WKPT
FCC Facility # 27495

1400 kHz - 1.0 kW -Unlimited
Tower Replacement and Coordinate Correction

This technical report is provided in support of an application proposing a replacement of the existing WKPT tower with a shorter, series feed tower on the existing tower base and using the existing 90° ground system. It was determined that the existing tower was not viable. The coordinates are corrected and converted to NAD 83 as required by LMS.

Site	**N 36-32-40.4 W 82-31-21.5 (NAD 83)**
Day Power	**1.0 kW ND - 293.9 mV/m/km RMS (see E13F)**
Night power	**1.0 kW ND - 293.9 mV/m/km RMS**
Tower	**44.2 m AGL - 42.7 m radiator - 71.7° at 1400 kHz**

Exhibits:

E13A	Vertical sketch
E13B	Site plat
E13C	Site topographic map
E13D	25 mV/m and 1000 mV/m day contours
E13E	Aerial photographic view of day 1000 mV/m contour
E13F	Antenna efficiency
E13G	TowerAir
E14A	Day 5 mV/m
E17A	M-3 allocation plot
E17A1	Existing day overlaps
E17A2	Proposed day overlaps
E17B	Day service contours for licensed and proposed
E17C	Day allocation listing

A vertical sketch is provided as E13A, a site plat as E13B, a site topographic map as E13C and an aerial photograph showing the day 1000 mV/m contour as E13E. The 1,000 mV/m meter contour

contains no population based on the AMPRO 2 calculation and clearly less than 300 based on the aerial view of the contour in exhibit E-13E thus complying with §73.24(g).

100% of Kingsport's population and 97.8% of its area are encompassed by the day 5 mV.m (see E14A) thus complying with §73.24(i).

Day allocation analysis:

All analyses were conducted using V-Soft's AMPRO 2 software. An M3 allocations map is provided as E17 and detailed overlap analyses E17A1 and E17A2 demonstrating that the overlaps are all reduced and that the proposed facility's contours are entirely contained within the licensed contours.

Antenna Efficiency:

The proposed 42.7 meter series feed radiator has a ground system that is 0.25λ at 1400 kHz. Therefore, the efficiency has been determined using the Commission's web based §73.190, Figure 8 tool at 293.9 mV/m/km/kW and is included as E13F.

Night Allocation Analysis:

No night showings are required for a class C facility.

RF analysis:

The RF contributions of the proposed modification at the edge of the existing 2 meter fence (at the closest point) were determined for 0.1λ and 0.25λ towers from OET Bulletin 65A figures 1 and 2, and interpolated for the 0.2λ tower proposed.

KW	λ	V/m	% Maximum	A/m	% Maximum	
1.0	**0.1**	**750**		**1.05**		
1.0	**0.25**	**36**		**0.26**		
1.0	**0.20**	**274**	**44.6**	**0.523**	**32.08**	**(Interpolated values)**

Maximum values are 614 V/m and 1.63 A/m (OET65A, Table 1).

Clearly, the proposed antenna meets the maximum permissible values at edge of the existing 2 meter fence at 44.6% of the maximum general public exposure limit and is compliant.

Conclusion:

It is concluded that the proposed WKPT facility antenna modification complies with FCC rules and allocation and policies.

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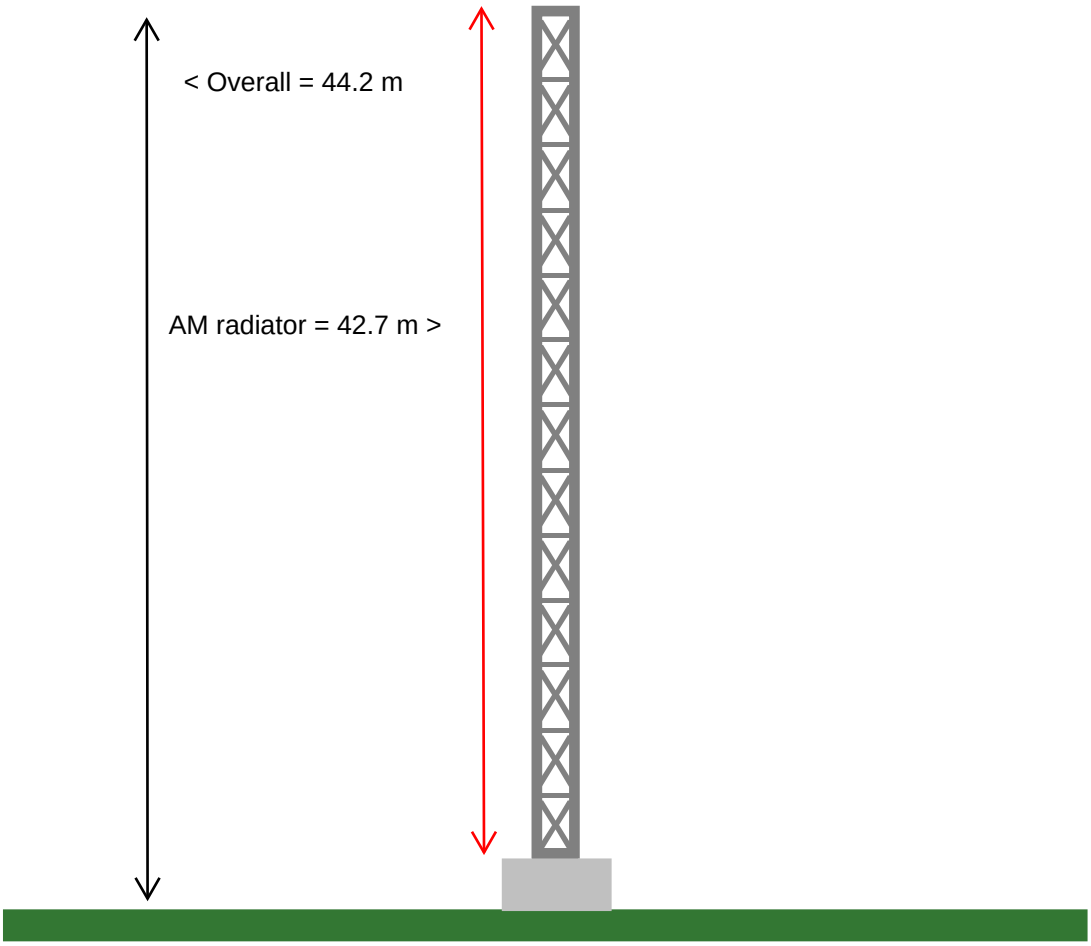
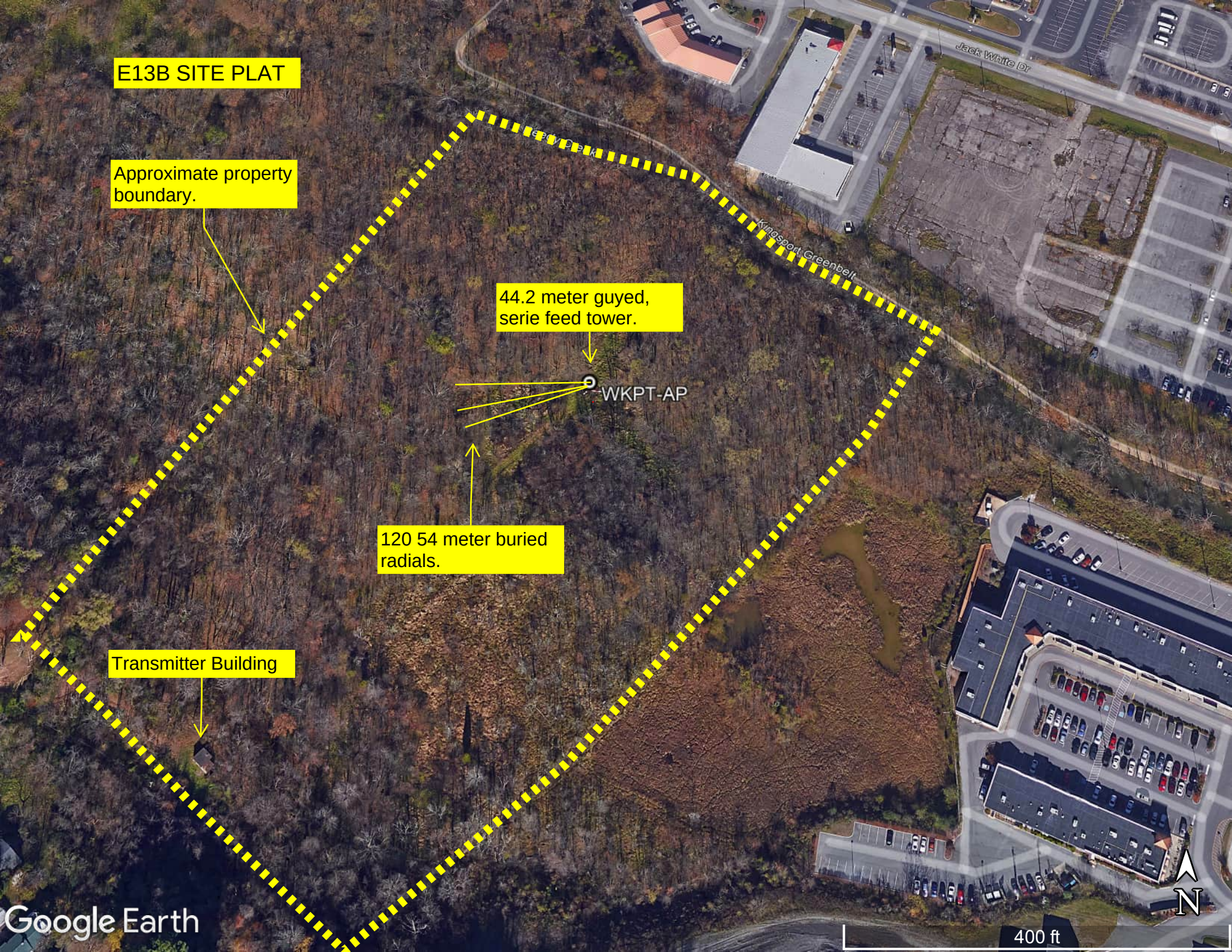
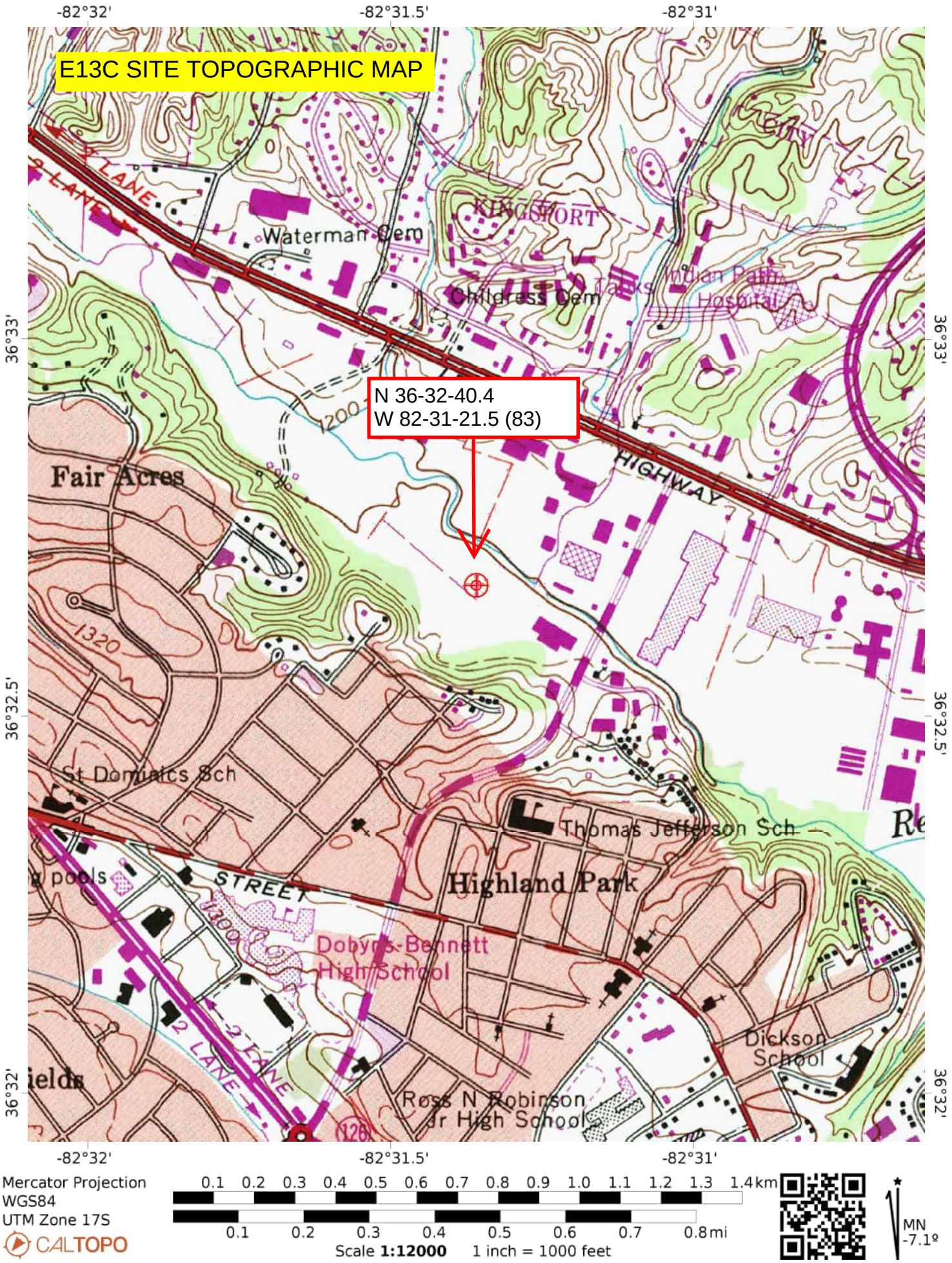
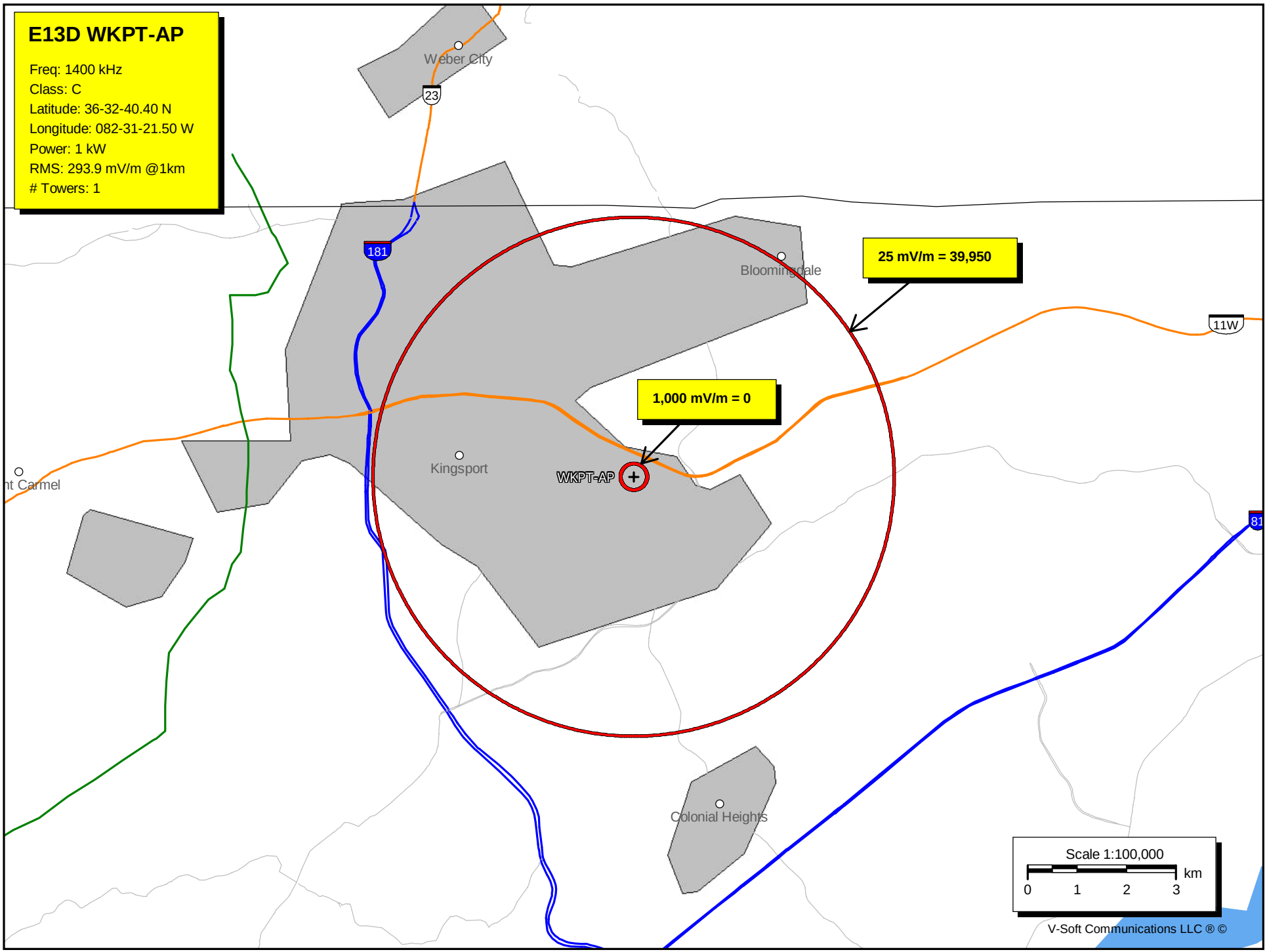
E13A VERTICAL SKETCH

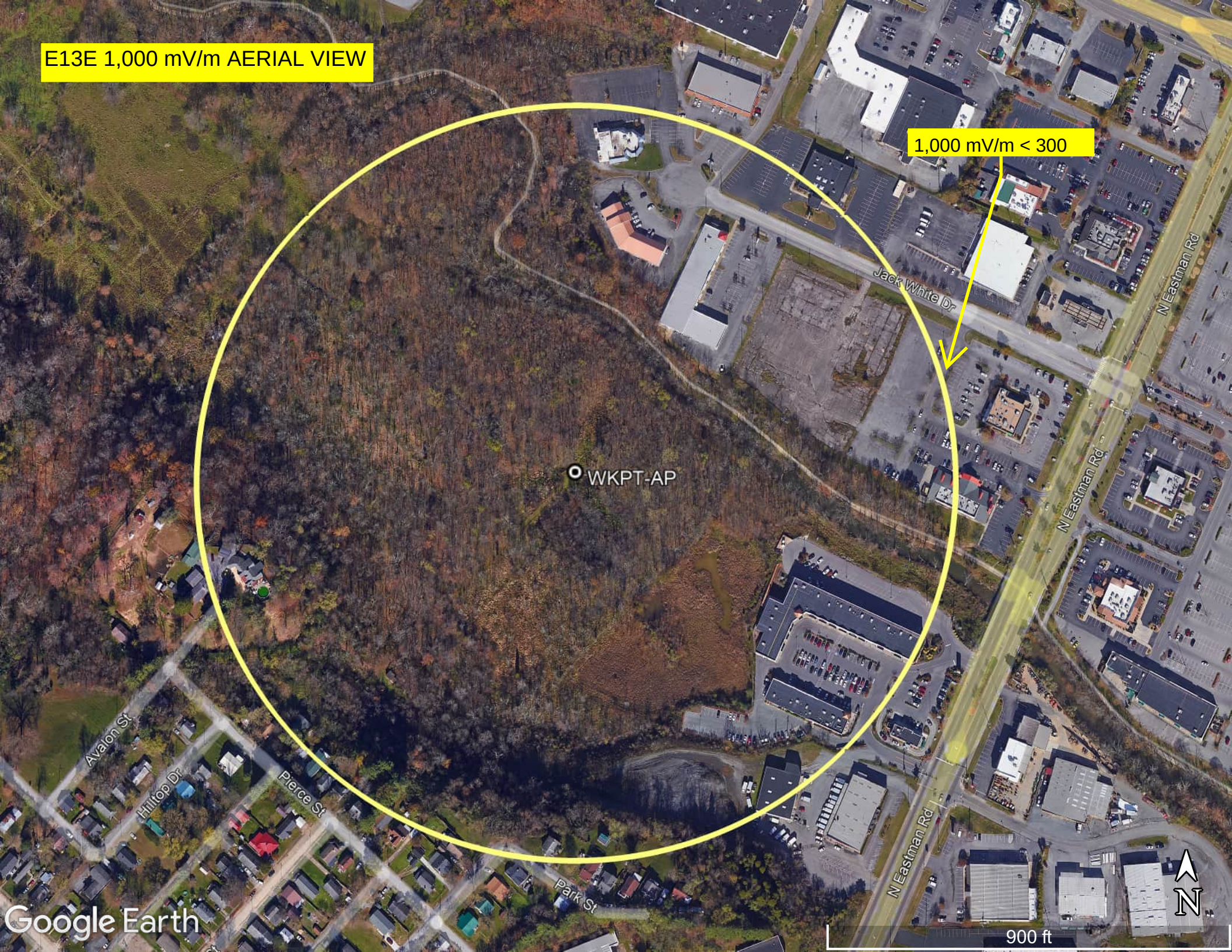


WKPT replacement tower will be a uniform cross section guyed steel tower 145 feet (44.2 meters) overall. The radiator will be 140 feet (42.7 meters) and will utilize the existing 1/4 wavelength ground system resulting in an efficiency of 293.9 mV/m/km/kW.


E13B SITE PLAT
Approximate property boundary.
44.2 meter guyed, serie feed tower.
WKPT-AP
120 54 meter buried radials.
Transmitter Building
Jack White Dr
Kingsport Greenbelt
Google Earth
N
400 ft


E13C SITE TOPOGRAPHIC MAP
-82°32'
-82°31.5'
-82°31'
36°33'
36°32.5'
36°32'
N 36-32-40.4
W 82-31-21.5 (83)
Waterman Cem
KINGSPORT
Childress Cem
Indian Path Hospital
HIGHWAY
Fair Acres
St Dominics Sch
Thomas Jefferson Sch
Highland Park
STREET
Dobyns-Bennett High School
Dickson School
Ross N Robinson Jr High School
2 LANE
1320
1200
Mercator Projection
WGS84
UTM Zone 17S
CALTOPO
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4km
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8mi
Scale 1:12000 1 inch = 1000 feet
MN
-7.1º


E13D WKPT-AP
Freq: 1400 kHz
Class: C
Latitude: 36-32-40.40 N
Longitude: 082-31-21.50 W
Power: 1 kW
RMS: 293.9 mV/m @1km
Towers: 1
Weber City
23
181
Bloomingdale
25 mV/m = 39,950
11W
1,000 mV/m = 0
Kingsport
WKPT-AP
Colonial Heights
Scale 1:100,000
km
0
1
2
3
V-Soft Communications LLC ® ©


E13E 1,000 mV/m AERIAL VIEW
1,000 mV/m < 300
WKPT-AP
Jack White Dr
N Eastman Rd
N Eastman Rd
N Eastman Rd
Avalon St
Hilltop Dr
Pierce St
Park St
Google Earth
900 ft
N

E13F **FIGURE 8** calculates the Inverse Distance Field for AM broadcast stations with frequencies between **530** and **1700 kHz.** This calculator is a computer version of Figure 8 of Section 73.190 of the FCC Rules.

The Inverse Distance Fields calculated here are in **mV/m at 1 kilometer.**

Ground system correction factors may be incorporated into the following results.

Input Parameters

Frequency:	1400 kHz
Number of Ground Radials:	120
Correction for number of radials:	0.0000 mV/m @ 1 kilometer
Average Length of Ground Radials:	54.000 meters 177.165 feet 90.783 degrees 0.2522 wavelengths
Correction factor for length:	0.0000 mV/m @ 1 kilometer
One Wavelength at 1400 kHz is:	214.138 meters 702.551 feet
Tower Height:	42.700 meters 140.092 feet 71.79 degrees 0.1994 wavelengths

Predicted Field Strength from Figure 8, Section 73.190

(Metric units)

	Theoretical Field	**Corrected Field**	
At **1.00 kW**:	293.893	293.893	mV/m @ 1 KM
At **1.000 kW**:	293.893	293.893	mV/m @ 1 KM

E13G TOWAIR Determination Results

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	36-32-40.4 north
Longitude	082-31-21.5 west

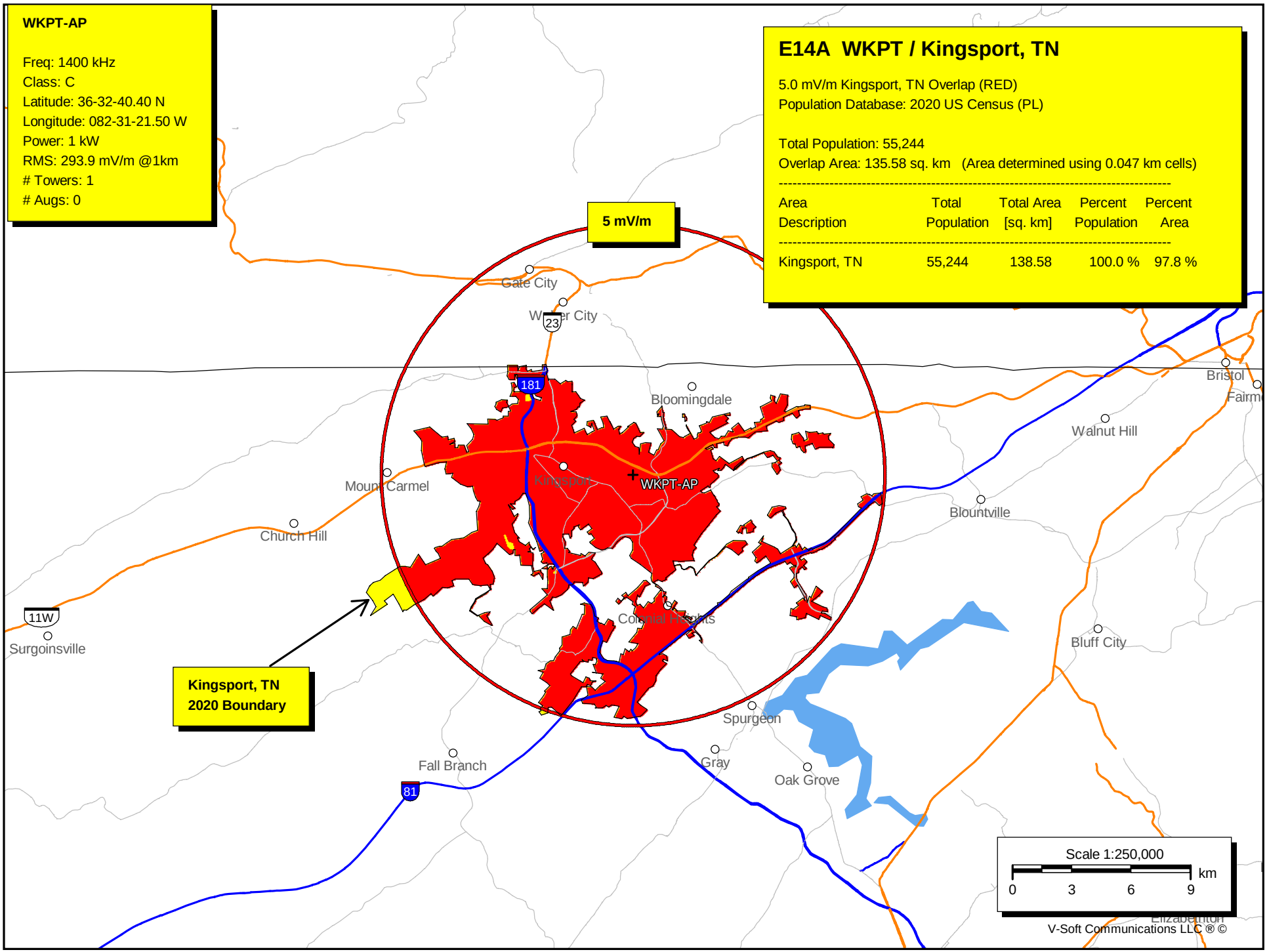
Measurements (Meters)

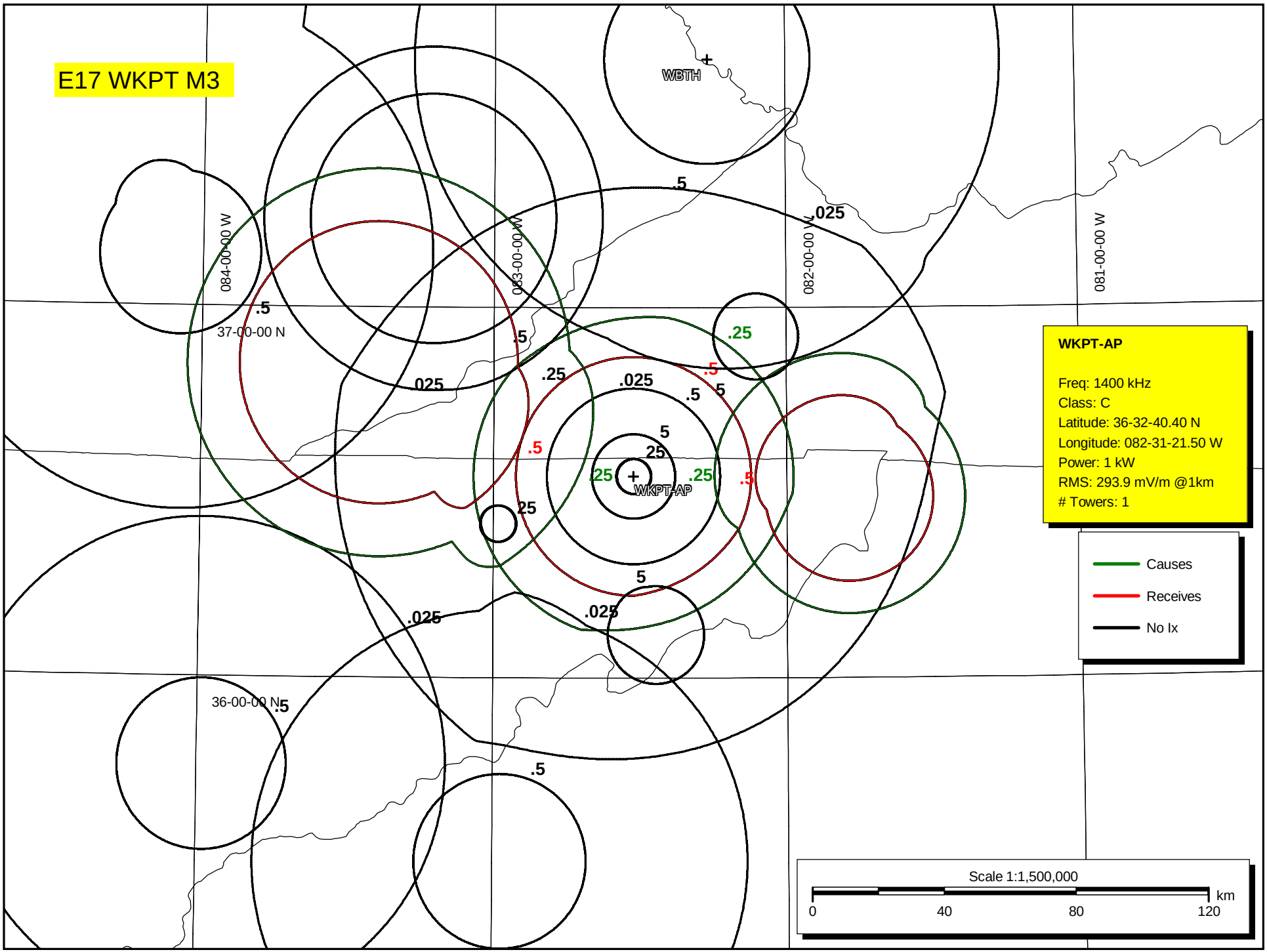
Overall Structure Height (AGL)	44.2
Support Structure Height (AGL)	0
Site Elevation (AMSL)	378

Structure Type

GTOWER - Guyed Structure Used for Communication Purposes

CLOSE WINDOW


WKPT-AP
Freq: 1400 kHz
Class: C
Latitude: 36-32-40.40 N
Longitude: 082-31-21.50 W
Power: 1 kW
RMS: 293.9 mV/m @1km
Towers: 1
Augs: 0
E14A WKPT / Kingsport, TN
5.0 mV/m Kingsport, TN Overlap (RED)
Population Database: 2020 US Census (PL)
Total Population: 55,244
Overlap Area: 135.58 sq. km (Area determined using 0.047 km cells)
Area Description | Total Population | Total Area [sq. km] | Percent Population | Percent Area
Kingsport, TN | 55,244 | 138.58 | 100.0 % | 97.8 %
5 mV/m
Gate City
Bloomingdale
Bristol
Walnut Hill
Mount Carmel
Kingsport
WKPT-AP
Church Hill
Blountville
Surgoinsville
Colonial Heights
Bluff City
Kingsport, TN
2020 Boundary
Spurgeon
Fall Branch
Gray
Oak Grove
Scale 1:250,000
km
0
3
6
9
V-Soft Communications LLC ® ©


E17 WKPT M3
WBTH
WKPT-AP
084-00-00 W
083-00-00 W
082-00-00 W
081-00-00 W
37-00-00 N
36-00-00 N
.5
.025
.25
5
25
WKPT-AP
Freq: 1400 kHz
Class: C
Latitude: 36-32-40.40 N
Longitude: 082-31-21.50 W
Power: 1 kW
RMS: 293.9 mV/m @1km
Towers: 1
Causes
Receives
No Ix
Scale 1:1,500,000
km
0
40
80
120

E17A1 Licensed AM Daytime Overlaps

Reference Station:
Call: WKPT Freq: 1400 kHz KINGSPORT, TN, US
Lat: 36-32-37.37 N Power: 1.0 kW
Lng: 082-31-20.54 W Theo RMS: 381.41 mV/m @ 1km

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	180.4	0	0	0.0	0.0	0.0	0.0

Call	Freq	City	ST	Dist	Azi	In	Out
WHLN	1410	HARLAN	KY	85.0	293.3	-1027.50	-665.00
WMCT	1390	MOUNTAIN CITY	TN	66.1	95.4	-443.50	-474.50
WBTH	1400	WILLIAMSON	WV	126.9	10.3	6.43	-5.75
WMXF	1400	WAYNESVILLE	NC	122.3	199.3	16.95	-5.75
WKIC	1390	HAZARD	KY	98.6	321.3	6.86	8.78
WEMB	1420	ERWIN	TN	47.9	171.9	19.00	19.00
WLRV	1380	LEBANON	VA	56.2	41.8	28.91	28.91
WFTG	1400	LONDON	KY	153.9	295.1	47.13	29.59
WRGS	1370	ROGERSVILLE	TN	43.7	251.0	32.06	32.06
WGAP	1400	MARYVILLE	TN	157.5	236.1	53.46	32.33
WHHV	1400	HILLSVILLE	VA	162.6	82.4	58.39	34.00
WSIC	1400	STATESVILLE	NC	168.2	119.7	57.25	46.25

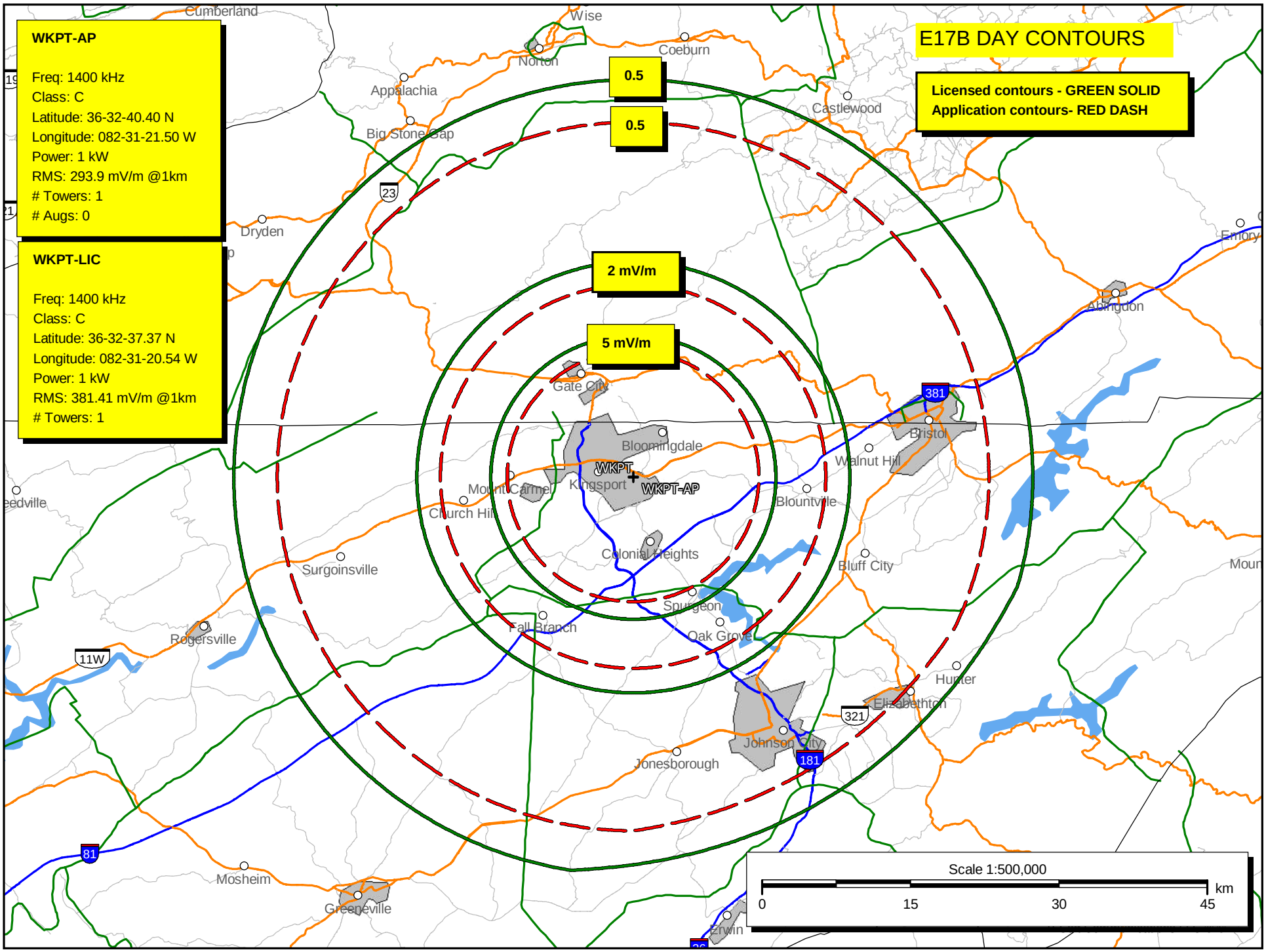
E17A2 Proposed AM Daytime Overlaps

Reference Station:
Call: WKPT-AP Freq: 1400 kHz KINGSPORT, TN, US
Lat: 36-32-40.40 N Power: 1.0 kW
Lng: 082-31-21.50 W Theo RMS: 293.90 mV/m @ 1km

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	71.7	0	0	0.0	0.0	0.0	0.0

Call	Freq	City	ST	Dist	Azi	In	Out
WKPT	1400	KINGSPORT	TN	0.1	165.7	-2185.25	-4984.00
WHLN	1410	HARLAN	KY	85.0	293.2	-746.50	-377.50
WMCT	1390	MOUNTAIN CITY	TN	66.2	95.4	-268.50	-256.00
WBTH	1400	WILLIAMSON	WV	126.8	10.3	9.56	8.33
WMXF	1400	WAYNESVILLE	NC	122.4	199.3	20.23	8.59
WKIC	1390	HAZARD	KY	98.5	321.3	11.16	13.34
WEMB	1420	ERWIN	TN	48.0	171.9	20.78	20.78
WLRV	1380	LEBANON	VA	56.1	41.9	30.54	30.54
WRGS	1370	ROGERSVILLE	TN	43.8	250.9	32.97	32.97
WFTG	1400	LONDON	KY	153.8	295.1	50.27	38.58
WGAP	1400	MARYVILLE	TN	157.5	236.1	56.70	41.40
WHHV	1400	HILLSVILLE	VA	162.6	82.5	61.61	43.02
WSIC	1400	STATESVILLE	NC	168.3	119.8	60.53	55.33

Note that WHLN and WMCT overlaps are decreased and WBTH and WMCF overlaps are eliminated.


E17B DAY CONTOURS
Licensed contours - GREEN SOLID
Application contours- RED DASH
WKPT-AP
Freq: 1400 kHz
Class: C
Latitude: 36-32-40.40 N
Longitude: 082-31-21.50 W
Power: 1 kW
RMS: 293.9 mV/m @1km
Towers: 1
Augs: 0
WKPT-LIC
Freq: 1400 kHz
Class: C
Latitude: 36-32-37.37 N
Longitude: 082-31-20.54 W
Power: 1 kW
RMS: 381.41 mV/m @1km
Towers: 1
0.5
0.5
2 mV/m
5 mV/m
WKPT
WKPT-AP
Cumberland
Wise
Norton
Coeburn
Appalachia
Big Stone Gap
Castlewood
Dryden
Abingdon
Gate City
Bloomingdale
Kingsport
Mount Carmel
Church Hill
Bristol
Walnut Hill
Blountville
Colonial Heights
Surgoinsville
Bluff City
Spurgeon
Fall Branch
Oak Grove
Rogersville
Hunter
Elizabethton
Johnson City
Jonesborough
Mosheim
Greeneville
Erwin
Scale 1:500,000
km
0
15
30
45

E17C Allocation Relevant Facility Listing

Reference Station: WKPT-AP, 1400 kHz
Location: 36-32-40.40 N, 082-31-21.50 W

***** 1370 kHz (-3) *****

43.8 km	**WRGS**	**L**	**36-24-58.34 N082-59-03.59 W1.0 kW**	**ND1 - 313.8 mV/m@1km**
27.2 mi			**Azi: 250.9 Class: D Sched: U File #: BL5836**	
			Location: ROGERSVILLE, TN, US	

***** 1380 kHz (-2) *****

56.1 km	**WLRV**	**L**	**36-55-18.39 N082-06-15.48 W1.0 kW**	**ND1 - 305.8 mV/m@1km**
34.9 mi			**Azi: 41.9 Class: D Sched: U File #: BL19810220AF**	
			Location: LEBANON, VA, US	

***** 1390 kHz (-1) *****

66.2 km	**WMCT**	**L**	**36-29-24.93 N081-47-13.52 W1.0 kW**	**ND2 - 282.0 mV/m@1km**
41.1 mi			**Azi: 95.4 Class: D Sched: U File #: BML20160615ABQ**	
			Location: MOUNTAIN CITY, TN, US	

***** 1400 kHz (CO) *****

122.4 km	**WMXF**	**L**	**35-30-14.37 N082-58-24.49 W1.0 kW**	**ND1 - 299.3 mV/m@1km**
76.1 mi			**Azi: 199.3 Class: C Sched: U File #: BL13663**	
			Location: WAYNESVILLE, NC, US	
126.8 km	**WBTH**	**L**	**37-40-09.37 N082-16-08.51 W1.0 kW**	**ND1 - 436.1 mV/m@1km**
78.8 mi			**Azi: 10.3 Class: C Sched: U File #: BL19840924AF**	
			Location: WILLIAMSON, WV, US	
153.8 km	**WFTG**	**L**	**37-08-30.32 N084-04-44.75 W0.69 kW**	**ND2 - 312.2 mV/m@1km**
95.6 mi			**Azi: 295.1 Class: C Sched: U File #: BL20021115ADK**	
			Location: LONDON, KY, US	

***** 1410 kHz (+1) *****

85.0 km	**WHLN**	**L**	**36-50-59.32 N083-23-40.67 W5.0 kW**	**ND1 - 375.0 mV/m@1km**
52.8 mi			**Azi: 293.2 Class: D Sched: U File #: BL6921**	
			Location: HARLAN, KY, US	

***** 1420 kHz (+2) *****

48.0 km	**WEMB**	**L**	**36-06-58.39 N082-26-48.50 W5.0 kW**	**ND1 - 383.0 mV/m@1km**
29.8 mi			**Azi: 171.9 Class: D Sched: U File #: BL19980330KB**	
			Location: ERWIN, TN, US	