

Comprehensive Technical Statement

in support of

Talking Information Center, Incorporated

Application for Minor Modification to a Construction Permit

WRRS (FM), Facility ID # 177016

Channel 203A, 88.5 MHz

Middleborough Center, MA

Canadian Notification Required

Introduction

Talking information Center ("TIC") proposes to modify the construction permit it holds for WRRS (FM), FCC facility ID # 177016.

The following changes are proposed:

- Effective radiated power
- Directional antenna pattern

No changes are proposed to the location, frequency, or class.

Data Sources

Distances between stations up to 475 km were calculated using the FCC method defined in 73.208 of the Commission's Rules. All other distances were calculated using the Great Circle method.

Except where otherwise noted, contours shown in this report were generated using antenna center above mean sea level, NAD-27 coordinates, and the online FCC HAAT calculator, which uses 30-second terrain data.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Interference Study

The following table lists all conflicts that do not meet the minimum separation requirements for a Class A FM Broadcast station under 73.207:

app_id	fac_id	adj	chan	status	call	st	city	erp	da	haat	brg	dkm	req	Δ
1227463	177016	0	203A	CP	WRRS	MA	MIDDLEBOROUGH CENTER	1.4	Y	41	0	0	115	-115
1400418	64500	0	203A	LIC	WWTA	MA	MARION	0.1	Y	16	150	27.72	115	-87.28
1398956	175689	0	203A	CP MOD	WPMW	MA	BAYVIEW	0.14	Y	54	185	31.71	115	-83.29
94642	57299	1	202A	LIC	WRPS	MA	ROCKLAND	0.105	N	42	4	22.79	72	-49.21
1212803	175310	1	204B1	APP	NEW	MA	EAST FALMOUTH	8	Y	27	139	50.27	96	-45.73
248181	69304	0	203B	LIC	WFCR	MA	AMHERST	13	N	295	292	132.35	178	-45.65
1096939	165651	0	203A	APP	NEW	MA	GLOUCESTER	0.1	N	68	13	76.37	115	-38.63
1211969	174752	1	204A	APP	NEW	MA	SAGAMORE	0.48	Y	40	119	34.47	72	-37.53
1212777	175291	0	203A	APP	NEW	MA	ORLEANS	3	Y	143	102	78.47	115	-36.53
1262153	57426	1	202A	LIC	WQRI	RI	BRISTOL	0.8	N	24	221	40.78	72	-31.22
205250	15985	1	202A	LIC	WGAO	MA	FRANKLIN	0.175	N	58	295	42.36	72	-29.64
1318491	173527	1	204B1	APP	NEW	MA	BARNSTABLE	9	N	80	109	67.39	96	-28.61
30708	7650	1	204A	LIC	WJMF	RI	SMITHFIELD	0.225	N	40	270	50.21	72	-21.79
1198333	171674	1	204A	APP	NEW	MA	MASHPEE	0.2	N	47	134	51.4	72	-20.6
1224147	176884	0	203A	APP	NEW	MA	NANTUCKET	3	Y	63	138	95.82	115	-19.18
1329713	7650	1	204A	CP MOD	WJMF	RI	SMITHFIELD	1.2	Y	163	256	53.37	72	-18.63
1211644	174594	1	204B1	APP	NEW	MA	EASTHAM	15.5	N	112	102	78.47	96	-17.53
1209449	173403	1	204A	APP	NEW	MA	BARNSTABLE	2	N	103	118	55.44	72	-16.56
1213349	175707	1	204A	APP	NEW	MA	OAK BLUFFS	0.1	N	10	149	61.16	72	-10.84
1207062	172994	1	204A	APP	NEW	MA	SOUTH YARMOUTH	6	N	34	113	67.2	72	-4.8
206628	13556	1	202A	LIC	WIQH	MA	CONCORD	0.1	N	7	330	67.29	72	-4.71

The first record is for the WRRS CP, which will be replaced by the facility proposed in the present application.

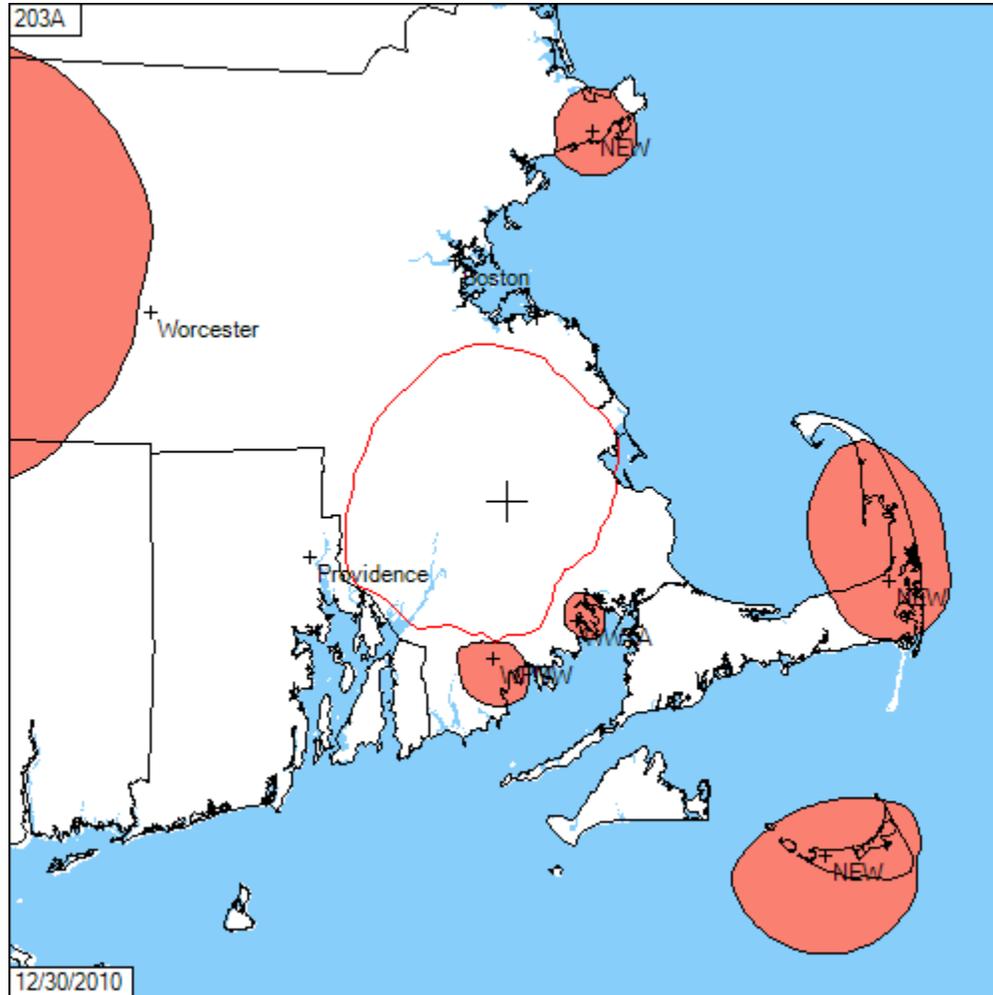
The following regional maps show the situation with regard to the large numbers of potential conflicts. These maps were generated using terrain data from the FCC online HAAT calculator, which is based on 30-second terrain data.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Outbound co-channel



The map above shows the proposed 40 dBu f(50,10) contour in red. The 60 dBu contours of the conflicts are shown in black and filled in salmon.

The only conflict is with the CPMOD for WPMW in Bayview, MA (facility ID 175689, CDBS application ID 1398956, File Number BMPED-20101006ABJ).

Using the FCC online HAAT calculator, the 40 dBu f(50,10) contour of the instant WRRS application, as well as that of its existing Construction Permit, overlaps the 60 dBu f(50,50) contour of the WPMW CPMOD.

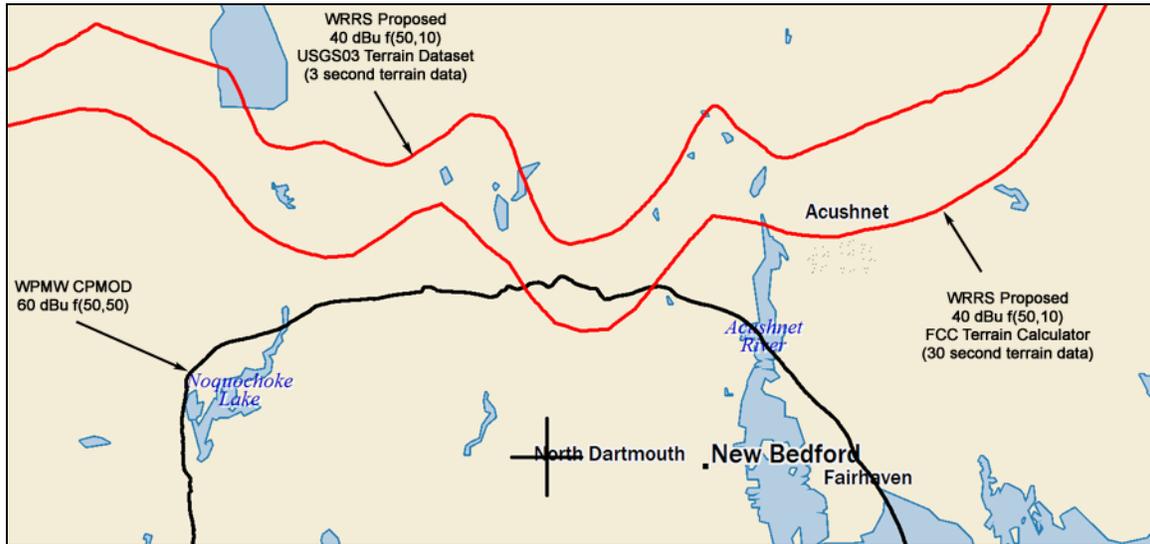
However, in their CPMOD application, the WPMW permittee relied upon 3-second terrain data to show lack of overlap of their 60 dBu f(50,50) contour with the 40 dBu f(50,10) contour of the WRRS CP.

Therefore, WRRS provides the following detailed map, showing that – on the same basis that WPMW used to justify its CPMOD application – there is no overlap when 3-second terrain data is used to generate the contours:

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com



The WPMW 60 dBu f(50,10) contour shown here was plotted using 3-second data from the USGS03 terrain dataset. The FCC HAAT Calculator, which uses 30-second data, produces very similar results for this contour.

Two contours are shown for WRRS, based on the aforementioned 3-second and 30-second terrain data sources.

Overlap is shown when the usual 30-second data is employed, but no overlap exists when the 3-second data is used.

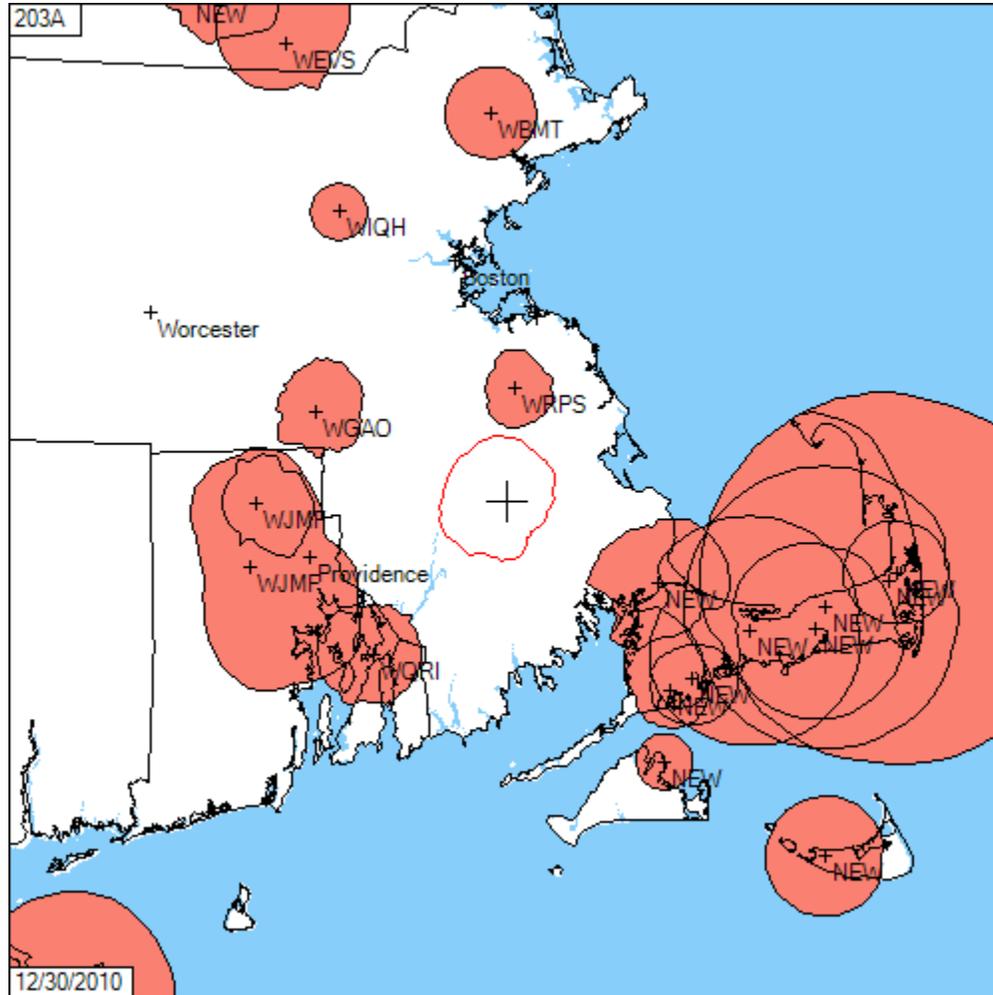
Since the WPMW CPMOD application relied on 3-second terrain data to show lack of prohibited overlap, and this was accepted by the Commission, WRRS proposes to employ 3-second terrain data to show that no prohibited overlap exists with respect to WPMW.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Outbound first adjacent



The map above shows the proposed 54 dBu f(50,10) contour in red. The 60 dBu contours of the conflicts are shown in black and filled in salmon.

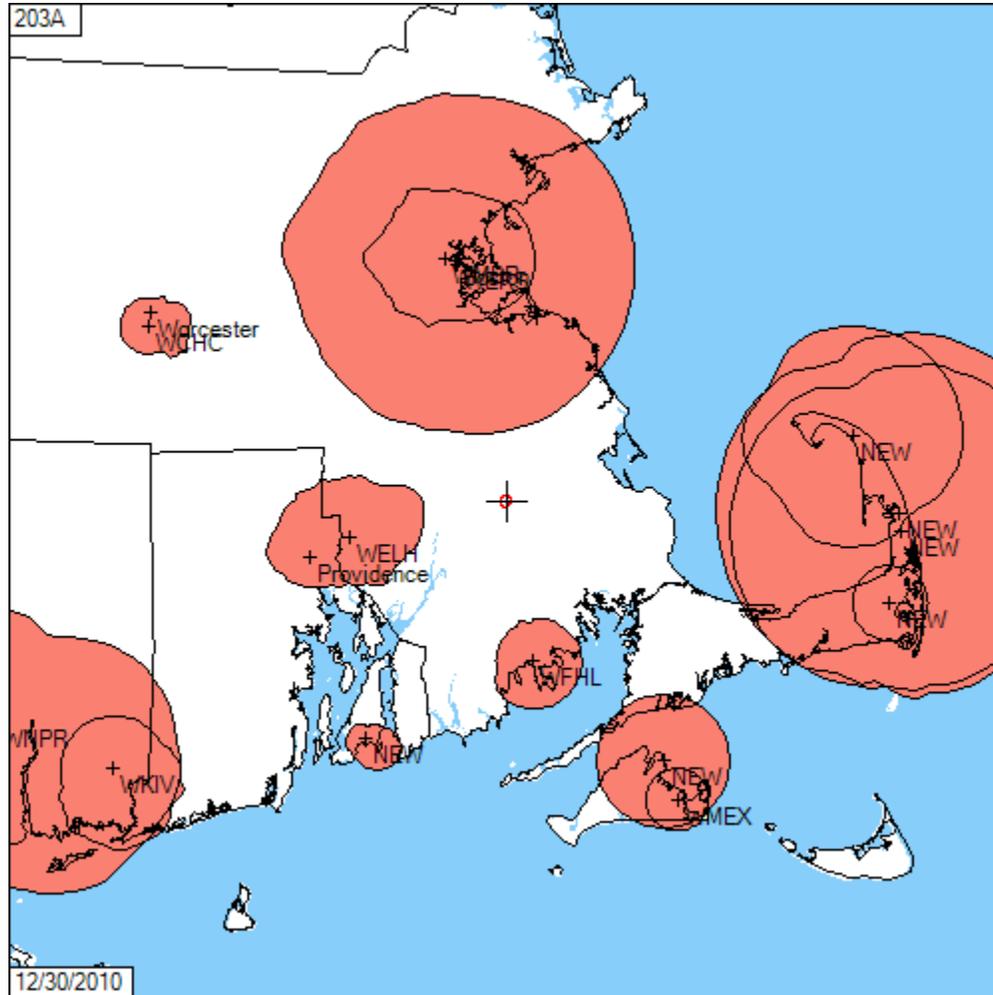
There are no prohibited overlaps with first adjacent outbound conflicts.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Outbound second and third adjacent



The map above shows the proposed 100 dBu f(50,10) contour in red. The 60 dBu contours of the conflicts are shown in black and filled in salmon.

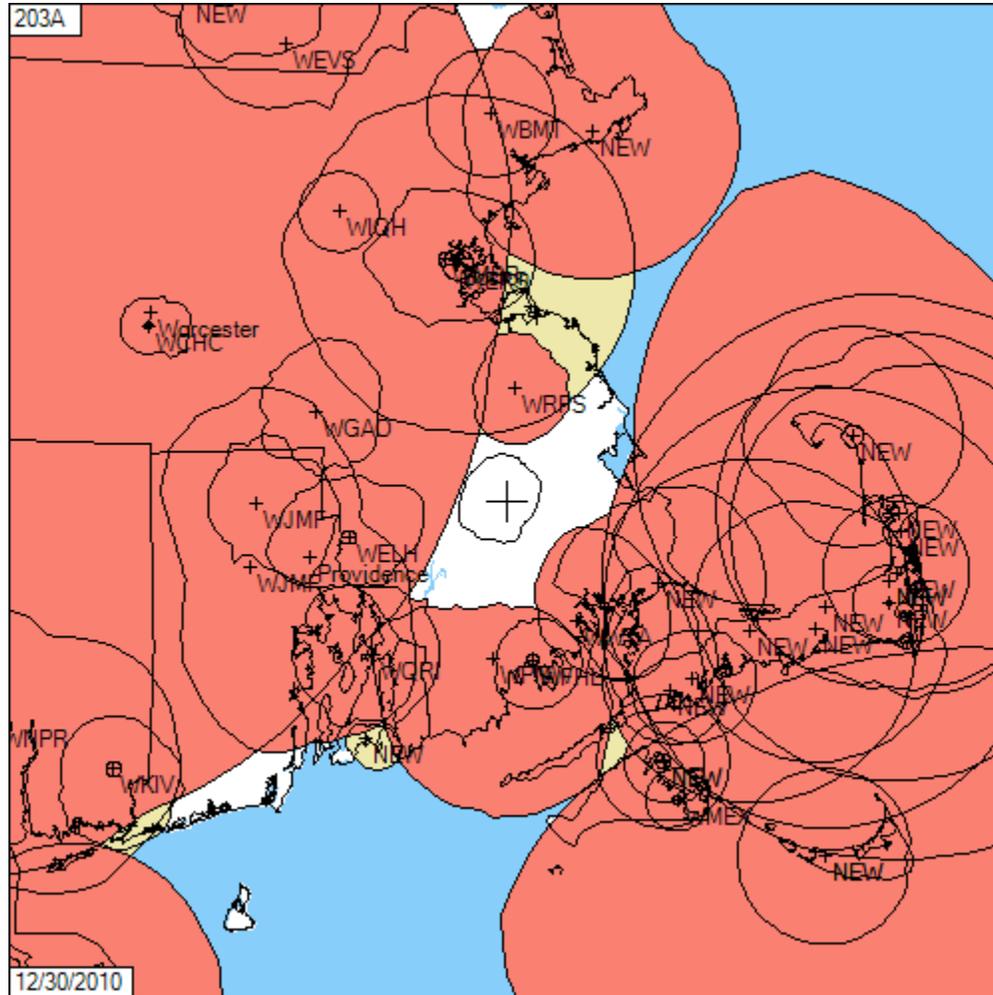
There are no second or third adjacent outbound conflicts.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Inbound



The map above shows the proposed 60 dBu f(50,50) contour in black. The interfering contours of co-channel and first-adjacent conflicts are shown in black and filled in salmon. Because the interfering contours are so small, second and third adjacent conflicts have their 60 dBu contours plotted in yellow to make obvious the presence of the 100 dBu contours within.

The only potential inbound interference issue is with WFCR in Amherst, MA (facility ID 69304, CDBS application ID 248181).

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Detailed inbound interference from WFCR:



This close-up shows that no prohibited overlap occurs between the proposed 60 dBu f(50,50) (shown in black) and the inbound 40 dBu f(50,10) interference from WFCR (black filled with salmon).

Blanketing Interference

The blanketing radius is 249 m from the tower. The tower is in an industrial area, and there is no population within the blanketing area.

The applicant agrees to resolve any blanketing complaints in accordance with the procedures contained in 73.318.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

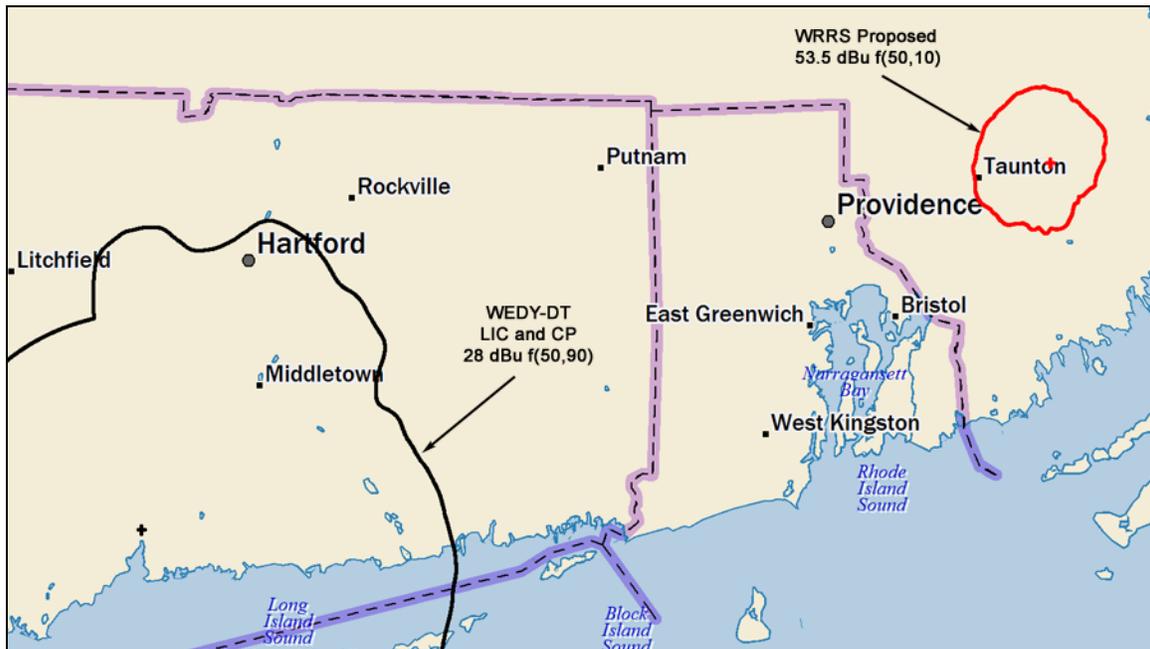
Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Channel 6 Interference

Proposals for channel 203 must take into account all digital Channel 6 full-power digital TV stations within a radius of 246 km. There is one such facility: WEDY-DT is 177 km from the proposed facility.

Full-power DTV facilities are protected to the 28 dBu f(50,90) contour. This protected contour is roughly equivalent to the analog 47 dBu f(50,50) Grade B contour. For NCE interferors on channel 203, the U/D ratio at the Grade B contour is +6.5 dB relative to the Grade B, or 53.5 dBu f(50,10). It may therefore be concluded that, although direct interference ratios between DTV and analog FM have not yet been established, the 53.5 dBu f(50,10) contour represents a reasonable interfering contour for a proposed NCE station on 88.5 MHz with respect to the 28 dBu f(50,90) of a digital TV6 station.



As shown on the above map, there is no overlap between the 28 dBu f(50,90) contour of WEDY-DT and the 53.5 dBu f(50,10) contour of the proposed WRRS facility.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Transmitter Location

Tower data:

Coordinates 41 55 26 N (NAD-27)
 70 56 07 W (Primary source: WVBF(AM) coordinates)

 41 55 26.4 N (NAD-83)
 70 56 05.1 W (NADCON conversion attached)

Site Elevation 12 m

Overall height 50 m AGL
 62 m AMSL

ASR Number Registration not required. TOWAIR results attached.

Antenna data:

Description One-bay circularly polarized directional antenna

Interbay spacing N/A

Antenna center 48 m AGL
 60 m AMSL
 41 m AAT

ERP:

Horizontal 0.400 kW (maximum – directional)
Vertical 0.400 kW (maximum – directional)

Pattern:

brg	rel fld	brg	rel fld	brg	rel fld
0	0.900	120	0.480	240	0.930
10	0.810	130	0.450	250	0.920
20	0.730	140	0.410	260	0.910
30	0.670	150	0.480	270	0.920
40	0.620	160	0.600	280	0.940
50	0.590	170	0.700	290	0.950
60	0.580	180	0.790	300	0.960
70	0.570	190	0.860	310	0.980
80	0.560	200	0.910	320	0.990
90	0.560	210	0.930	330	1.000
100	0.540	220	0.940	340	0.990
110	0.520	230	0.940	350	0.960

This pattern meets the requirements of 73.510. No ten-degree increment exceeds 2 dB and the maximum null depth is 7.7 dB.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

International

Border Calculations

The distance to the US/Canada border is 346 km. The proposed 34 dBu f(50,10) contour does not cross the border.

WRRS has already been coordinated at this location at this class. Since the ERP and directional antenna pattern are changing, notification may be required, but coordination should not be required.

The distance to the US/Mexico border is 2,976 km. Notification is not required.

Quiet Zones and Protected FCC Monitoring Stations

Quiet Zone Calculations [73.1030(a) & (b)]

The proposed site is outside the National Radio Quiet Zone (National Radio Astronomy Observatory Notification Area).

The proposed site is outside the Arecibo Observatory notification area.

The proposed site is not within a 100km extension of the Table Mountain Radio Receiving Zone.

Protected Monitoring Stations [73.1030(c)]

The nearest Protected Monitoring Station is 318 km distant, in Belfast, ME.

Environmental

The antenna will be mounted on an existing tower. No new construction of any kind is proposed.

For the worst-case antenna, FMMODEL produces an exposure of 8.3 $\mu\text{W}/\text{cm}^2$, which is about 4% of the limit for casual / uncontrolled exposure. The tower is fenced and appropriate warning signage is provided.

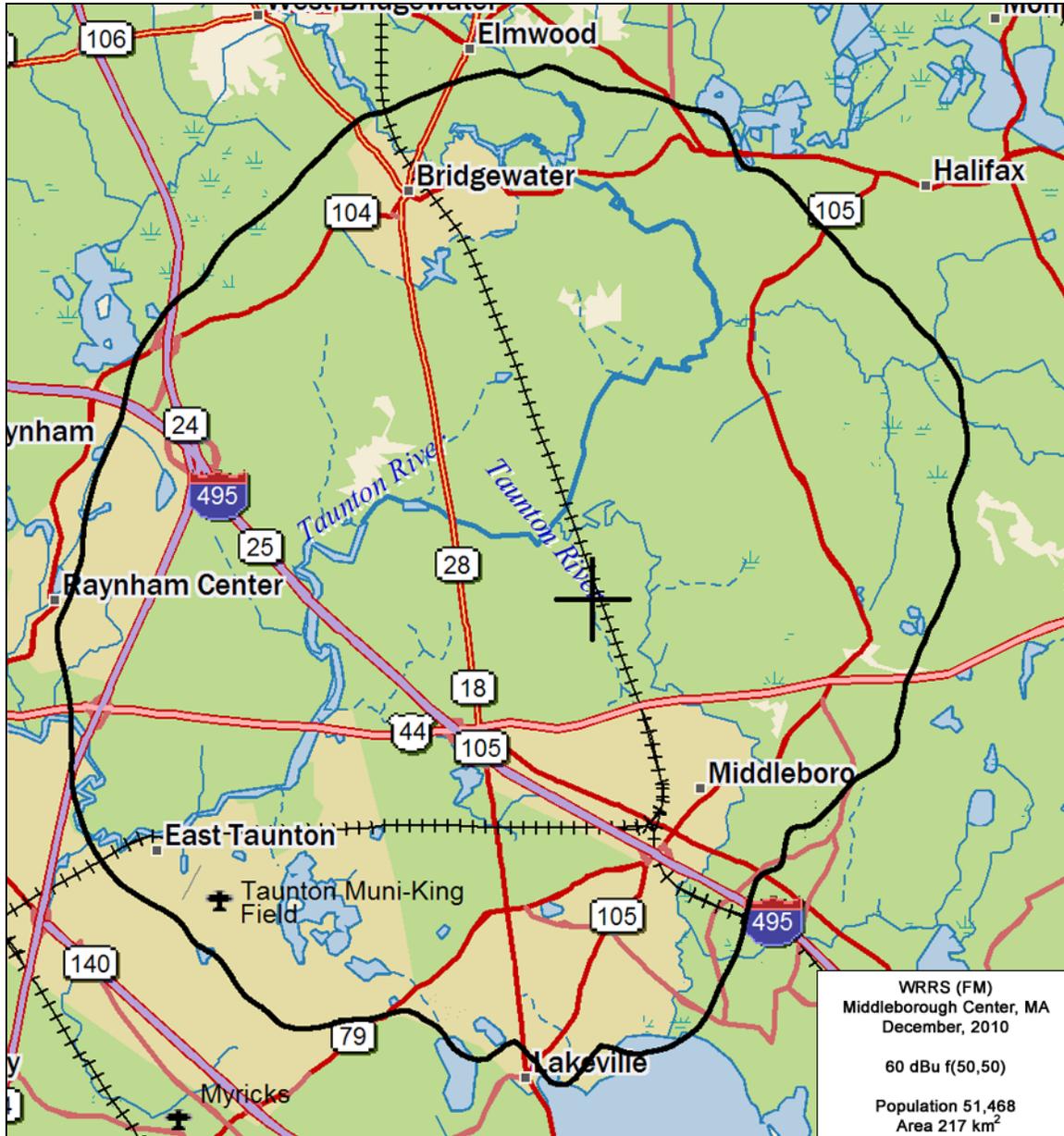
Therefore, this application does not reflect a major environmental action.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Coverage



The principal community of Middleborough Center (shown as "Middleboro" on this map) falls entirely within the 60 dBu f(50,50) contour, satisfying the requirements of 73.515.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Conclusion

The application to which this exhibit is attached is for a minor modification to an already-granted Construction Permit. No change to the frequency, location, or antenna height is proposed. The only changes proposed are a modification to the directional antenna pattern and a decrease in maximum ERP.

International coordination is not required, and no waivers are requested.

The permittee is prepared to build the facility expeditiously

-0-

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527

Telephone: 401-354-2400
<http://www.skywaves.com>

Washington: 202-370-6357
Email: dave@skywaves.com

Output from NADCON for station WRRS

North American Datum Conversion

NAD 27 to NAD 83

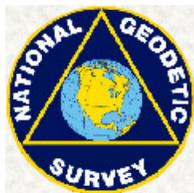
NADCON Program Version 2.11

=====

Transformation #: 1 Region: Conus

	Latitude	Longitude
NAD 27 datum values:	41 55 26.00000	70 56 7.00000
NAD 83 datum values:	41 55 26.36600	70 56 5.14861
NAD 83 - NAD 27 shift values:	0.36600	-1.85139 (secs.)
	11.292	-42.659 (meters)
Magnitude of total shift:		44.128 (meters)

□



[NGS HOME PAGE](#)

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	41-55-26.4 north
Longitude	070-56-05.1 west
Measurements (Meters)	
Overall Structure Height (AGL)	50
Support Structure Height (AGL)	50
Site Elevation (AMSL)	12
Structure Type	
TOWER - Free standing or Guyed Structure used for Communications Purposes	

[Tower Construction Notifications](#)

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW