CONNECTICUT SITING COUNCIL

PETITION OF NEW CINGULAR WIRELESS PCS, LLC ("AT&T") TO THE CONNECTICUT SITING COUNCIL FOR A DECLARATORY RULING THAT NO CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED FOR THE PROPOSED INSTALLATION OF AN CONCEALED TOWER ON A WATER TANK AND RELATED FACILITIES LOCATED AT A WATER TREATMENT PLANT AT 455 VALLEY ROAD GREENWICH, CONNECTICUT	**)**	**PETITION NO. ____** **OCTOBER 4, 2011**

PETITION FOR A DECLARATORY RULING TO INSTALL A CONCEALED TOWER ON A WATER TANK AND CONSTRUCT ASSOCIATED EQUIPMENT AT A WATER TREATMENT PLANT 455 VALLEY ROAD, GREENWICH CONNECTICUT

I. Introduction

New Cingular Wireless PCS, LLC ("AT&T"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Section 16-50k of the Connecticut General Statutes ("C.G.S.") for the proposed installation of a concealed tower facility on top of an existing water tank and other equipment located at grade at an Aquarion Water Company plant located in the Cos Cob area of the Town of Greenwich Connecticut.

II. The Existing Aquarion Water Treatment Facility

The property consists of a 2.63 acre parcel of land located at 455 Valley Road in the Town of Greenwich which is owned by Aquarion Water Company of Connecticut. The parcel abuts the Mianus River and is used and operated as a water treatment plant. The existing facilities were initially developed in 1954 and the parcel is currently improved with several structures including equipment and control buildings, garages, filtration tanks, and a water supply tank. The water tank is a cylindrical steel structure 30' in diameter with a domed top that extends to an overall height of 46' 6" AGL (51' to top of existing vent). The water tank is dark green in color and screened from adjacent properties by natural vegetation and a few evergreens that appear to have been planted at the time of initial construction of the water tank. The parcel is identified on the USGS map and an aerial photograph of the area which are annexed hereto in Exhibit A.

III. AT&T's Concealed Tower Facility & Associated Equipment

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. AT&T proposes to construct a tower structure on top of the water tank, the first portion of which would extend the full circumference of the water tank to an overall height of 49' AGL, and then consist of a cylindrical structure 15' in diameter extending to an overall height of 64' AGL. The entire steel tower structure would be concealed with fiberglass panels and painted to match the existing water tank. Up to twelve (12) panel antennas and other associated equipment would be installed within the concealed tower structure with antennas at a centerline height of 60' AGL. A 10' x 15' equipment shelter is proposed adjacent to the water tank and would have a pitched roof and brick like exterior to be

consistent with other existing structures on the parcel. While the project involves a tower, it would appear to the general public simply as a 17' 6" extension of the water tank itself with a new small pump house located adjacent thereto. Included as Exhibit B are detailed construction drawings prepared by Clough Harbour & Associates LLP, (CHA) which include an abutters map, site access map, compound plan and tower elevation. Also annexed as Exhibit B is a structural report dated September 14, 2011 also prepared by CHA noting that the existing water tank can support the AT&T tower and proposed loading.

IV. The Proposed Facility is a Tower Under the Siting Council's Exclusive Jurisdiction

The Siting Council has exclusive jurisdiction over "such telecommunication towers, including associated telecommunications equipment, owned or operated by the state, a public service company or a certified telecommunications provider or used in a cellular system, as defined in the Code of Federal Regulations Title 47, Part 22." C.G.S. § 16-50i(6). State regulations specifically define a "tower" as "a structure, whether free standing or **attached to a building or another structure**, that has a height greater than its diameter and that is high relative to its surroundings". R.C.S.A. § 16-50j-21(q) (emphasis added). Associated equipment is further defined to mean "any building, structure, antenna, satellite dish, or technological equipment, including equipment intended for sending or receiving signals to or from satellites, that is an integral part of the operation of a community antenna television tower or telecommunications tower." R.C.S.A. § 16-50j-21(a).

AT&T's facilities are used in a "cellular system" as that term is defined in FCC regulations and as interpreted by the Siting Council. In this case, AT&T's proposed tower

facility involves a structure attached to a water tank, the structure is slightly taller than it is in diameter and the structure is high relative to its surroundings. As such, the proposed facility constitutes a tower with associated equipment that is regulated by the Siting Council as a matter of Connecticut State law.

There are several prior decisions by the Siting Council that are of precedential value in interpreting what constitutes a "tower" for purposes of Connecticut State law. See e.g. Petitions No. 343, 581 and TS-AT&T/NEXTEL-103-991022. In fact, the Council has routinely determined that typical lattice tower structures on rooftops, water tanks or even rebuilt silos are "tower" facilities for purposes of its jurisdiction. Thus, the question for the Council as presented in this Petition is whether or not this "tower facility" presents any significant adverse environmental effects that would require a full Certificate proceeding.

Of note, the existing water tank is simply too low in height for AT&T to attach antennas to it and provide meaningful service to the area. Additionally, AT&T has sought to avoid the impacts of a new ground mounted tower structure in this area of Greenwich which would be proposed at a substantially higher elevation in order to provide substantially more coverage in AT&T's network. As such, this Petition presents a unique set of facts where AT&T has of its own volition sought to use an existing structure and install a modest tower on it in order to provide more reliable services to what is a distinctly residential area of Greenwich and Stamford. For the reasons more fully set forth herein, AT&T petitions the Council to find that there are no such environmental effects and that a declaratory ruling determining that a Certificate is not required for this tower facility as proposed by AT&T.

V. The Concealed Tower and Associated Equipment Will Not Have a Substantial Adverse Environmental Effect

A comparison of existing and proposed conditions reveals no substantial adverse environmental impacts associated with AT&T's proposed facility.

A. Visibility

As demonstrated in the visual materials included in Exhibit C, the proposed AT&T facility will be barely noticeable in this residential area of Greenwich. The overall increase in height is just under 18' above the dome of the existing water tank and only to a height of 64' AGL. At the location of the existing water tank, this increase in height is essentially at the height of the average tree canopy in the area. The facility will not be visible from any historic properties, parks, or schools and there are no designated scenic roads in the study area. Year round views of the top of the facility are limited to 19 residential properties in the immediate area. Moreover, as shown in the photosimulations, the facility will be extremely difficult to discern from these properties given relative elevation, color, design and existing tree cover in the area. As such, AT&T respectfully submits that the added visibility of the tower on top of the water tank is not significant for purposes of the Council's environmental considerations.

B. Minimal Physical Impact

AT&T's proposed ground mounted equipment shelter will have a brick appearance and a pitched roof and be located in an already cleared area adjacent to the existing water tank. No new access drives are proposed as part of the project. On site utilities will be upgraded as needed from CL&P pole #6468 which is immediately adjacent to the proposed equipment shelter. Annexed hereto as Exhibit D is a tree inventory letter dated August 4, 2011, prepared by

Clough Harbour & Associates LLP, (CHA) noting no trees with a diameter of 6" or larger need to be removed for construction of the facility. As such there are significant physical impacts associated with the facility.

C. Wetlands

As indicated in the Wetlands Delineation Report dated August 15, 2011, and prepared by Vanasse Hangen Brustlin, Inc, (VHB) included hereto as Exhibit E, the parcel abuts the Mianus River. The edge of the river and associated wetlands are well defined and delineated and there is a significant paved area and buildings extending to the river's edge along with a dam forming the Mill Pond. The AT&T project is located approximately fifty (50) feet further away from these existing developed areas along the river's edge and which make up part of Aquarion's waste and water treatment plant. All appropriate sediment and erosion control measures will be designed and employed in accordance with the Connecticut Soil Erosion Control Guidelines, as established by the Council of Soil and Water Conservation during construction. Based on the foregoing, AT&T submits there will be no impacts to the Mianus River and associated wetlands as part of AT&T's tower facility and associated equipment.

D. Compliance with MPE Limits

The operation of AT&T's antennas will not increase the total radio frequency electromagnetic power density at the site to a level at or above the applicable standards. A detailed power density report prepared by C Squared Systems, LLC is included as part of Exhibit F. The total radio frequency power density will be well within standards adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and the MPE limits established by the Federal Communications Commission.

VI. Public Need

Annexed hereto in Exhibit G are AT&T radio frequency coverage plots which depict existing and proposed coverage from the site at 60' AGL. As demonstrated therein, AT&T currently has gaps in reliable service in these areas of Cos Cob and Stamford and the proposed facility is needed to fill some of these existing coverage gaps within AT&T's network. Specifically, coverage improvements are anticipated along Valley Road, Westover Road, Palmers Hill Road and residences in this area of Greenwich and Stamford. While the Council does not have to find a public need for the facility as part of a ruling on this Petition, it is respectfully submitted that the enclosed information fully demonstrates the need for the installation of this facility in providing reliable wireless services to the public. Indeed, AT&T has attempted to balance the need for service improvements in the area with the overall height of any new facility and respectfully submits that any other alternative would involve a substantially taller tower in order to provide reliable service to the public.

VII. Conclusion

As more fully set forth in this Petition, the proposed AT&T tower and associated equipment at Aquarion's water treatment facility are wholly consistent with legislative findings outlined in Section 16-50g and 16-50aa of the General Statutes of Connecticut that seek to avoid the unnecessary proliferation of towers in the State. Further, there are no known adverse environmental effects associated with the project. As such and for all the foregoing reasons, AT&T petitions the Connecticut Siting Council for a determination that the proposed facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving same.

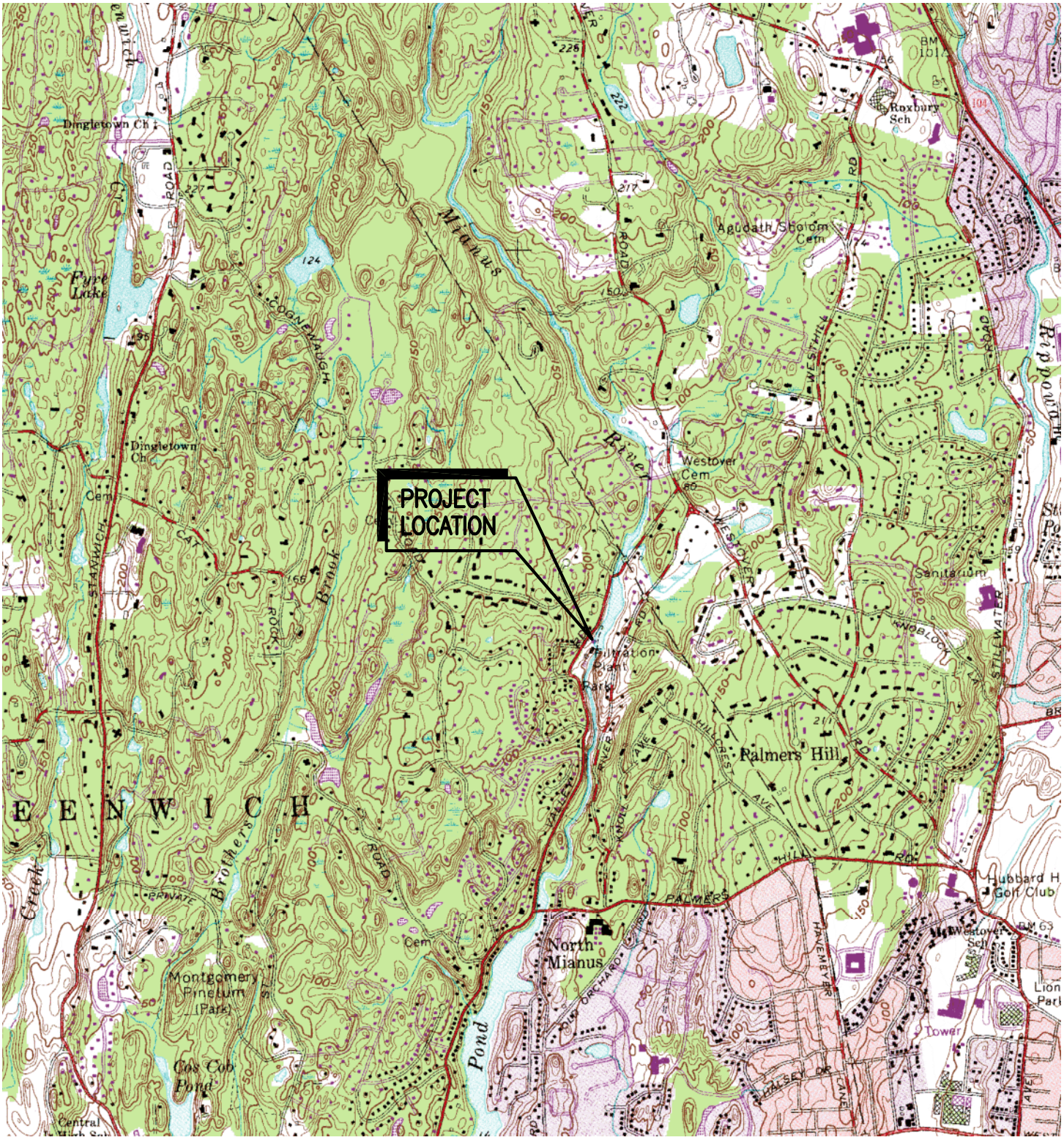
Respectfully Submitted,

Christopher B. Fisher, Esq.
Cuddy & Feder, LLP
445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
(914) 761-1300

Attorneys for and on behalf of
Petitioner AT&T

cc: First Selectman Peter Tesei, Town of Greenwich
Katie Blankley, Assistant Town Planner, Town of Greenwich
Liz Camerino Schultz, Aquarion
Michele Briggs, AT&T

Exhibit A



1 USGS TOPO MAP: 41073-A5

SCALE: 1" = 2000'

0 1000 2000

SCALE IN FEET

TRUE NORTH

MAP DATE: 1960
PHOTO REVISED: 1984

CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067

CT1887
MIANUS WASH WATER TANK
455 VALLEY ROAD
COS COB, CT 06807
FAIRFIELD COUNTY

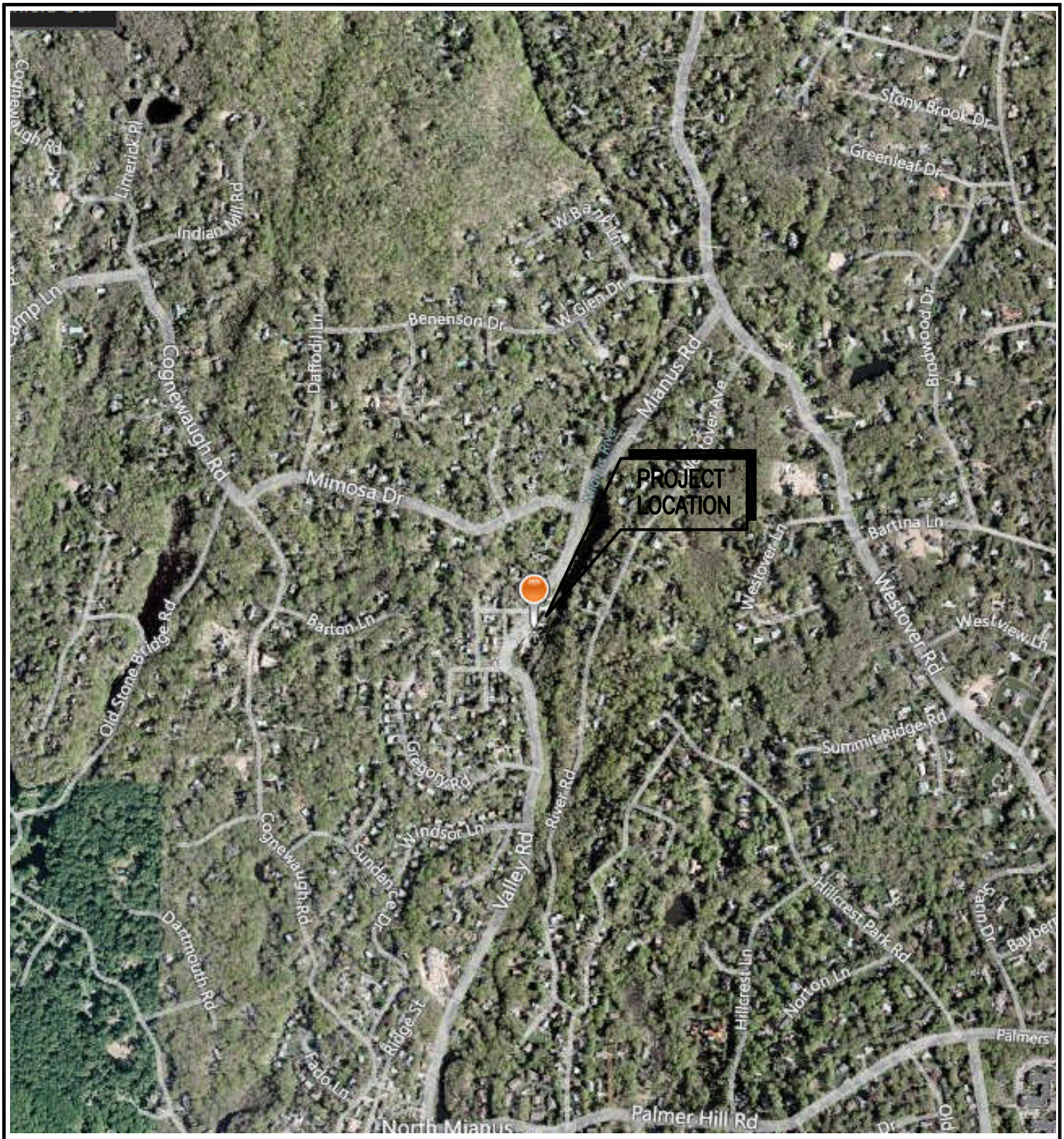
CHA PROJ. NO. – 18301-1077-43000

SHEET TITLE:
USGS TOPO MAP

DATE:
09/20/11

REVISION:
0

DATE: 8/4/2011 1:05 PM FILE: W:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\ZD\GREENWICH-5 USGS.DWG



1 **2004 AERIAL PHOTO**
SCALE: 1" = 1000'

0 500 1000
SCALE IN FEET

TRUE NORTH

CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067

CT1887
MIANUS WASH WATER TANK
455 VALLEY ROAD
COS COB, CT 06807
FAIRFIELD COUNTY

CHA PROJ. NO. – 18301–1077–43000

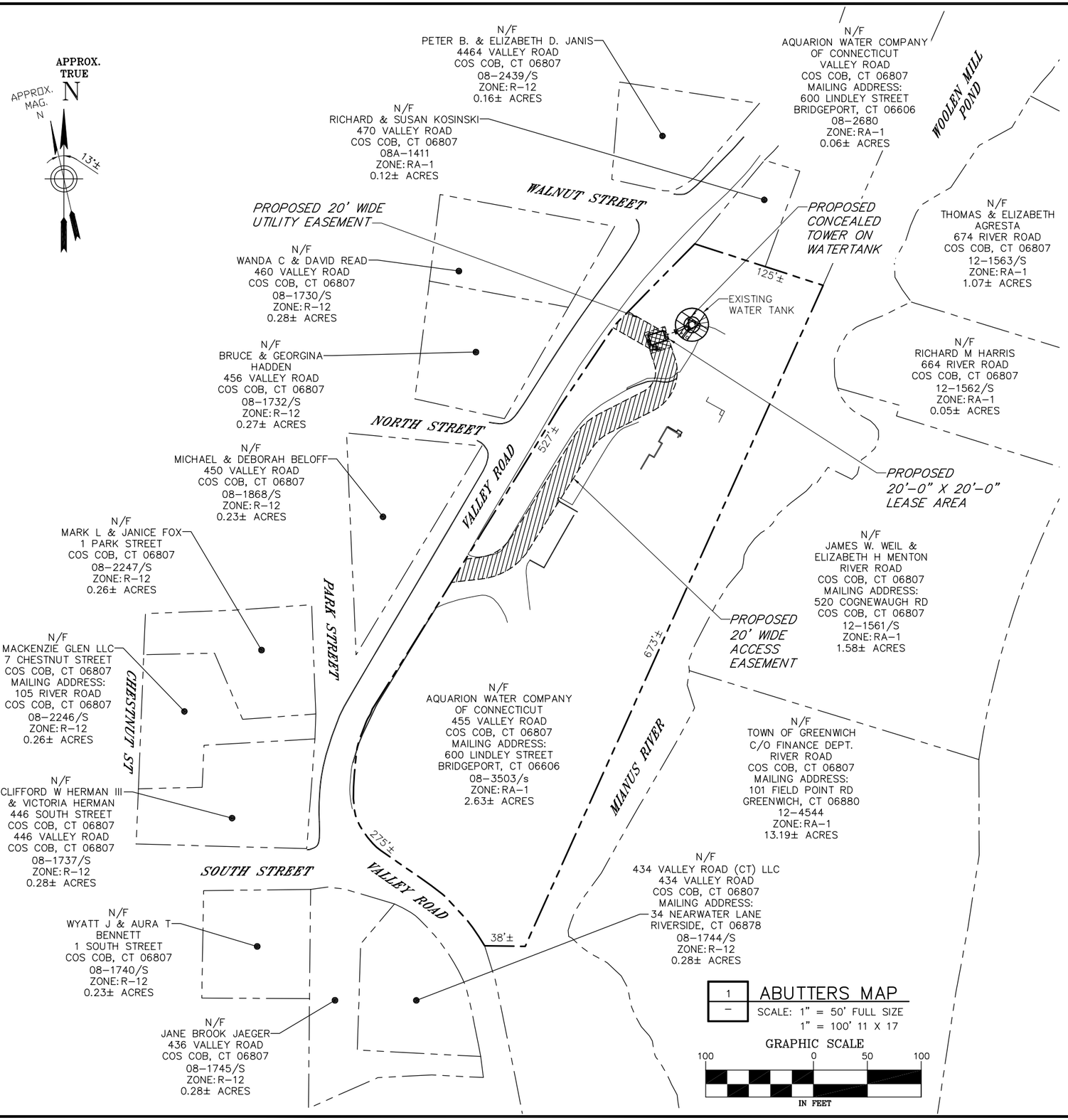
SHEET TITLE:
AERIAL PHOTO

DATE:
09/20/11

REVISION:
0

DATE: 8/4/2011 1:24 PM FILE: W:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\ZD\GREENWICH-6 AERIAL.DWG

Exhibit B



SURVEY NOTES:

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC. ON SEPTEMBER 26, 1996. THE BOUNDARY LINES SHOWN ON THIS PLAN WERE COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.

TYPE OF SURVEY: COMPILATION PLAN

BOUNDARY DETERMINATION CATEGORY: NONE

CLASS OF ACCURACY: HORIZONTAL CLASS A-2
VERTICAL CLASS V-2
TOPOGRAPHIC CLASS T-2

2. PROPERTY LINE SHOWN HEREON ARE FROM RECORD DEEDS PLOTS AND/OR TAX MAPS AS OVERLAID ON ANY MONUMENTATION OR OTHER EVIDENCE THAT MAY HAVE BEEN LOCATED DURING THE TOPOGRAPHIC SURVEY. A PROPERTY SURVEY WAS NOT PERFORMED BY CHA AND AS A RESULT THE PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT PRESENT A PROPERTY/BOUNDARY OPINION.

3. BASE MAPPING PREPARED BY CHA FROM AN JULY 2011 FIELD SURVEY.

4. NORTH ORIENTATION IS TRUE NORTH BASED ON GPS OBSERVATIONS TAKEN AT THE TIME OF THE FIELD SURVEY.

5. UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES HAVE BEEN SHOWN FROM SURFACE LOCATIONS AND MEASUREMENTS OBTAINED FROM A FIELD SURVEY, THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHER UTILITIES WHICH THE EXISTENCE OF ARE NOT KNOWN. SIZE, TYPE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED BY PROPER AUTHORITIES PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG SAFE PRIOR.

6. SUBJECT TO ANY STATEMENT OF FACTS THAT AN UP-TO-DATE ABSTRACT OF TITLE WOULD DISCLOSE.

7. SUBJECT TO ALL RIGHTS, EASEMENTS, COVENANTS OR RESTRICTIONS OF RECORD.

8. LATITUDE/LONGITUDE/ELEVATIONS WERE OBTAINED BY GPS OBSERVATIONS. LATITUDE/LONGITUDE ARE REFERENCED TO NAD83 CONNECTICUT ZONE. COORDINATES SHOWN, IF ANY, ARE EXPRESSED IN U.S. SURVEY FEET. ELEVATIONS ARE REFERENCED TO NAVD88. TOP OF STRUCTURE HEIGHT AS SHOWN, IF ANY, DETERMINED BY VERTICAL ANGLE OR BY ACTUAL LOCATION. INFORMATION SHOWN BASED ON FAA 1A CERTIFICATION ACCURACY LEVEL DEFINED AS;
HORIZONTAL: ±20 FEET / 6 METERS
VERTICAL: ±3 FEET / 1 METERS

9. SITE FALLS WITHIN ZONE "X" DEFINED AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP, TOWN OF GREENWICH, CONNECTICUT, FAIRFIELD COUNTY, PANEL 14 OF 28, COMMUNITY PANEL NUMBER 090008 0014 C, REVISED FEBRUARY 22, 1999.

MAP REFERENCES:

1. MAP ENTITLED "IMPROVEMENT LOCATION SURVEY AND COMPILED PROPERTY LINE SURVEY- VALLEY ROAD GREENWICH, CONNECTICUT, PREPARED FOR TIGHE & BOND" AS PREPARED BY CHAS. H. SELLS, INC., DATED DECEMBER 28, 2005.

2. TOWN OF GREENWICH TAX MAPS 400, 401 & 402 VOL5.

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

CHA PROJECT NO:
18301 - 1077 - 43000

NO.	SUBMITTAL		
0	09/20/11	ISSUED FOR CSC CERTIFICATE	
	BY: PAL	CHK: PAL	APP'D: PAL

SITE ID:
CT1887
SITE NAME:
MIANUS WASH WATER TANK
SITE ADDRESS:
455 VALLEY ROAD
COS COB, CT
06807
FAIRFIELD COUNTY

SHEET TITLE
ABUTTERS MAP

SHEET NUMBER
C01

APPROX. TRUE N

APPROX. MAG. N

13°±

PROPOSED 20' WIDE UTILITY EASEMENT

PROPOSED 20'-0" X 20'-0" LEASE AREA

PROPOSED 10'-0" X 15'-0" AT&T EQUIPMENT SHELTER

PROPOSED UNDERGROUND POWER & TELEPHONE FROM EXISTING UTILITY POLE #6468

PROPOSED 20' WIDE ACCESS EASEMENT

EXISTING ASPHALT ACCESS DRIVEWAY TO BE UTILIZED AS THE ACCESS DRIVE TO THE SITE

PROPOSED CONCEALED TOWER ON WATER TANK

64' STRUCTURE RADIUS

BENCHMARK
SPIKE FOUND IN TREE
ELEV: 73.59'

VALLEY ROAD

NORTH STREET

MAIL BOXES

CONCRETE RETAINING WALL

CONCRETE AREA

WATERTANK WITH CONCRETE BASE

WOODED AREA

GUIDE WIRE

POLE CL&P 73229

STUMP

STEEL PIPES

EXISTING WETLANDS

EXISTING WETLAND FLAG, TYP

MH

SHRUB

WV

POLE CL&P 6468 W/ UG

CONC PAD w/ TRANSFORMER

BOL

VAULT

ASPHALT AREA

CB

REF. WALL w/5' CHLK

ELEC BOX

6" PVC

4" PVC

STONE RET. WALL

BUILDING

FLOOD BOUNDARY, TYP.

PROPERTY BOUNDARY, TYP.

FLOOD ELEVATION, TYP.

POST

ORN

MAILBOX

CONC. CURB

CONC. SIDEWALK

TIMBER WALL

POST w/ SPOT LIGHT

1 — SITE ACCESS MAP
SCALE: 1" = 15' FULL SIZE
1" = 30' 11 X 17

GRAPHIC SCALE
30 0 15 30
IN FEET

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

CHA PROJECT NO:
18301 – 1077 – 43000

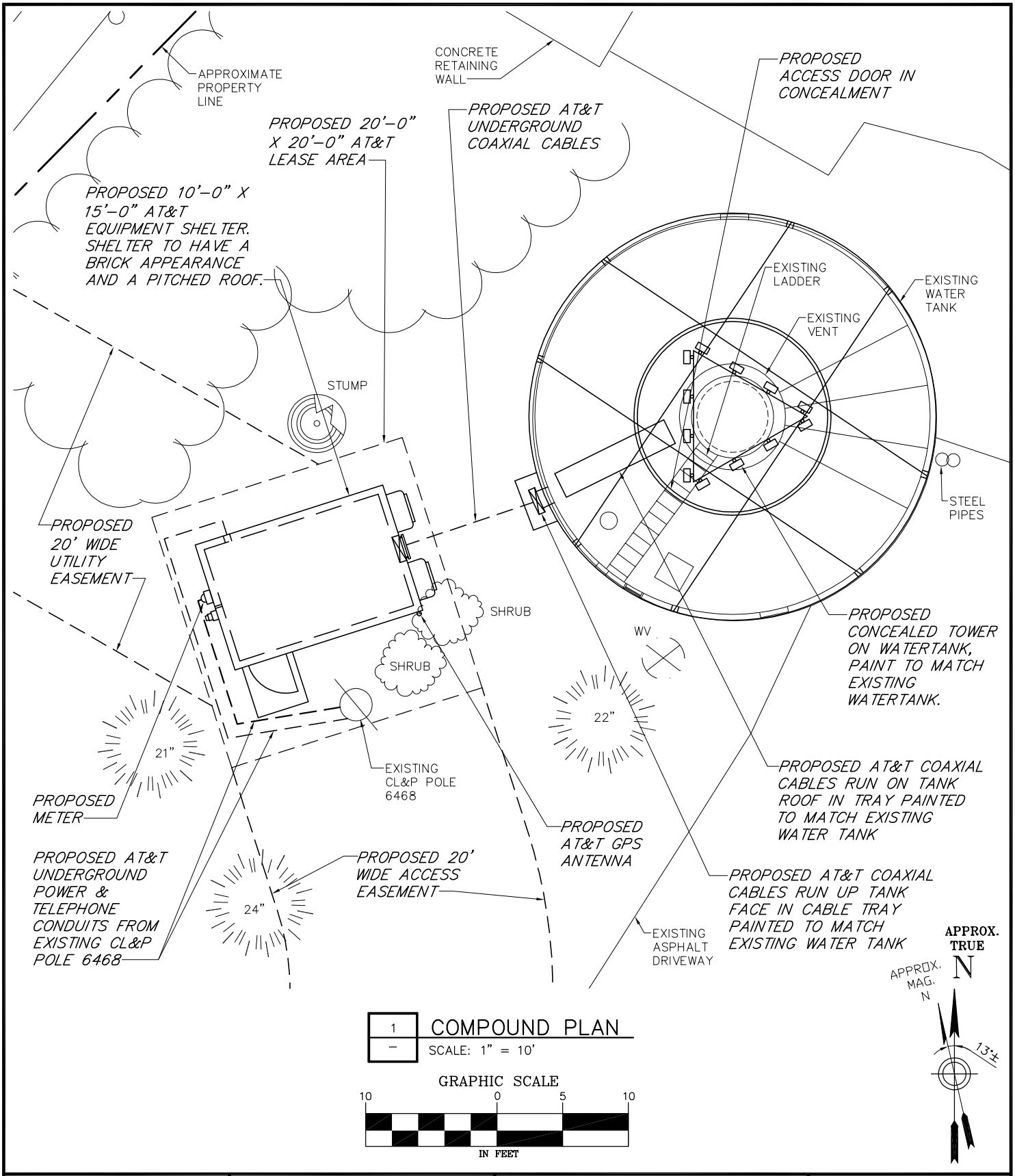
NO.	SUBMITTAL		
0	09/20/11	ISSUED FOR CSC CERTIFICATE	
	BY: PAL	CHK: PAL	APP'D: PAL

SITE ID:
CT1887
SITE NAME:
MIANUS WASH WATER TANK
SITE ADDRESS:
455 VALLEY ROAD
COS COB, CT
06807
FAIRFIELD COUNTY

SHEET TITLE
SITE ACCESS MAP

SHEET NUMBER
C02

File: w:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\2D\GREENWICH-2 SITE ACCESS MAP.DWG Saved: 9/20/2011 7:55:11 AM PLotted: 9/21/2011 9:49:43 AM User: Lusitoni, Paul



1 — COMPOUND PLAN
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10
IN FEET

CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067

CT1887
MIANUS WASH WATER TANK
455 VALLEY ROAD
COS COB, CT 06807
FAIRFIELD COUNTY

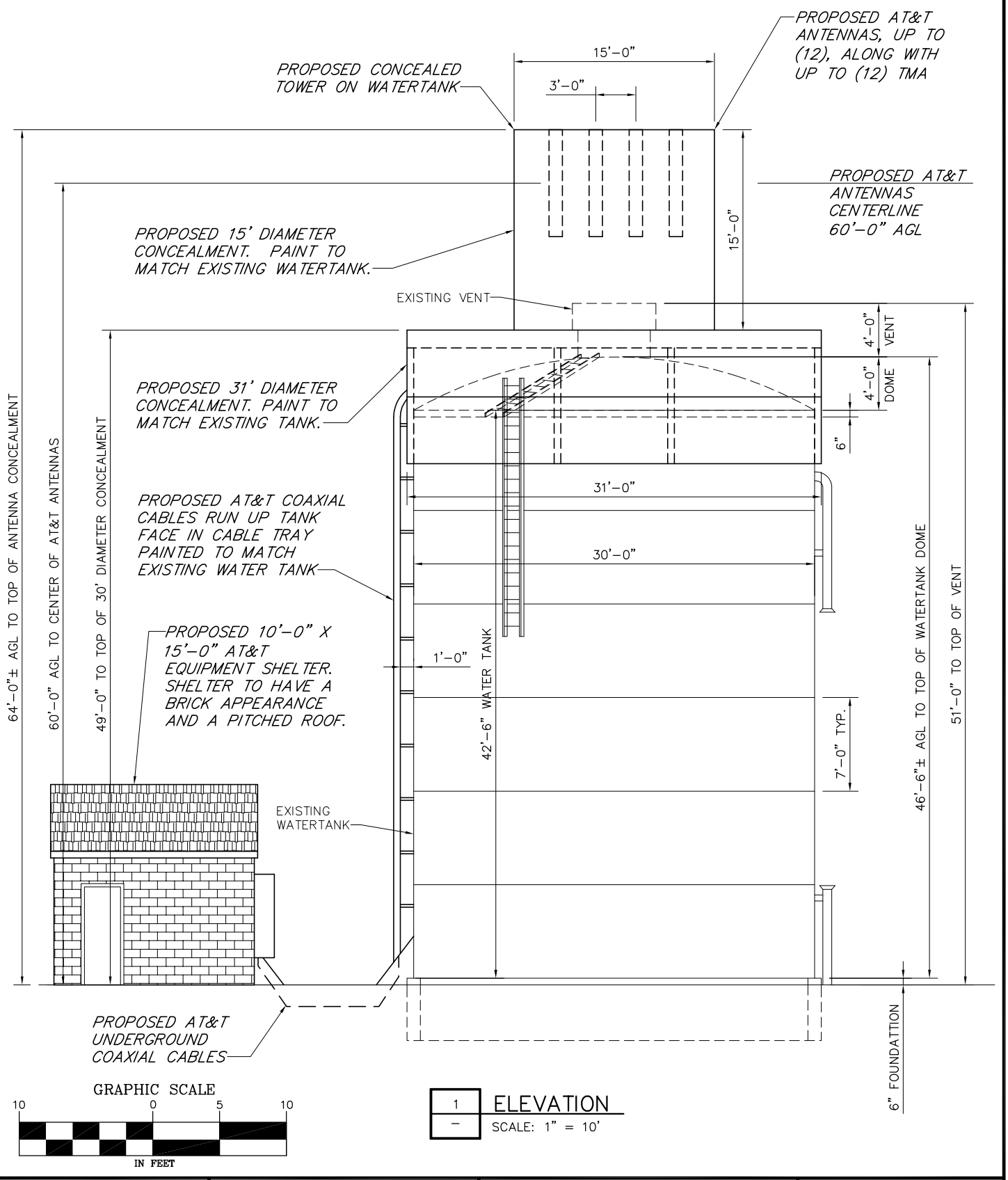
CHA PROJ. NO. – 18301-1077-43000

SHEET TITLE:
COMPOUND PLAN

DATE:
09/20/11

REVISION:
0

DATE: 9/19/2011 4:10 PM FILE: W:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\ZD\GREENWICH-3 COMPOUND PLAN.DWG



CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067

CT1887
MIANUS WASH WATER TANK
455 VALLEY ROAD
COS COB, CT 06807
FAIRFIELD COUNTY

CHA PROJ. NO. – 18301-1077-43000

SHEET TITLE:
TOWER ELEVATION

DATE:
09/20/11

REVISION:
0

DATE: 9/21/2011 9:44 AM FILE: W:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\ZD\GREENWICH-4 TOWER ELEVATION.DWG

September 14, 2011

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067

RE: Structural Analysis of the Aquarian Water Tank (CT1887) – Antenna Enclosure Allowances Located in Fairfield County, CT
CHA Project No. 18301-1077-28000

To whom it may concern:

CHA has performed an overturning moment analysis of the referenced water tank for the purpose of evaluating its ability to support existing loads in addition to new equipment loads within a fiberglass enclosure proposed by New Cingular Wireless. In summary, our analysis indicates that the water tank with its foundation weight ***are*** structurally capable of resisting the overturning moment due to existing and proposed loads, given the following maximum allowed enclosure dimensions:

Option 1 – 9'-0" x 9'-0" square enclosure, allowing antennas to be mounted at a centerline elevation of 60'-0" AGL.

Option 2 – 15'-0" diameter circular enclosure, with antennas mounted at a centerline elevation of 60'-0" AGL.

Our analysis is based on the following information:

- Original water tank drawings and foundation information obtained from design drawings by American Water Works Service Company, Inc., dated September 24, 1953.
- Proposed and existing equipment information, including antenna models and elevations, obtained from New Cingular Wireless dated July 11, 2011.
- Water tank field investigation information obtained from NE Towers, dated August 10, 2011.
- Previous analysis by CHA, dated August 29, 2011.

Our analysis includes data for the following proposed equipment and cables:

1- New Cingular Wireless

- Twelve (12) Powerwave P65-17-XLH-RR panel antennas mounted within a fiberglass enclosure, at a centerline elevation of 60' AGL, with eighteen (18) 1-5/8" coaxial cables.

2139 Silas Deane Highway, Suite 212, Rocky Hill, CT 06067-2336
T 860.257.4557 • F 860.257.7514 • www.chacompanies.com

- Six (6) Remote Radio Units mounted to the new fiberglass enclosure at a centerline elevation of 60' AGL.
- Six (6) Powerwave TT19-08BP111-001 TMA's mounted within the new fiberglass enclosure at a centerline elevation of 60' AGL.
- One (1) Raycap DC-48-60-18-8F Surge Arrestor
- Two (2) DC Power Cables and one (1) 5/8" Fiber Cable in a 3" innerduct.

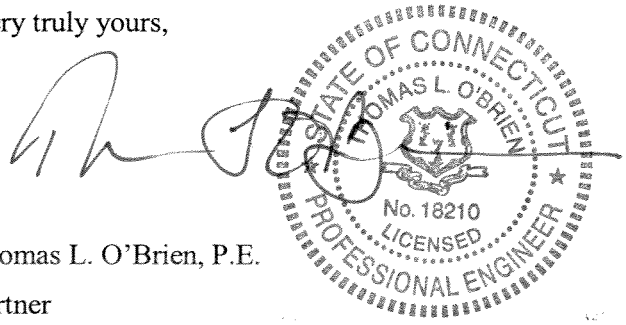
With this information and ANSI/TIA/EIA-222-F, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures,* as well as ANSI/AWWA, *American Water Works Association Standards* - D100-05 with FM approvals dated May 2011, the analysis was performed to verify the adequacy of the tank to resist overturning due to the increase wind areas on the tank. A plate analysis of the tank walls to determine their adequacy to support loads due to the proposed enclosure, under load combinations due to wind, has not been performed. Per the AWWA standard, wind speed considered in the analysis is 100 mph, which coincides with the wind speed for Greenwich County per the 2005 CT Supplement to the Building Code. Based on the data provided, applicable wind loads were calculated. These wind loads were then applied to the existing structure with the proposed wall extension.

The analysis indicates that the existing water tank ***is*** capable of supporting the existing and proposed loads, under the given maximum dimensions for the two (2) options, listed on page 1. The proposed fiberglass enclosure top of wall height is 64' AGL, which is 21'-6" above the top of existing tank wall elevation. The fiberglass enclosure will be supported on a steel frame that will be connected to the existing water tank walls. This configuration allows the existing tank to meet the overturning moment Safety Factor of 2.0. The fiberglass enclosure is required to be supported by a steel framed platform, in order to transfer loads from the enclosure to the tank walls, rather than the tank roof.

CHA was not provided original tank base reactions for the foundation. A foundation analysis has not been performed in order to determine its adequacy for supporting the proposed loads in addition to the existing loads.

If you have any questions, or if we can be of further assistance, please do not hesitate to call.

Very truly yours,



Thomas L. O'Brien, P.E.

Partner

CHA

CHA COMPUTATION PAD

COMPLETED BY:	Jan
CHECKED BY:	CJ
PROJECT NAME:	CT 1387
PROJECT LOCATION:	FAIRFIELD COUNTY

PROJECT	PHASE	ORG
18301	1077	28000

SHEET #: 1 OF

DATE: 7/12/11

SUBJECT: O.T.M. ANALYSIS - SRR. ENCLOSURE

PER PREVIOUS ANALYSIS - 8/22/11 ;

P_{WIND} 0'-50' = 23.3 PSF / 0.6 = 38.8 PSF ✓
P_{WIND} 50'-100' = 27.1 PSF / 0.6 = 45.2 PSF ✓

C_f = 0.6 (FOR ROUND SURFACES) / C_F = 1.0 FOR FLAT SURFACES. ✓
G = 1.0

CHK OPTION 1: FIBERGLASS ENCLOSURE TO EXTEND APPROX 4'-0" ABOVE TOP OF EXISTING W.T. ROOF, FLAT FACE, 18'-0" WIDTH 4-SIDED, WITH STEEL FRAMING @ BASE & PANELS ON OUTSIDE FACE OF STEEL. SK-1 (ATTACHED). SK-1 (P.3)

ANALYSIS: M_{OT} O.T.M.

0'-42'-6" = $P_{WIND} \times AREA$ = 29.71K (WIND ON TANK - SAME AS PREVIOUS)
42'-6"-48'-6" = $P_{WIND} \times AREA$ = 23.3 PSF × (6' × 31'-0" Φ) = 4.33K
↳ WIND ON CONCEALMENT FROM T/WALLS TO 1'-6" ABOVE T/ROOF.
48'-6"-50'-0" = $P_{WIND} \times AREA$ = 38.8 PSF × (19' WIDTH × 1.5') = 0.81K ✓
50'-69'-0" = $P_{WIND} \times AREA$ = 45.2 PSF × (14' × 14') = 8.86K ✓

$M_{OT} = [(29.71^K \times \frac{42.5'}{2}) + (4.33^K \times 45.5) + (0.81^K \times 47.25') + (8.86^K \times 57')] = \underline{1373.3\ K\cdot ft}$ ✓

RESISTING MOMENT: M_R RESISTING MOMENT

(FROM PREVIOUS) WT. WALLS + WT. ROOF + WT. LADDER + WT. CONC. FDN + WT. TANK FLOOR + WT. EQUIP
= 57.3K + 8.1K + 0.3K + 63.8K + 21.6K + 1.2K
= 152.3K

WT. ENCLOSURE = 7.93 PLF × (19' × 4 SIDES) + (FIRE PROTECTION = 200 LBS) = 0.62K
WT. STEEL = (8 POSTS @ 19.33 PLF FOR HSS 4×4×1/16") × 50 LF + (W16×31 × 120') = 4.96K

$M_R = (152.3^K + 0.62^K + 4.96^K) \times 15' = \underline{2360\ K\cdot ft}$

CHA COMPUTATION PAD

COMPLETED BY:	Ken
CHECKED BY:	CJ
PROJECT NAME:	CT 1887
PROJECT LOCATION:	FAIRFIELD COUNTY

PROJECT	PHASE	ORG
18301	1077	28200

SHEET #: 2 OF

DATE: 9/19/11

SUBJECT: OTM ANALYSIS - SQR ENCLOSURES

OVERTURNING MOMENT ANALYSIS: OPTION 1

$MR/M_{OT} \leq 2.0$?

$\frac{2360 \text{ K-FT}}{1373.3 \text{ K-FT}} = 1.72 < 2.0$ ✗ (N.G.) ✓ F.S. CHK

∴ FIBERGLASS ENCLOSURE THAT IS 14'-0" SQUARE WITH A TOP OF WALL ELEVATION OF 69'-0" IS NOT ADEQUATE, & ANTENNA WILL BE @ 60'-0", PER CLIENT.
IN THIS SCENARIO: T/STEEL PLATFORM = 48'-6" AGL
T/FRP WALL = 61'-0" AGL
MAXIMUM PERMISSIBLE FLAT FACE WIDTH = 9'-0" (FS. = 2.0)

OPTION 2: CIRCULAR ENCLOSURE W/ AN ASSUMED 14' DIAMETER & SAME HEIGHT AS SQUARE ENCLOSURE, SK-2 (ATTACHED) SK-2 (P4)

SINCE $C_F = 0.6$; ✓

∴ ASSUMED 14' OUTER DIAMETER IS (OK) ✓ B.I.
MAXIMUM ALLOWED = 9'/0.6 = 15'-0"

* NOTES: ① THIS IS PRESUMING THE STEEL PLATFORM FRAMING WILL REMAIN THE SAME AS INTENDED FOR 9' SQUARE OPTION #1, & AN ALTERNATE SOLUTION FOR ANY KICKER BRACES REQ'D WILL BE DESIGNED BY FIBERGLASS ENCLOSURE MANUFACTURER, (IF REQ'D)

② CHA WILL NOT BE RESPONSIBLE FOR THE DESIGN OF ANY FIBERGLASS ENCLOSURES, OR ANYTHING ABOVE STEEL PLATFORM FRAMING, WHICH WILL BE DESIGNED BASED ON FRP MANUFACTURER DESIGN REACTIONS.

CHA COMPUTATION PAD

COMPLETED BY:	[illegible]
CHECKED BY:	CA
PROJECT NAME:	CT 1387
PROJECT LOCATION:	Cos Cobb, CT. (FAIRFIELD Co.)

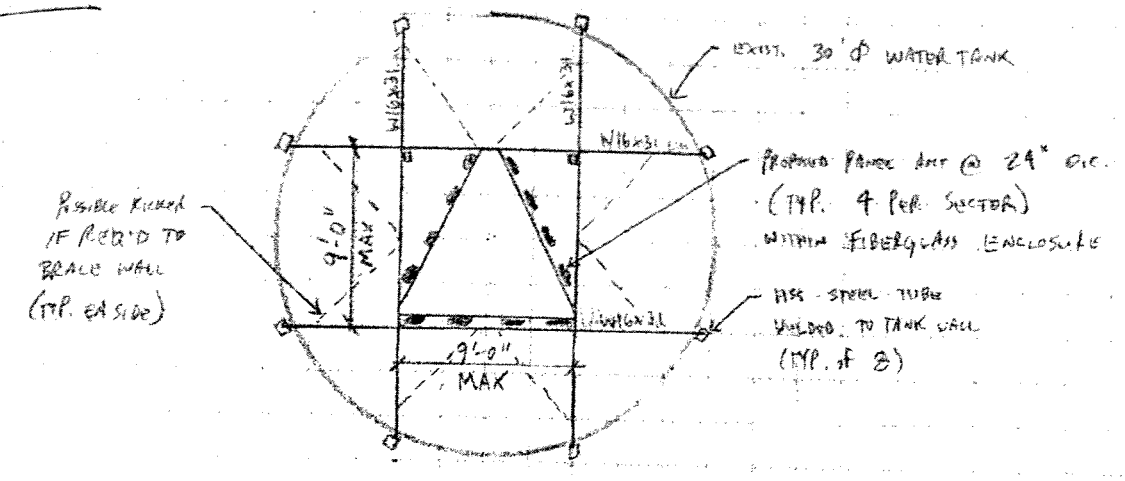
PROJECT	PHASE	ORG
18301	1977	

SHEET #: 3 OF

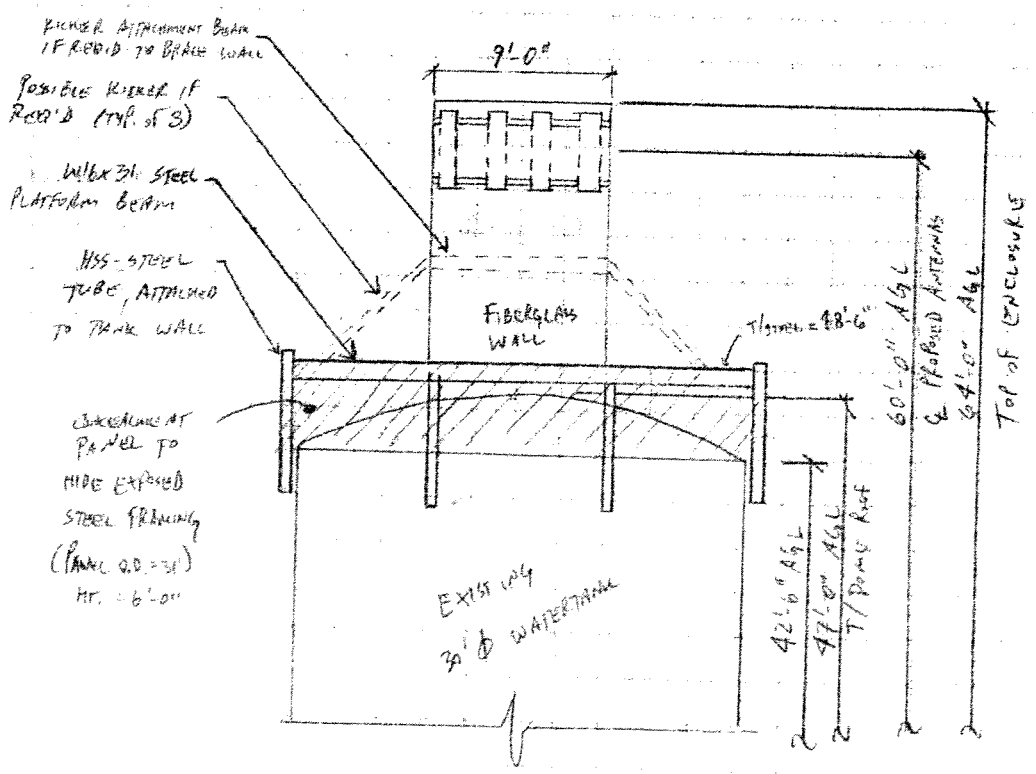
DATE: 9/12/11

SUBJECT: ALTERNATE FRP ENCLOSURE SKETCH - OPTION 1

SK-1



PLAN VIEW



ELEVATION VIEW

CHA COMPUTATION PAD

COMPLETED BY:	[illegible]
CHECKED BY:	CJ
PROJECT NAME:	CT1337
PROJECT LOCATION:	FAIRFIELD COUNTY, CT.

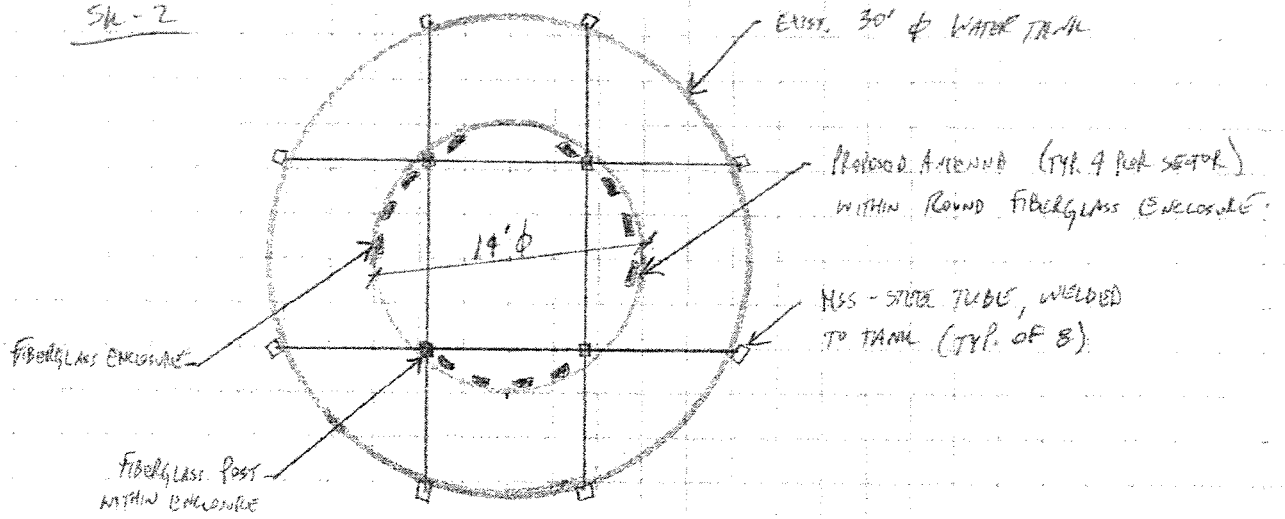
PROJECT	PHASE	ORG
18301	1077	28 000

SHEET #: 2 OF

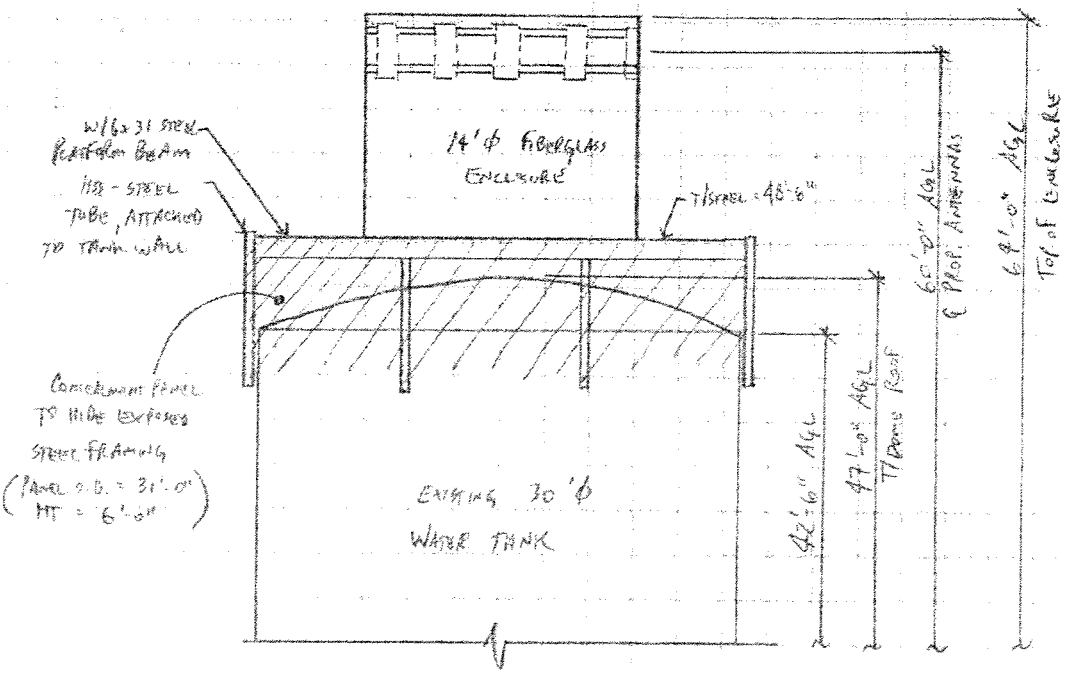
DATE: 9/19/11

SUBJECT: ALTERNATE RFP ENCLOSURE SKETCH - ATTACH

Sk - 2



PLAN VIEW



ELEVATION VIEW

Exhibit C

Visual Analysis Report

CT1887
MIANUS WASH WATER TANK
455 VALLEY ROAD
COS COB, CT 06807

CHA Project Number: 18301.1077.43000

Prepared for:
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067

Prepared by:

2139 Silas Deane Highway
Rocky Hill, Connecticut 06067
(860) 257-4557

September 23, 2011 Rev. 0

TABLE OF CONTENTS

1.0 INTRODUCTION

CHA conducted a visibility study for a proposed concealed tower to be positioned on top of an existing water tank located at 455 Valley Road, Cos Cob, CT. The proposed antennas are to be located at a centerline elevation of 60'-0" above ground level (AGL). The top of the existing water tank is about 47'-0" AGL, therefore, a vertical enclosure on top of the existing water tank is proposed to house the tower and will have an overall height of 64'-0" AGL. The purpose of the study was to determine the visual impact, if any, that the proposed concealed tower would have on the surrounding community within a two mile radius study area. Two techniques were utilized to determine the visual impact within the study area: a computer model using topography and vegetation as constraints to estimate the visual limits and a field analysis to verify the visual limits determined from the computer model. Research of the study area was also conducted to determine locations of sensitive visual receptors.

2.0 COMPUTER MODEL VISUAL ANALYSIS

A computer model was developed using a proprietary AutoCAD-based application developed by our Technology Solutions Group to estimate how the surrounding topography and vegetation within a 2 mile radius may obstruct the extended water tank's visibility. The visibility calculations are completed using a digital elevation model (DEM), which is a model of the earth's surface represented by a grid of elevations from USGS topography maps. Each point in the DEM is independently tested for visibility based on the surrounding topography developed from the USGS maps. Once all points have been tested, a map is generated showing areas of visibility and areas screened by topography. Knowing which areas are screened by topography will assist in field determining which areas within the study area may have seasonal visibility. Next, vegetation within the study area is added to the map by digitizing it from 2004 aerial photographs. CHA's application utilizes a vegetation outline layer which is assigned the standard 65' height. A new map is generated showing only areas of visibility based on topography and the vegetation constraint. These visible areas will be verified during the field visual analysis.

3.0 VISUAL RECEPTOR RESEARCH

Research of the surrounding study area was conducted to determine the locations of sensitive visual receptors such as historic sites, historic districts, schools, churches, cemeteries, parks, playgrounds, recreational areas, walking trails, beaches, scenic roads, scenic lands[1], and heritage areas[2]. Historic sites and districts were determined from the National Register of Historic Places. State parks and walking trail systems were determined from the CTDEP and municipalities websites. Surrounding schools, churches, cemeteries, parks, playgrounds, recreational areas, and beaches were determined from street maps, internet searches, and available mapping from the municipal websites. Scenic roads were determined from the CTDOT list of designated scenic roads. Scenic lands were determined by contacting the CTDOT. Heritage Areas were determined from available information on individual heritage area websites and internet searches. All of the above sensitive visual receptors were added to the viewshed map.

4.0 SITE AND STUDY AREA DESCRIPTION

The subject parcel is approximately 2.6 acres. The parcel houses an existing water tank, Water Company building, and associated parking and appurtenances. The existing water tank where the concealed tower is to

[1] Scenic Lands acquired pursuant to Public Act No. 445 (February, 1965)
[2] Connecticut Heritage Areas pursuant to Public Act No. 09-221 (July, 2009)

be located is in a low lying area at the north end of the parcel, adjacent to the Mianus River. The base of the water tank is at about +/-72' AMSL. The topography within the study area consists of hills ranging from 30' AMSL to 250' AMSL. The heavy vegetation and varied topography surrounding the proposed facility will act as a visual buffer to help screen the facility from the adjacent residential parcels. Additionally, the relatively low height (64'-0" AGL) will limit the structures visibility within the study area.

There are 5 historical sites, 14 parks/recreational areas, 14 schools, 3 cemeteries, and 10 churches within the study area. There are no designated scenic roads within the study area.

5.0 FIELD VISUAL ANALYSIS

On August 23, 2011 a field visual analysis was conducted to verify the sensitive visual receptors and the limit of visibility determined from our research and computer model. Weather conditions were favorable on the date of the visibility study as it was a clear and sunny day with winds between 3 and 7 MPH; therefore, visibility of the balloon from surrounding areas was not affected. In general, the field visibility study was conducted as follows: A 40" diameter red balloon was flown at a height of 64'-0" above existing grade. Once the balloon was flown, CHA completed a field drive of the surrounding area to determine the visibility of the balloon, and thus the proposed concealed tower. Visibility from the sensitive visual receptors was our primary focus so photos were taken from each of these locations. Photos were also taken from major streets, intersections, and residential areas; from key areas where the balloon was visible; and from key areas where it was not visible. The limits of visibility determined from the computer model were field verified and adjusted as needed. Areas of potential seasonal visibility were field estimated and marked on the viewshed map. Finally, the number of residences within the seasonal and year round visible areas was determined.

6.0 CONCLUSION

The results of our visual study are summarized in the following documents: Section 7.0: Visibility Summary Tables, Section 8.0: Viewshed Maps, and Section 9.0: Photosims. In conclusion, the year round visual impact to the surrounding community within a two mile radius is limited to the red hatched areas on the viewshed map, which is approximately 0.15%, or 12.16 acres, of the total study area. The proposed concealed tower will be seen year round by 19 residences within the study area. The proposed concealed tower will not be seen year round from any of the sensitive visual receptors listed on the viewshed map.

Immediately outside some of the limits of year round visibility, trees start to screen the proposed monopole giving the potential for seasonal views. The blue hatched areas on the viewshed map indicate the seasonal visual impact estimated during leaf on conditions, which is approximately 0.04%, or 3.48 acres, of the total study area. The proposed concealed tower will be seen seasonally from 6 residences within the study area. The proposed concealed toewr will not be seen seasonally from any of the sensitive visual receptors listed on the viewshed map.

The remainder of the two mile radius study area is screened by topography (5,967 acres, 74%) and vegetation (2,070 acres, 26%). Photos documenting the visible conditions described above have been included in the photo-simulations with their locations marked on the viewshed map.

7.0 VISIBILITY SUMMARY TABLES

Visibility Summary by Photo Simulation Location					
View Number	Visibility	Location	Distance to Concealed Tower (ft / miles)	Nearby Residences with Views by Address	Nearby Visual Receptors with Views
1	Year Round	Intersection of South Street and Valley Road	590 / 0.11	South Street: 1, #[2] Valley Road: 436, 434	None
2	Seasonal[1]	Intersection of Valley Road and Park Street	380 / 0.07	Park Street: 1, 5	None
3	Year Round	North Street	240 / 0.05	Valley Road: 450 North Street: 6	None
4	Year Round	Valley Road	60 / 0.01	Valley Road: 456, 464, 460 North Street: 1, 2, 3 Walnut Street: #[2]	None
5	Year Round	Intersection of North Street and Chestnut Street	530 / 0.10	North Street: 4 Chestnut Street: 16	None
6	Seasonal[1]	Valley Road	620 / 0.12	Valley Road: 470, 480, 482, 484	None
7	Year Round	River Road	400 / 0.08	River Road: #[2], 664, 659, 674	None
8	Nonvisible	Mianus River National Park	1,715 / 0.32	N/A	N/A
9	Nonvisible	Mianus River Park Trails	2,480 / 0.47	N/A	N/A
10	Nonvisible	Westover Elementary School	6,785 / 1.29	N/A	N/A
11	Nonvisible	Scalzi Park and J.M. Wright Technical High School	9,160 / 1.73	N/A	N/A
12	Nonvisible	Stillmeadow School	5,524 / 1.05	N/A	N/A
13	Nonvisible	Roxbury School	8,450 / 1.60	N/A	N/A
14	Nonvisible	Beth-El Cemetery	9,600 / 1.82	N/A	N/A
15	Nonvisible	Fort Stamford	5,960 / 1.13	N/A	N/A
16	Nonvisible	North Mianus School	3,910 / 0.74	N/A	N/A
17	Nonvisible	Central Middle School	10,000 / 1.89	N/A	N/A
18	Nonvisible	The Stanwich School	7,024 / 1.33	N/A	N/A

[1]Seasonal views were determined during leaf-on conditions. Extents are based on the computer model and field judgement, not observation.

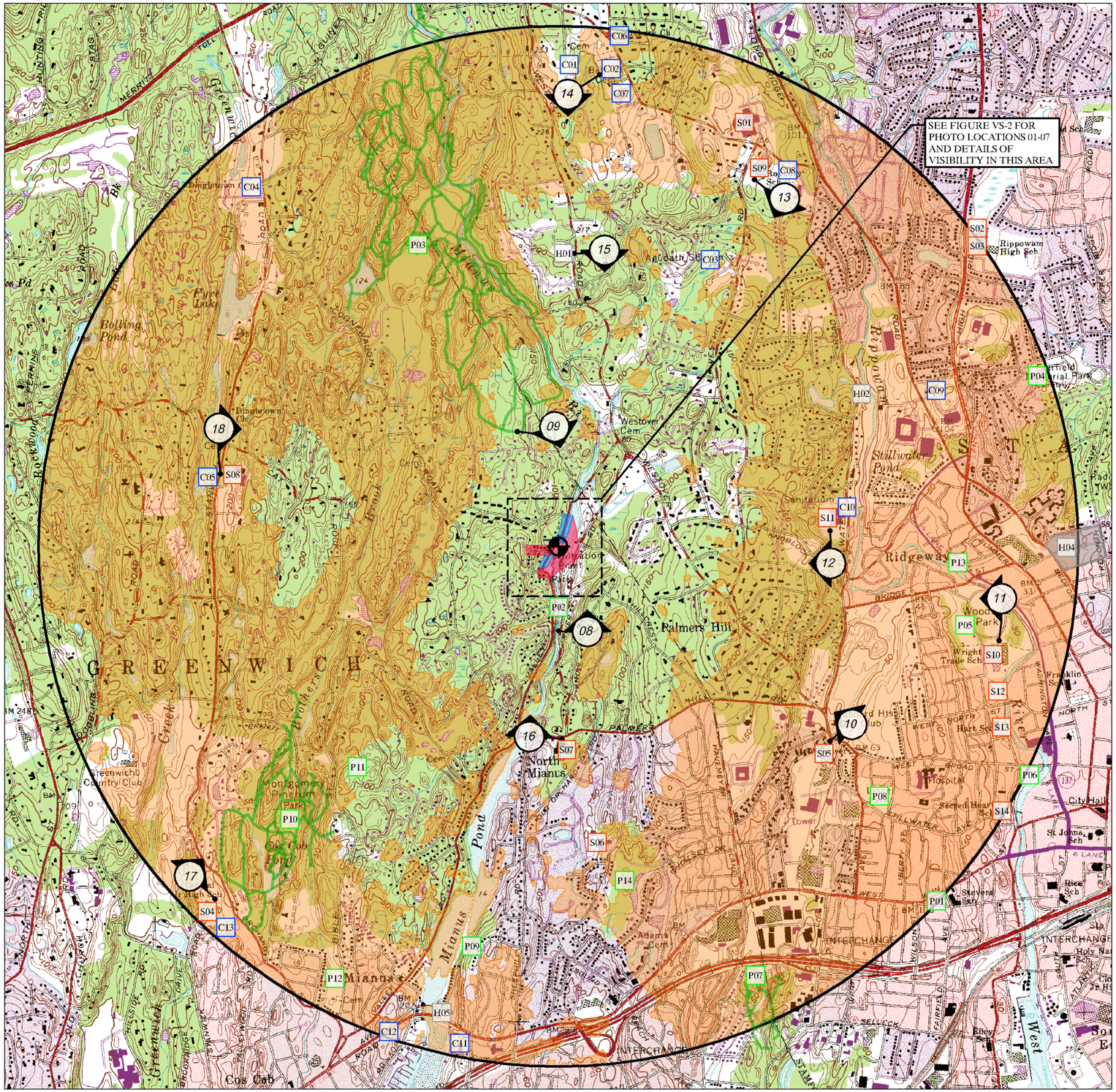
[2]Residence with visibility but no house/mailbox number found during field visit.

Visibility Summary by Street				
Street	Visibility	Residences with Views		Visibility Along Roadway (ft)
		Addresses	Total	
Chestnut Street	Year Round	16	1	60
North Street	Year Round	1, 2, 3, 4, 6	5	370
Park Street	Seasonal[1]	1, 5	2	50
River Road	Year Round	#[2], 664, 659, 674	4	260
South Street	Year Round	1, #[2],	2	100
Valley Road	Seasonal[1]	470, 480, 482, 484	4	290, 550
	Year Round	434, 436, 450, 456, 460, 464	6	270, 380
Walnut Street	Year Round	#[2]	1	90

[1]Seasonal views were determined during leaf-on conditions. Extents are based on the computer model and field judgement, not observation.

[2]Residence with visibility but no house/mailbox number found during field visit.

8.0 VIEWSHED MAPS



Sensitive Visual Receptors

Schools:

- S01 West Hill High School
- S02 Academy of Information Technology & Engineering
- S03 Rippowam Middle School
- S04 Central Middle School
- S05 Westover Elementary School
- S06 The International School at Dundee
- S07 North Mianus School
- S08 The Stanwich School
- S09 Roxbury School
- S10 J.M. Wright Technical High School
- S11 Stillmeadow School
- S12 Cloonan Middle School
- S13 Hart Magnet Elementary School
- S14 Sacred Heart School

Parks:

- P01 Hatch Field
- P02 Mianus River Natural Park
- P03 Mianus River Park
- P04 Fairfield Memorial Park
- P05 Scalzi Park
- P06 Mill River Park
- P07 Rosa Hartman Park
- P08 Lione Park
- P09 Mianus Park
- P10 Montgomery Pinetum
- P11 Montgomery Park
- P12 Bible Street Playground
- P13 Vincent Horan Park
- P14 Dundee Woods

Historic Sites:

- H01 Fort Stamford
- H02 John Knap House
- H03 Linden Apartments
- H04 Revonah Manor Historic District
- H05 Samuel Ferris House

Church/Cemetery:

- C01 Roxbury Cemetery
- C02 Beth-El Cemetery
- C03 Agudath Sholum Cemetery
- C04 Dingletown Church
- C05 St. Agnes Rectory
- C06 Roxbury Church
- C07 Temple Beth El
- C08 St. Leo Catholic Church
- C09 First United Methodist Church
- C10 Church of Jesus Christ of LDS
- C11 St. Catherine of Sienna
- C12 Diamond Hill United Methodist
- C13 Greenwich Baptist Church

Visibility by Acreage

ITEM	APPROXIMATE ACRES	% OF TOTAL AREA
2 MILE RADIUS AREA	8,053	100%
NOT VISIBLE DUE TO TOPOGRAPHY	5,967.27	74.10%
NOT VISIBLE DUE TO VEGETATION	2,070.09	25.71%
VISIBLE YEAR ROUND	12.16	0.15%
POTENTIAL SEASONAL [1] VISIBILITY	3.48	0.04%

[1] ESTIMATED DURING LEAF-ON CONDITIONS

Legend

- APPROX. LOCATION OF PROPOSED CONCEALED TOWER
- APPROXIMATE LIMIT OF YEAR ROUND TOWER VISIBILITY
- APPROXIMATE LIMIT OF SEASONAL TOWER VISIBILITY (ESTIMATED DURING LEAF-ON CONDITIONS)
- APPROXIMATE LIMIT OF AREA SCREENED BY TOPOGRAPHY (AS DETERMINED BY COMPUTER MODEL)
- # COMPUTER SIMULATION PHOTOGRAPH LOCATION (NON-VISIBLE)
- # COMPUTER SIMULATION PHOTOGRAPH LOCATION (YEAR ROUND VISIBILITY)
- # COMPUTER SIMULATION PHOTOGRAPH LOCATION (SEASONAL VISIBILITY)
- C# CHURCH/CEMETERY
- P# PARK
- WALKING TRAIL
- H# HISTORICAL SITE
- S# SCHOOL
- HISTORICAL DISTRICT

2 MILE VIEWSHED ANALYSIS MAP

MIANUS WASH WATER TANK
VISUAL IMPACT ASSESSMENT

PREPARED FOR:

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

PREPARED BY:

CHA

2139 Silas Deane Highway, Suite 212 - Rocky Hill, CT 06067-2336
Main: (860) 257-4557 • www.chacompanies.com

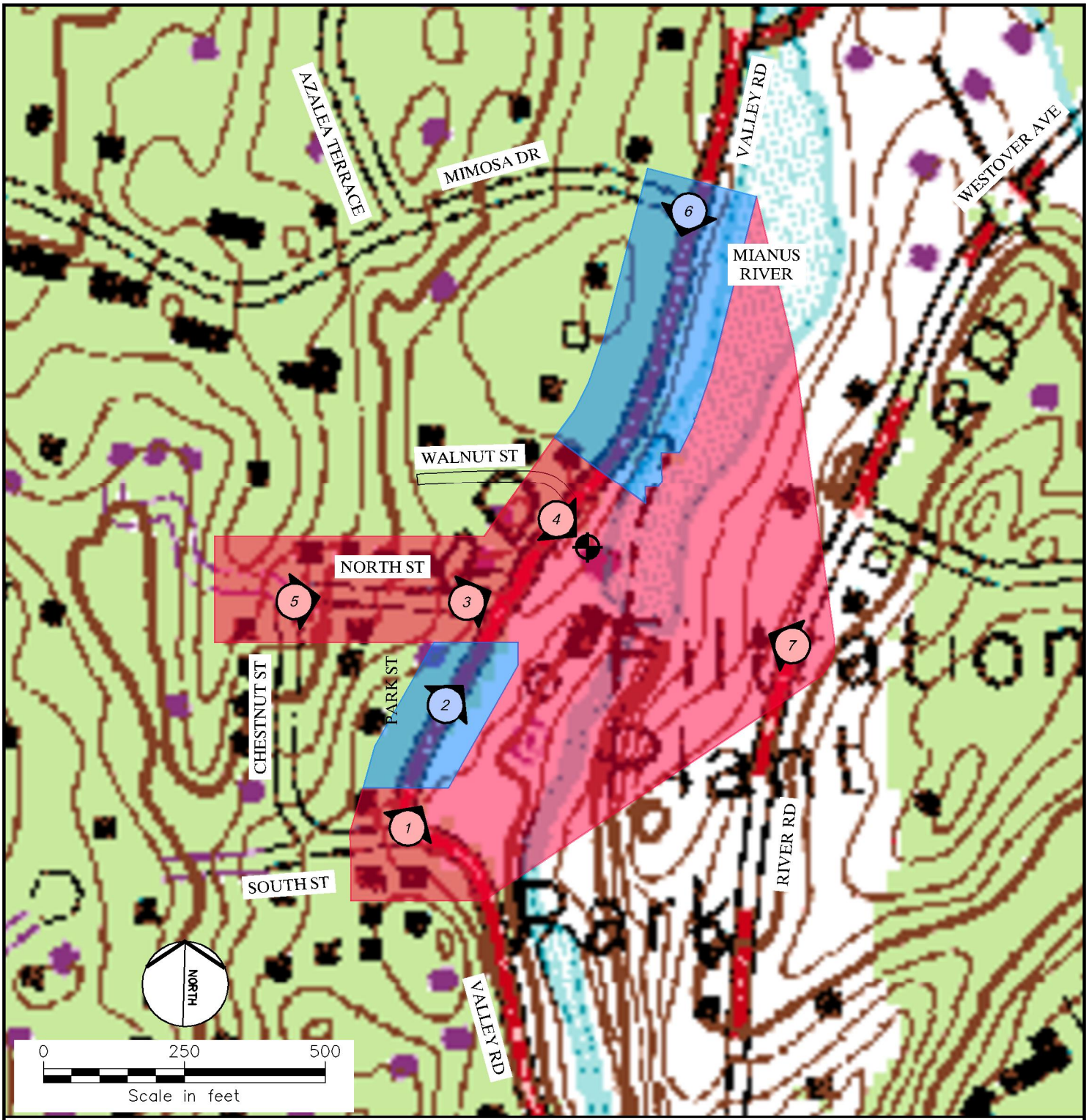
CHA Project No.
18301-1077-43000

September 2011

0 2250' 4500'

NORTH

FIGURE VS-1



APPROXIMATE LOCATION OF PROPOSED CONCEALED TOWER

COMPUTER SIMULATION PHOTOGRAPH LOCATION

NON-VISIBLE (#) SEASONAL[1] (#) YEAR ROUND (#)

APPROXIMATE LIMIT OF SEASONAL[1] TOWER VISIBILITY

APPROXIMATE LIMIT OF YEAR ROUND TOWER VISIBILITY

[1]SEASONAL VISIBILITY ESTIMATED DURING LEAF-ON CONDITIONS

CHA
2139 Silas Deane Highway, Suite 212 - Rocky Hill, CT 06067-2336
Main: (860) 257-4557 • www.chacompanies.com

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067

SHEET TITLE:

VISIBILITY NEAR PROPOSED SITE

FIGURE TITLE: VS-02

DATE: September 2011

REVISION: 0

DATE: 9/23/2011 10:23 AM FILE: W:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\VISUALS\VIEWSHED MAP – CT FORMAT.DWG

9.0 PHOTOSIMS

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 1 - EXISTING VIEW FROM INTERSECTION OF SOUTH STREET AND VALLEY ROAD LOOKING NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 1 - PROPSOED VIEW FROM INTERSECTION OF SOUTH STREET AND VALLEY ROAD LOOKING NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 2 - NON-VISIBLE VIEW FROM INTERSECTION OF VALLEY ROAD AND PARK STREET LOOKING NORTHEAST TOWARDS SITE (POTENTIAL SEASONAL VISIBILITY)

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 3 - EXISTING VIEW FROM
NORTH STREET LOOKING
NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 3 - PROPOSED VIEW FROM
NORTH STREET LOOKING
NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 4 - EXISTING VIEW FROM
VALLEY ROAD LOOKING
EAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 4 - PROPOSED VIEW FROM
VALLEY ROAD LOOKING
EAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 5 - EXISTING VIEW FROM INTERSECTION OF NORTH STREET AND CHESTNUT STREET LOOKING NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 5 - PROPSOED VIEW FROM INTERSECTION OF NORTH STREET AND CHESTNUT STREET LOOKING NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 6 - NON-VISIBLE VIEW FROM VALLEY ROAD LOOKING SOUTHWEST TOWARDS SITE (POTENTIAL SEASONAL VISIBILITY)

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 7 - EXISTING VIEW FROM
RIVER ROAD LOOKING
WEST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 7 - PROPOSED VIEW FROM
RIVER ROAD LOOKING
WEST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 8 - NON-VISIBLE VIEW FROM
MIANUS RIVER NATIONAL PARK
LOOKING NORTH TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 9 - NON-VISIBLE VIEW FROM
MIANUS RIVER PARK TRAILS
LOOKING SOUTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 10 - NON-VISIBLE VIEW FROM
WESTOVER ELEMENTARY SCHOOL
LOOKING NORTHWEST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 11 - NON-VISIBLE VIEW FROM SCALZI PARK AND J.M. WRIGHT TECHNICAL HIGH SCHOOL LOOKING NORTHWEST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 12 - NON-VISIBLE VIEW FROM STILLMEADOW SCHOOL LOOKING WEST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 13 - NON-VISIBLE VIEW FROM ROXBURY SCHOOL LOOKING SOUTHWEST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 14 - NON-VISIBLE VIEW FROM
BETH-EL CEMETERY LOOKING
SOUTH TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 15 - NON-VISIBLE VIEW FROM
FORT STAMFORD LOOKING
SOUTH TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 16 - NON-VISIBLE VIEW FROM NORTH MIANUS SCHOOL LOOKING NORTH TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 17 - NON-VISIBLE VIEW FROM CENTRAL MIDDLE SCHOOL LOOKING NORTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Photosim for conceptual purposes only - actual antenna and equipment locations to be determined based on final engineering design

CHA

DATE: SEP 2011

SITE: CT1887
AQUARION
WATER TANK

VIEW 18 - NON-VISIBLE VIEW
FROM THE STANWICH SCHOOL
LOOKING SOUTHEAST TOWARDS SITE

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

Exhibit D

August 4, 2011

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067

RE: Tree Inventory
Site: CT1887 Aquarion Water Tank
455 Valley Road
Cos Cob, CT 06807
CHA # 18301-1077-43000

A site survey was completed at the subject site in July of 2011. A requirement of the survey involved determining the location of all trees within the topographic survey area with a diameter at breast height of 6" or larger. As can be seen on the site access map, no trees with a diameter of 6" or larger need to be removed for construction of the facility.

If you have any questions, comments or need further information, please do not hesitate to contact our office.

Very truly yours,

CLOUGH HARBOUR & ASSOCIATES LLP

Paul Lusitani

Paul Lusitani
Project Engineer

W:\SAI Cingular\18301\Sites\1077 Greenwich 1887\ZD\GREENWICH-8 TREE INVENTORY.doc

2139 Silas Deane Highway, Suite 212, Rocky Hill, CT 06067-2336
T 860.257.4557 • F 860.257.7514 • www.cloughharbour.com

Exhibit E

Vanasse Hangen Brustlin, Inc.

WETLANDS DELINEATION REPORT

Date: August 15, 2011

Project No.: 41502.45

Prepared For: New Cingular Wireless PCS, LLC
500 Enterprise Drive, Suite 3A
Rocky Hill, Connecticut, 06067

Site Location: Aquarion Water Tank - 455 Valley Road, Greenwich (Cos Cob), Connecticut

Site Map: Wetland Sketch, dated June 20, 2011

Inspection Date: June 20, 2011

Field Conditions: Weather: sunny, mid 70's
Snow Depth: 0 inches
General Soil Moisture: moist
Frost Depth: 0 inches

Type of Wetlands Identified and Delineated:

Connecticut Inland Wetlands and Watercourses	☒
Tidal Wetlands	☐
U.S. Army Corps of Engineers	☐

Local Regulated Upland Review Areas: Wetlands*: 150 feet Watercourses*: 200 feet
* Within public water supply watershed (Mianus River Watershed)

Field Numbering Sequence of Wetlands Boundary: WF 1 to 13
[as depicted on attached wetland sketch map]

The classification systems of the National Cooperative Soil Survey, the U.S. Department of Agriculture, Natural Resources Conservation Service, County Soil Survey Identification Legend, Connecticut Department of Environmental Protection and United States Army Corps of Engineers New England District were used in this investigation.

All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.

The wetlands delineation was conducted and reviewed by:

Dean Gustafson
Professional Soil Scientist

Enclosures

54 Tuttle Place
Middletown, Connecticut 06457-1847
860.632.1500 ▪ FAX 860.632.7879
email: info@vhb.com
www.vhb.com

Attachments

- Wetland Delineation Field Form
- Soil Map
- Soil Report
- Wetland Delineation Sketch Map

Wetland Delineation Field Form

Project Address:	455 Valley Road Greenwich (Cos Cob), Connecticut	Project Number:	41502.45
Inspection Date:	June 20, 2011	Inspector:	Dean Gustafson, PSS
Wetland I.D.:	Wetland 1		

Field Conditions:	Weather: sunny, mid 70's	Snow Depth: 0 inches
	General Soil Moisture: moist	Frost Depth: 0 inches
Type of Wetland Delineation:	Connecticut ☒	
	ACOE ☐	
	Tidal ☐	
Field Numbering Sequence: WF 1 to 13		

WETLAND HYDROLOGY:

NONTIDAL

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☒
Semipermanently Flooded ☐	Seasonally Flooded ☒	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☐	Seasonally Saturated - perched ☐
Comments:		

TIDAL

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: N/A		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☒	Palustrine ☐
Lacustrine ☐	Marine ☐	
Comments: dammed portion of Mianus River forms Mill Pond		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☒	Disturbed ☒	Wet Meadow ☐
Comments: forested & developed bordering edge of Mianus River/Mill Pond		

WATERCOURSE TYPE:

Perennial ☒	Intermittent ☐	Tidal ☐
Comments: Mianus River		

SPECIAL AQUATIC HABITAT:

Vernal Pool ☐	Other ☐	
Comments: N/A		

Wetland Delineation Field Form (Cont.)

MAPPED SOILS:

SOIL SERIES (Map Unit Symbol)	WET	UP	NRCS MAPPED	FIELD IDD/ CONFIRMED
Ridgebury, Leicester, and Whitman soils, extremely stony (3)	☒	☐	☒	☒
Canton and Charlton soils (61)	☐	☒	☒	☒
Udorthents-Urban land complex (306)	☐	☒	☒	☒

DOMINANT PLANTS:

sugar maple (*Acer saccharum*)	Japanese barberry (*Berberis thunbergii*)
winged euonymus (*Euonymus alatus*)	common spicebush (*Lindera benzoin*)
white ash (*Fraxinus americana*)	American sycamore (*Platanus occidentalis*)

WETLAND NARRATIVE:

Wetland 1 is identified as the edge of the Mianus River consisting of some upland bordering forest and a concrete retaining wall as the boundary of the delineated wetland. This concrete retaining wall provides the boundary for most of the Mianus River through the subject parcel. A dam is located near wetland flag WF 13, forming a ponded portion of the Mianus River known as Mill Pond. The Mianus River bank is located approximately 50 feet east of the proposed telecommunications ground equipment.

Soil Map—State of Connecticut
(455 Valley Road, COS COB, CT 06807)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:1,390 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

Date(s) aerial images were photographed: 7/16/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	3.5	40.8%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	2.5	28.6%
275C	Urban land-Chatfield complex, rocky, 3 to 15 percent slopes	1.5	17.2%
W	Water	1.2	13.4%
Totals for Area of Interest		**8.6**	**100.0%**

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

State of Connecticut

Map Unit: 73C—Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky

Component: Charlton (45%)

The Charlton component makes up 45 percent of the map unit. Slopes are 3 to 15 percent. This component is on hills, uplands. The parent material consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Chatfield (30%)

The Chatfield component makes up 30 percent of the map unit. Slopes are 3 to 15 percent. This component is on hills, ridges, uplands. The parent material consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Rock outcrop (6%)

Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Component: Hollis (5%)

Generated brief soil descriptions are created for major components. The Hollis soil is a minor component.

Component: Leicester (5%)

Generated brief soil descriptions are created for major components. The Leicester soil is a minor component.

Component: Sutton (5%)

Generated brief soil descriptions are created for major components. The Sutton soil is a minor component.

Component: Unnamed, red parent material (2%)

Generated brief soil descriptions are created for major components. The Unnamed soil is a minor component.

Component: Unnamed, sandy subsoil (2%)

Generated brief soil descriptions are created for major components. The Unnamed soil is a minor component.

Map Unit: 75E—Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes

Component: Hollis (35%)

The Hollis component makes up 35 percent of the map unit. Slopes are 15 to 45 percent. This component is on hills, ridges, uplands. The parent material consists of loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 40 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Chatfield (30%)

The Chatfield component makes up 30 percent of the map unit. Slopes are 15 to 45 percent. This component is on hills, ridges, uplands. The parent material consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Rock outcrop (15%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Component: Charlton (7%)

Generated brief soil descriptions are created for major components. The Charlton soil is a minor component.

Component: Leicester (5%)

Generated brief soil descriptions are created for major components. The Leicester soil is a minor component.

Component: Sutton (5%)

Generated brief soil descriptions are created for major components. The Sutton soil is a minor component.

Component: Brimfield (1%)

Generated brief soil descriptions are created for major components. The Brimfield soil is a minor component.

Component: Unnamed, red parent material (1%)

Generated brief soil descriptions are created for major components. The Unnamed soil is a minor component.

Component: Unnamed, sandy subsoil (1%)

Generated brief soil descriptions are created for major components. The Unnamed soil is a minor component.

Map Unit: 275C—Urban land-Chatfield complex, rocky, 3 to 15 percent slopes

Component: Urban land (45%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Chatfield (30%)

The Chatfield component makes up 30 percent of the map unit. Slopes are 3 to 15 percent. This component is on hills, ridges, uplands. The parent material consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Charlton (5%)

Generated brief soil descriptions are created for major components. The Charlton soil is a minor component.

Component: Hollis (5%)

Generated brief soil descriptions are created for major components. The Hollis soil is a minor component.

Component: Leicester (5%)

Generated brief soil descriptions are created for major components. The Leicester soil is a minor component.

Component: Sutton (5%)

Generated brief soil descriptions are created for major components. The Sutton soil is a minor component.

Component: Udorthents (3%)

Generated brief soil descriptions are created for major components. The Udorthents soil is a minor component.

Component: Rock outcrop (2%)

Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

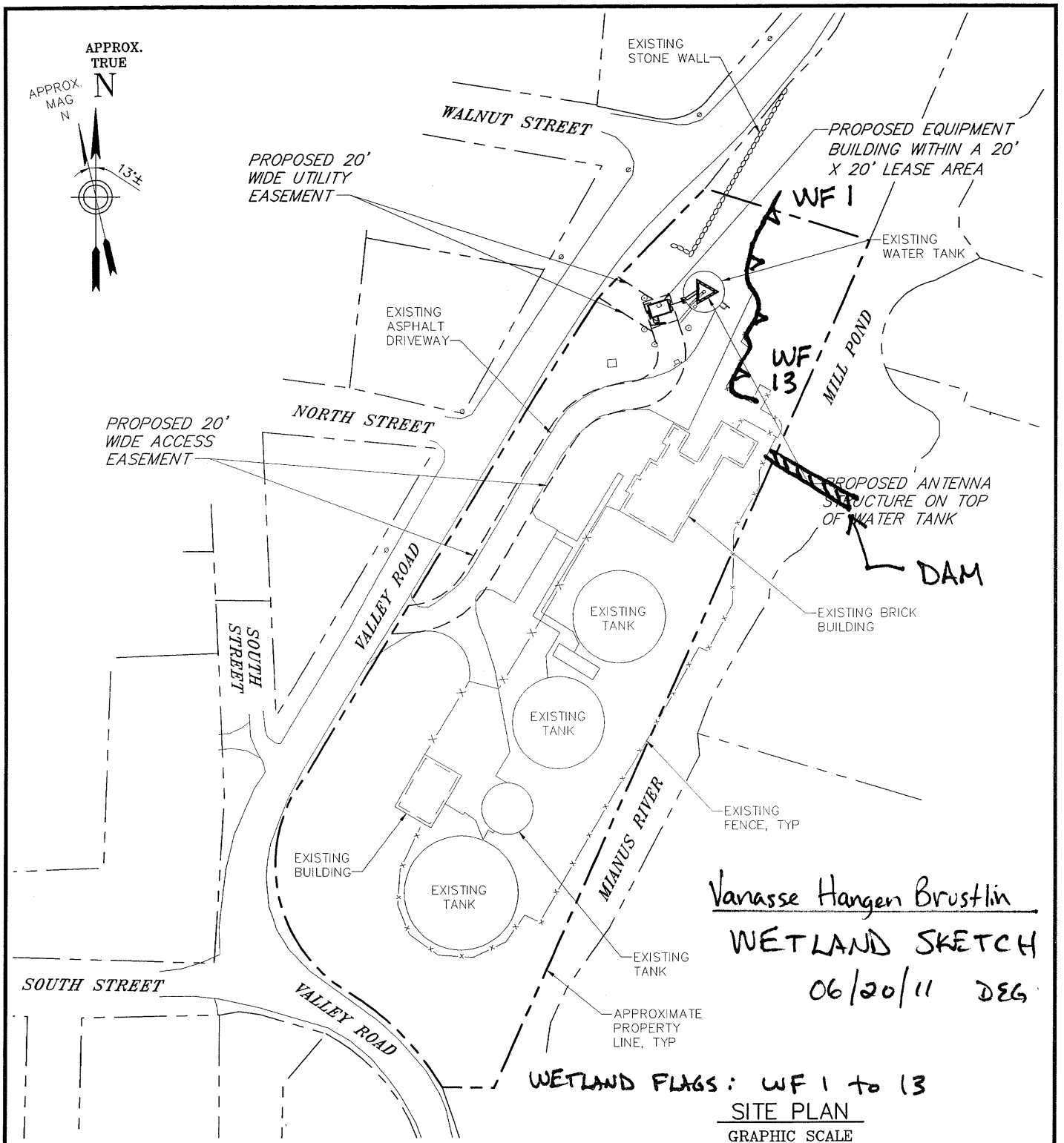
Map Unit: W—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011



SITE PLAN

GRAPHIC SCALE

100 0 50 100

IN FEET

NOTE:
PROPOSED AT&T INSTALLATION SHOWN IS ONLY APPROXIMATE. EXACT LOCATIONS AND DETAILS WILL BE DETERMINED BY FINAL ENGINEERING DESIGN.

CHA
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.chacompanies.com

at&t
Your world. Delivered.

NEW CINGULAR WIRELESS PCS, LLC
500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067

CT1887
AQUARION WATER TANK
455 VALLEY ROAD
COS COB, CT 06807
FAIRFIELD COUNTY
CHA PROJ. NO. – 18301–1077

1 OF 3

REV 0

LE–1

DATE: 3/4/2011 1:45 PM FILE: W:\SAI CINGULAR\18301\SITES\1077 GREENWICH 1887\LE\GREENWICH_LE.DWG

MAIL BOXES

CONCRETE RETAINING WALL

73

CONCRETE AREA

WATERTANK WITH CONCRETE BASE

WOODED AREA

STUMP

PROPOSED ANTENNA STRUCTURE ON WATER TANK

72

70

8

STEEL PIPES

EXISTING WETLANDS

71

EXISTING WETLAND FLAG, TYP

SHRUB

WV

SHRUB

POLE CL&P 6468 W/ UG

22"

4"

70

70

ASPHALT AREA

BOL

BOL

VAULT

CB

RET. WALL W/5'CHLK

65' STRUCTURE RADIUS

BENCHMARK

SPIKE FOUND IN TREE

ELEV: 73.59'

CB

MH

69

BOL

MH

ELEC BOX

VAULT

BOL

BOL

6" PVC

4" PVC

MH

WALL

BUILDING

FLOOD BOUNDARY, TYP.

PROPERTY BOUNDARY, TYP.

50

FLOOD ELEVATION, TYP.

NG ASPHALT
SS DRIVEWAY
UTILIZED AS
CCESS DRIVE
E SITE

5 6 7 8 9 10 11 12 13

NO.

0

Exhibit F

C Squared Systems, LLC
65 Dartmouth Drive, A3
Auburn, NH 03032
Phone: (603) 644 2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions

SR1887

455 Valley Road, Cos Cob, CT 06807

August 23, 2011

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed AT&T installation on the water tank located at 455 Valley Road, CT. The coordinates of the site are 41-4-5.3 N, 73-34-45.8 W.

AT&T is proposing the following:

1) Install 12 quad-band panel antennas (4 per sector) at 60' AGL;
2) Install an equipment shelter on the ground to house the base-station equipment;

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the antennas used by AT&T are directional in nature, the majority of the RF power is focused towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the water tank. Please refer to Attachment C for the vertical patterns of the proposed AT&T antennas. The % MPE values in Table 1 are calculated at 6' above ground (to approximate the height of a human standing at base of water tank) and include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the directional antennas.

Carrier	Antenna Model	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
AT&T UMTS	P65-17-XLH-RR	60	1900	1	500	0.0062	1.0000	0.62%
AT&T LTE	P65-17-XLH-RR	60	716	1	1077	0.0133	0.4773	2.78%
AT&T UMTS	P65-17-XLH-RR	60	880	1	660	0.0081	0.5867	1.39%
AT&T GSM	P65-17-XLH-RR	60	1900	1	427	0.0053	1.2667	0.42%
AT&T GSM	P65-17-XLH-RR	60	880	3	550	0.0203	0.5867	3.47%
							Total	**8.67%**

Table 1: Carrier % MPE Information at Base of Water Tank[1]

[1] Calculated values include a -10 dB off-beam loss factor (see Attachment C) due to relevant antenna patterns.

Due to the topography of the surrounding area, additional calculations have been performed at points located away from the water tank to consider the steep upgrade heading northwest and southeast from the water tank. Figure 1 shows an aerial view of 16 sample points, located in increments of 50' & 100' away from the silo in a northwesterly and southeasterly direction. These bearings represent the steepest grade from the site and consequently worst-case calculations due to the upslope in ground elevation compared to other directions.

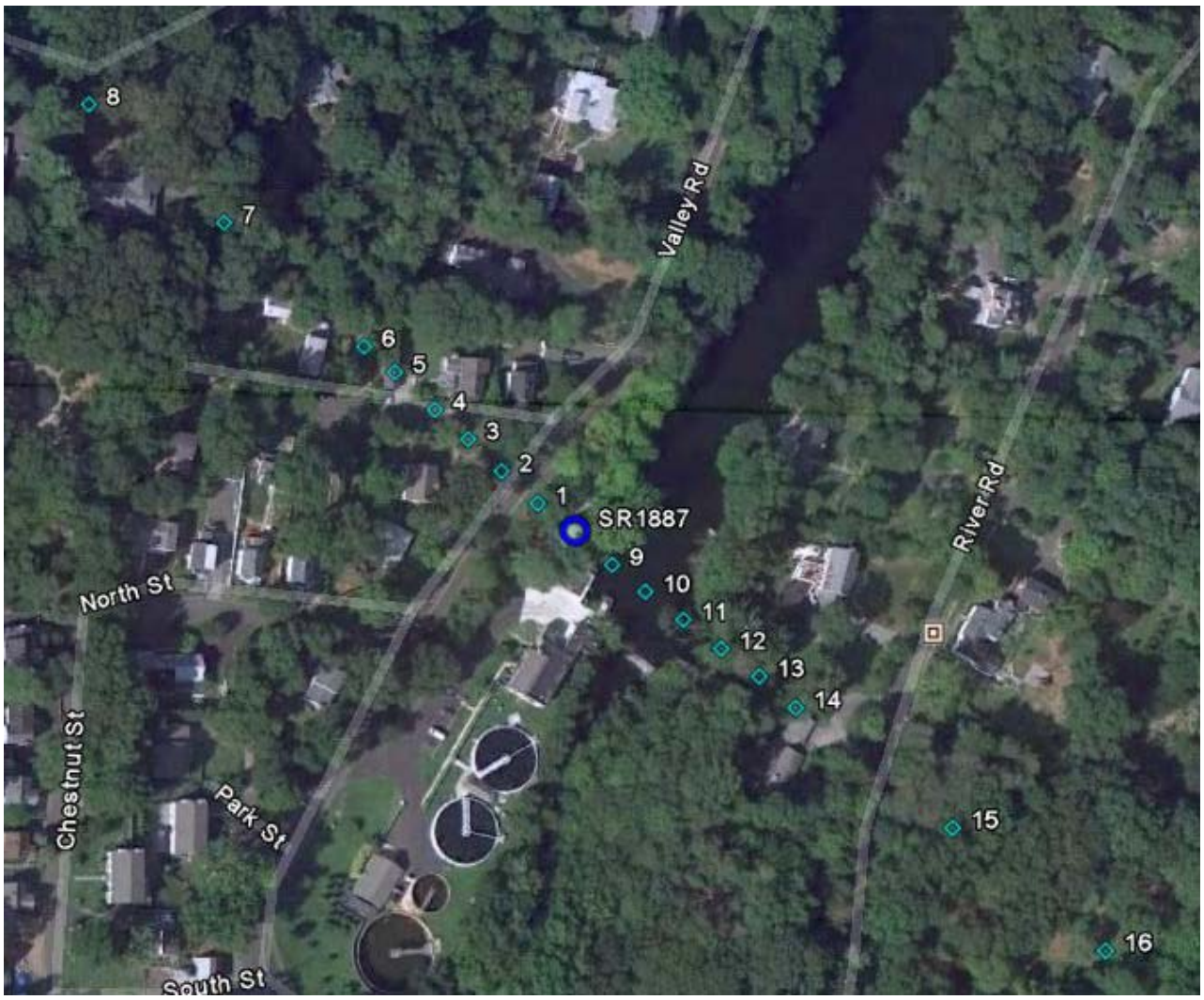


Figure 1: Aerial View Around Water Tank (Courtesy of Google Earth™)

Table 2 below outlines the ground elevation differences of the 16 sample points compared to the water tank, and the calculated power densities at each location.

Water Tank Ground Elevation: 84' AMSL

Sample Point	Ground Elevation (ft AMSL)	Distance From Silo (ft)	AT&T %MPE (Gen'l Public)
Base of Water Tank	84	0	8.67%
1	89	50	5.16%
2	93	100	2.10%
3	96	150	1.04%
4	99	200	0.61%
5	103	250	0.40%
6	104	300	0.28%
7	115	500	1.01%
8	127	700	0.52%
9	81	50	4.40%
10	81	100	1.91%
11	87	150	1.01%
12	90	200	0.60%
13	92	250	0.39%
14	96	300	0.28%
15	107	500	0.90%
16	113	700	0.52%

Table 2: % MPE Levels at Sample Points[2]

Please note that sample points 7,8, and 16 are within the main beam of all antennas on the water tank and therefore no off-beam loss is factored into the calculations. The other sample points are outside of the main beam of the antennas and therefore a -10 dB off-beam loss factor is included in the calculations.

[2] %MPE calculations include a nominal -10dB antenna off-beam loss factor where appropriate.

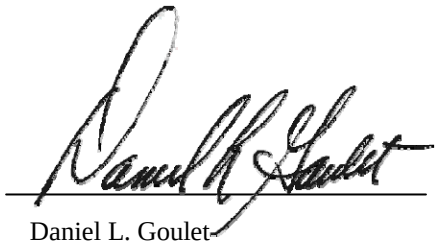
5. Conclusion

The above analysis verifies that emissions from the proposed installation will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the transmit antennas at the facility is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the water tank is 8.67% of the FCC limit.

As noted in the introduction, obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

August 23, 2011
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure (MPE)

[3] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[4] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

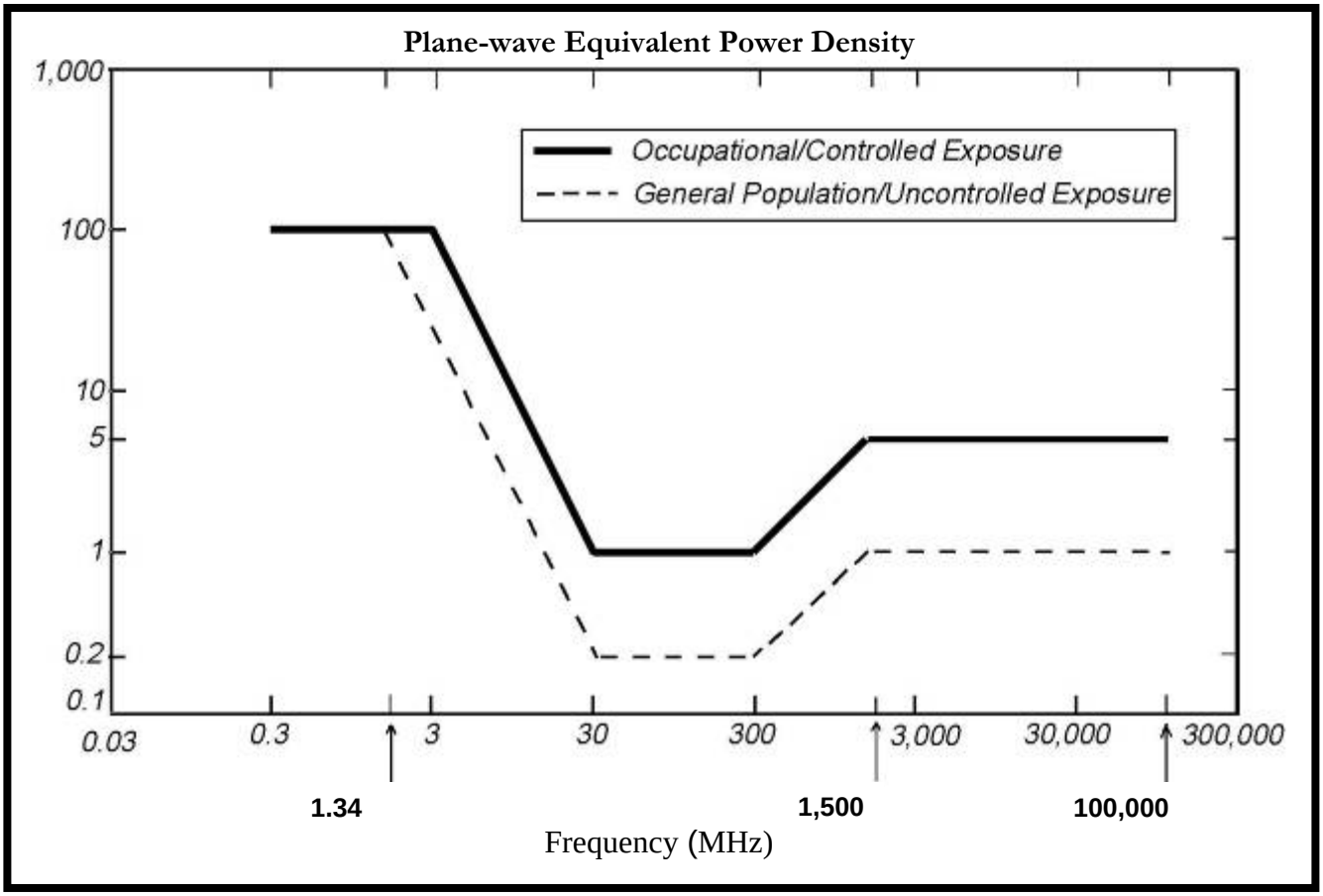
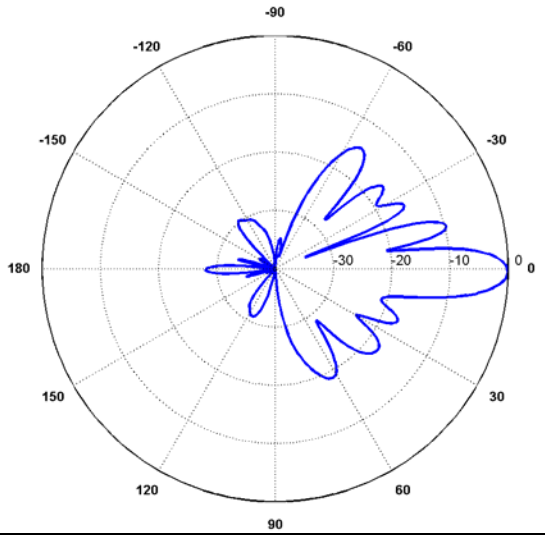


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T's Antenna Model Data Sheets and Electrical Patterns

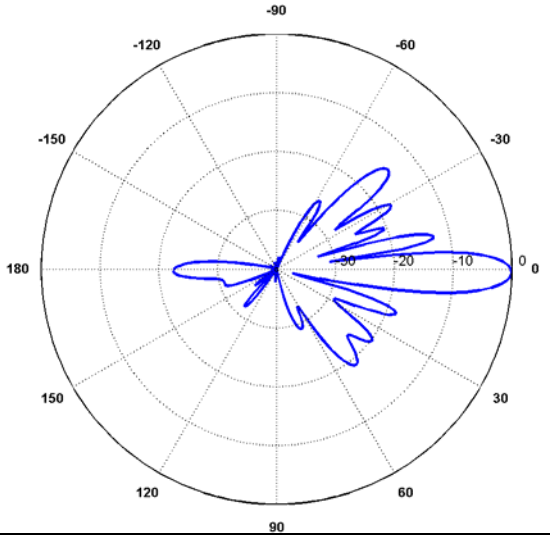
716 MHz

Manufacturer:	Powerwave
Model #:	P65-17-XLH-RR
Frequency Band:	698-806
Gain:	14.3 dBd
Vertical Beamwidth:	8.4 deg
Horizontal Beamwidth:	70 deg
Polarization:	+- 45 deg
Size L x W x D:	96" x 12" x 7.3"



880 MHz

Manufacturer:	Powerwave
Model #:	P65-17-XLH-RR
Frequency Band:	806-894
Gain:	15.1 dBd
Vertical Beamwidth:	8.4 deg
Horizontal Beamwidth:	63 deg
Polarization:	+- 45 deg
Size L x W x D:	96" x 12" x 7.3"



1950 MHz

Manufacturer:	Powerwave
Model #:	P65-17-XLH-RR
Frequency Band:	1710-2170
Gain:	15.1 dBd
Vertical Beamwidth:	6.5 deg
Horizontal Beamwidth:	63 deg
Polarization:	+- 45 deg
Size L x W x D:	96" x 12" x 7.3"

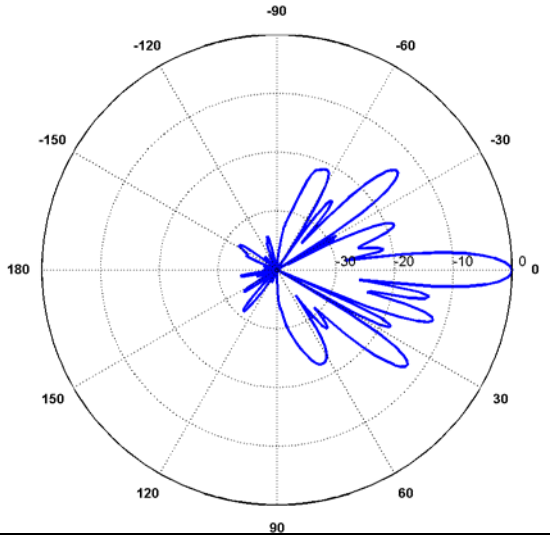
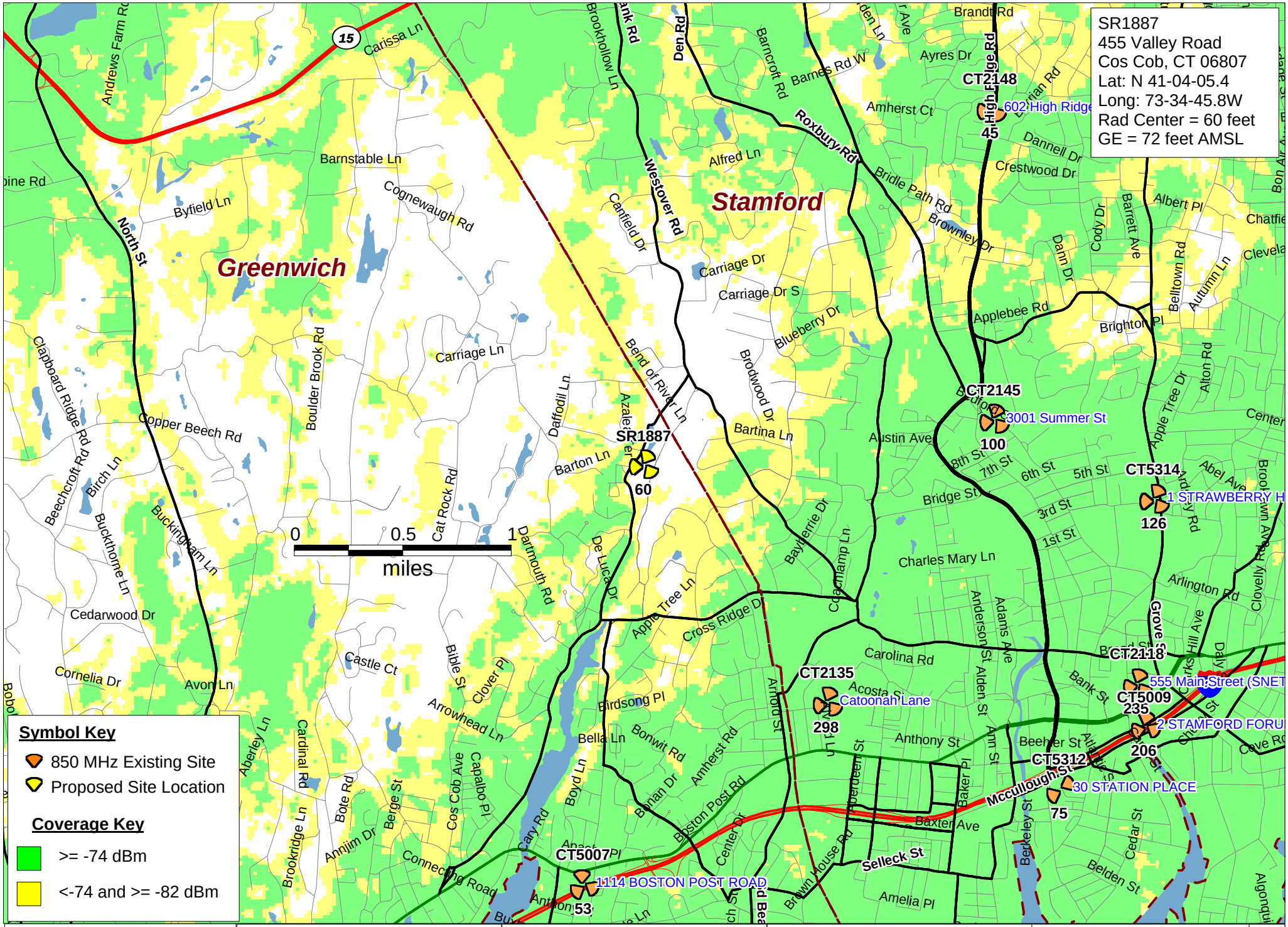
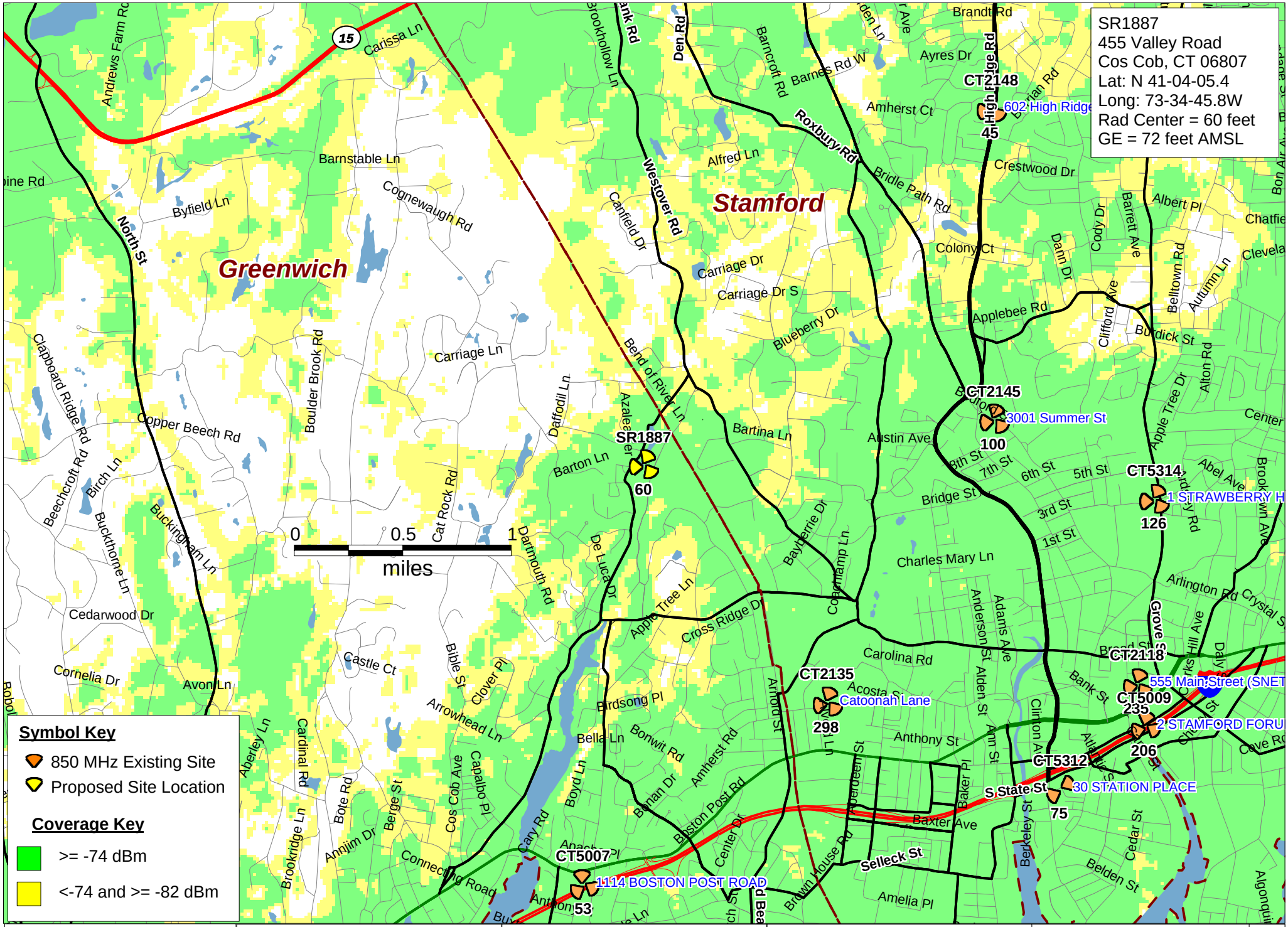


Exhibit G



Existing Coverage	**Cos Cob, CT**	455 Valley Road Cos Cob, CT 06807	at&t	PREPARED ON DATE: 08/31/2011 REV 0



Existing & Proposed	**Cos Cob, CT**	455 Valley Road Cos Cob, CT 06807	at&t	PREPARED ON DATE: 08/31/2011 REV 0