

**September 2023**  
**KEZQ(FM) Channel 225C**  
**West Yellowstone, Montana**  
**Auxiliary Antenna**

**Facilities Proposed**

The instant application proposes a new auxiliary (backup) antenna for KEZQ. The attached contour map demonstrates that the auxiliary 60 dBu contour is completely contained within the main 60 dBu contour. Note that while KEZQ has been reallocated to Iona, Idaho, as Channel 226C1, this auxiliary facility will be licensed to West Yellowstone on Channel 225C so that it can be utilized as a backup for the licensed main KEZQ facility (BLH-19990625KA).

The proposed auxiliary operation will be on Channel 284C1 (104.7 MHz) with an effective radiated power of 0.023 kilowatts. Operation is proposed with a 1-element omni-directional antenna (Nicom BKG88-1) which is mounted on an existing tower with FCC Antenna Structure Registration Number 1006712. This tower is used as the antenna for AM station KWYS (see discussion below).

**RF Exposure Calculations**

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.4 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

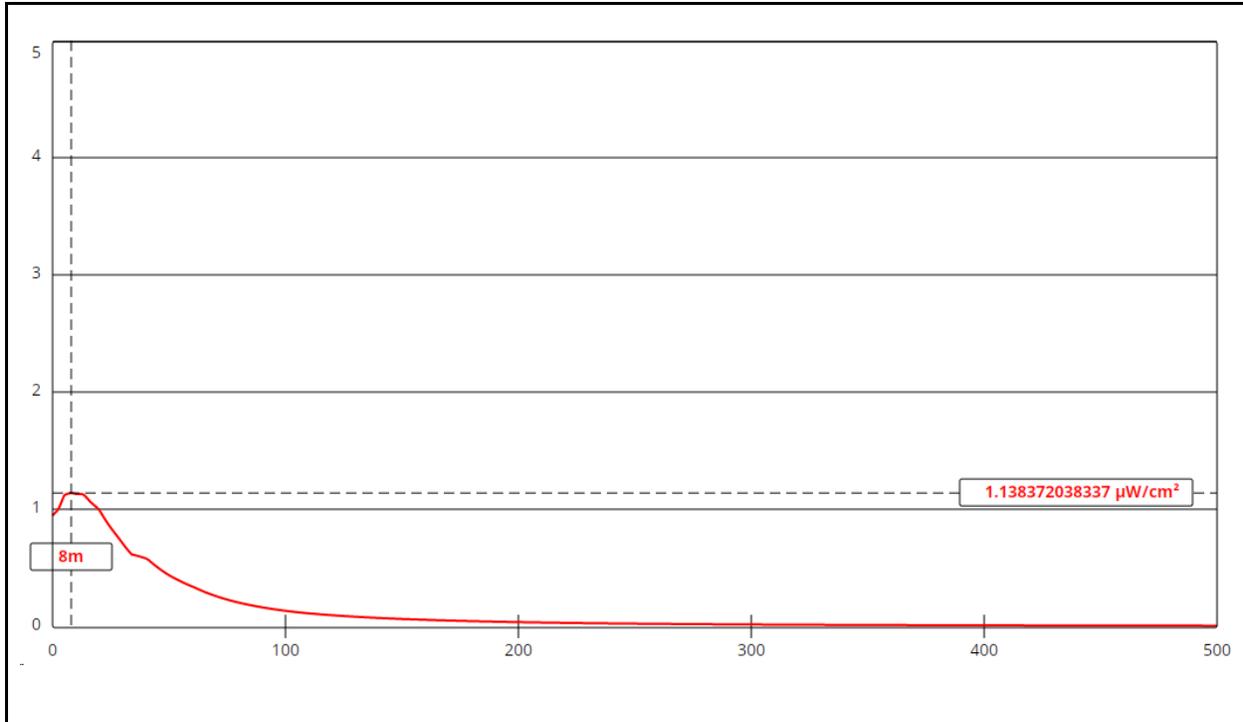
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 1 element pattern, which is the element pattern for the Nicom model BKG88-1 antenna proposed for use. The highest calculated ground level power density occurs at a distance of 1 meters from the base of the antenna support structure. At this point the power density is calculated to be 1.1  $\mu\text{W}/\text{cm}^2$ , which is 0.6% of 200  $\mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

### **AM Station KWYS**

The translator antenna will be installed on the tower used by AM station KWYS 920 kHz. KWYS operates with 1 kilowatts nondirectional daytime and 38 watts nondirectional nighttime. The radiator is 80.8 electrical degrees tall, or 22.4% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for this station is 1 meter from the tower base. The tower is fenced to at least this distance.



**Ground-Level RF Exposure**

**OET FMModel**

**KEZQ 225C Auxiliary**

Antenna Type: Nicom BKG88-1 (Type 1)

No. of Elements: 1

Element Spacing: 1.0 wavelength

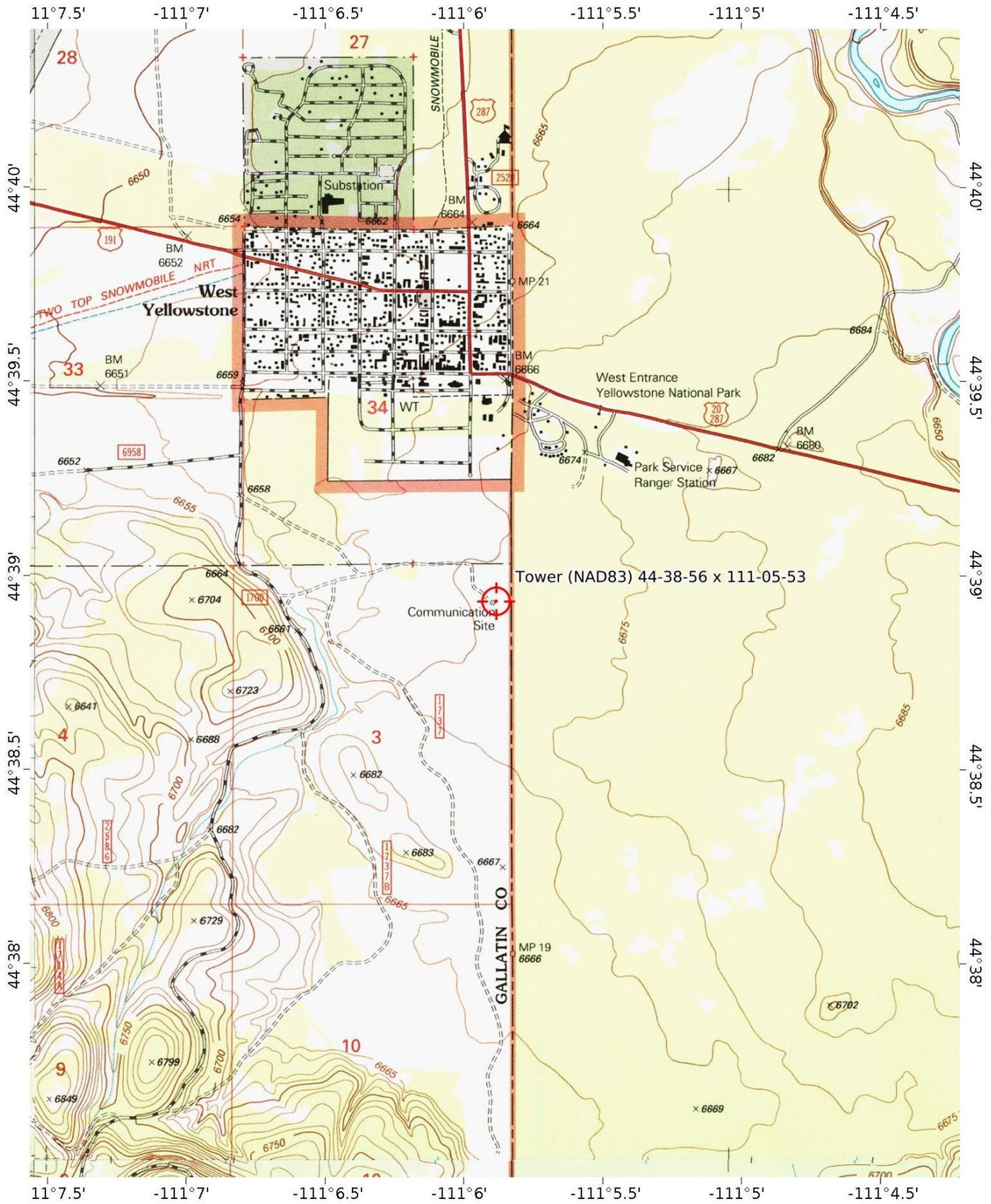
Distance: 500 meters

Horizontal ERP: 23 watts

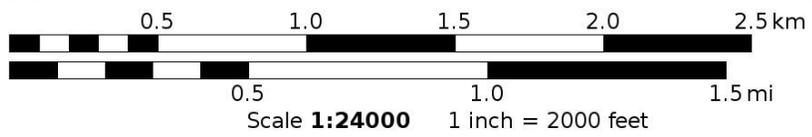
Vertical ERP: 23 watts

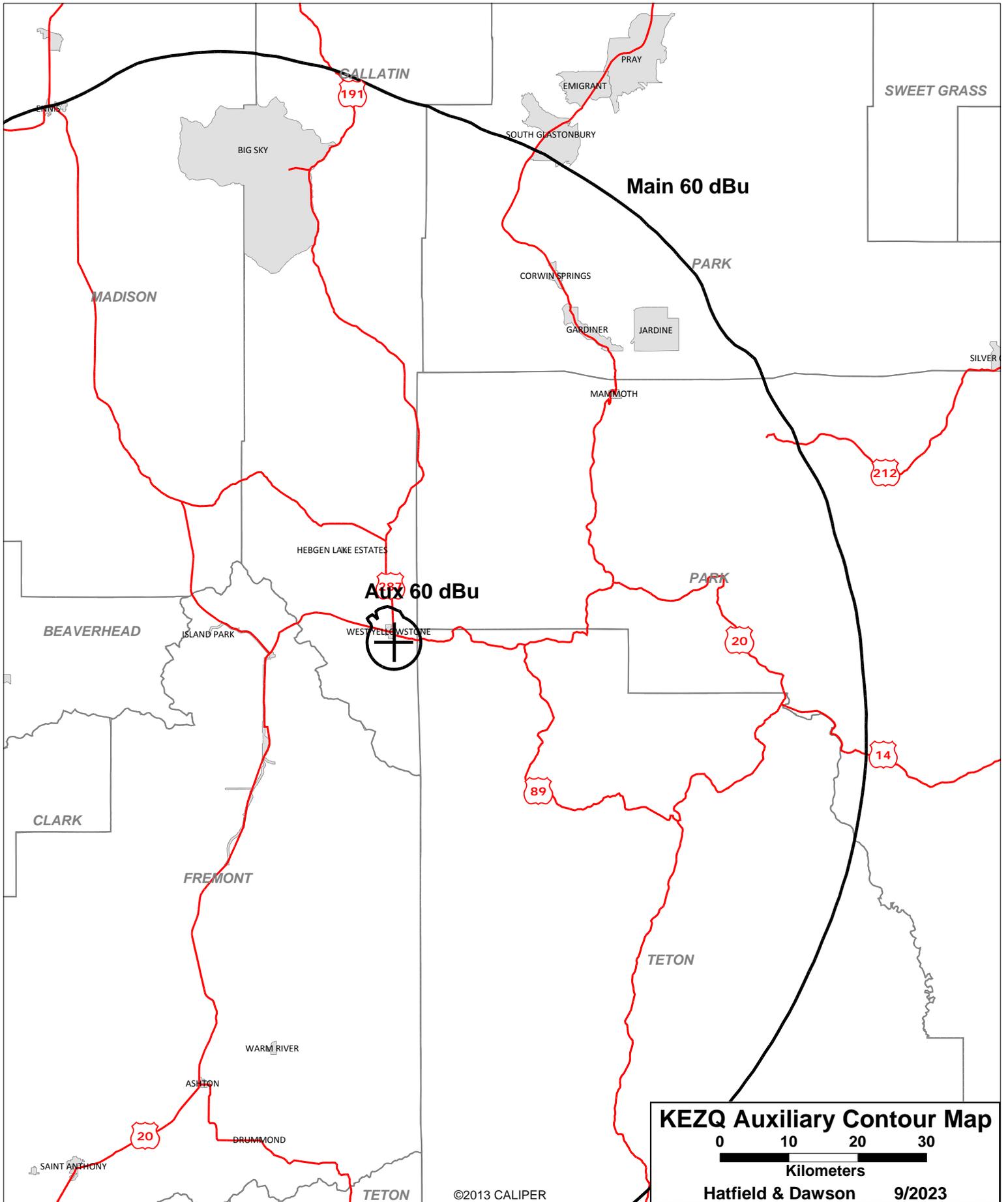
Antenna Height: 30.5 meters AGL

Maximum Calculated Power Density is 1.1  $\mu\text{W}/\text{cm}^2$  at 8 meters from the antenna structure.



Mercator Projection  
 WGS84  
 UTM Zone 12T  
 CALTOPO





SALLATIN  
191

Main 60 dBu

Aux 60 dBu

**KEZQ Auxiliary Contour Map**

0 10 20 30

Kilometers

Hatfield & Dawson 9/2023

©2013 CALIPER