

Columbia FM, Inc.  
FM Translator W234BH -- Facility ID 141502 – West Hazleton, PA  
Application for Minor Change Construction Permit  
**ENGINEERING EXHIBIT**

The application requests a modification of FM Translator W234BH to change its location, HAAT, and directional antenna pattern. There will be no change in channel. Please note that all F(50,50) and F(50,10) contours in the instant application are based on FCC 30-second terrain data.

**Figure 1** demonstrates that the proposed 60 dBu coverage contour overlaps that of the licensed facility (LMS File Number 0000120539) and does not extend beyond a 25 mile radius from primary station WBWX(AM). The total area within the proposed coverage contour is 460.5 km<sup>2</sup>, including a 56.4 km<sup>2</sup> overlap with the coverage contour of W242CY (Facility ID 200948, which also rebroadcasts WBWX). The area of overlap accounts for only 12.25% of the total proposed coverage of W234BH and 20% of the 282.0 km<sup>2</sup> total coverage of W242CY; therefore, the two translators will not serve "substantially" the same area.

**Figure 2** shows that all co-channel and first-adjacent stations will be afforded a level of contour protection that exceeds specifications of 47 CFR §74.1204(a) and (b).

**Figure 3** is a similar contour plot showing full contour protection of all second- and third-adjacent stations except for WQKX, Channel 231B, Sunbury, PA (Facility ID 63890), which has a predicted F(50,50) field strength of 58.7 dBu at the proposed translator site.

**Figure 4** shows the proposed 98.7 dBu free space contour plotted on a portion of USGS topographic maps for this area. Please note that no buildings or major highways are shown within this interference contour; the land use is limited to rural agriculture and forestry.

**Figure 5** is a recent satellite image showing additional buildings constructed since publication of the USGS maps. The closest residence is 1.29 km from the proposed site at an azimuth of 150 degrees. Proposed effective radiated power on the 150 degree azimuth is 0.226 kW, which would limit the 98.7 dBu free-space field strength to a distance of 1.225 km in that direction; therefore, the residence is outside the area of predicted interference to third-adjacent station WQKX. Applicant believes this showing satisfies requirements of §74.1204(d) in accordance with the "Living Way" precedent.

The proposed transmit antenna will be side-mounted on an existing 61 meter antenna structure owned by the licensee of W234BH and also used by FM station WMMJ. **Figure 6** is an "FM Model" power density plot based on the "worst case" assumption of an omnidirectional single bay EPA Type 1 antenna at

the proposed height and power level. On this basis, the maximum predicted radiofrequency power density attributed to W234BH does not exceed 3.7 microwatts per square centimeter at two meters above ground level, less than 2 percent of the general population / uncontrolled guideline. (The maximum predicted power density presently attributed to collocated WMMZ does not exceed 1.92 microwatts per square centimeter, taking into account its two-bay half-wave EPA Type 3 antenna mounted 59 meters above ground, and an effective radiated power of 1.05 kW.) In coordination with other users, applicant will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

Figure 1  
Proposed Coverage Contour

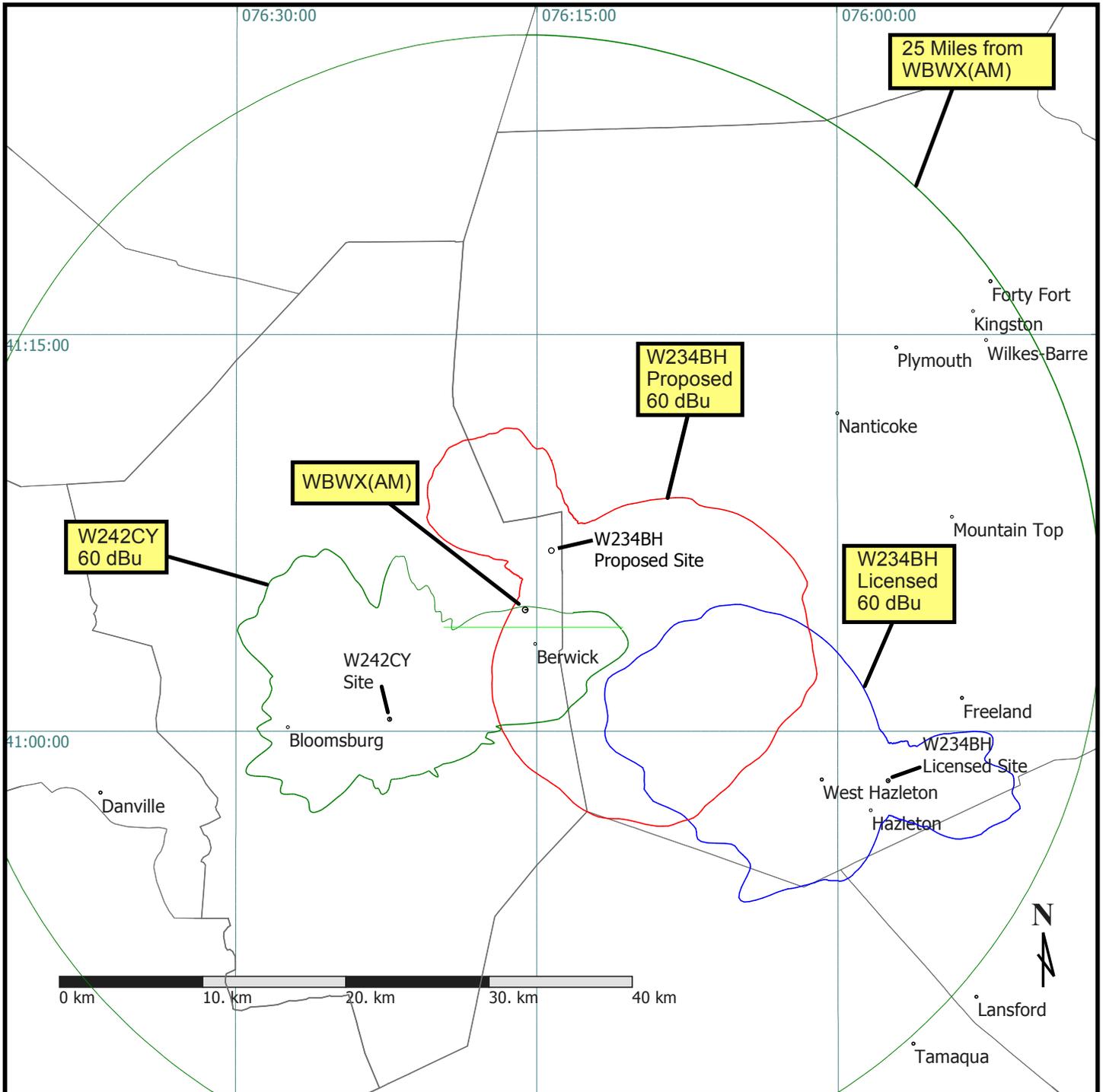


Figure 2  
Co-Channel and 1st-Adjacent Contour Protection

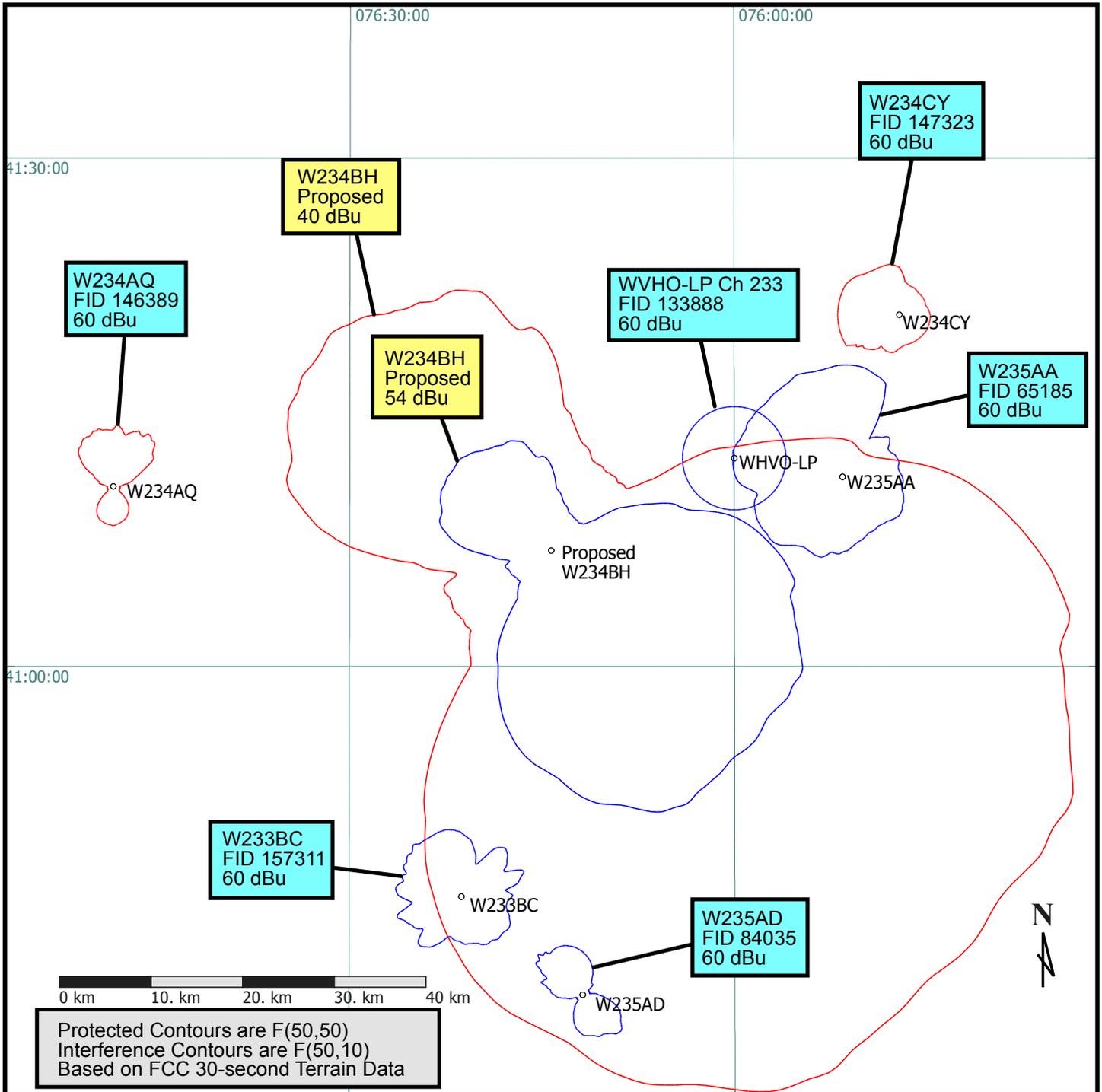
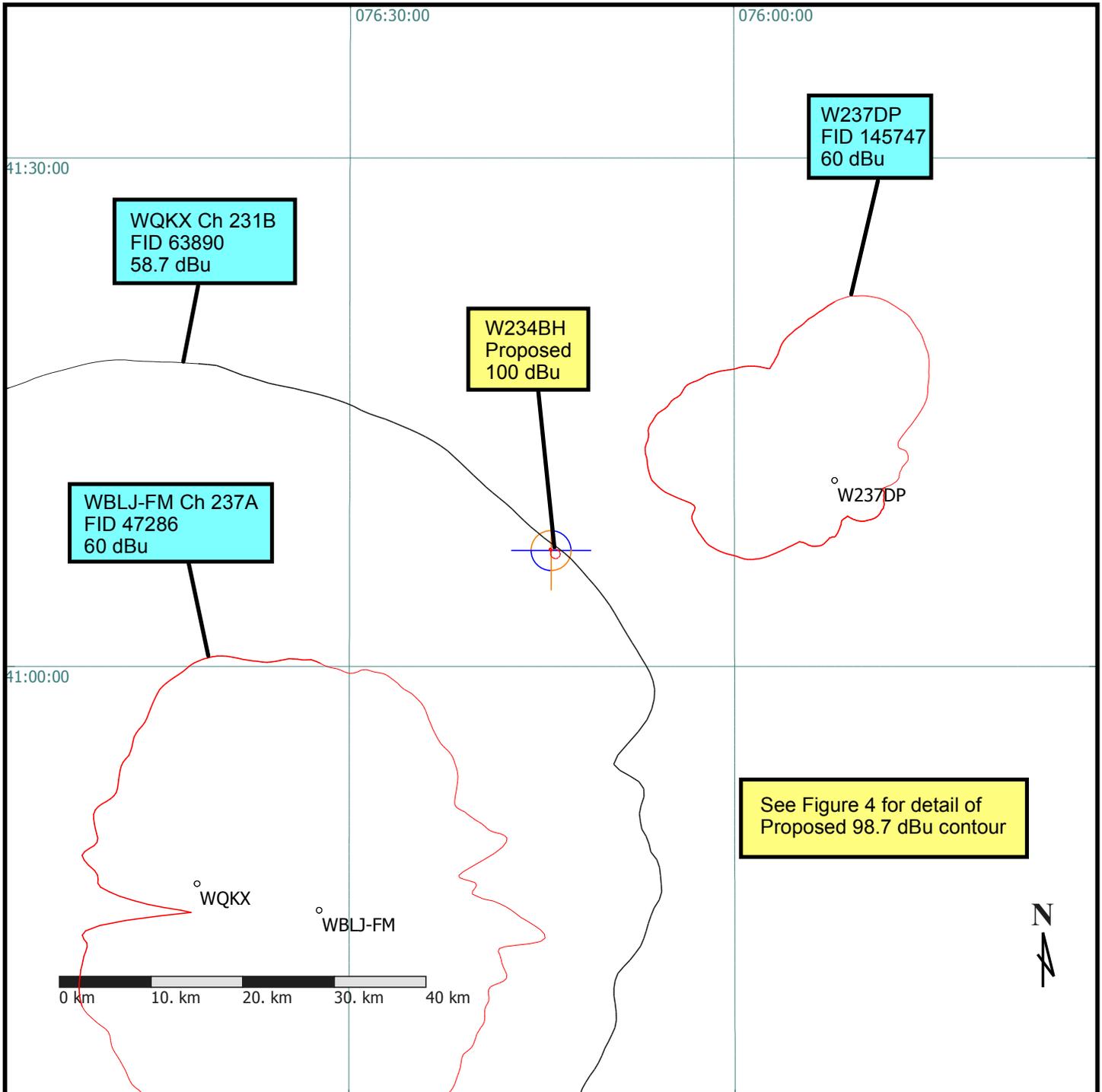
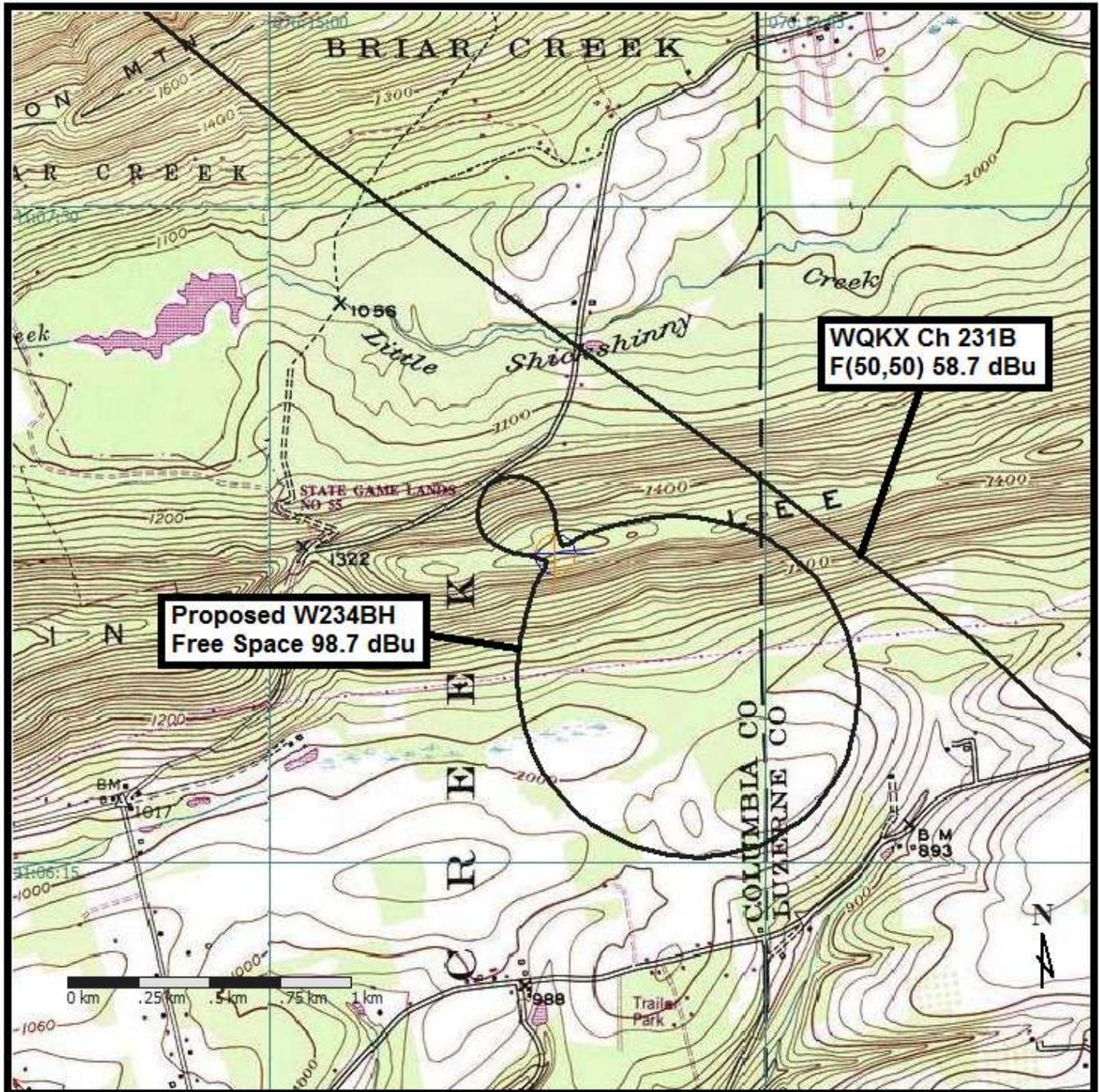


Figure 3  
2nd- and 3rd-Adjacent Contour Protection



**Figure 4**  
**Protection of 3rd-Adjacent WQKX**



**Figure 5**  
**Satellite Image of Site Vicinity**



**Proposed W234BH Site**

Cold Water Creams

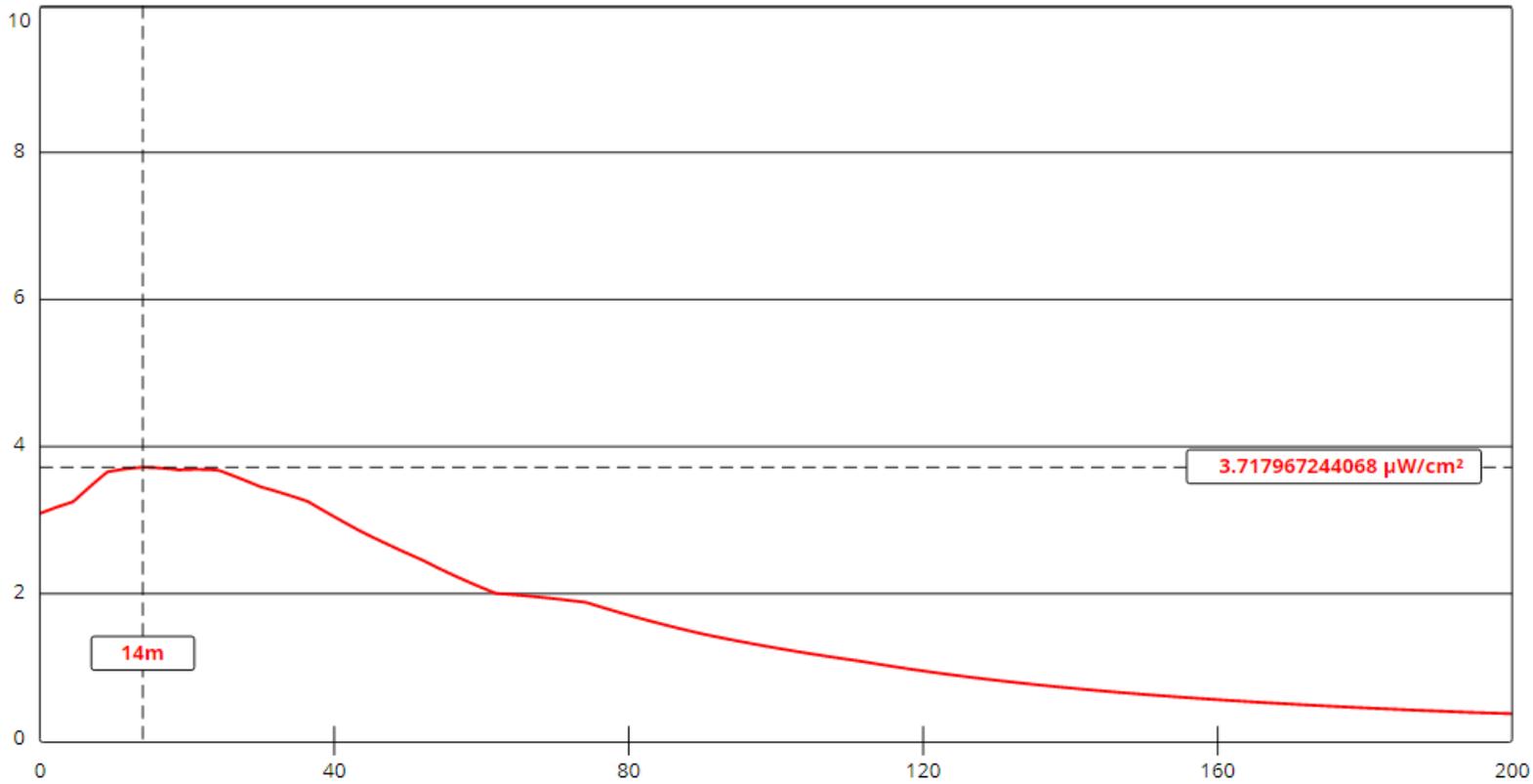
East Branch Briar Creek

4039

**Residence Closest to  
98.7 dBu Contour  
1.29 km at 150 deg**

Measure distance  
Click on the map to add to your path  
Total distance: 4,232.68 ft (1.29 km)

# Figure 6 -- RF Power Density Plot



[View Tabular Results +](#)

Channel Selection	Channel 234 (94.7 MHz) ▼		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	54	Distance (m)	200
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	1	Element Spacing ( $\lambda$ )	1
Num of Points	500	<b>Apply</b>	