**Comprehensive Technical Statement**

**in support of**

**Providence College**

**Application for Minor Change**

**WDOM (FM), Facility ID # 53676**

**Channel 271A, 91.3 MHz**

**Providence, RI**

## Introduction

The following changes are proposed:

- Correct geographic coordinates
- Correct site elevation
- Increase antenna center height
- Increase effective radiated power

In reviewing the facility for potential improvements, it was discovered that coordinates and site elevation for the building upon which the antenna is mounted are incorrect. In addition to correcting these values, it is proposed to increase the tower height and antenna center by two meters.

## Data Sources

Distances were calculated using the FCC method defined in 73.208 of the Commission's Rules.

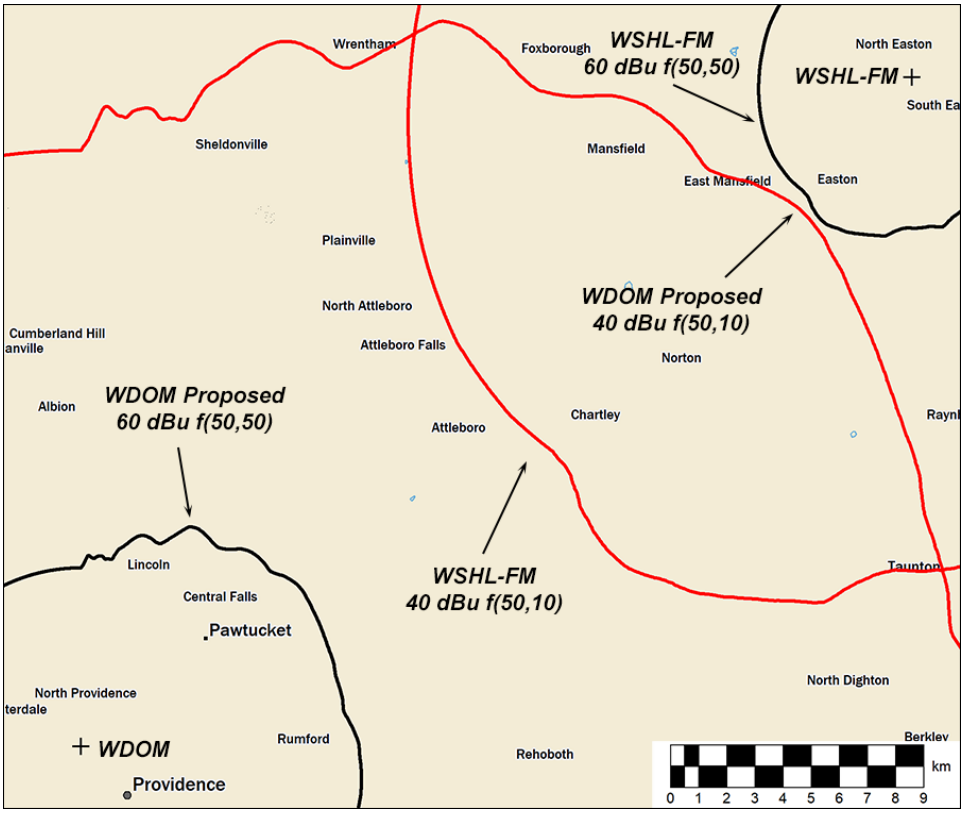
All contours shown in this report were generated using antenna center above mean sea level, NAD-27 coordinates, and the USGS03 terrain data set.

## Allocation Study – Reserved (NCE) channels

Two stations are nearby and represent potential conflicts.

Skywaves Consulting LLC
PO Box 4, Millbury, MA 01527
Main Number: 401-354-2400
http://www.skywaves.com Washington: 202-370-6357 consultants@skywaves.com

*WSHL-FM, FCC Facility ID # 63487 is co-channel.*



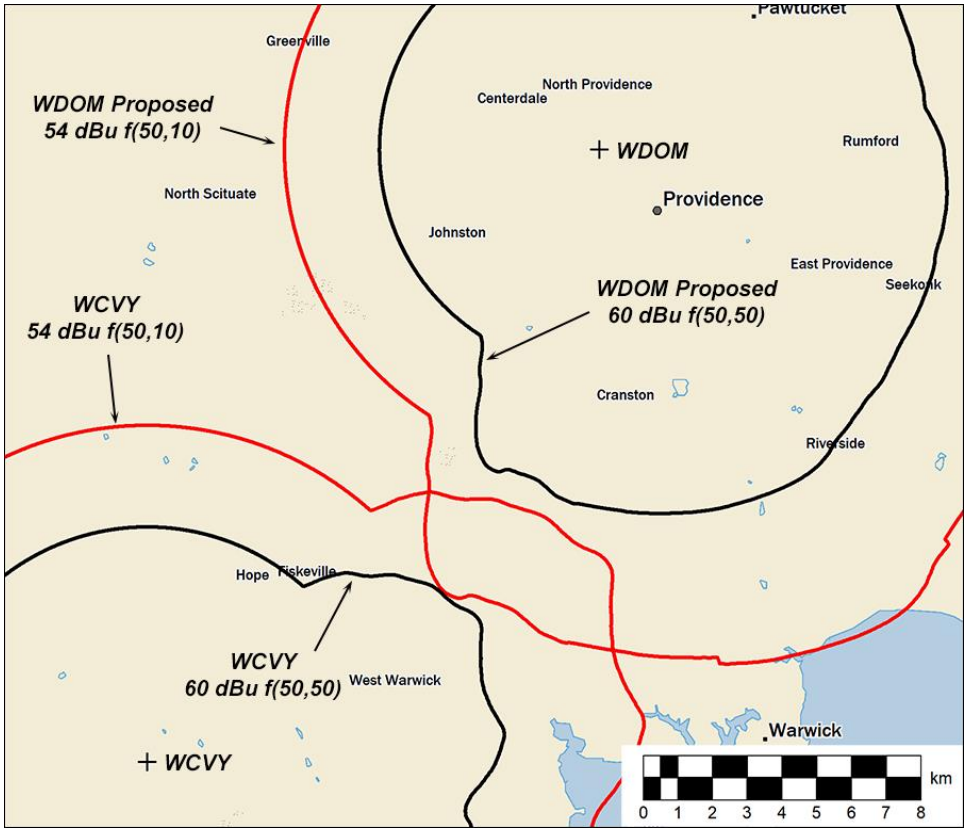

As shown on the above map, neither station's 40 dBu f(50,10) interfering contour crosses the other's 60 dBu f(50,50) protected contour. The WDOM interfering contour is close to the WSHL-FM protected contour. Therefore, the following tabulation was done using USGS03 terrain data and NAD-27 coordinates:

| az | eRel | kW | terht | eah | km | lat | lon | km | brg | eRel | kW | terht | eah | fs | margin |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 1 | 0.155 | 27.3 | 66.7 | 31.36 | 42 01 17.46 | 71 08 27.25 | 6.45 | 231.6 | 0.991 | 0.098 | 34.0 | 30.0 | 57.68 | 2.32 |
| 52 | 1 | 0.155 | 26.3 | 67.7 | 31.61 | 42 01 08.35 | 71 08 04.11 | 6.23 | 226.6 | 0.978 | 0.096 | 34.0 | 30.0 | 58.16 | 1.84 |
| 53 | 1 | 0.155 | 25.6 | 68.4 | 31.81 | 42 00 58.06 | 71 07 42.47 | 6.12 | 221.2 | 0.959 | 0.092 | 32.8 | 31.2 | 58.51 | 1.49 |
| 54 | 1 | 0.155 | 25.2 | 68.8 | 31.90 | 42 00 45.31 | 71 07 24.88 | 6.17 | 216.0 | 0.939 | 0.088 | 28.8 | 35.2 | 59.11 | 0.89 |
| 55 | 1 | 0.155 | 25.1 | 68.9 | 31.93 | 42 00 31.19 | 71 07 09.69 | 6.34 | 211.1 | 0.919 | 0.085 | 26.1 | 37.9 | 59.07 | 0.93 |
| 56 | 1 | 0.155 | 25.2 | 68.8 | 31.90 | 42 00 15.66 | 71 06 57.24 | 6.62 | 206.8 | 0.899 | 0.081 | 25.8 | 38.2 | 58.22 | 1.78 |
| 57 | 1 | 0.155 | 25.4 | 68.6 | 31.85 | 41 59 59.72 | 71 06 45.70 | 6.95 | 203.1 | 0.880 | 0.077 | 25.3 | 38.7 | 57.29 | 2.71 |

The first six columns show the calculation of distance to the proposed 40 dBu f(50,10) contour, followed by the latitude and longitude of the point described by the azimuth and distance from the proposal. The following columns show the calculation of the f(50,50) signal from the conflict at each location, and the margin below the 60 dBu limit. (A negative margin indicates prohibited overlap.)

The tabulation confirms the lack of overlap shown on the map.

*WCVY, FCC Facility ID # 14299 is first-adjacent*




As shown on the above map, neither station's 54 dBu f(50,10) interfering contour crosses the other's 60 dBu f(50,50) protected contour. The WDOM interfering contour is close to the WCVY protected contour. Therefore, the following tabulation was done using USGS03 terrain data and NAD-27 coordinates:

| az | eRel | kW | terht | eah | km | lat | lon | km | brg | eRel | kW | terht | eah | fs | margin |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 192 | 1 | 0.155 | 25.40 | 68.60 | 13.37 | 41 43 35.69 | 71 28 10.87 | 11.25 | 66.3 | 1 | 0.2 | 31.80 | 70.20 | 58.47 | 1.53 |
| 193 | 1 | 0.155 | 25.70 | 68.30 | 13.34 | 41 43 38.22 | 71 28 20.48 | 11.08 | 65.5 | 1 | 0.2 | 32.80 | 69.20 | 58.63 | 1.37 |
| 194 | 1 | 0.155 | 25.80 | 68.20 | 13.33 | 41 43 40.28 | 71 28 30.21 | 10.90 | 64.7 | 1 | 0.2 | 34.30 | 67.70 | 58.75 | 1.25 |
| 195 | 1 | 0.155 | 26.20 | 67.80 | 13.30 | 41 43 43.09 | 71 28 39.65 | 10.74 | 63.8 | 1 | 0.2 | 36.30 | 65.70 | 58.78 | 1.22 |
| 196 | 1 | 0.155 | 26.20 | 67.80 | 13.30 | 41 43 45.21 | 71 28 49.32 | 10.57 | 62.9 | 1 | 0.2 | 37.80 | 64.20 | 58.88 | 1.12 |
| 197 | 1 | 0.155 | 24.70 | 69.30 | 13.43 | 41 43 43.37 | 71 29 00.61 | 10.31 | 62.6 | 1 | 0.2 | 38.20 | 63.80 | 59.26 | 0.74 |
| 198 | 1 | 0.155 | 24.00 | 70.00 | 13.49 | 41 43 43.62 | 71 29 11.19 | 10.10 | 61.9 | 1 | 0.2 | 39.10 | 62.90 | 59.53 | 0.47 |
| 199 | 1 | 0.155 | 24.30 | 69.70 | 13.47 | 41 43 46.79 | 71 29 20.54 | 9.96 | 60.8 | 1 | 0.2 | 40.00 | 62.00 | 59.66 | 0.34 |
| 200 | 1 | 0.155 | 25.30 | 68.70 | 13.38 | 41 43 52.00 | 71 29 28.86 | 9.87 | 59.4 | 1 | 0.2 | 41.00 | 61.00 | 59.69 | 0.31 |
| 201 | 1 | 0.155 | 27.30 | 66.70 | 13.20 | 41 44 00.01 | 71 29 35.60 | 9.86 | 57.7 | 1 | 0.2 | 43.10 | 58.90 | 59.42 | 0.58 |
| 202 | 1 | 0.155 | 29.80 | 64.20 | 12.99 | 41 44 09.25 | 71 29 41.40 | 9.91 | 55.9 | 1 | 0.2 | 46.30 | 55.70 | 58.87 | 1.13 |
| 203 | 1 | 0.155 | 33.20 | 60.80 | 12.69 | 41 44 20.79 | 71 29 45.53 | 10.03 | 53.9 | 1 | 0.2 | 49.20 | 52.80 | 58.17 | 1.83 |

The first six columns show the calculation of distance to the proposed 54 dBu f(50,10) contour, followed by the latitude and longitude of the point described by the azimuth and distance from the proposal. The following columns show the calculation of the f(50,50) signal from the conflict

at each location, and the margin below the 60 dBu limit. (A negative margin indicates prohibited overlap.)

The tabulation confirms the lack of overlap shown on the map.

There are no other nearby reserved band conflicts.

**Allocation Study – Non-reserved (commercial) channels**

On channel 217, the only distance requirement with respect to non-reserved band stations relates to IF separations (53/54 channels). The nearest such station is WCIB in Falmouth, MA, which is 76.8 km from WDOM. The minimum required separation is 10 km, so the WDOM proposal meets the requirement.

**Blanketing Interference**

At the proposed ERP of 155 W, the 115 dBu blanketing contour will fall at 156 m. That is entirely on the campus of the licensee. The increase from the current 125 W to the proposed 155 W is not expected to cause any blanketing issues. The applicant commits to resolving any blanketing complaints in accordance with § 73.318.

**International**

The FM Agreements with Canada and Mexico require evaluation and potential coordination of any proposal within 320 km of the border.

The distance to the nearest point along the US/Canada border is 352 km. Coordination with Canada is not required.

The distance to the nearest point along the US/Mexico border is 2,936 km. Coordination with Mexico is not required.

**Quiet Zones**

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

The proposed site is outside the Arecibo Observatory notification area in Puerto Rico.

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

**Protected Monitoring Stations**

The nearest Protected Monitoring Station is 346 km distant, in Belfast, ME. This is well beyond any potential 80 dBu contour.

**Environmental**

The existing 6 m guyed tower is mounted on the roof of a 33 m building. It is proposed to add 2 m to the tower, making the tower 8 m and the total height Above Ground Level (AGL) 41 m. The proposal passes TOWAIR (copy attached), as the overall height is under 200' and the site is not within five miles of an airport. No construction or excavation is proposed.

Therefore, the proposal is not for a major environmental action.

**RF Exposure**

The antenna center will be 39 m AGL and 12 m above the highest occupied floor in the building.

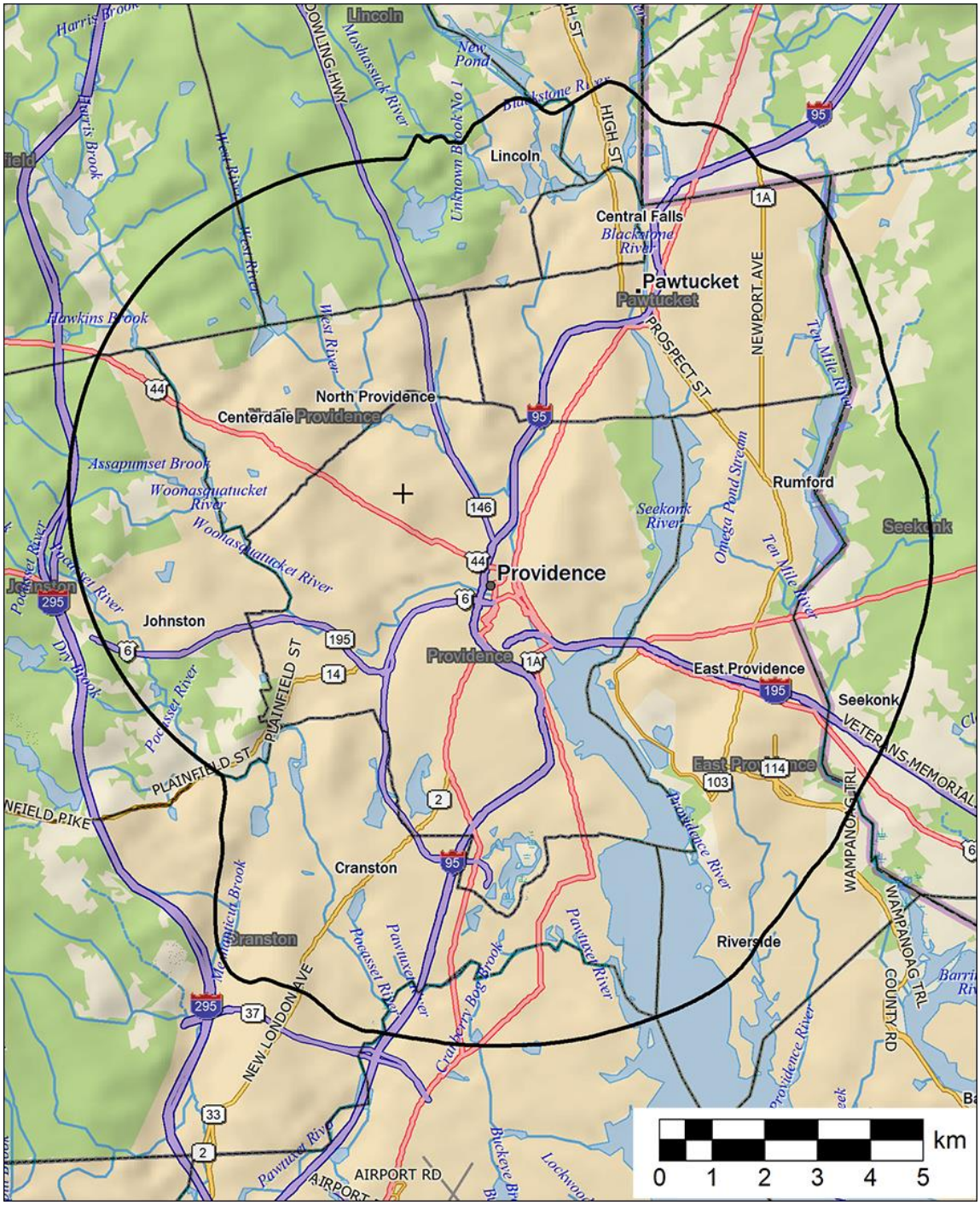
Using the height above the highest occupied floor, the proposed ERP of 155 W-H + 155 W-V, the worst-case EPA Type 1 antenna in the configuration described above, FM Model (copy attached) returns a maximum exposure of 12.3 µW/cm², about 6% of the limit for casual / uncontrolled exposure. The roof itself is a controlled environment, with appropriate access controls and safety signage provided.

Therefore, the proposal meets all environmental requirements.

**Community Coverage**

As shown on the coverage map on the following page, the entire Principal Community of Providence, RI falls within the 60 dBu f(50,50) contour.

**Coverage**




**WDOM Providence**
**60 dBu f(50,50) Contour**


**Skywaves Consulting LLC**
PO Box 4, Millbury, MA 01527
Main Number: 401-354-2400
http://www.skywaves.com Washington: 202-370-6357 consultants@skywaves.com

**Transmitter Location**

Tower data:

| | |
|---|---|
| Coordinates (NAD-83) | 41 50 39.9 N<br>71 26 10.0 W |
| ASR | Not required. TOWAIR study attached. |

Antenna data:

| | |
|---|---|
| Description | Two-bay non-directional CP |
| Interbay spacing | 0.5 λ |
| Antenna center | 39 m AGL<br>94 m AMSL<br>45 m AAT (from FCC online HAAT calculator) |

ERP:

| | |
|---|---|
| Horizontal | 0.155 kW |
| Vertical | 0.155 kW |

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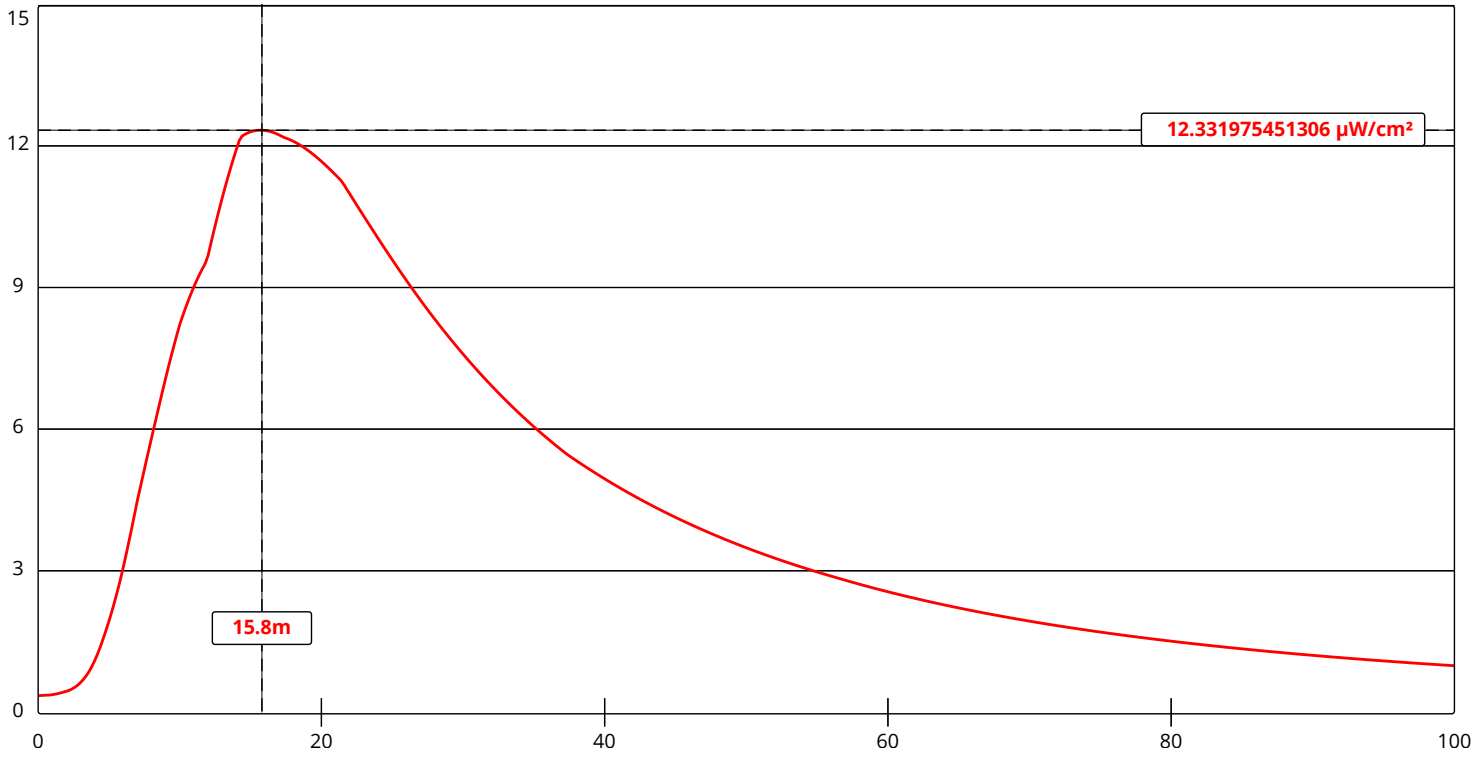
# FM Model

The FM Model calculator determines the potential exposure from radiofrequency (RF) electromagnetic fields produced by FM broadcast station antennas at ground level. The FM Model software was originally developed by the FCC in 1997 as a standalone executable program and this improved version provides more precise predictions and runs via a JavaScript enabled web browser. The FM Model is originally based on measured data published in 1985 by the EPA (http://nepis.epa.gov/Exe/ZyNET.exe/2000ED2W.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A\zyfiles\Index%20Data\81thru85\Txt\00000003\2000ED2W.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL). ▼ Show More....




View Tabular Results +

| | | | |
|---|---|---|---|
| Channel Selection | Channel 217 (91.3 MHz) ▾ | | |
| Antenna Type + | EPA Type 1: Ring-and-Stub or "Other" ▾ | | |
| Height (m) | 12 | Distance (m) | 100 |
| ERP-H (W) | 155 | ERP-V (W) | 155 |
| Num of Elements | 2 | Element Spacing (λ) | .5 |
| Num of Points | 500 | Apply | |

**Bureau/Office:**

Engineering & Technology (https://www.fcc.gov/engineering-technology)

**Updated:**

Friday, June 8, 2018

# 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 | 41-50-39.9 north |
| Longitude | 071-26-10.0 west |
| **Measurements (Meters)** | |
| Overall Structure Height (AGL) | 41 |
| Support Structure Height (AGL) | 33 |
| Site Elevation (AMSL) | 55 |
| **Structure Type** | |
| BTWR - Building with Tower | |

**Tower Construction Notifications**
Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

# Antenna Height Above Average Terrain Calculations -- Results

**Input Data**

Latitude **41° 50' 39.9"** North
Longitude **71° 26' 10"** West (NAD 83)

These coordinates convert to NAD 27 coordinates of
41° 50' 39.54", North, 71° 26' 11.79" West (NAD 27).

Height of antenna radiation center above mean sea level: **94** meters AMSL

Number of Evenly Spaced Radials = **8** 0° is referenced to True North

## Results

Calculated HAAT = **46 meters**

Antenna Height Above Average Terrain calculated
using FCC 30 second terrain database (continental USA only)

**Individual "Radial HAAT" Values, in meters**

| | |
|---|---|
| 0° | 31.7 m |
| 45° | 67.0 m |
| 90° | 76.9 m |
| 135° | 86.6 m |
| 180° | 81.8 m |
| 225° | 15.9 m |
| 270° | 5.8 m |
| 315° | 2.8 m |

Print Results? New Calculation?