

Asheville, North Carolina
Minor Modification Application for
FM Translator W271CB
File Number BPFT-20170717ABF
On Channel 271
by
Isothermal Community College

Exhibit 13
Interference Analysis

December 2017

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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 Isothermal Community College, 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.



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7 December 2017

Narrative

This Exhibit supports a modification application for W271CB, for FM translator Construction Permit file number BPFT-20170717ABF, on Channel 271 in Asheville, North Carolina. Allocation details are provided in this exhibit. The changes are limited to an increase in effective radiated power. This proposal creates no new mutual exclusivities with any Auction 83 Tech Box filings or any other facility.

Figure 1 shows the proposed 60 dBu F(50,50) contour, and the licensed and authorized contours, which are identical. As Figure 1 shows, this is a minor modification of the authorized facilities. Figure 1 also shows that the proposed facilities are a fill-in facility for the primary station.

Allocations

This application proposes service to Asheville, North Carolina, on channel 271. 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 protected by the Undesired to Desired (U/D) method. Facilities protected by the U/D method are listed in Table 2. Where the outgoing protection is provided by interference contours with a separation of less than 3.2 kilometers (2 miles), the lack of overlap is plotted in figures in this exhibit, and the output of the FM Over program is provided. For this application, there is one (1) facility for which additional detail is provided.

Table and Figure	Call Sign	Location	Channel, class and relationship
3	WWST	Seveirville, Tennessee	271C1, co-channel

Table 1: Allocations

Allocation Study Isothermal Community College											
REFERENCE 35 35 23.0 N. 82 40 26.0 W.	CH# 271D - 102.1 MHZ, Pwr= 0.08 kW DA, HAAT= 338.7 M, COR= 1080 M DISPLAY DATES Average Protected F(50-50)= 18.1 km Standard Directional DATA 12-07-17 SEARCH 12-07-17										
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*
271C1 WWST Sevierville	WGST	LIC	CN TN	285.6 105.1	93.15 BLH19860519KF	35 48 35 40	41.0 08.0	15.000 603	161.5 981	73.5 Scripps	-73.9* Broadcasting Holdi
273C1 WMYI Hendersonville	WMYI	LIC	NC NC	173.3 353.3	50.60 BLH20110929AKK	35 08 35 36	15.6 30.6	44.000 416	8.8 1079	68.7 Capstar Tx, Llc	33.7 -18.1*
					Protected by U/D ratio, see text and figures.						
271D W271CB! Asheville	W271CB!	CP	DH NC	0.0 0.0	0.00 BPFT20170717ABF	35 35 35 40	23.0 26.0	0.010	2.1 1080	0.2 Isothermal	-2.7 Community College
					CP being modified.						-5.4
271D W271CB! Asheville	W271CB!	LIC	DH NC	0.0 0.0	0.00 BLFT20170103AAR	35 35 35 40	23.0 26.0	0.010	2.1 1080	0.2 Isothermal	-2.7 Community College
					Licensed facility being modified.						-5.4
268C WQUT Johnson City	WQUT	LIC	CY TN	21.7 201.9	81.27 BMLH19980904KD	36 16 36 20	07.0 21.0	100.000 457	11.1 1069	75.8 Radio License	58.8 Holding Cbc,
270C0 WBAV-FM Gastonia	WBAV-FM	LIC	CY NC	107.0 287.8	132.71 BLH19880129KD	35 13 35 16	57.0 35.0	100.000 301	103.1 552	70.9 Wkis License	10.1 Limited Partn
271D W271CL Brevard	W271CL	LIC	DC NC	170.4 350.4	34.29 BLFT20151013AHD	35 17 35 36	08.0 39.0	0.250	14.5 840	4.6 Gonuts Media,	11.0 Llc
269D 1760588 Canton	1760588	APP	DC NC	263.6 83.4	21.23 BNPFT20170726AAH	35 34 35 54	05.0 26.0	0.165	0.2 1389	9.9 Skycountry	15.6 Broadcasting, I
269D 1771139 Canton	1771139	APP	DC NC	263.6 83.4	21.23 BNPFT20171201ADG	35 34 35 54	05.0 26.0	0.160	0.1 1389	9.8 Skycountry	15.6 Broadcasting, I
269D W269CW Hendersonville	W269CW	LIC	DC NC	142.3 322.4	26.85 BLFT20151106EQT	35 23 35 29	55.0 33.0	0.019	0.3 781	7.0 Bible Broadcasting	12.9 Network
271D W271BS Greenville	W271BS	LIC	DC SC	161.6 341.8	75.97 BLFT20151013AEG	34 56 34 24	27.0 41.0	0.099	39.0 642	10.6 Ted A McCall	25.9
268D W268CL Brevard	W268CL	LIC	DC NC	180.9 0.9	45.95 BLFT20160915ABC	35 10 35 40	35.0 54.0	0.010	0.2 1170	11.9 Western North Carolina	38.4 Pub
268D W268BS Tryon	W268BS	LIC	DC NC	132.5 312.7	53.06 BLFT20151105AOD	35 16 35 24	00.0 34.0	0.010	0.2 994	10.0 Western North Carolina	36.5 Pub
272A WWMY Beech Mountain	WWMY	LIC	ZCX NC	47.0 227.5	97.37 BLH20080422AAO	36 11 36 52	03.0 48.0	0.150 597	24.9 1665	17.0 High Country Adventures,	56.5 L
269A WGOG Walhalla	WGOG	LIC	CX SC	203.4 23.2	88.41 BLH20150803AAE	34 51 34 03	33.0 30.0	6.000 92	3.0 497	29.9 Appalachian	81.3 Broadcasting C
271C0 WJMH Reidsville	WJMH	LIC	C NC	72.0 253.6	257.60 BMLH20010731ACA	36 16 36 56	33.0 26.0	100.000 367	177.0 600	75.6 Entercom License,	61.9 Llc
274C3 WVEK-FM Weber City	WVEK-FM	LIC	C VA	4.3 184.3	104.46 BLH20080821ABX	36 31 36 35	36.0 13.0	1.750 376	2.6 835	38.5 Holston Valley Broadcastin	93.3
274C3 AL5363 Weber City	AL5363	RSV-A	V VA	4.3 184.3	104.46 RM11280	36 31 36 35	36.0 13.0	25.000 100	3.3 548	33.1 92.7	65.5

Terrain database is GLOBE 30 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. Call signs with exclamation marks need not be protected.
 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 restricted contour.

Table 2: Facilities Protected by U/D Method

Facility	WMYI Hendersonville, North Carolina
Relationship	273C1, second adjacent
Distance (km)	50.61
Bearing (degrees)	173.3
ERP (kW, on azimuth)	44.0
HAAT (m, on azimuth)	363.5
Ratio	40
Signal Strength (dBu)	68.09
Translator Signal Strength	108.09
Translator distance (km)	.247

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 WMYI field strength calculated at ground level at the proposed W271CB site is 68.09 dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 108.09 dBu field strength distance is .247 kilometers in the horizontal plane. The proposed antenna location is 6 meters above ground. Figure 4 is an elevation pattern for the proposed antenna.

Figure 5 is a topographic map of the transmitter site, showing the terrain, with the site on a mountain top. Figure 6 is an aerial photograph of the site, showing the absence structures in the area of interest. The only structures within the interfering contour are transmitter buildings for this and other communications facilities. The 108.09 dBu interference signal toward WMYI is only .247 kilometers (247 meters) at its maximum extent and is plotted.

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 National Geophysical Data Center's (NGDC) 30 arcsecond terrain database, formatted by V-Soft Communications and edited to match the database in use at the Federal Communications Commission.

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.

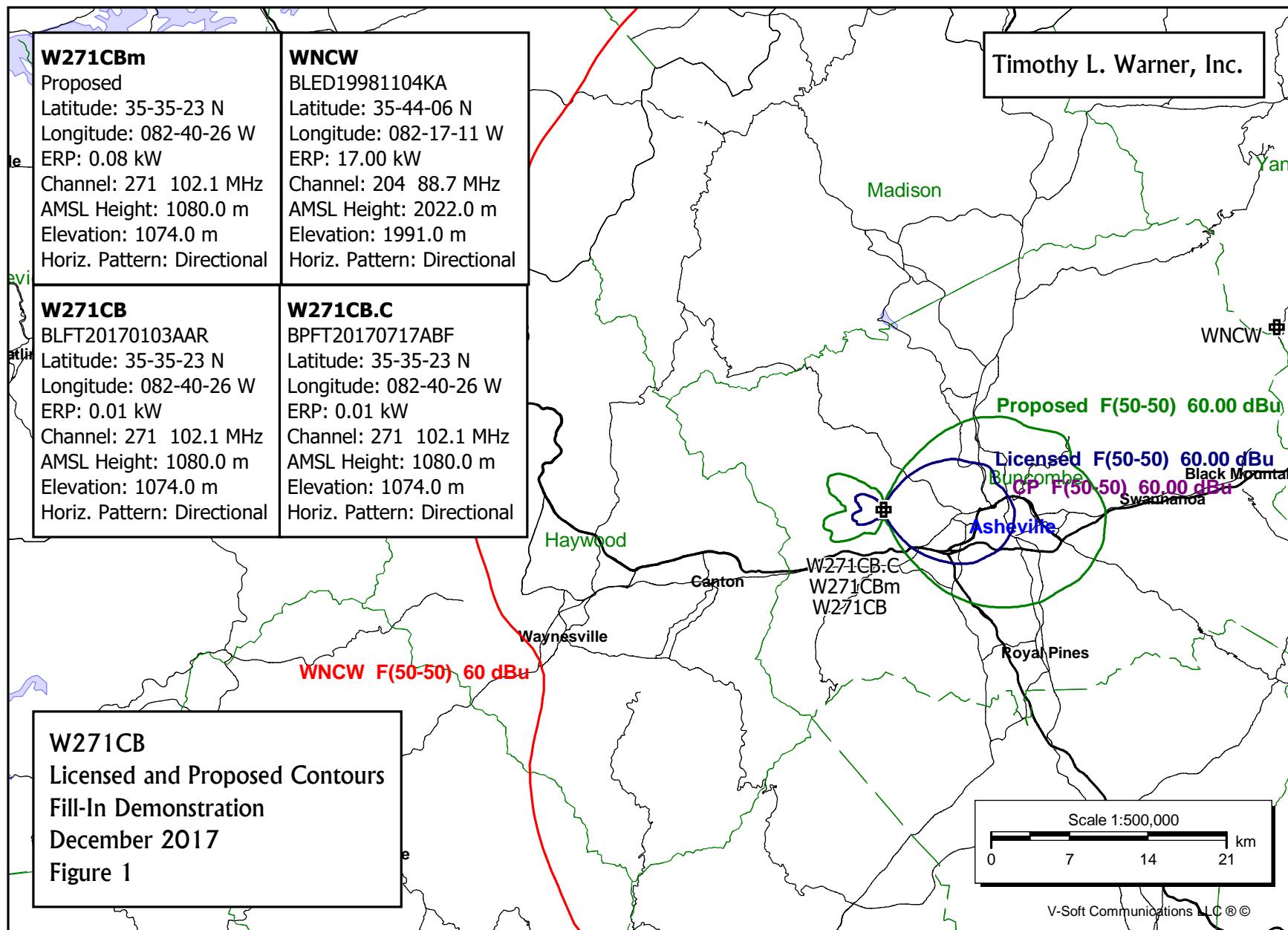


Figure 2: W271CBm Antenna Pattern

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	1.0
10.0	0.96
20.0	0.84
30.0	0.665
40.0	0.463
50.0	0.269
60.0	0.118
70.0	0.024
80.0	0.015
90.0	0.012
100.0	0.016
110.0	0.039
120.0	0.042
130.0	0.05
140.0	0.093
150.0	0.138
160.0	0.175
170.0	0.173
180.0	0.174
190.0	0.168
200.0	0.159
210.0	0.139
220.0	0.106
230.0	0.064
240.0	0.039
250.0	0.034
260.0	0.023
270.0	0.01
280.0	0.012
290.0	0.032
300.0	0.105
310.0	0.24
320.0	0.433
330.0	0.645
340.0	0.83
350.0	0.954

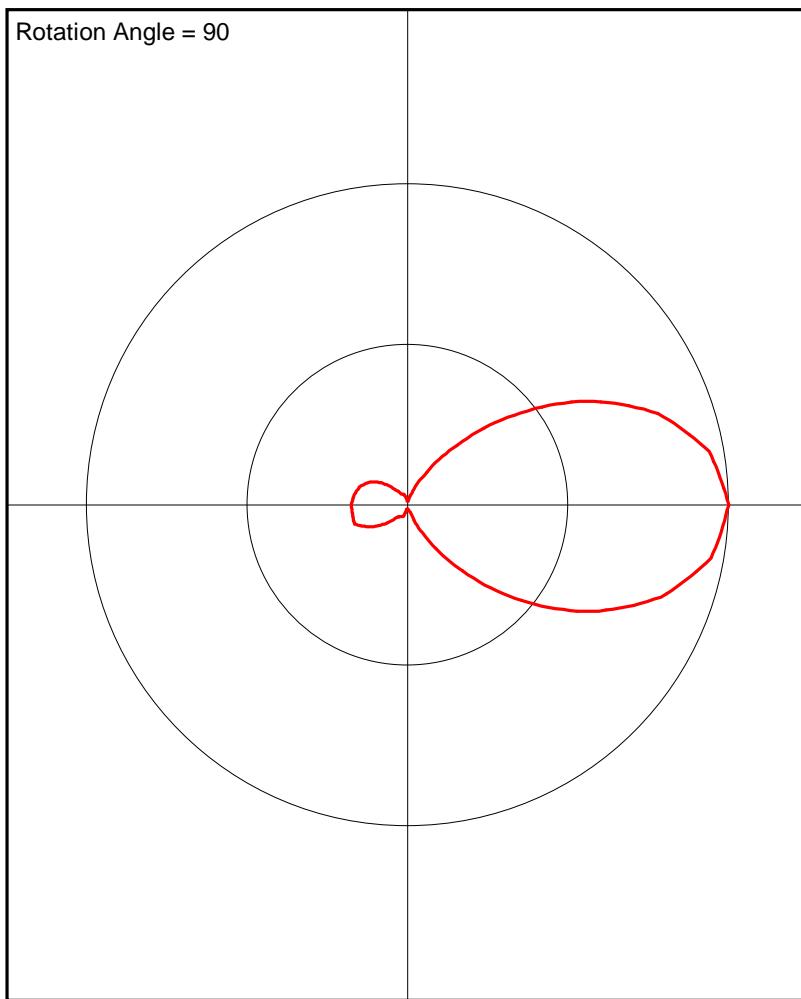


Figure 3: Allocation Study: WWST
Isothermal Community College

FMCommander Single Allocation Study - 12-07-2017 - GLOBE 30 Sec
W271CB's Overlaps (In= -73.87 km, Out= 0.21 km)

W271CB CH 271 D DA
Lat= 35 35 23.0, Lng= 82 40 26.0
0.08 kW 338.7 m HAAT, 1080 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WWST CH 271 C1 BLH19860519KF
Lat= 35 48 41.0, Lng= 83 40 08.0
15.0 kW 603 m HAAT, 981 m COR
Prot.= 60 dBu, Intef.= 40 dBu

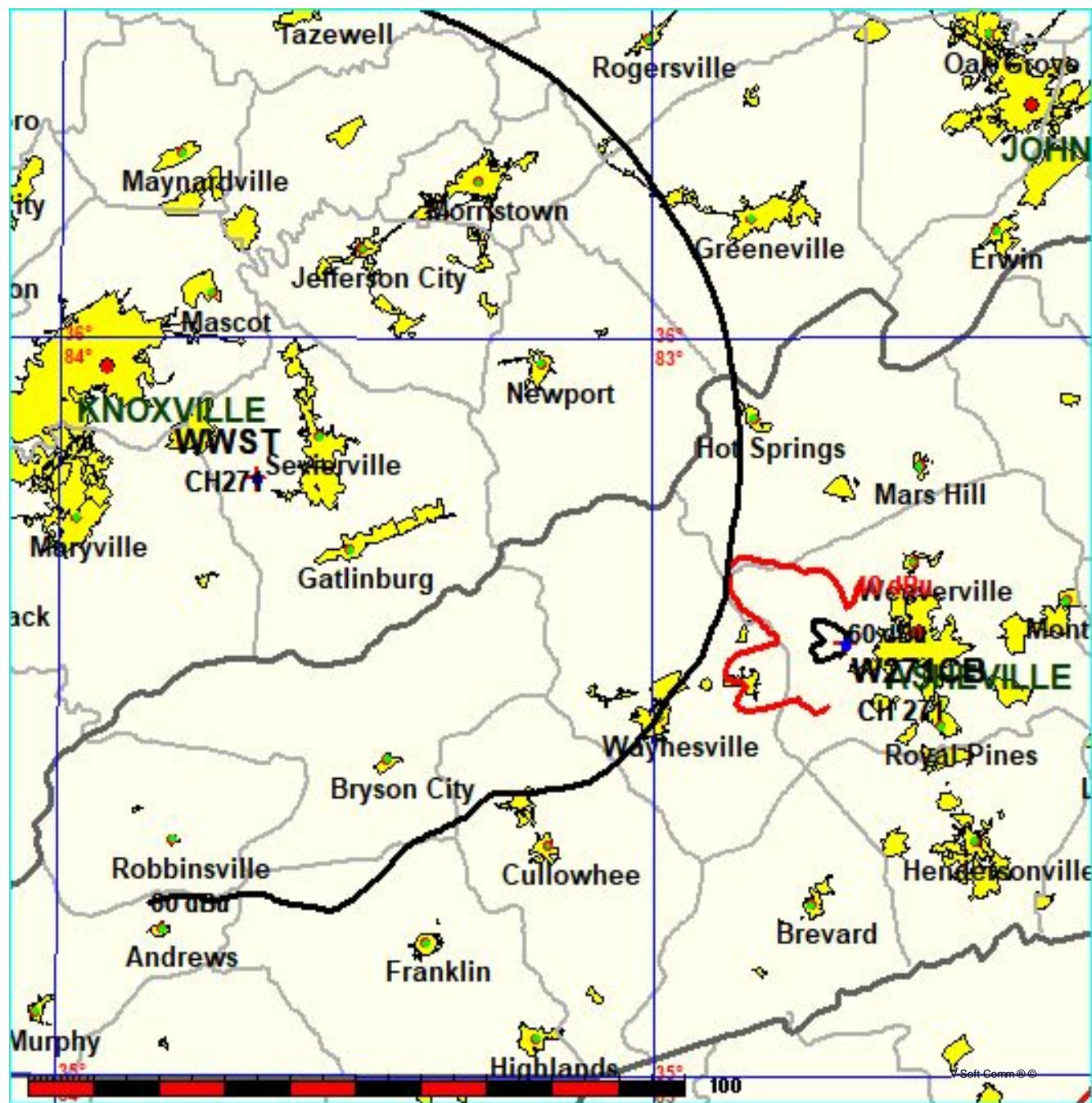
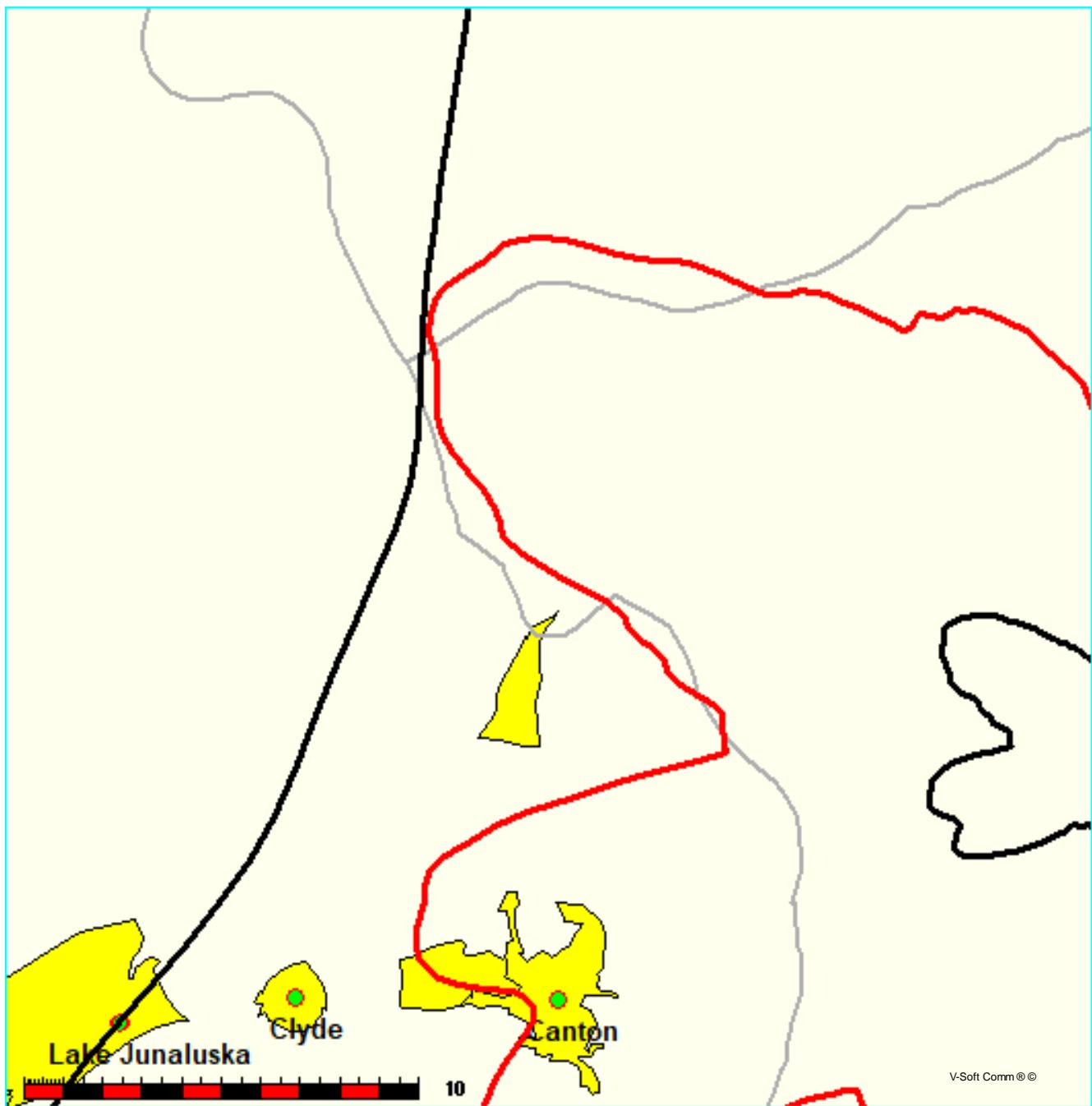


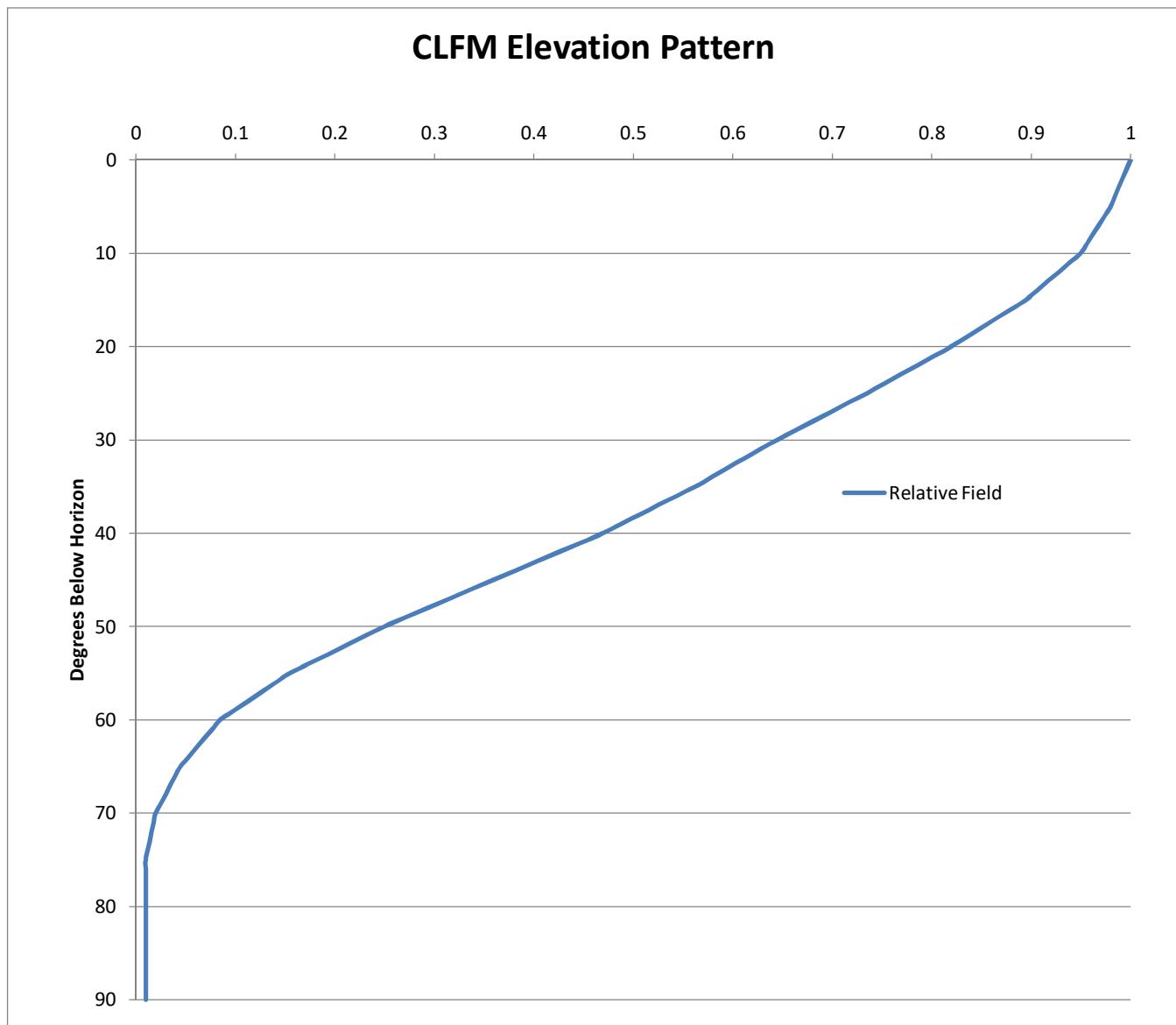
Figure 3A: Allocation Study: WWST: Detail
Isothermal Community College

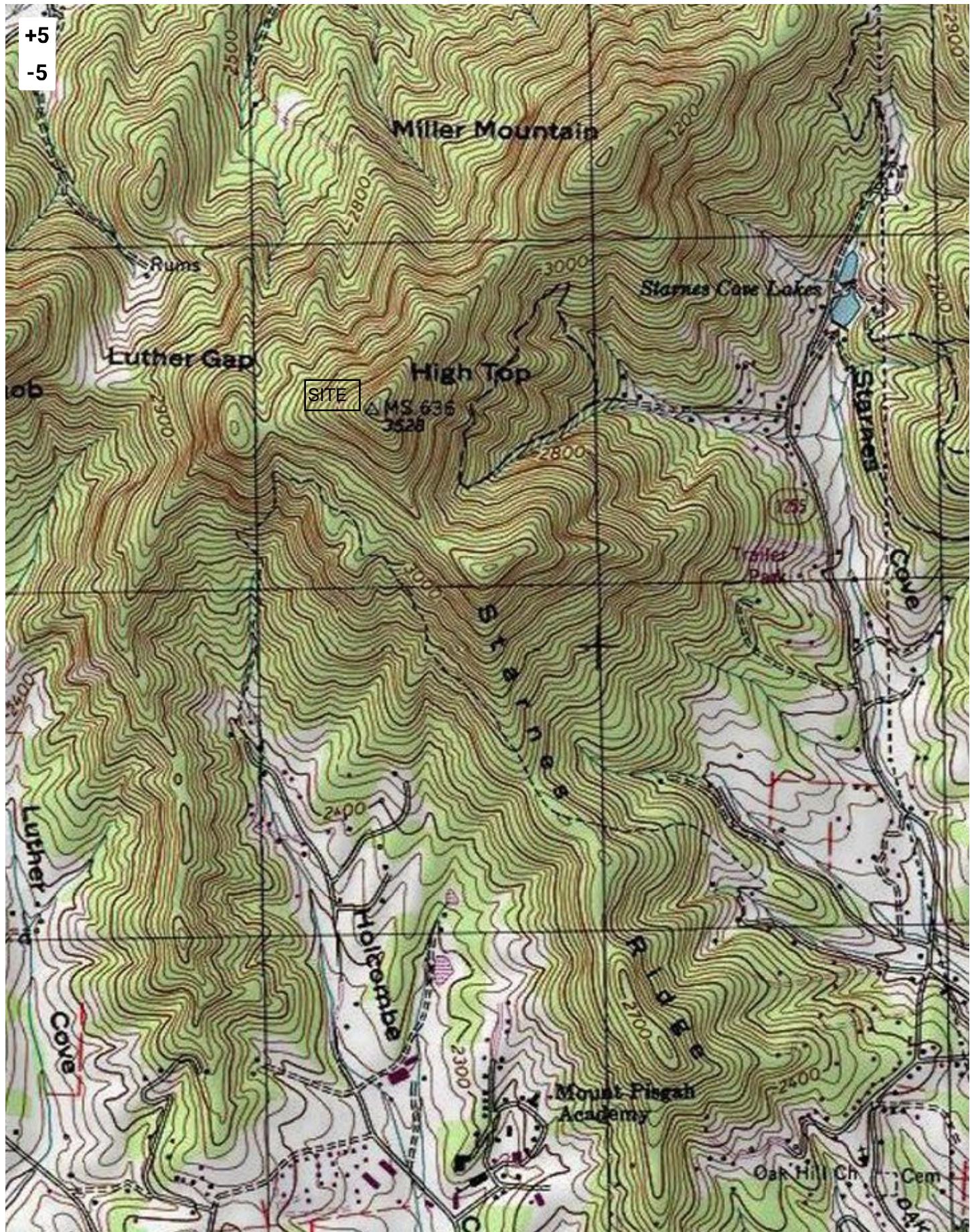
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WWST CH 271 C1 BLH19860519KF
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15.0 kW 603 m HAAT, 981 m COR
Prot.= 60 dBu, Intef.= 40 dBu





**Google**

200 m

W271CB

Aerial Photograph
With Interference Contour
December 2017
Figure 6

Legend

W271CBm (271)

W271CBm (271) - 50 10 Field Strength: 108.09 dBu FCC [GLOBE 30]

