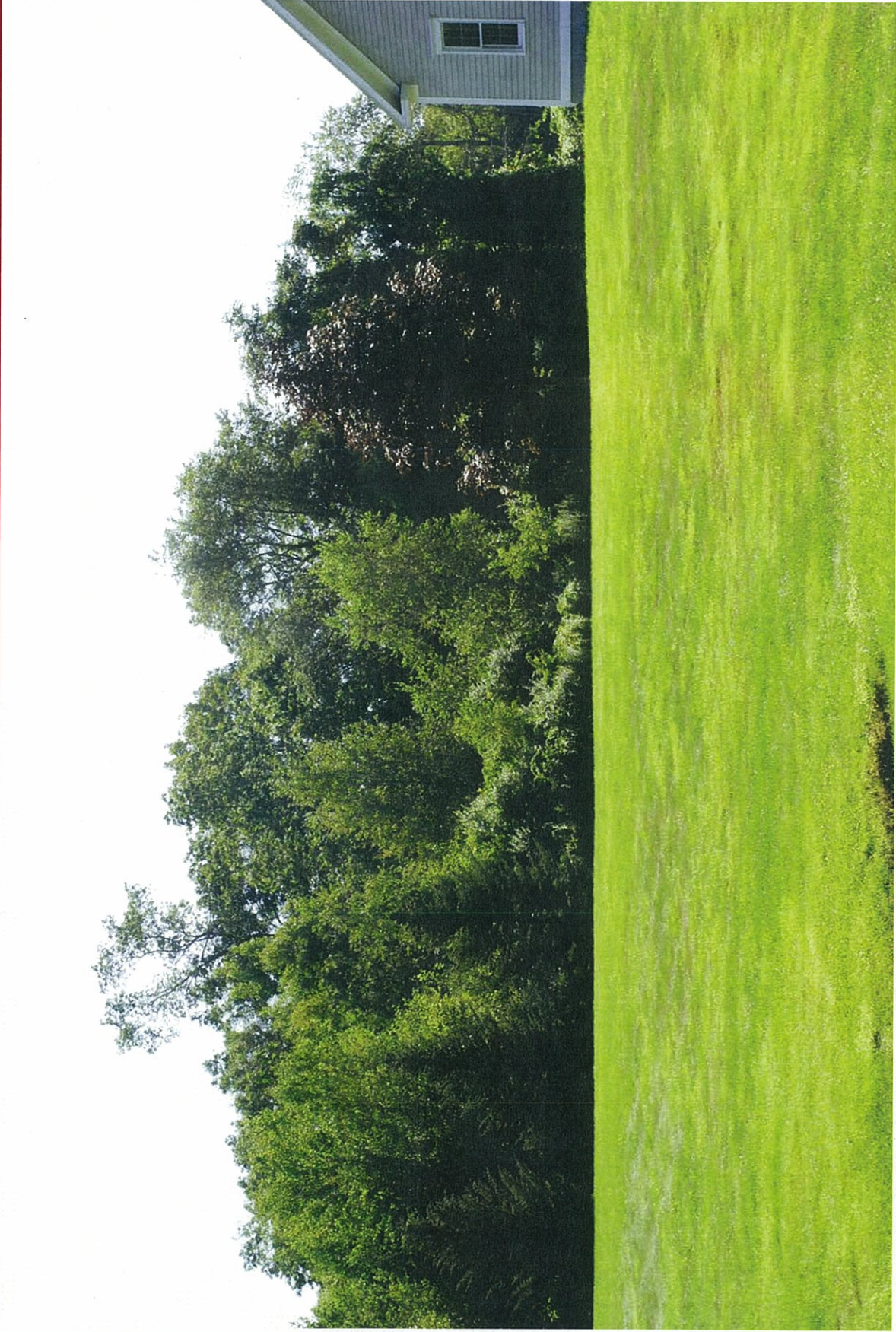


J:\4179\_55\graphics\FIGURES\4179\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	WEST QUASSET ROAD	NORTHEAST	0.50 MILE +/-	YEAR-ROUND



# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	ADJACENT TO #485 WEST QUASSET ROAD	SOUTHEAST	0.48 MILE +/-	NOT VISIBLE

# | Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	ADJACENT TO #114 NEW SWEDEN ROAD	SOUTHEAST	0.47 MILE +/-	NOT VISIBLE

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photoism

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	ROUTE 171	SOUTHEAST	0.80 MILE +/-	NOT VISIBLE

# | Photographic Documentation



J:\41479\_55\graphics\FIGURES\41479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	ADJACENT TO #253 OLD HALL ROAD	SOUTH	0.76 MILE +/-	NOT VISIBLE

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photoism

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	ADJACENT TO #33 MEEHAN ROAD	SOUTHEAST	0.87 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\41479\_55\graphics\F(G)URES\41479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	ADJACENT TO #33 MEEHAN ROAD	SOUTHEAST	0.87 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	MEEHAN ROAD	SOUTHEAST	1.03 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	MEEHAN ROAD	SOUTHEAST	1.03 MILE +/-	YEAR-ROUND



# Photographic Documentation



J:\41479\_55\graphics\F(G)URES\41479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	ADJACENT TO #27 LOYOLA ROAD	NORTHWEST	0.44 MILE +/-	NOT VISIBLE

# Photographic Documentation



J:\4179.55\graphics\FIGURES\4179.55\_Photos.mxd

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	ADJACENT TO #22 SHORE ROAD	NORTHWEST	0.43 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479.55\graphics\FIGURES\1479.55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	ADJACENT TO #22 SHORE ROAD	NORTHWEST	0.43 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\41479\_55\graphics\FIGURES\41479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	ADJACENT TO #36 SHORE ROAD	NORTHWEST	0.38 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479.55\graphics\FIGURES\1479.55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	ADJACENT TO #36 SHORE ROAD	NORTHWEST	0.38 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	END OF SHORE ROAD (24mm focal length)	WEST	0.36 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\F\GURE\S\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	END OF SHORE ROAD (24mm focal length)	WEST	0.36 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\4179\_55\graphics\FIGURES\4179\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	ADJACENT TO #109 EAST QUASSET ROAD	SOUTHWEST	0.37 MILE +/-	YEAR-ROUND



# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	ADJACENT TO #109 EAST QUASSET ROAD	SOUTHWEST	0.37 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\4179\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	ADJACENT TO #83 EAST QUASSET ROAD	SOUTHWEST	0.39 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\41479\55\graphics\FIGURES\41479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	ADJACENT TO #83 EAST QUASSET ROAD	SOUTHWEST	0.39 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos\m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	ADJACENT TO #191 EAST QUASSET ROAD	NORTHWEST	0.52 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_PhotoSim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	ADJACENT TO #191 EAST QUASSET ROAD	NORTHWEST	0.52 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	SHELDON ROAD NORTH OF EAST QUASSET ROAD	NORTHWEST	0.63 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	SHELDON ROAD NORTH OF EAST QUASSET ROAD	NORTHWEST	0.63 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\4179\_55\graphics\FIGURES\4179\_55\_Photos.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	EAST QUASSET ROAD AT QUASSET CEMETERY	SOUTHWEST	0.42 MILE +/-	NOT VISIBLE



# Photographic Documentation



J:\1479\_55\graphics\FGURES\1479\_55\_Photo1.m

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	QUASSET ROAD	SOUTHWEST	0.36 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\1479\_55\graphics\FIGURES\1479\_55\_Photosim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	QUASSET ROAD	SOUTHWEST	0.36 MILE +/-	YEAR-ROUND

# Photographic Documentation



J:\1479\_55\graphics\F\GURE\S4\1479\_55\_Photoism

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
23	ADJACENT TO #99 EAST QUASSET ROAD (24mm focal length)	NORTH	0.09 MILE +/-	YEAR-ROUND

# Photographic Simulation



J:\41479\_55\graphics\FIGURES\41479\_55\_PhotoSim

VIEW	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
23	ADJACENT TO #99 EAST QUASSET ROAD (24mm focal length)	NORTH	0.09 MILE +/-	YEAR-ROUND

*Viewshed Analysis*  
*Potential Replacement Wireless*  
*Telecommunications Facility*  
*Existing ATC Site*  
*87 West Quasset Road*  
*Woodstock, Connecticut*

**NOTE:**

- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 160 feet.
- Existing tree canopy height estimated at 65 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 2004, 2006 and 2008 digital orthophotos with 0.5-foot, 1-foot and 1-meter pixel resolutions, respectively.
- Base map comprised of Punnam (1970) and Eastford (1983) USGS Quadrangle Maps
- Municipal and Private Open Space data layer provided by CT DEP, 1987
- 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 August, 2011

- Legend**
- Proposed Tower Location
  - Photographs - August 18, 2011
  - Balloon is not visible
  - Balloon visible above trees
  - Seasonal Visibility (Approximately 155 acres)
  - Year-Round Visibility (Approximately 177 acres)
  - Protected Municipal and Private Open Space (CT DEP, 1987)
  - Open Space (CT DEP, 2004)
  - Conservation
  - Preservation
  - Existing Preserved Open Space
  - Recreation
  - General Recreation
  - School
  - Uncategorized
  - CT DEP Property (CT DEP, May 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
  - Federal Open Space (CT DEP, 2004)
  - Boat Launches (CT DEP, Dec 2009)
  - Scenic Road (State and Local)
  - Town Line

