

**Rochester Radio**  
**Form 318 Application for new LPFM Facility**  
**on Channel 291 at Rochester, NH**

**Exhibit 11**  
**Compliance With Second Adjacent Channel Waiver Standard**

**Overview**

This application meets the spacing requirements of Section 73.807 with respect to all co-channel and first adjacent channel facilities. It is shortspaced to second adjacent WNHI on Channel 293A at Farmington, NH. As demonstrated herein, the applicant proposes to meet the requirements of the second adjacent waiver standard, and respectfully requests a waiver as described below.

**Interference Considerations In Antenna Vicinity**

As shown in Figures 1A and 1B, WNHI places a 75.4 dBu F(50,50) service contour over the proposed site. The Commission has generally considered overlap from a proposed second adjacent facility interfering contour to be acceptable where the ratio of undesired to desired signal (U/D) does not exceed 40 dB over any populated area, residence, or well-traveled road, i.e. where in the instant case the proposed F(50,10) interfering signal does not exceed 115.4 dBu.

For an ERP of 100 Watts, the predicted distance to the proposed 115.4 dBu F(50,10) interfering contour in free space is 119 meters. The antenna center of radiation is 28 meters above ground level. As shown in Figure 2, there are three residences within this contour. They are at distances of 33.5 meters, 51.8 meters, and 85 meters from the proposed antenna site. Residences 1 and 3 are located on the host property, and all three residences will receive significant margins of protection from interference to WNHI, as described below.

Only two roads traverse within 119 meters of the proposed antenna site. Loon Lane to the north is a dirt road leading to four residences beyond the proposed site. It dead ends 189 meters beyond the site. The unmarked dirt road to the south provides seasonal access to an unattended boat ramp on Baxter Lake. There are no residences located anywhere along this road. There are no businesses anywhere within 119 meters of the site.

**Proposed Antenna System**

The proposed antenna is an OMB MP-3. This is an array of three MP-series antenna bays spaced 0.75 wavelengths apart with the center of radiation at 28 meters AGL. The array produces a vertical radiation pattern that prevents the 115.4 dBu F(50,10) interfering contour from reaching any of the three residences located within 119 meters of the antenna site location. The antenna manufacturer's vertical radiation pattern is illustrated and field values tabulated in Attachment A. This is attached separately to Exhibit 11 in the instant Form 318.

Based on the actual distance in space from the antenna center of radiation to each of the three residences, the table in Figure 3 provides calculations of the interference protection at each residence in order to establish that the interfering contour does not reach any residence.

### **Protection From Interference to WNHI at Nearby Residences, Businesses, and Roadways**

For each residence, the downward angle and actual distance in space from the proposed antenna center of radiation is shown in the table in Figure 3 together with the maximum allowable ERP at which the interfering contour would reach the residence, the maximum allowable field relative to 100 Watts = 1.000, a comparison with the actual field produced by the antenna at the pertinent downward vertical angle according to the antenna manufacturer's specifications provided in Attachment A, and the margin of safety in dB. As shown in Figure 3, the margins of safety are 6.08 dB, 14.07 dB, and 1.83 dB respectively.

The determination that no interference will occur at any residence was established as follows.

Residence 1 is 33.5 meters from the proposed antenna site. The antenna center of radiation is 28 meters above ground level. The downward angle from the antenna center of radiation to Residence 1 is 39.9 degrees. The actual distance in space from the antenna center of radiation to Residence 1 is 43.7 meters.

The 115.4 dBu F(50,10) interfering contour extends 43 meters for an ERP of 13 Watts. Hence the power limit toward Residence 1 is 13 Watts, and the corresponding field limit is 0.361 (field value = 1.000 at ERP of 100 Watts.) The antenna manufacturer's specifications in Attachment A show the vertical pattern field at a downward angle of 39.9 degrees to be 0.179. The margin of safety at Residence 1 is thus found to be 6.08 dB as shown in Figure 3.

Residence 2 is at a distance of 51.8 meters and similarly, the margin of safety is found to be 14.07 dB to this Residence, also as shown in Attachment Figure 3.

Residence 3 is at a distance of 85 meters and the margin of safety is found to be 1.83 dB.

Area roads are lightly traveled and there are no major roads in the vicinity. All residences beyond these three are beyond the distance to the proposed 115.4 dBu F(50,50) interfering contour in free space, and thus receive even greater protection from any possible interference.

The applicant therefore believes its application meets the requirements of the second adjacent waiver standard with respect to "other factors" insuring no actual interference to WNHI. Should any actual interference occur, the applicant will take the required steps to eliminate it, including reduction of power or cessation of operation.

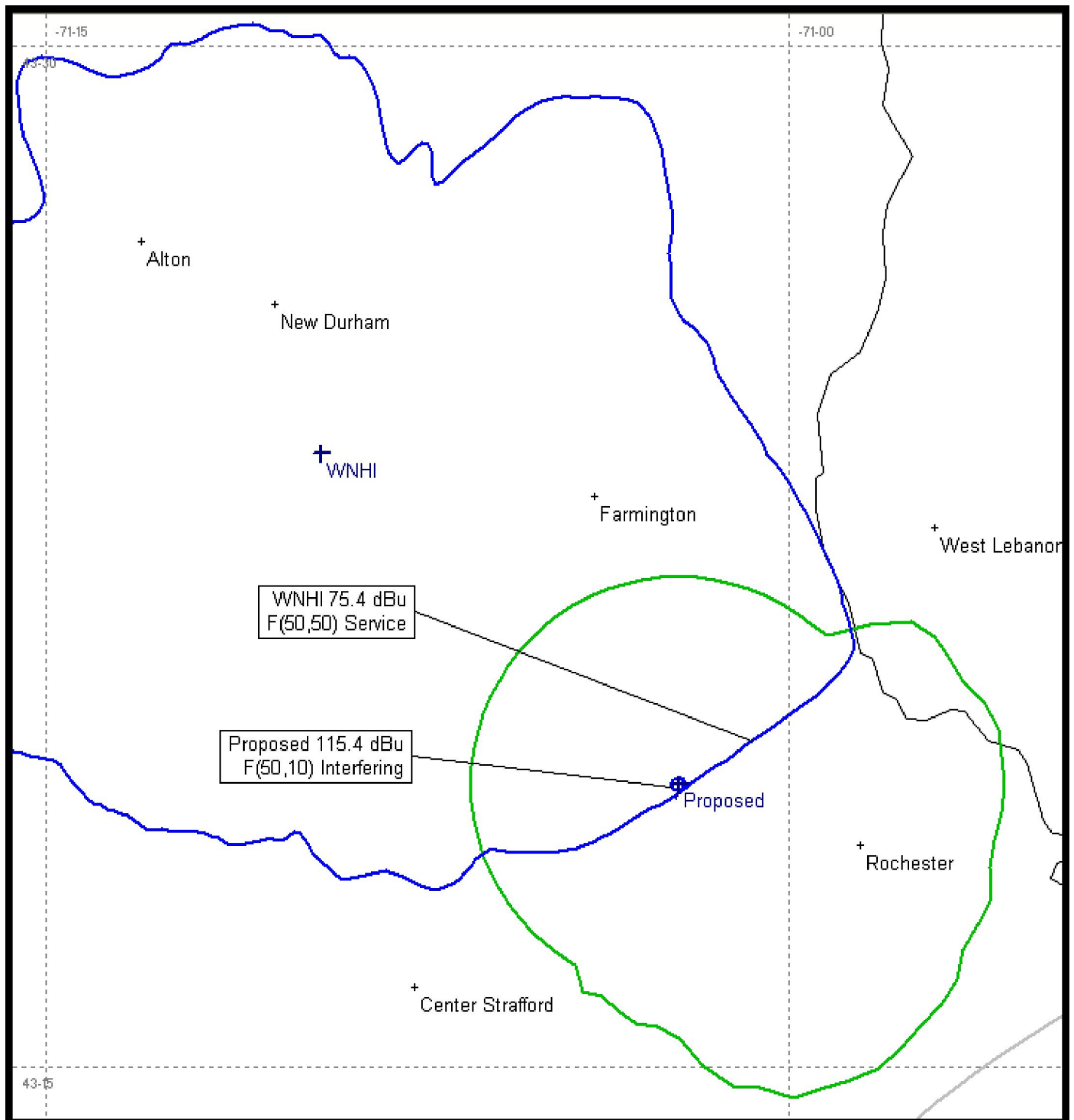
Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Dennis Jackson', with a stylized flourish at the end.

Dennis Jackson  
Technical Consultant  
November 11, 2013

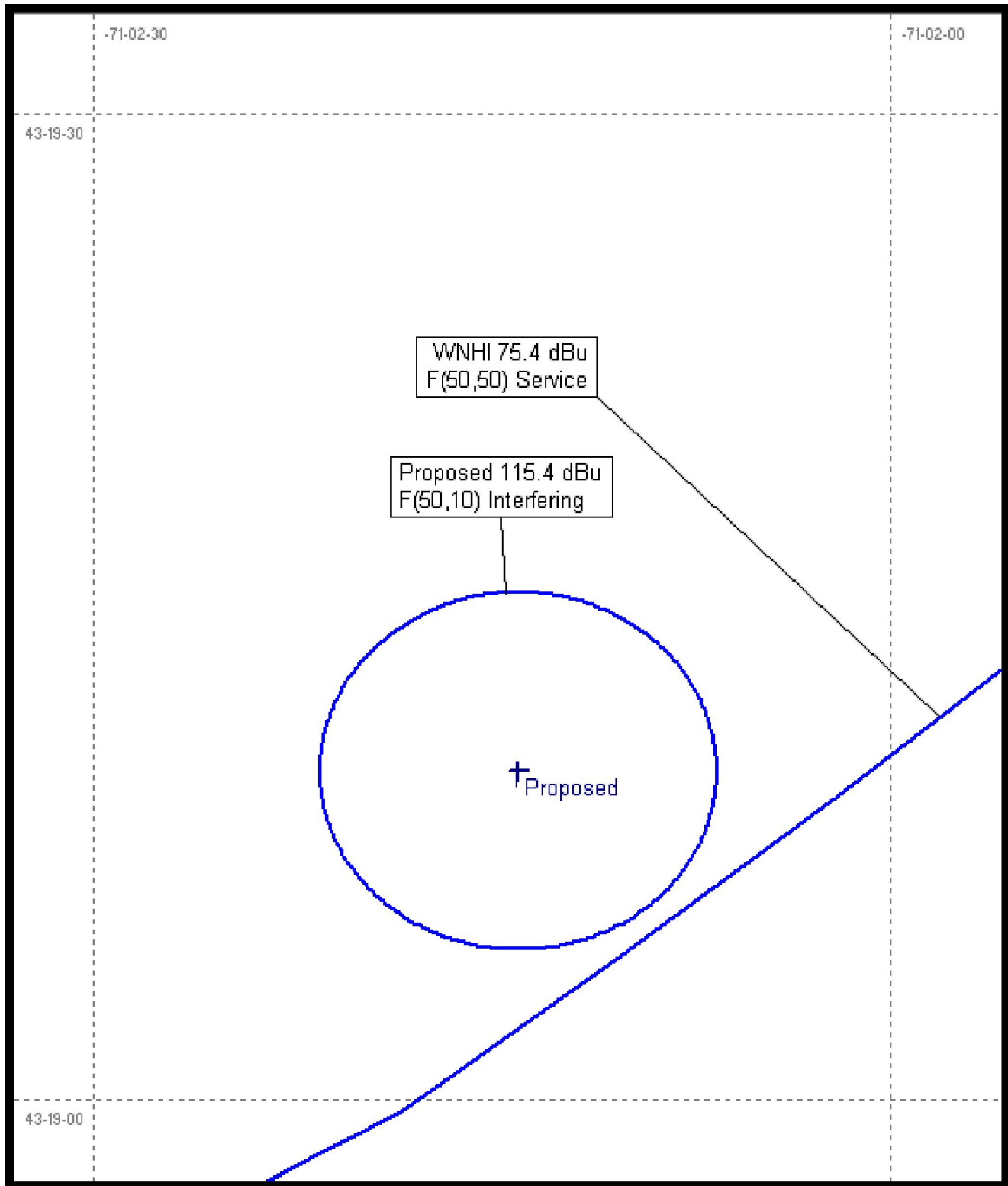
**Figure 1A – Allocation Study**

**Second-adjacent WNHI places a 75.4 dBu F(50,50) Service Contour over the proposed site.**



**Figure 1B – Allocation Study – Protection to Second Adjacent WNHI**

**WNHI places a 75.4 dBu F(50,50) Service Contour over the proposed site.**





**Figure 2 – Aerial Photograph Of Site**

**Proposed 115.4 dBu F(50,10) Interfering Contour extends 119 meters from antenna. Within 119 meters are three residences and two lightly traveled dead end dirt roads.**

**Residences are at distances of 33.5 meters, 51.8 meters, and 85 meters from the proposed antenna site, as shown below.**

**Note: Loon Lane is a dead end with four residences beyond proposed antenna site. Road south of site provides a seasonal access to boat ramp on Baxter Lake.**

**119 meters = 390 feet.**



**Figure 3**

**Calculation of Maximum Allowable Field**  
**Toward the Three Residences Located Within 119 meters of Antenna Site**  
**Showing Pertinent Distances, Downward Angles, Maximum Allowable ERP,**  
**and Maximum Allowable Antenna Field Compared to Actual Antenna Field Values**  
**Illustrating Margin of Safety**

**Notes:**

1. 115.4 dBu Interfering Contour extends 119 meters in free space at 100 Watts ERP.
2. Antenna Center of Radiation is 28 meters above ground level.
3. Residences are 33.5, 51.8, and 85 meters from proposed site as shown in Figure 2.
4. Downward Vertical Angle and Actual Distance in space to each residence is shown.
5. 115.4 dBu interfering contour extends “Actual Distance” at “Power Limit.”
6. “Power Limit” is converted to a “Field Limit.” (100 Watts = 1.000.)
7. Actual Antenna Field is from manufacturer’s specifications in Attachment A.
8. Difference between Field Limit and Actual Antenna Field is Margin of Safety in dB.
9. Margins of Safety at the only three residences within 119 meters of proposed antenna site are 6.08 dB, 14.07 dB, and 1.83 dB respectively. Residences 1 and 3 are located on the host property. Only residence 2 is an unrelated private residence.

	Horizontal	Downward	Actual				Margin
	Distance	Vertical	Distance	Power	Antenna	Actual	of
	to Point	Angle	in Space	Limit	Field	Antenna	Safety
Residence	(meters)	(degrees)	(meters)	(Watts)	Limit	Field	(dB)
1	33.5	39.9	43.7	13.0	0.361	0.179	6.08
2	51.8	28.4	58.9	24.0	0.490	0.097	14.07
3	85	18.2	89.5	29.0	0.539	0.436	1.83