

**Technical Statement**  
In support of  
**WELH (FM)**  
**Application for Minor Change**

**Licensee:**

Wheeler School of Providence, Rhode Island is the licensee of WELH (FM).

Wheeler School is an IRS-qualified not-for-profit educational institution dedicated to the education of children from nursery school through high school.

Wheeler School was founded in 1889, and has operated continuously since that date as a significant educational institution. Wheeler School was granted the license for WELH in 1995.

**Introduction:**

Providence is the capital of Rhode Island.

WELH is the only Non-Commercial Educational FM station licensed to Providence that operates continuously<sup>1</sup>.

WELH is severely restricted in its coverage by the presence of analog channel 6 television station WLNE-TV in New Bedford, MA and the requirement contained in 47 CFR 73.525 to protect WLNE-TV's analog signal from interference. Elsewhere in this application is a request for a waiver of 73.525 due to the impending demise of analog television broadcasting. Therefore, this statement ignores interference to channel 6.

Wheeler School proposes to relocate WELH from rural property in Seekonk, MA, from which its coverage is extremely limited, to Neutaconkanut Hill in Johnston, RI, just south of Providence. This will provide, for the first time, a strong fulltime local noncommercial educational FM signal to the capital of Rhode Island and most of its close-in suburbs.

**Proposed Location:**

WELH proposes to locate on ASRN 1025228. This tower is owned by Crown Castle International, a well-known tower rental firm. The tower coordinates in NAD-27 are 41-48-28N / 71-28-22W. The antenna will be centered at 53 meters above ground. The Height Above Average Terrain will be 80 meters, and the maximum Effective Radiated Power will be 700W.

**Directional Antenna**

A directional antenna is proposed. The maximum to minimum ratio is 15db, and no ten degree increment is greater than 2db. Therefore, the proposed antenna complies with 47 CFR 73.316.

**RF Exposure**

FMMModel returns a maximum RF exposure of  $0.0028\mu\text{W}/\text{cm}^3$ . That is a vanishingly small percentage of the allowed  $200\mu\text{W}/\text{cm}^3$  for casual exposure. The site is fenced and warning signs are provided. The applicant agrees to reduce power or turn the transmitter off as necessary to protect personnel climbing the tower.

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<sup>1</sup> The other NCE/FM, WDOM, is student-run, and does not operate when Providence College is not in session.

## Population and Area Covered:

### 70dbu Principal City Contour

The current WELH facility serves 19,021 people in an area of 46 km<sup>2</sup>.

The proposed WELH facility would serve 288,911 people in an area of 141km<sup>2</sup>, an increase of 269,890 people (1419%) and 95 km<sup>2</sup> (207%).

At present, not one person in Providence receives a 70dbu NCE/FM signal on a fulltime basis. The proposed facility would provide a 70dbu signal to nearly every resident of the city.

### 60dbu Nominally Protected Contour

The current WELH facility serves 115,816 people in an area of 147 km<sup>2</sup>.

The proposed WELH facility would serve 536,064 people in an area of 451km<sup>2</sup>, an increase of 420,248 people (463%) and 304 km<sup>2</sup> (307%).

The proposed facility would provide a signal of at least 60dbu to the entire population of Providence.

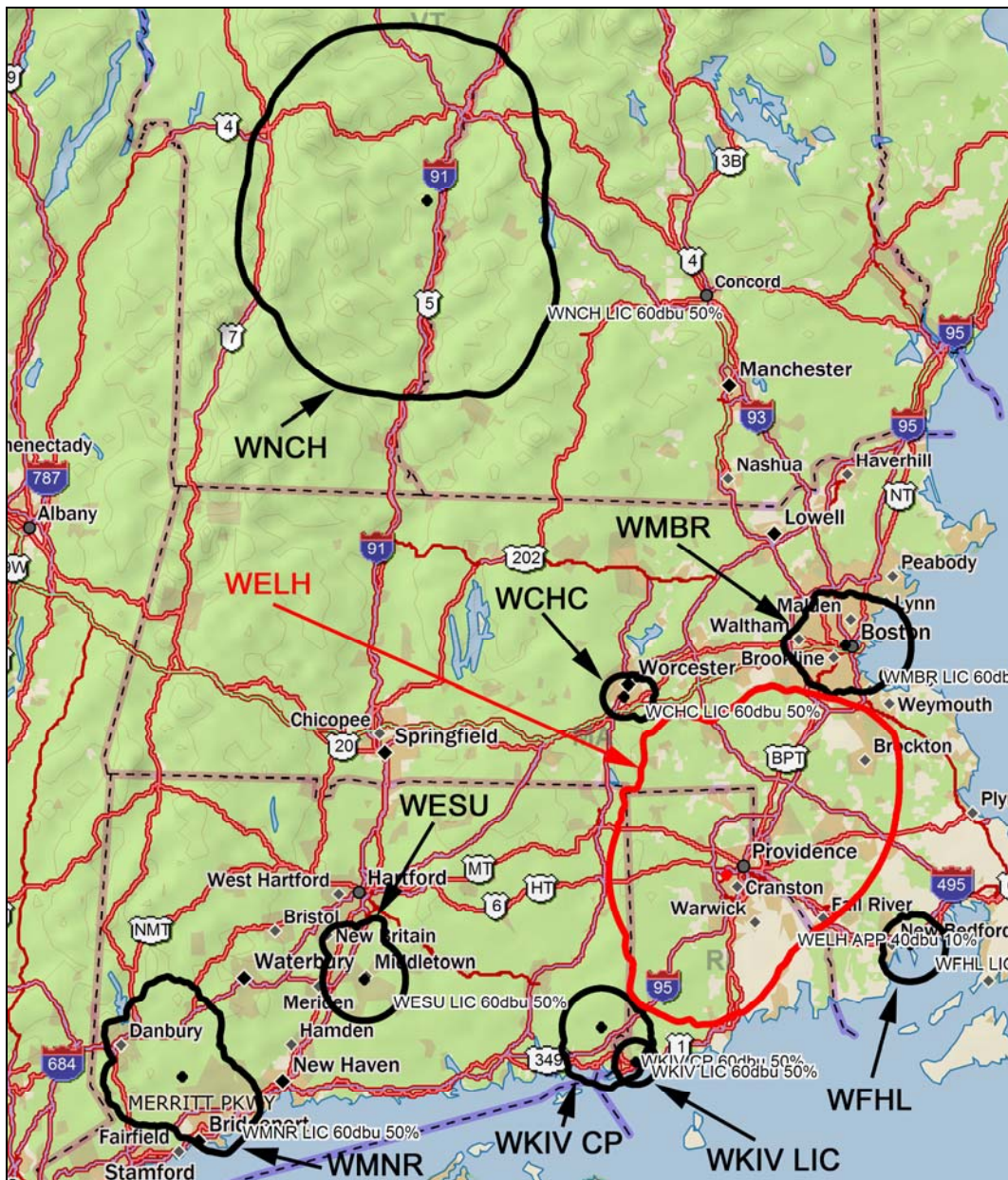
## Interference:

The following is a list of all FM conflicts with the proposed facility. All records exceeding the normal class-to-class spacing by 25km were suppressed:

adj	chan	stat	call	state	city	brg	dist	erp	da	haat	fsmin	fsdelta
0	201A	LIC	WELH	RI	PROVIDENCE	66	14.05	0.15	N	30	115	-100.95
0	201A	LIC	WFHL	MA	NEW BEDFORD	111	53.45	0.3	N	41	115	-61.55
0	201A	CP	WKIV	RI	WESTERLY	220	53.47	1.2	N	32	115	-61.53
0	201A	LIC	WCHC	MA	WORCESTER	330	55.24	0.1	N	-2	115	-59.76
0	201A	LIC	WKIV	RI	WESTERLY	206	56.12	0.1	N	20	115	-58.88
1	202A	LIC	WQRI	RI	BRISTOL	135	25.01	0.8	N	23	72	-46.99
0	201A	LIC	WMBR	MA	CAMBRIDGE	27	69.42	0.72	Y	90	115	-45.58
1	202A	LIC	WGAO	MA	FRANKLIN	11	31.46	0.175	N	58	72	-40.54
3	204A	LIC	WJMF	RI	SMITHFIELD	336	13.70	0.225	N	40	31	-17.3
1	202A	LIC	WRPS	MA	ROCKLAND	52	58.25	0.105	N	42	72	-13.75
0	201A	LIC	WESU	CT	MIDDLETOWN	254	102.65	1.5	N	12	115	-12.35
1	202A	LIC	WIQH	MA	CONCORD	8	71.72	0.1	N	7	72	-0.28
0	201B1	LIC	WMNR	CT	MONROE	250	158.16	5	Y	123	143	15.16
0	201B	LIC	WNCH	VT	NORWICH	336	198.07	1.6	Y	688	178	20.07

### Interference to co-channel stations:

The following map shows the protected 60dbu  $f(50,50)$  contours of all co-channel stations, including the CP for WKIV, in black, and the interfering 40dbu  $f(50,10)$  contour of this proposal.

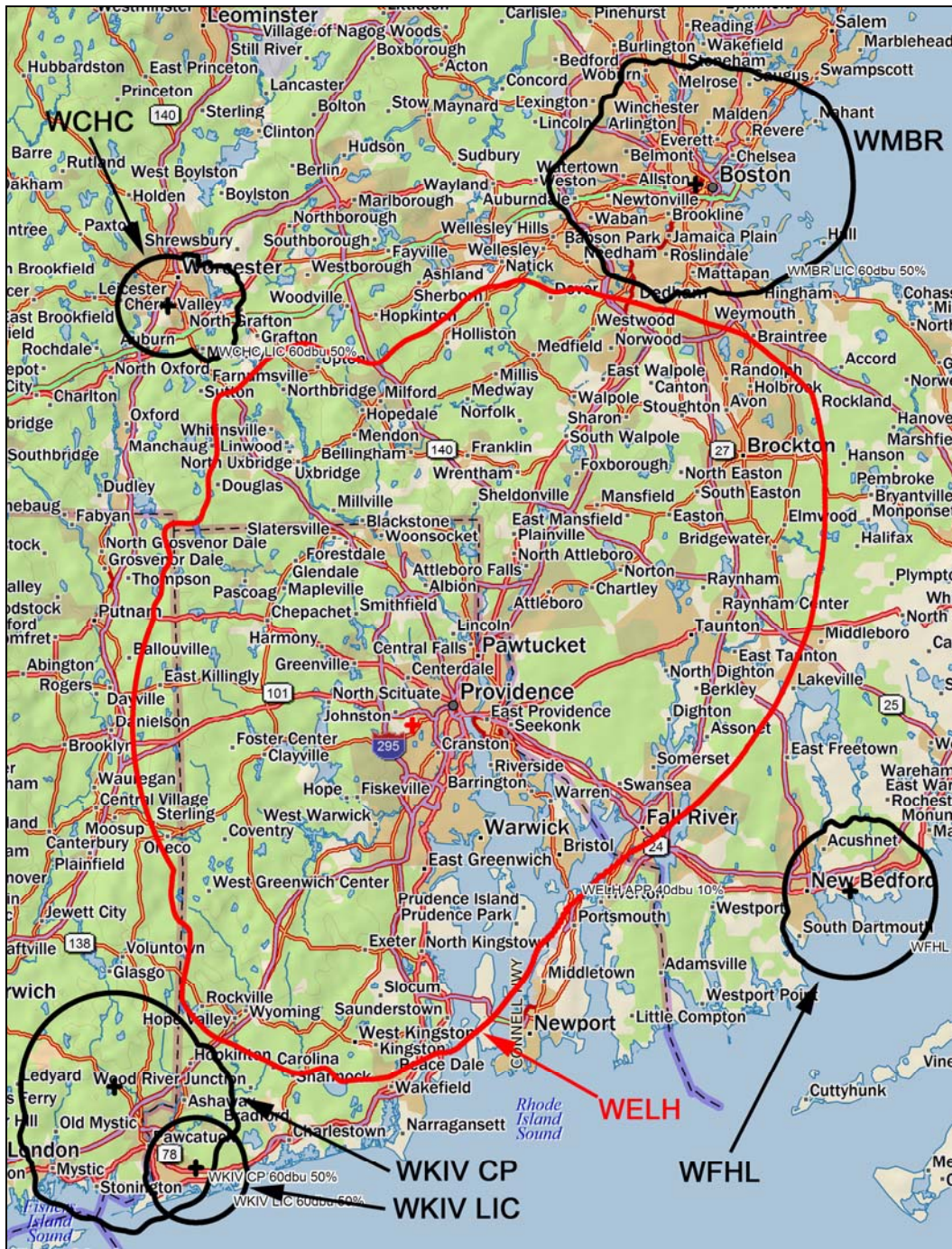


The 40dbu  $f(50,10)$  interfering contour of WELH is shown in red.

The 60dbu  $f(50,50)$  protected contour of the co-channel conflicts are shown in black.

It is clear that only WMBR, WCHC, and the WKIV CP are close to overlapping.

The following map shows that none of these co-channel conflicts actually overlap:

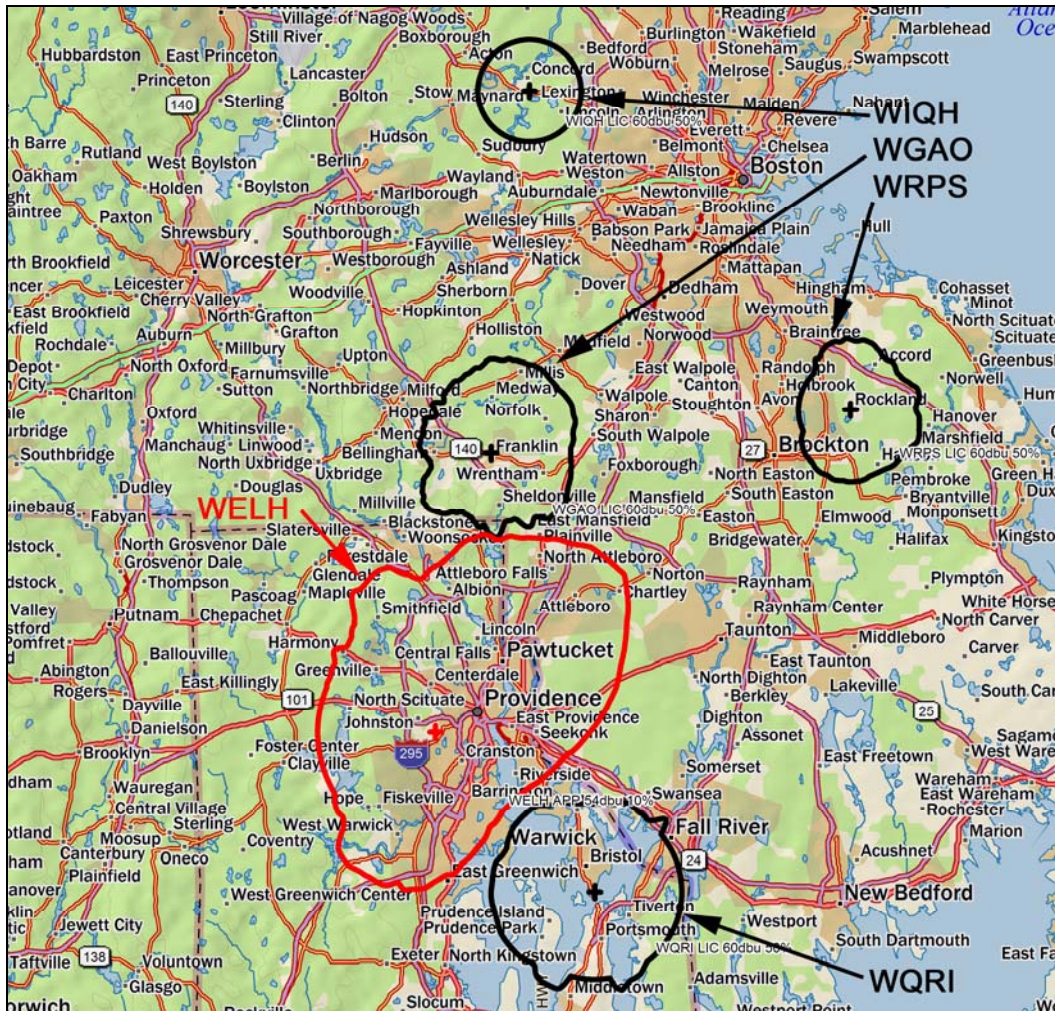


The 40dbu  $f(50,10)$  interfering contour of WELH is shown in red.

The 60dbu  $f(50,50)$  protected contour of the co-channel conflicts are shown in black.

### Interference to first-adjacent channel stations:

The following map shows the protected 60dbu  $f(50,50)$  contours of all first-adjacent stations in black and the interfering 54dbu  $f(50,10)$  contour of this proposal. It shows clearly that only WGAO comes close to overlapping:



The 54dbu  $f(50,10)$  interfering contour of WELH is shown in red.

The 60dbu  $f(50,50)$  protected contours of WGAO, WRPS, and WQRI are shown in black.

The following close-up shows clearly that no prohibited overlap will occur with WGAO:

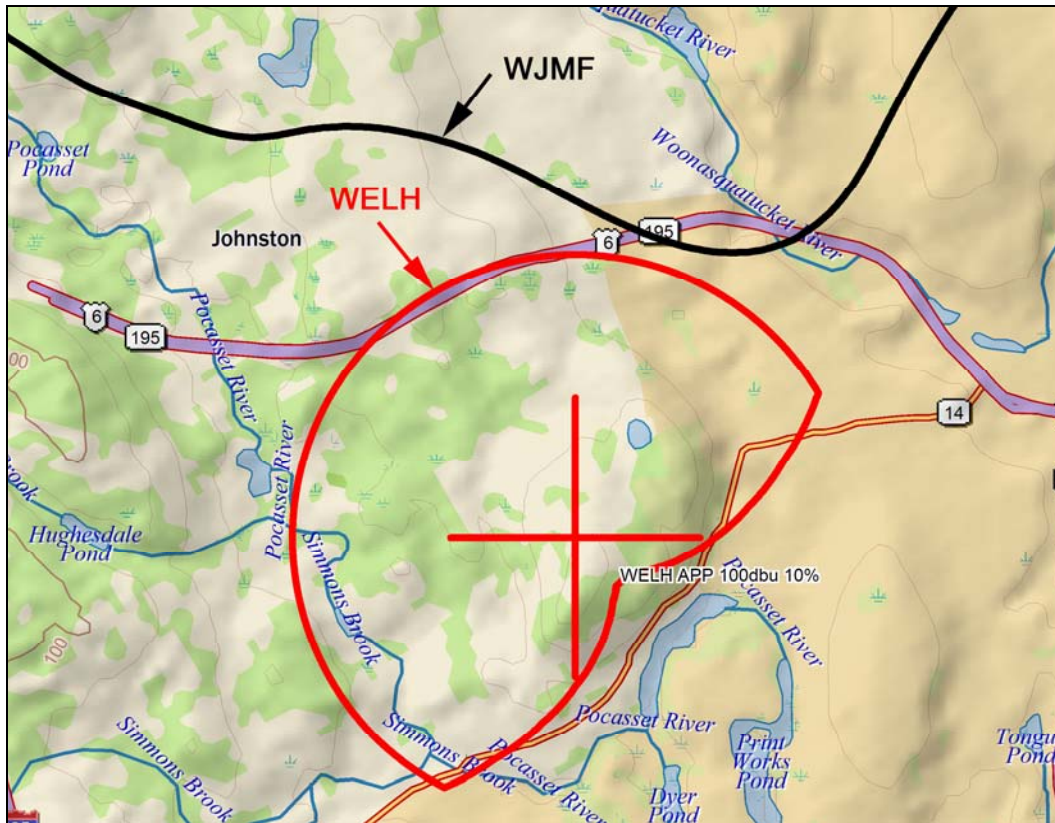


The 54dbu  $f(50,10)$  interfering contour of WELH is shown in red.

The 60dbu  $f(50,50)$  protected contour of WGAO is shown in black.

### Interference to 2<sup>nd</sup> and 3<sup>rd</sup> adjacent stations:

The following map shows the protected 60dbu  $f(50,50)$  contour of WJMF, the only third adjacent station, in black, and the interfering 100dbu  $f(50,10)$  contour of this proposal. It shows clearly that no prohibited overlap will occur. There are no second adjacent conflicts.

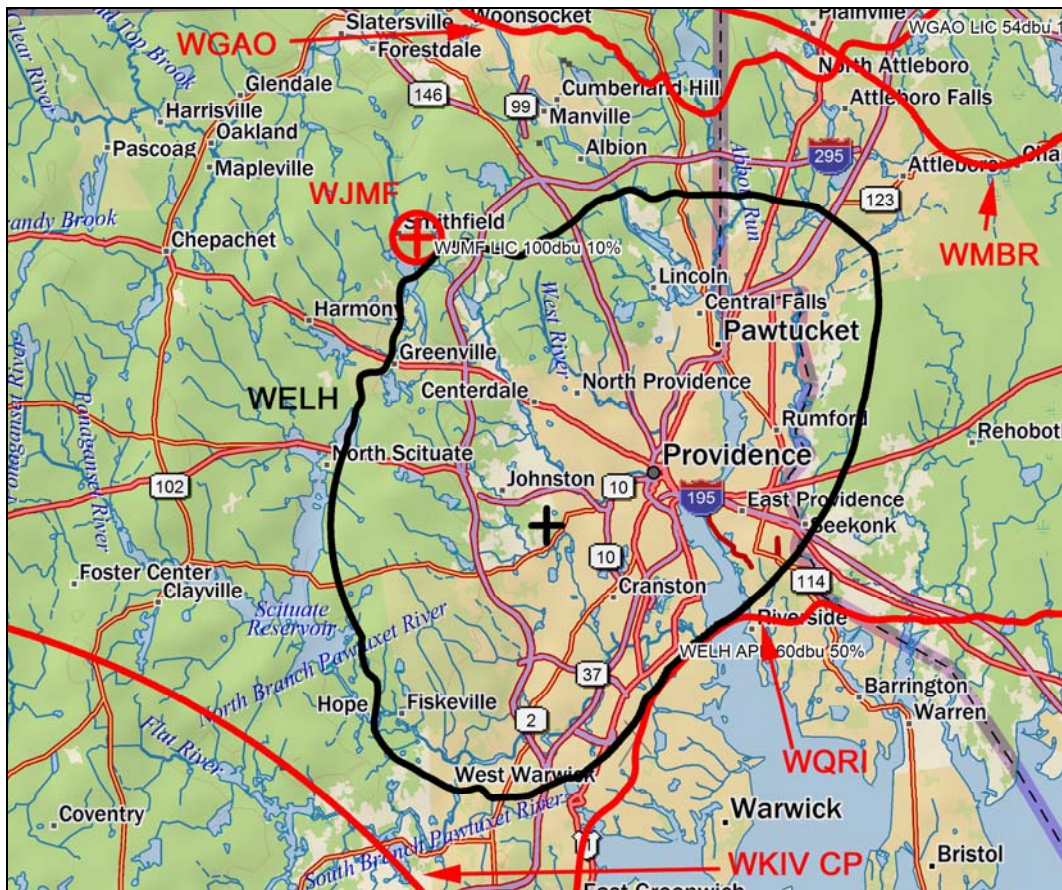


The 100dbu  $f(50,10)$  interfering contour of WELH is shown in red.

The 60dbu  $f(50,50)$  protected contour of WJMF is shown in black.

### Interference to the proposed facility:

The following map shows the protected 60dbu  $f(50,50)$  contour of the instant proposal and all nearby interfering contours in red:



The 40dbu  $f(50,10)$  interfering contour of WMBR is shown in red.

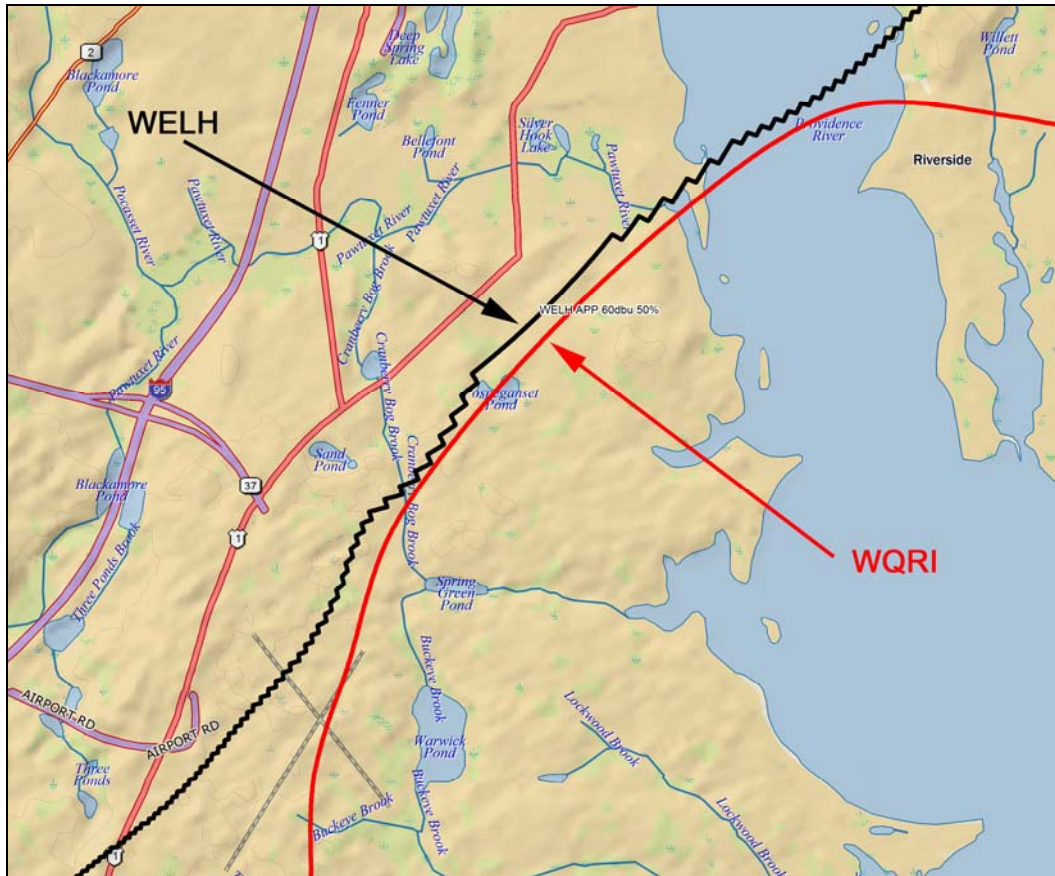
The 54dbu  $f(50,10)$  interfering contours of WQRI, WGAO and the WKIV CP are shown in red.

The 100dbu  $f(50,10)$  interfering contour of WJMF is shown in red.

The 60dbu  $f(50,50)$  protected contour of WELH is shown in black.

This map shows clearly that only WQRI and WJMF are close to overlapping.

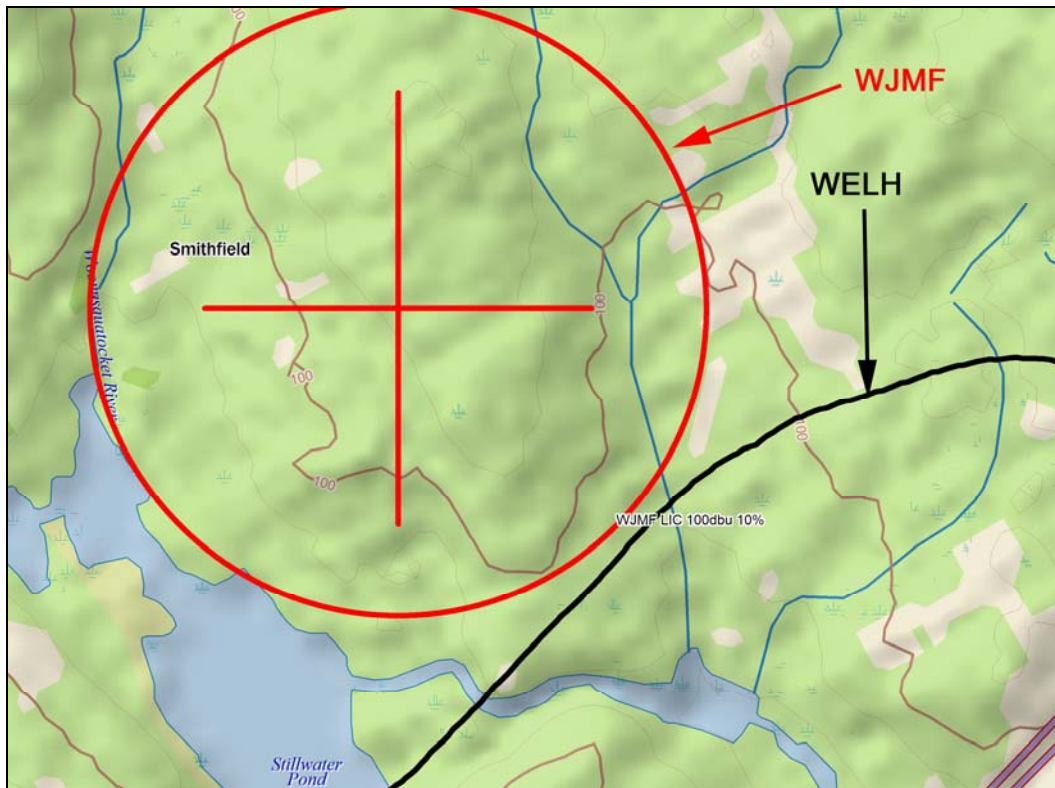
The following detail map shows lack of overlap between the WELH proposal and first-adjacent WQRI:



The 54dbu  $f(50,10)$  interfering contour of WQRI is shown in red.

The 60dbu  $f(50,50)$  protected contour of WELH is shown in black.

The following map shows lack of overlap between the WELH proposal and WJMF:



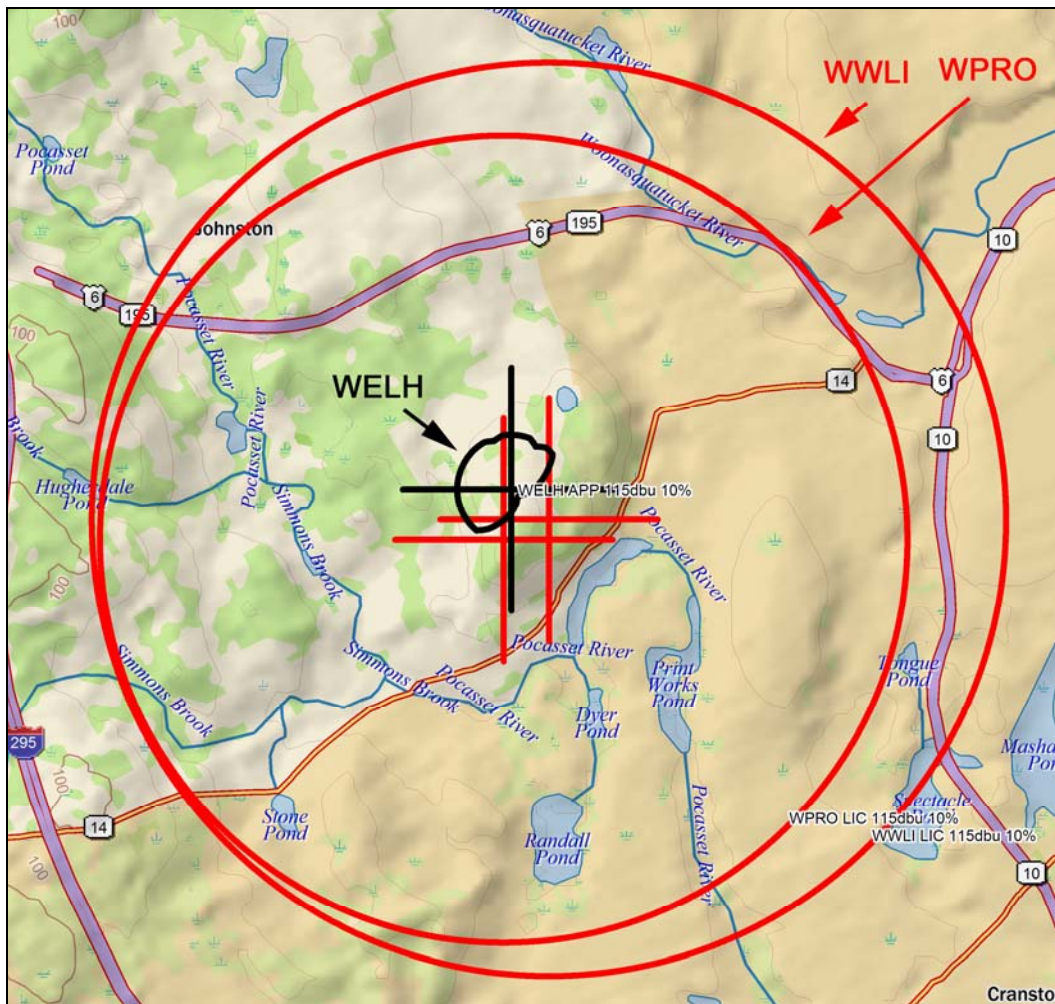
The 100dbu  $f(50,10)$  interfering contour of WJMF is shown in red.

The 60dbu  $f(50,50)$  protected contour of WELH is shown in black.

**Conclusion:**

Since no prohibited overlap will occur, the application is acceptable with regard to other FM stations, applications, and construction permits.

## Blanketing Interference



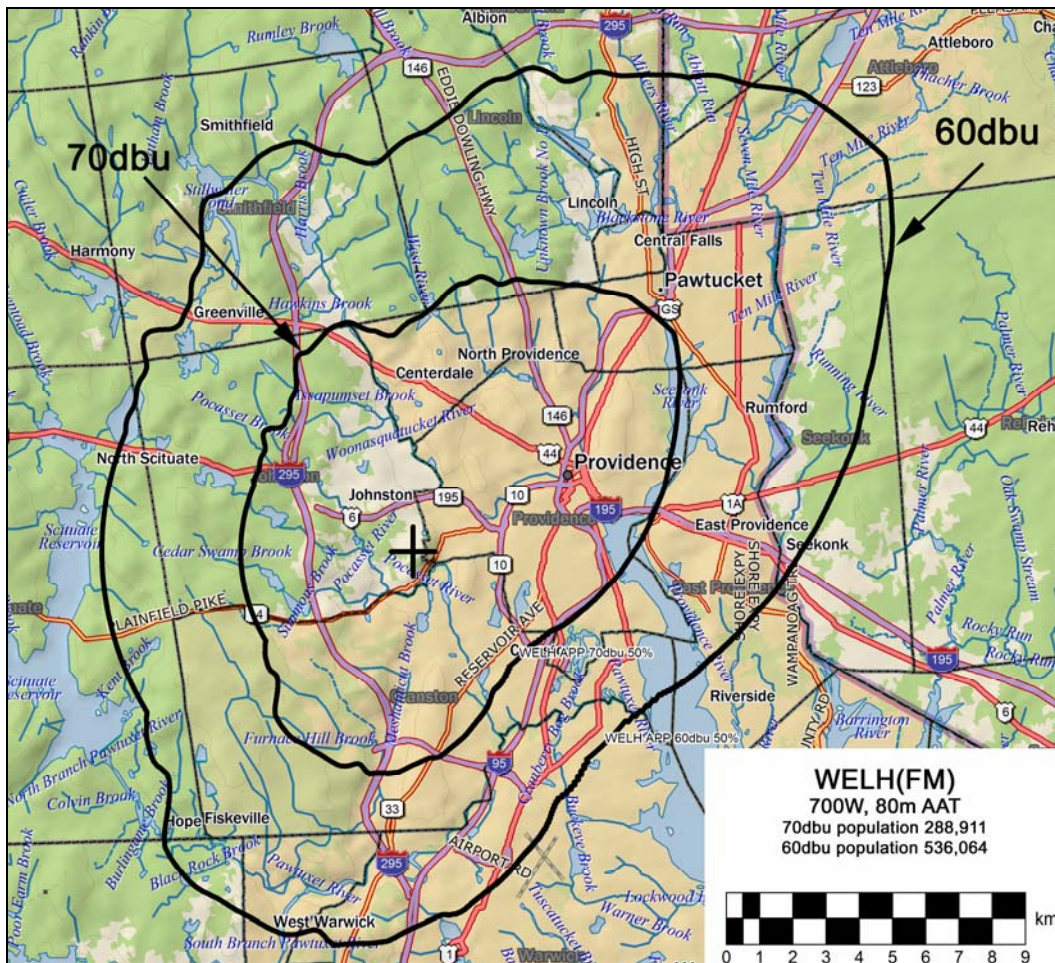
The existing blanketing contours of WPRO and WWLI are shown in red.

The proposed blanketing contour of WELH is shown in black.

The proposed blanketing contour is contained entirely within the blanketing contours of WPRO and WWLI. Therefore, no new blanketing interference will be created.

## Coverage

The following map shows that the 60dbu f(50,50) contour completely encircles the city of Providence, confirming that the instant application is in compliance with 47 CFR 73.515:



## Conclusion

The instant application will provide no prohibited overlap to any existing FM station, construction permit, or application.

A grant of this application will provide Providence, the capital city of Rhode Island, with its first full time NCE/FM station. It will vastly increase the population covered by WELH, and therefore will represent a significant improvement in the use of spectrum efficiency.

It is, therefore, respectfully submitted that a grant of this application would be in the public interest.