

**EXHIBIT 10**  
**in support of**  
**Application for Construction Permit**  
**for a Minor Change in a licensed facility**  
**prepared June 2002 for**  
**Willow Farm, Inc.**  
**WNSH(AM) - Beverly, Massachusetts**  
**1570 kHz - 0.085 kW - 0.5 kW - DA-D**

This application has been prepared on behalf of Willow Farm, Inc., (“WFI”), licensee of Standard Broadcast station WNSH(AM), Beverly, Massachusetts, for a Construction Permit to operate non-directionally at a power less than 250 watts (and less than 141 mV/m@1km) during nighttime hours from its presently licensed daytime transmitter site. The instant application proposes no change in the presently licensed daytime operation.

Following a devastating fire at its licensed transmitter site in 1992, WNSH has operated under multiple STAs while attempting to return to licensed operation. On 27 May, 1998, WFI was granted a permit to construct new day and night antenna systems on the campus of Endicott College (BP-19980120AC). During construction of the new antenna system, questions were raised regarding potentially sensitive environmental issues near the area of proposed construction of two towers which were to be used only in the nighttime antenna system. Since these issues did not affect construction of the 3-tower daytime antenna system, and in order to complete construction within the required 3 year period required in §73.3598, WFI chose to complete construction of the daytime system and withdrew only the nighttime portion of its original construction permit (see BMP-20010213AAA).

Subsequently, WFI filed an application for license to cover the outstanding daytime CP and was granted a license to operate from two separate sites, one for day and one night facilities (BL-20010529ACT), effectively becoming a two-site operation. Since the original (and presently licensed) nighttime site had long since been abandoned because of the fire, WFI requested and was granted STA to operate non-directionally at 125 watts nighttime from the center tower of its licensed daytime 3-tower directional antenna system. It was believed that this would afford WFI the opportunity to evaluate and resolve the issues which had arisen regarding the nighttime towers.

Evaluation and negotiation regarding the remaining proposed nighttime towers now leads WFI to

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believe that it is no longer feasible to construct the towers necessary for nighttime directional operation. Further, considering that it took almost 8 years to acquire the Endicott property, WFI no longer believes that it will be able to locate an alternate site on which to construct a nighttime directional antenna system. Therefore, by the instant application, Willow proposes to operate with 85 watts, non-directionally from the center tower of the licensed daytime array. WFI further notes that upon a grant of license to cover this proposal, WNSH would become a Domestic Class D facility without nighttime protection levels in accordance with MM Docket 97-267 as a down-graded Class B station.

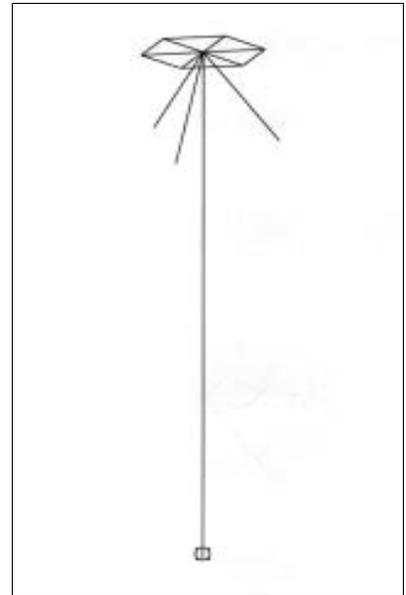
**§73.24(e):** All technical elements were installed in compliance with recognized and good engineering practice to the greatest extent possible. A complete discussion of the proposed antenna is included below under §73.33.

**§73.24(g):** The 1 V/m contour extends only approximately 62 meters, and covers no populated area.

**§73.33:** WFI proposes to license nighttime operation from the center tower of its currently licensed daytime array which was constructed under authority of BMP-20010213AAA as modified.

The tower has an overall height above ground of 99 feet (30.2 meters), and as such, the proposed tower is categorically exempt from notification to the FAA and Tower Registration.

As authorized in the original construction permit, due to zoning restrictions the tower has an overall physical height of 30.2 meters, which is less than the height required in §73.190, Figure 7. As a condition of that original CP, complete current distribution measurements on the tower were



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presented in the license application, BL-20010529ACT, which establish that the current distribution approximates that of an antenna with an electrical height of 66° as proposed. The complete daytime antenna system consists of 3 radiators, each 30.2 meters tall. Each of the towers are identically constructed above the base insulator with slight variations in concrete base height to compensate for terrain. WFI proposes nighttime operation from the center (tower #2), of the day antenna system with the end towers floating, a common and effective method de-tuning structures of 1/4 wavelength or less.

Each of the towers is top loaded to provide approximately 10° of additional apparent electrical height. Initial attempts to top load the structures using only the topmost guy wire sections, while moderately successful, provided current distribution measurement data less than that of the required 66° tall tower, therefore additional top loading elements (“TLEs”) were added in the form of six, ten foot horizontal arms attached to the top plate of the tower. A sketch of the tower as constructed is provided to the right.

The ground system consists of 120 radial wires of #10 soft drawn copper, spaced as evenly as possible around the base of each tower in the directional array. Where possible, each wire is approximately 47.8 meters (1/4 wavelength) except where the radials from one tower intersect those of another. At such points of intersection, the radial wire is truncated and attached to a four-inch copper strap which bisects the intersecting arc. Buffer zones of 100 feet from any potential wetland had been established during the survey of the site. Where ground radials would encroach into these buffer zones along the north and west edges of the ground system, those radials were turned back. Based upon the measured non-directional pattern submitted in BL-20010529ACT, it is not believed that these areas have had a significant impact upon the symmetry of the radiated pattern.

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In the initial application for a construction permit, WFI proposed the use of a copper-mesh ground screens of at least 30' by 30', or 10 meter stub radials interspaced among the 1/4-wave ground-radials, at the base of each tower; however, due to the rocky nature of terrain at the tower bases, it was determined that such ground screens or stub radials were not physically practical, and therefore were not installed. It is normally customary to bury the ground system of an AM tower from four to six inches into the soil, however, again due to the lack of soil at the construction site, the vast majority of the ground system at the WNSH site is laid across the bare rock ground surface.

Finally, while it is customary to completely clear and plow the entire site where ground system will be installed, due primarily to the rock dominated terrain, this was not possible. Further, due to the environmentally sensitive political climate which exists in the Beverly area, as a condition of permission to build on the site, Endicott College insisted on minimal disturbance to as much of the natural vegetation as possible. As a result, the site has been selectively cleared, however a significant number of trees remain on the site.

**§73.45 & §73.189:** As a condition placed on the daytime construction permit BMP-20010213AAA, WFI submitted both the current distribution measurements discussed above, and a full non-directional proof of performance with its daytime license application, BL-20010529ACT, which was granted on September 04, 2001. The analysis presented by that data indicates that the measured RMS for the 350 watt non-directional operation authorized for the proof of performance measurements was expected to be 167.2 mV/m @ 1km (282 mV/m/kw/km), however as reported and tabulated in the license application, the actual measured non-directional RMS is calculated to be 116.5 mV/m @ 1 km, or approximately 30% below theoretical. WFI believes that this is consistent with the lower than expected system efficiency for the directional pattern reported in BL-20010529ACT and supports its belief that the loss of efficiency is due to conditions beyond its control in the physical environment in and near the site, and is not the result of deficiencies in the

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antenna system as constructed. WFI believes that these factors include, but are not limited to, de-rating of the ground system due to truncation and the inability to bury ground radials and provide solid earth contact with the soil; and signal attenuation due to heavy foliage at and within the first kilometer of the site.

For the purpose of clarity, a copy of the discussion portion of **Exhibit C**, Tabulation and Analysis of the Measured Data; and **Figure A**, polar plot of the Measured Non-directional Pattern that was submitted in the above referenced license application is included herein. The raw data submitted with that application has been omitted for brevity. Supported by this evidence, **WFI respectfully requests of a waiver of the minimum efficiency requirements of §73.45(a) and §73.189(b)(2)(ii), when processing the instant proposal.**

Further, this application requests non-directional operation at 85 watts based on the measured RMS of the non-directional tower. The discussion regarding the nighttime allocation impact of the instant proposal is included in **Exhibit 15**. It is also noted here, that WFI respectfully submits that a grant of this application would be in the public interest by allowing WNSH to continue to serve the public to the fullest extent possible while creating no new predicted interference during nighttime hours. WFI also notes that it has been operating under STA at a nighttime non-directional power of 125 watts for almost 10 years without receiving complaints of objectionable interference.

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**§73.150 & §73.152:** Not applicable to the instant proposal.

**§73.160:** As presented, the proposed antenna structure is a guyed tower with top-loading as described in §73.160(b)(1). It is an existing structure which is 56° in electrical height with approximately 10° of top-loading at 1570 kHz. Theoretical Vertical Plane Radiation characteristics were calculated using the formula in §73.160(a)(2) of the Rules.

**§73.182(a)-(i):** The instant proposal is believed to comply with §73.182, specifically §73.182(a)(4), is pertinent. No change is proposed in the licensed daytime authorization.

**§73.186:** The measurements referred to in the discussion of sections §73.45 and §73.189 above were taken in accordance with §73.186 of the rules. The non-directional data referred to was presented in detail in conjunction with the license application (FCC 302), filed as BL-20010529ACT. Since the bulk of that data has bearing only on the daytime directional antenna system, it has not been re-submitted herein. Data supporting the measured RMS efficiency of the non-directional antenna system proposed will be re-submitted if deemed necessary by the FCC processing staff.

**§73.1650:** This application is believed to be in full compliance with all International Treaties.