Facilities Proposed

The proposed auxiliary antenna operation will be on Channel 229A (93.7 MHz) with an effective radiated power of 0.045 kilowatts. While KRKG-FM has been approved to change to Channel 261A, this auxiliary antenna application requests operation on Channel 229A so that the station can promptly commence HD radio operation with this antenna.

Operation is proposed with a 1-element circularly-polarized omni-directional antenna. The antenna will be side-mounted on an existing tower located at Jump Off Joe Butte. This is the site of the licensed KRKG-FM main antenna.

The proposed antenna support structure will not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

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.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

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 1000 meters. Values past this point are increasingly negligible.

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Calculations of the power density produced by the proposed antenna system assume the appropriate element pattern for the OMB antenna proposed for use. The highest calculated ground level power density occurs at a distance of 2 meters from the base of the antenna support structure. At this point the power density is calculated to be 36.9 μW/cm², which is 18.5% of 200 μW/cm² (the FCC standard for uncontrolled environments).

Two FM translators are located close to the KRKG-FM tower site: K282AA and K258CN.

> The highest calculated ground level power density from K282AA occurs at a distance of 6 meters from the base of the antenna support structure. At this point the power density is calculated to be 22.8 μW/cm², which is 11.4% of 200 μW/cm² (the FCC standard for uncontrolled environments).

> The highest calculated ground level power density from K258CN occurs at a distance of 8 meters from the base of the antenna support structure. At this point the power density is calculated to be 22.0 μW/cm², which is 11.0% of 200 μW/cm² (the FCC standard for uncontrolled environments).

These individual contributions sum to 59.3% of the FCC standard for uncontrolled environments. This assumes that the individual maxima coincide, which they do not.

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.

Power Density vs Distance

Power Density (μW/cm²)
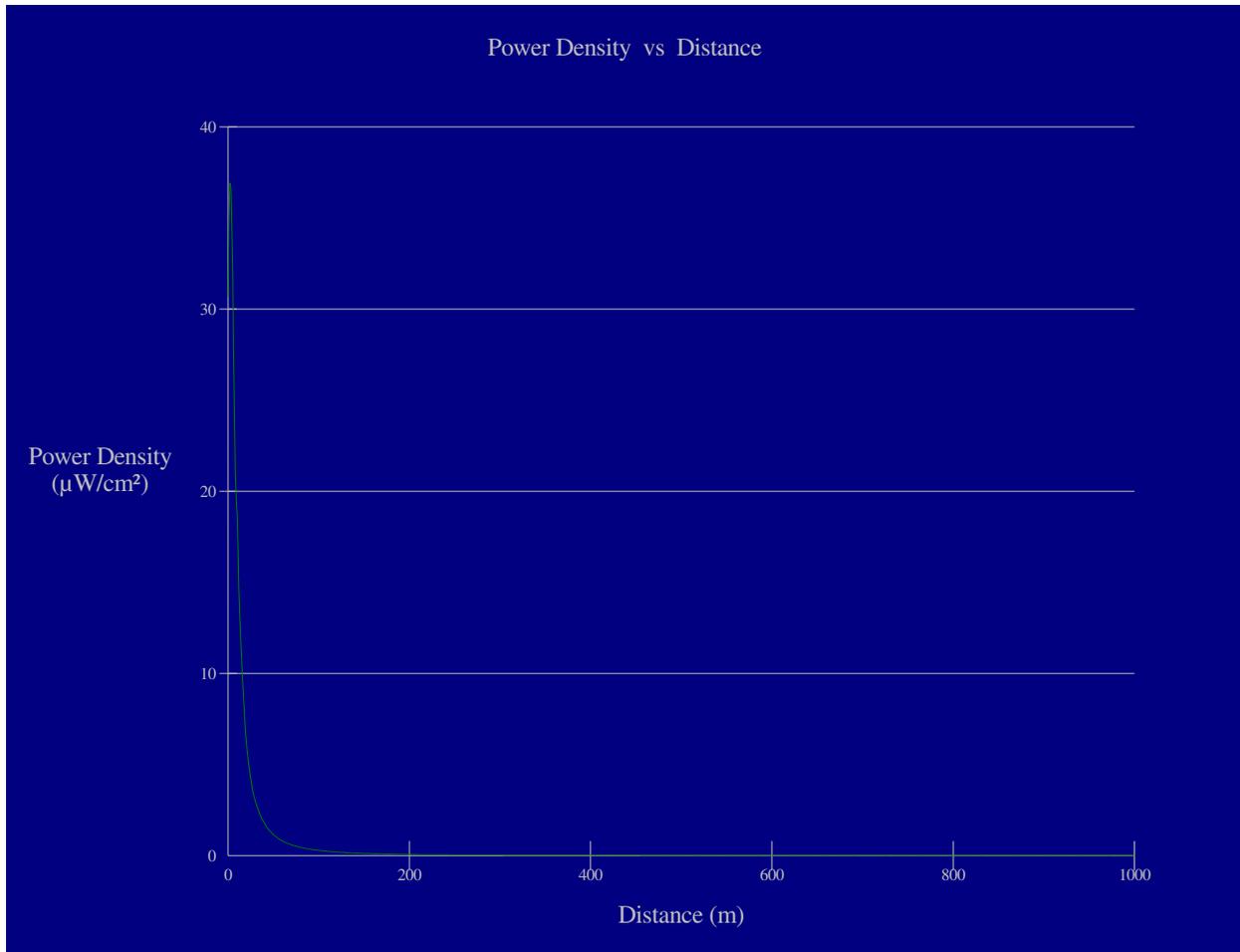
Distance (m)

Ground-Level RF Exposure **OET FMModel**

KRKG-FM 229A Auxiliary Antenna
Antenna Type: ring stub assumed
No. of Elements: 1
Element Spacing: 1.0 wavelength

Distance: 1000 meters
Horizontal ERP: 0.045 kW
Vertical ERP: 0.045 kW

Antenna Height: 9 meters AGL

Maximum Calculated Power Density is 36.9 μW/cm^2 at 2 meters from the antenna structure.

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GRANT

FRANKLIN

CONNELL

KAHLOTUS

BASIN CITY

MESA

RICHLAND

WEST RICHLAND

BENTON CITY

SSER

WEST PASCO

PASCO

KENNEWICK

BURBANK

WALLA WALLA

FINLEY

Main
60 dBu

Aux
60 dBu

BENTON

WALLULA

TOUCHET

UMA

UMATILLA

IRRIGON

BOARDMAN

HERMISTON

HELIX

AT

STANFIELD

UMATILLA

ADAMS

MORROW

ECHO
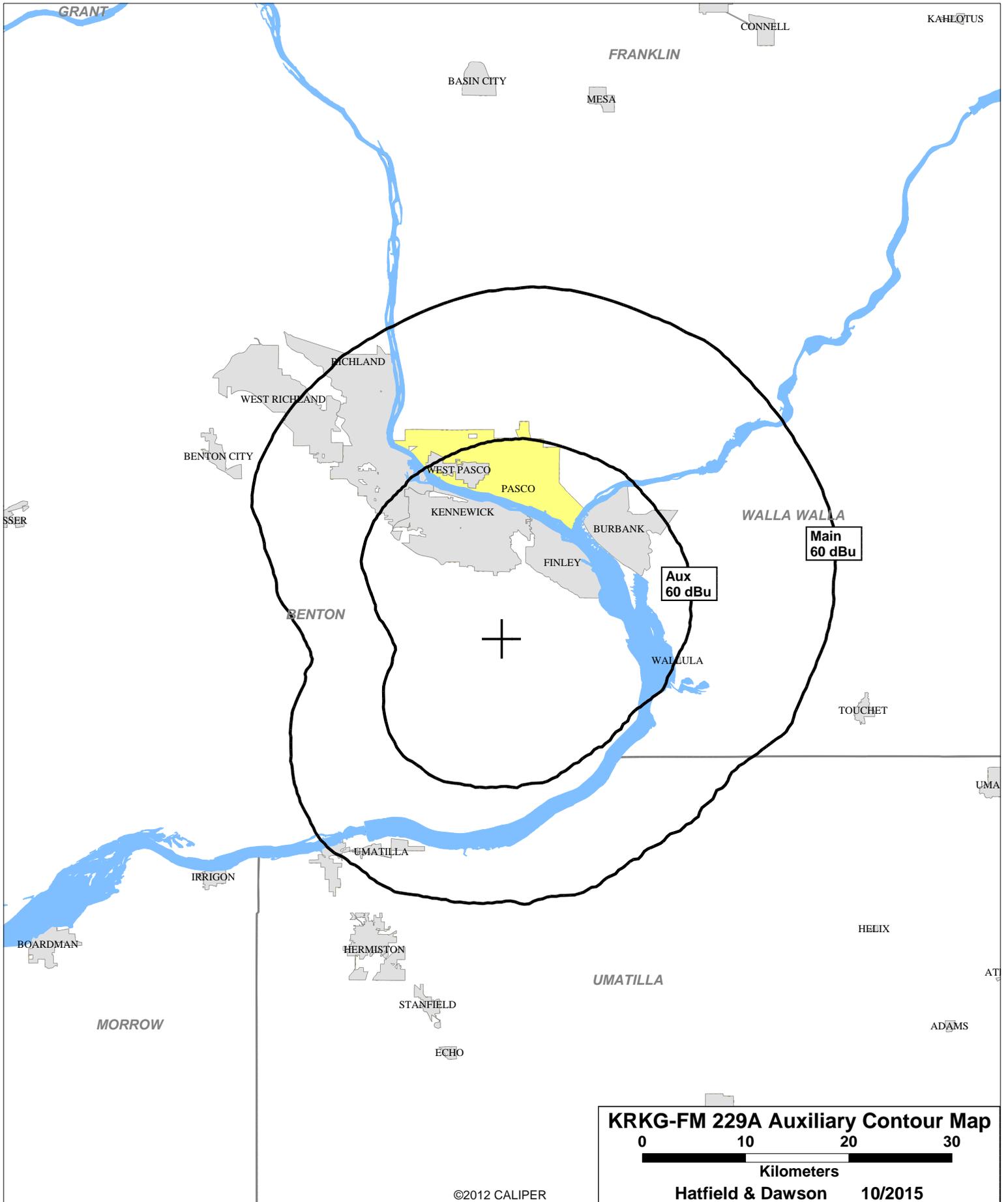
KRKG-FM 229A Auxiliary Contour Map

0   10   20   30

Kilometers

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