

Hendersonville, North Carolina
Long Form Application for FM Translator 1563190
File Number BNPFT-20030317GSD
On Channel 257
by
Western North Carolina Public Radio, Inc.

Exhibit 13
Interference Analysis

August 2013

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Timothy L. Warner, Inc.
Post Office Box 8045
Asheville, North Carolina 28814-8045
(828) 258-1238
twarner@tlwinc.net

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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Exhibit 13, Interference Analysis, for Western North Carolina Public Radio, Inc., and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



Timothy L. Warner, P.E.
Post Office Box 8045
Asheville, North Carolina 28801
(828) 258-1238
twarner@tlwinc.net
14 August 2013

Narrative

This Exhibit supports a long form application for CDBS application ID 1563190, an amended “Tech Box” application in response to a filing window¹ for FM translator file number BNPFT-20030317GSD, original CDBS application ID 649340, on Channel 257 in Hendersonville, North Carolina. Allocation details are provided in this exhibit. The application proposes no change from the tech box filing.

This proposal creates no new mutual exclusivities with any Auction 83 Tech Box filings or any other facility. A preclusion showing, provided in the amendment, is unchanged.

Figure 1 shows the proposed 60 dBu F(50,50) coverage area. The primary station WCQS 60 dBu F(50,50) contour is also shown.

Allocations

This application proposes service to Hendersonville, North Carolina, on channel 257. An updated Table 1: Allocations is included in this exhibit with a list of the stations, construction permits, allocations, and applications studied. All are protected by this application., with the exception of facilities which are listed in Table 2 below. Those facilities are protected by the Desired to Undesired (D/U) Ratio method which is described below.

¹ *Public Notice, Media Bureau Announces FM Translator Auction 83 Filing Window and Filing Procedures, August 30, 2013 Deadline Set for Form 349 Applications for Certain Non-Mutually Exclusive Tech Box Proposals*, Report No. AUC-03-83-E, DA13-1675, released July 31, 2013.

Table 1: Allocations

Allocation Study											
Western North Carolina Public Radio, Inc.											
REFERENCE	CH# 257D - 99.3 MHz, Pwr= 0.03 kw, HAAT= 0.0 M, COR= 768 M										DISPLAY DATES
35 20 19.0 N.	Average Protected F(50-50)= 4.1 km										DATA 08-14-13
82 29 05.0 W.	Omni-directional										SEARCH 08-14-13
CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT* (in km)
260C Old Fort	AL7225	RSV-A	NC	291.5 111.3	26.54 RM10197	35 25 32.0 82 45 25.0	100.000 600	15.3 1590	96.0	2.9	-69.8*
260C Old Fort	WKSF	LIC	C NC	291.5 111.3	26.54 BMLH20031105AEC	35 25 32.0 82 45 25.0	53.000 799	12.7 1781	95.5 Capstar Tx Llc	6.0	-69.3*
Protected by U/D Ratio, see text and figures.											
255C Spartanburg	WSPA-FM	CP	CX SC	136.8 316.9	25.72 BPH20130415ABG	35 10 11.0 82 17 28.0	100.000 581	11.2 1016	77.7 Entercom Greenville Licens	4.8	-52.4*
One Step Application Protected by U/D Ratio, see text and figures.											
255C Spartanburg	WSPA-FM	LIC	C SC	136.8 316.9	25.72 BLH19991026ACQ	35 10 11.0 82 17 28.0	100.000 580	11.2 1016	77.7 Entercom Greenville Licens	4.8	-52.4*
257D Hendersonville	1563190	APP	C NC	0.0 0.0	0.00 BNPFT20030317GSD	35 20 19.0 82 29 05.0	0.030	26.9 768	8.0 Western North Carolina Pub	-34.9*	-34.9*
Tech Box proposal for which this is the long form application.											
258D West Asheville	640539	APP	C NC	332.6 152.5	32.84 BNPFT20030317BGM	35 36 04.0 82 39 07.0	0.010 340	16.9 1048	11.5 Radio Training Network, In	7.3	9.2
257C2 Cornelia	WCON-FM	LIC	CN GA	230.6 49.9	141.75 BLH19891201KA	34 31 24.0 83 40 46.0	19.000 246	127.0 662	51.6 Habersham Broadcasting Co.	7.9	72.6
257C3 Chester	WBT-FM	LIC	CX SC	118.4 299.1	126.46 BLH20031201APJ	34 47 30.0 81 16 06.0	7.700 182	104.2 350	40.5 Greater Media Charlotte In	12.2	52.1
257C3 Elizabethton	WTZR	LIC	NCX TN	12.0 192.2	120.68 BLH20130715ADX	36 24 07.0 82 12 12.0	4.400 244	100.2 802	39.1 Bristol Broadcasting Compa	12.7	54.5
258D Greenville	W249CB	APP	DC SC	170.7 350.8	45.40 BPFT20130220ACI	34 56 05.0 82 24 16.0	0.250	14.5 632	10.1 Tower Above Media Llc	23.9	22.3
258D Cullowhee, Etc.	W209AE	CP	C NC	272.8 92.4	67.03 BPFT20110824ABQ	35 21 58.0 83 13 17.0	0.250	10.1 917	7.1 Western North Carolina Pub	49.6	44.9
257A Jefferson City	WNRX	LIC	ZCX TN	309.9 129.2	128.56 BLH20121219ACI	36 04 28.0 83 34 56.0	0.200 199	53.0 533	16.3 Radio License Holding cbc,	68.0	86.8
255D Franklin	1563629	APP	C NC	260.2 79.7	81.66 BNPFT20030317JVJ	35 12 39.7 83 22 07.4	0.040	0.4 679	4.4 Charisma Radio Corp.	74.0	76.8

Terrain database is NED 03 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference Zone= East Zone, Co to 3rd adj.
 All separation margins (if shown) include rounding
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside protected contour.

Table 2: Facilities Protected by U/D Method

Facility	WKSF Old Fort, North Carolina	WSPA-FM Spartanburg, South Carolina
Relationship	260C, third adjacent	255C, second adjacent
Distance (km)	26.55	25.72
Bearing (degrees)	291.5	136.8
ERP (kW, on azimuth)	53	100
HAAT (m, on azimuth)	898.9	372.2
Ratio	40	40
Signal Strength (dBu)	90.2	85.5
Translator Signal Strength	130.2	125.5
Translator distance (km)	.012	.020

Undesired to Desired Method

Protection to some facilities is provided through the use of Undesired to Desired Signal Strength Ratio (U/D) calculations. Table 2 lists the parameters studied. The proposed antenna is a Shively Labs 6832-2 two level 0.8 wavelength spaced omnidirectional antenna. The antenna bay-to-bay spacing is 98 inches, which is 0.8 wavelength at channel 257. Figure 2 is a plot of the antenna vertical elevation pattern.

The WKSF field strength calculated at ground level at the proposed 1563190 site is 90.2 dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 130.2 dBu field strength distance is .012 kilometers in the horizontal plane. The proposed antenna location is 73 meters above ground. As Figure 3 shows, the 130.2 dBu signal level will never reach ground, nor will it be present at any other location on the ground.

The WSPA-FM field strength calculated at ground level at the proposed 1563190 site is 85.5 dBu, using the FM Curves calculator on the FCC web site. For the translator interference

contour, free space calculations are used. The corresponding 125.5 dBu field strength distance is .020 kilometers in the horizontal plane. The proposed antenna location is 73 meters above ground. As Figure 3 shows, the 125.5 dBu signal level will never reach ground, nor will it be present at any other location on the ground.

Figure 4 is a topographic map of the transmitter site. Figure 5 is an aerial photograph of the site. The site is on a ridge, with some increased elevation to the Northwest. There are no tall structures in the vicinity. Given the short distance to the interfering contours, the interfering contours do not reach the ground, any structures, or any population. There is no population within the predicted interference area and therefore this facility is permitted under §74.1204(d).

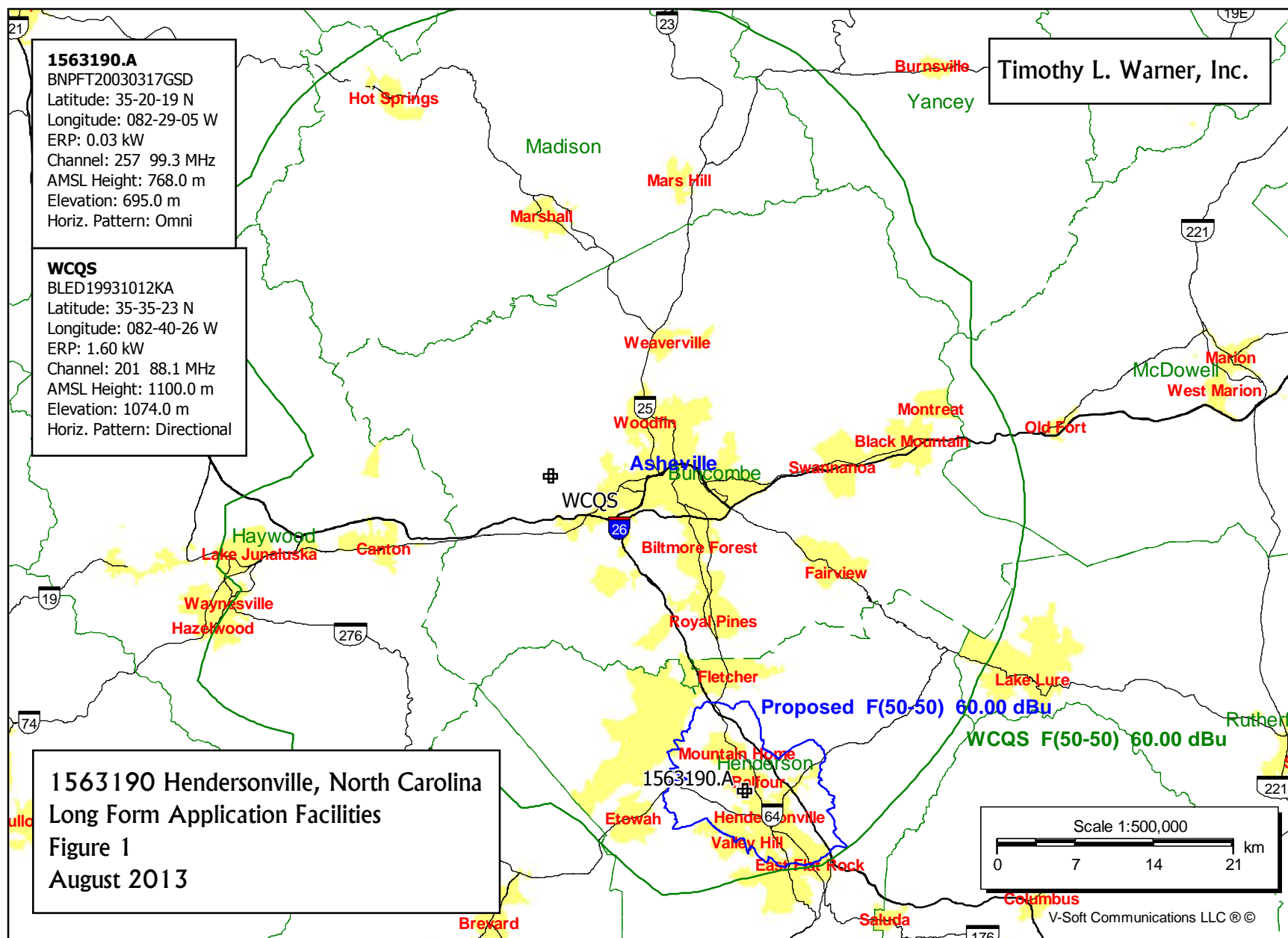
The applicant recognizes that the U/D method is only a tool for predicting likely interference. Should any actual interference be experienced, the applicant will cooperate fully in correcting the interference. Corrective steps may require changes in the transmitting antenna or other steps which would require Commission authorization, may require that the translator cease operation except for brief equipment tests, or may require filtering at the receivers which report interference.

Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's CDBS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments.

The contours were evaluated using terrain extracted from the V-Soft Communications NED 03 terrain database. The NED 03 database is derived from the USGS National Elevation Data 30 meter terrain database.

All population data is from 2010 U.S. Census PL data files. Population is counted by considering the location of the centroid of each census block. The data for each block is counted if it falls within the area being counted.



Antenna Mfg.: Shively Labs

Antenna Type: 6832-2

Station: 1563190

Frequency: 99.3

Channel #: 257

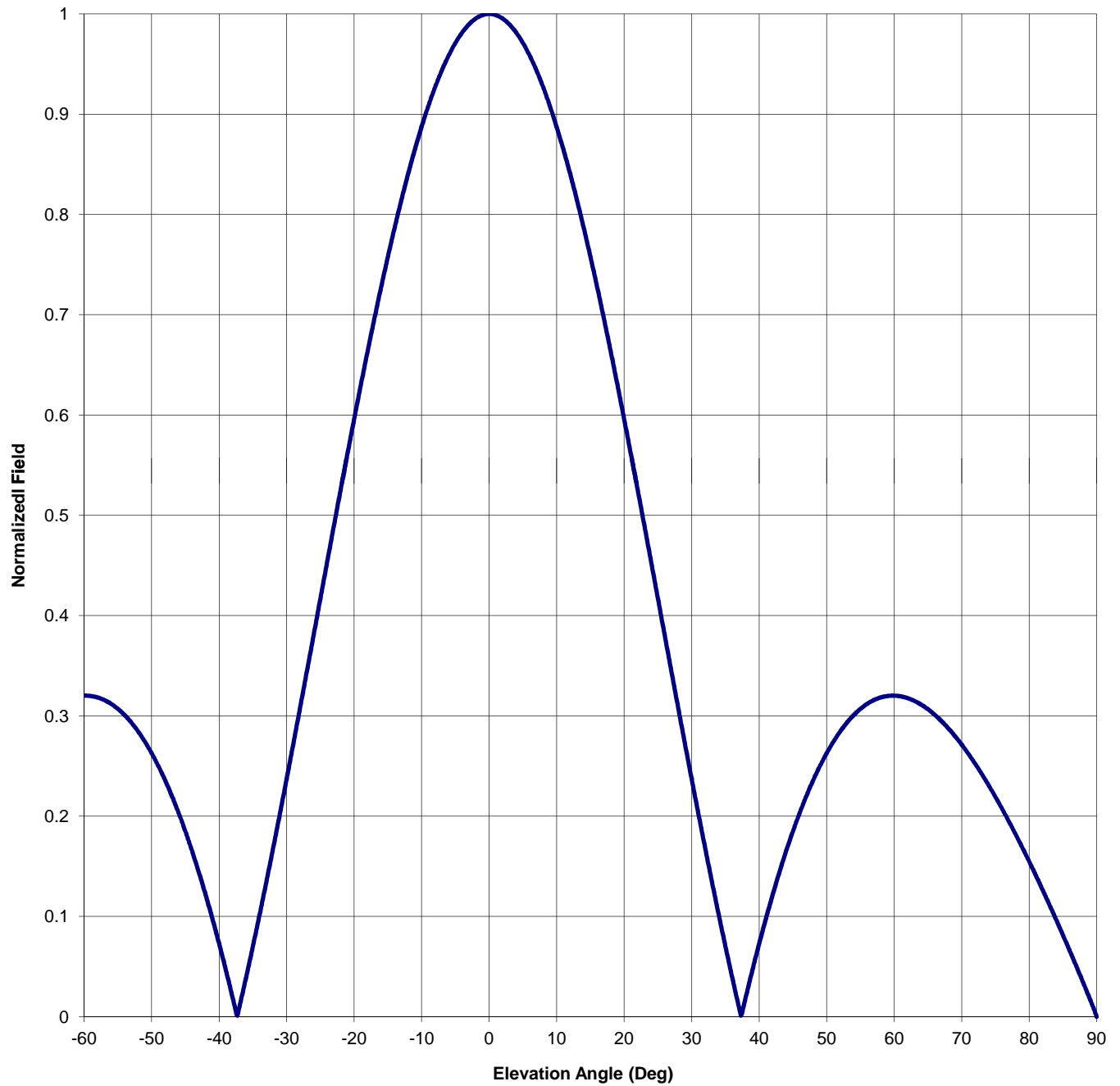
Figure: Figure 2

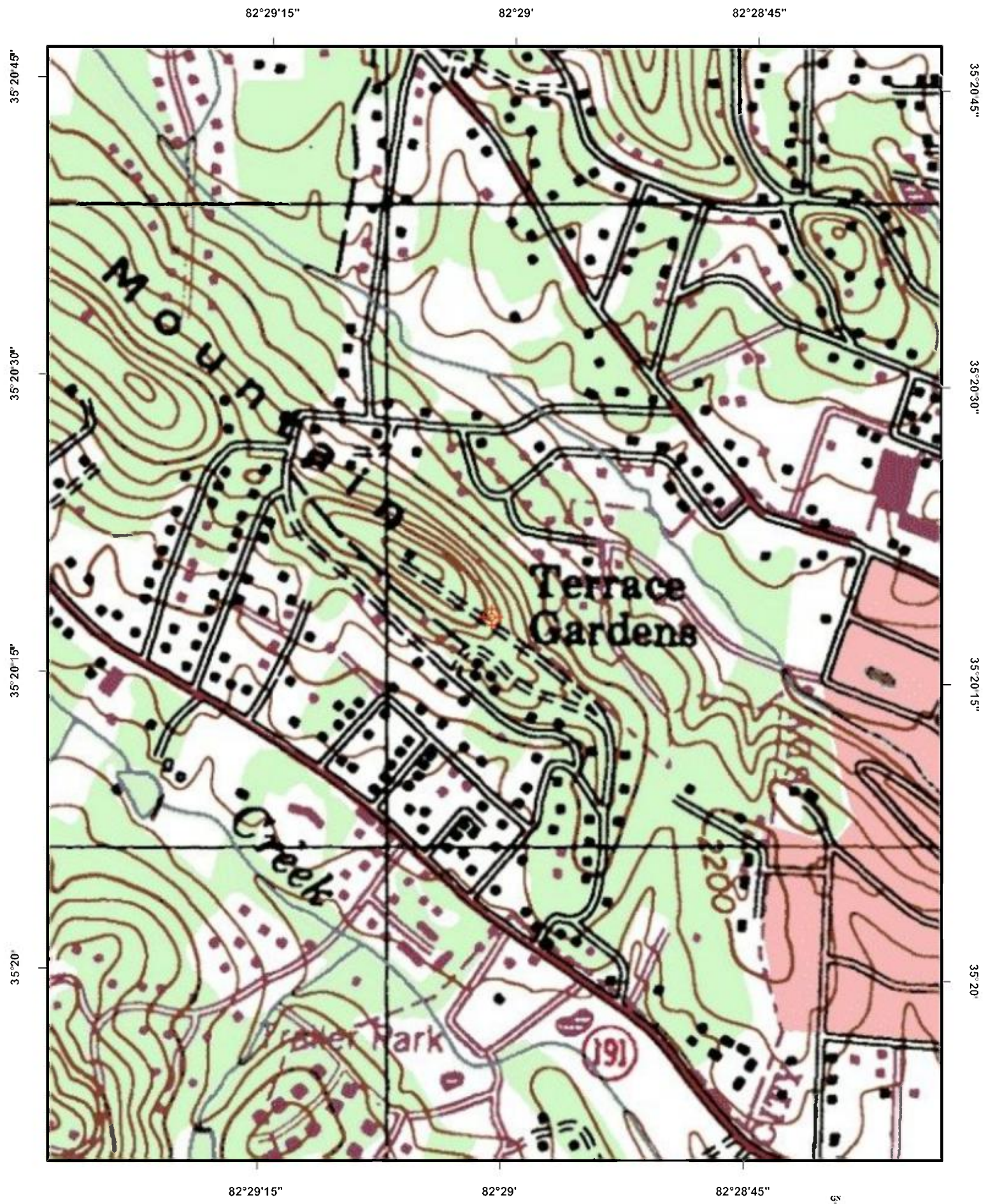
Date: 8/14/2013

Beam Tilt 0

Gain (Max) 0.998 -0.011 dB

Gain (Horizon) 0.998 -0.011 dB





Universal Transverse Mercator (UTM) Projection Zone 17
North American Datum of 1983

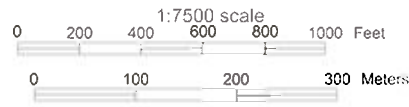


Figure 3

Magnetic declination of 7W at center of map
on March 17, 2011

82°29'10"

82°29'05"

82°29'

82°28'55"

35°20'25"

35°20'20"

35°20'15"

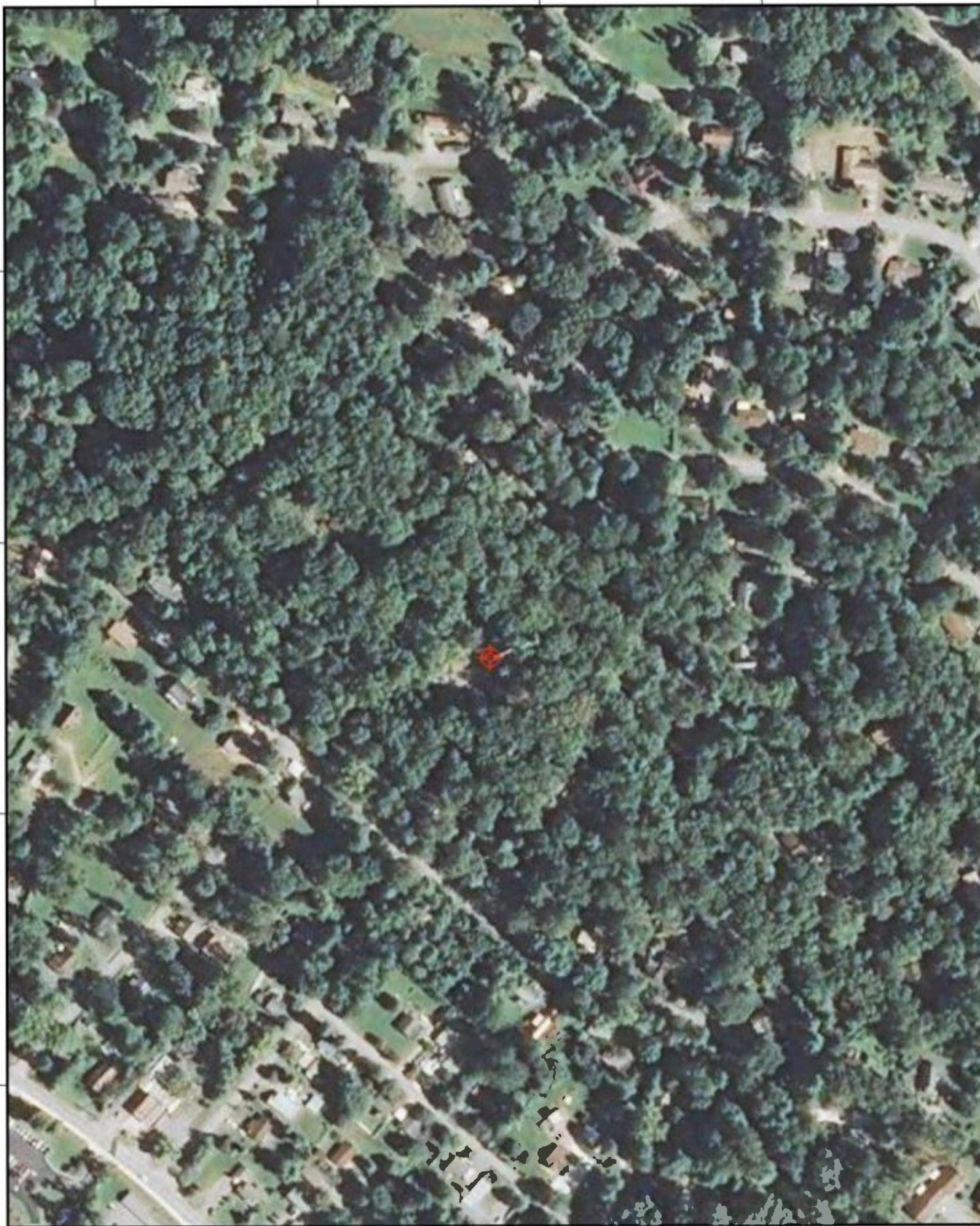
35°20'10"

35°20'25"

35°20'20"

35°20'15"

35°20'10"



82°29'10"

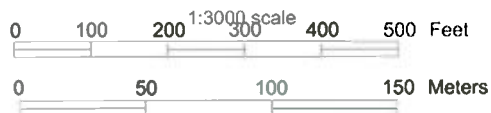
82°29'05"

82°29'

82°28'55"

82°28'50"

Universal Transverse Mercator (UTM) Projection Zone 17
North American Datum of 1983



Magnetic declination of 7W at center of map
on March 17, 2011

Figure 4