

## **KJUN 70 dBu Coverage of Scappoose**

The 70 dBu contour from the proposed facility, as calculated using the F(50,50) curves of §73.333, does not encompass the City of Scappoose. The center of Scappoose is located 33 kilometers, and the far side of Scappoose 35 kilometers, from the proposed transmitter site. The 70 dBu contour, based on the FCC's standard prediction method, extends approximately 32 kilometers towards Scappoose. However, it is believed that a supplemental showing using alternative contour prediction methodology is justified in this instance in accordance with §73.313(e).

Indeed, KJUN is already authorized for Class C3 operation at this same transmitter site and antenna height, based on the use of alternative contour prediction methodology. The proposed increase to Class C2 ERP at this site and height will only serve to improve service to Scappoose. Nevertheless, justification for and application of alternative contour prediction methodology is included below for the sake of completeness.

The transmitter site is located at an elevated site (1017 feet AMSL) in the Healy Heights area of Portland, Oregon, overlooking the Columbia River flatlands where Scappoose is located. This area is essentially at sea level. While the terrain average for the 3 to 16 kilometer portion of the radial in the direction of Scappoose (334E True) is 122 meters, the terrain average for the 16 to 35 kilometer portion of the radial is 37 meters. The terrain lying 16 to 35 kilometers from the proposed site is much lower than the terrain lying within the 3 to 16 kilometer portion of the radial, and an alternative prediction method to locate the 70 dBu contour is therefore justified.

Furthermore, it is noted that the field strength charts in §73.333 were developed assuming a terrain roughness factor of 50 meters, which is considered to be representative of average terrain

in the United States. The roughness factor for the 334E radial towards Scappoose departs appreciably from this figure. Analysis of the 10 to 50 kilometer portion of this radial reveals that the roughness factor in the direction of Scappoose is 289 meters. Therefore, the use of an alternative prediction methodology is believed fully justified in this instance.

Several alternative prediction methodologies have been employed to verify that the City of Scappoose will receive 70 dBu service from the proposed facility. All calculations were made using the 3-arc second terrain database, in conjunction with the height and ERP specified herein.

## Free Space Propagation

The proposed KJUN facility is line-of-sight to the City of Scappoose. Three terrain profile plots are included which depict these line-of-sight conditions along three radials towards Scappoose: 332E, 334E, and 336E True. Sample calculations have been made on these three radials to verify the presence of 70 dBu service, using the free space signal formula:

$$106.9 + \text{power in dBk} - 20\log(\text{distance in km to point of interest})$$

For the three radials studied (8.45 dBk over a 33 km path), the results of these calculations were:

Radial	Free Space Field	Minus Diffraction Loss	Yields
332E	84.98 dBu	2.0 dB	82.98 dBu
334E	84.98 dBu	1.2 dB	83.78 dBu
336E	84.98 dBu	2.6 dB	82.38 dBu

Allowing for a local clutter loss of 5 dB, the resulting free space field on all three radials is in excess of 70 dBu at Scappoose.

## PTP

Study has been made of the predicted 70 dBu field strength contour using version 7B of the Commission's PTP program (dated January 11, 2000). The results of this study are shown below:

Radial	F(50,50) 70 dBu	PTP 70 dBu	PTP exceeds F(50,50) by
332E	30.9 km	48.0 km	55%
334E	31.5 km	47.0 km	49%
336E	32.0 km	59.0 km	84%

These results indicate that 100% of the City of Scappoose will be encompassed by the proposed 70 dBu contour.

### **Longley-Rice**

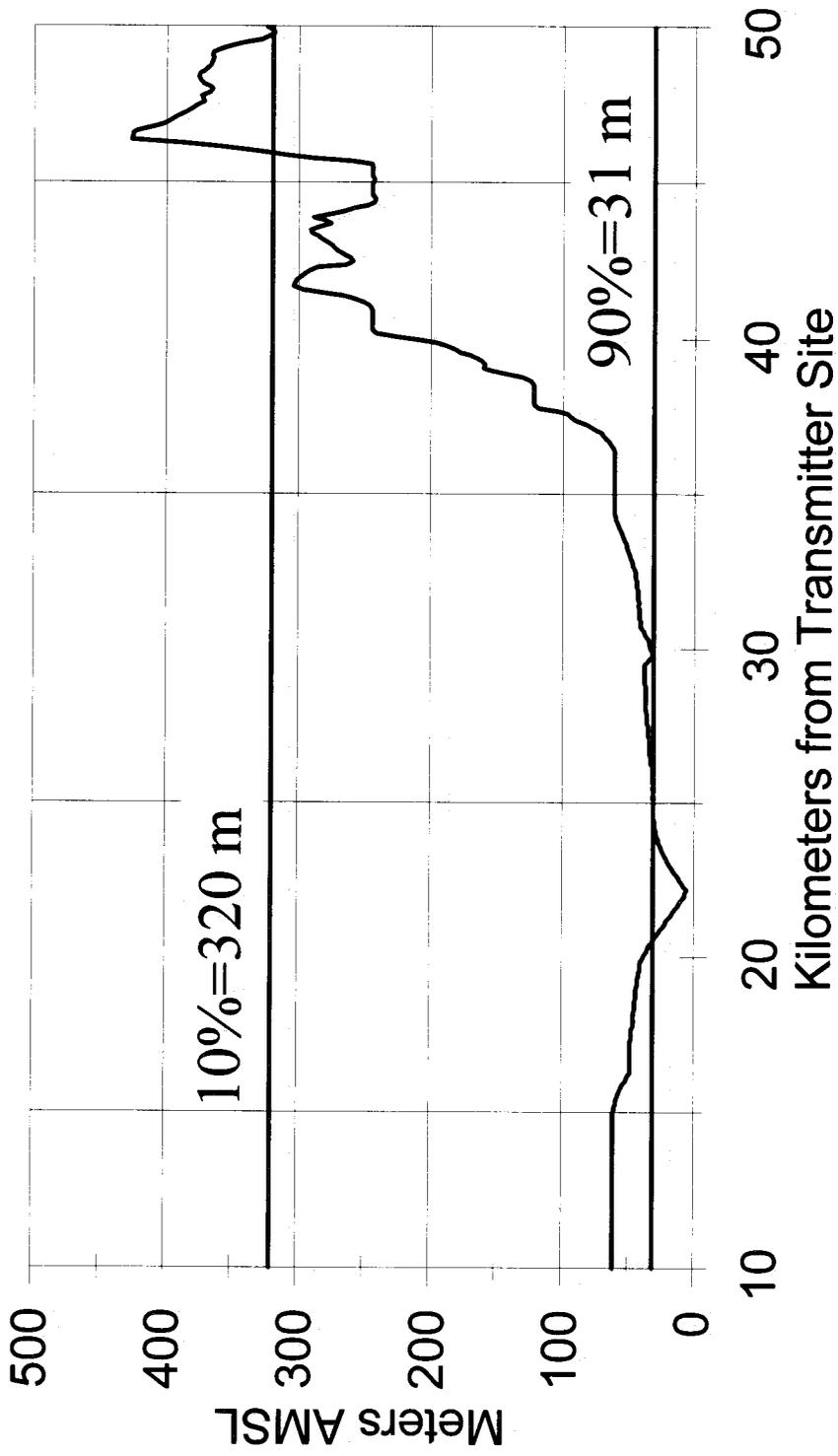
Study has been made of the predicted 70 dBu field strength conducted using the Longley Rice v1.2.2 methodology as described in the FCC's Office of Engineering and Technology Bulletin 69 Longley-Rice Methodology for Evaluating TV Coverage and Interference ("OET-69"), July 2, 1997.

This study has been conducted using the software program SIGNAL™ from EDX Engineering, Inc.

The attached map exhibit depicts the results of this Longley-Rice analysis. Shaded areas on this map indicate areas which are predicted to receive at least 75 dBu from the proposed facility. (The 75 dBu figure has been chosen to allow for 5 dB of local clutter loss at the receive locations.) This map shows that 100% of the City of Scappoose will receive a 70 dBu signal from the proposed facility.

# Terrain Roughness Factor Analysis

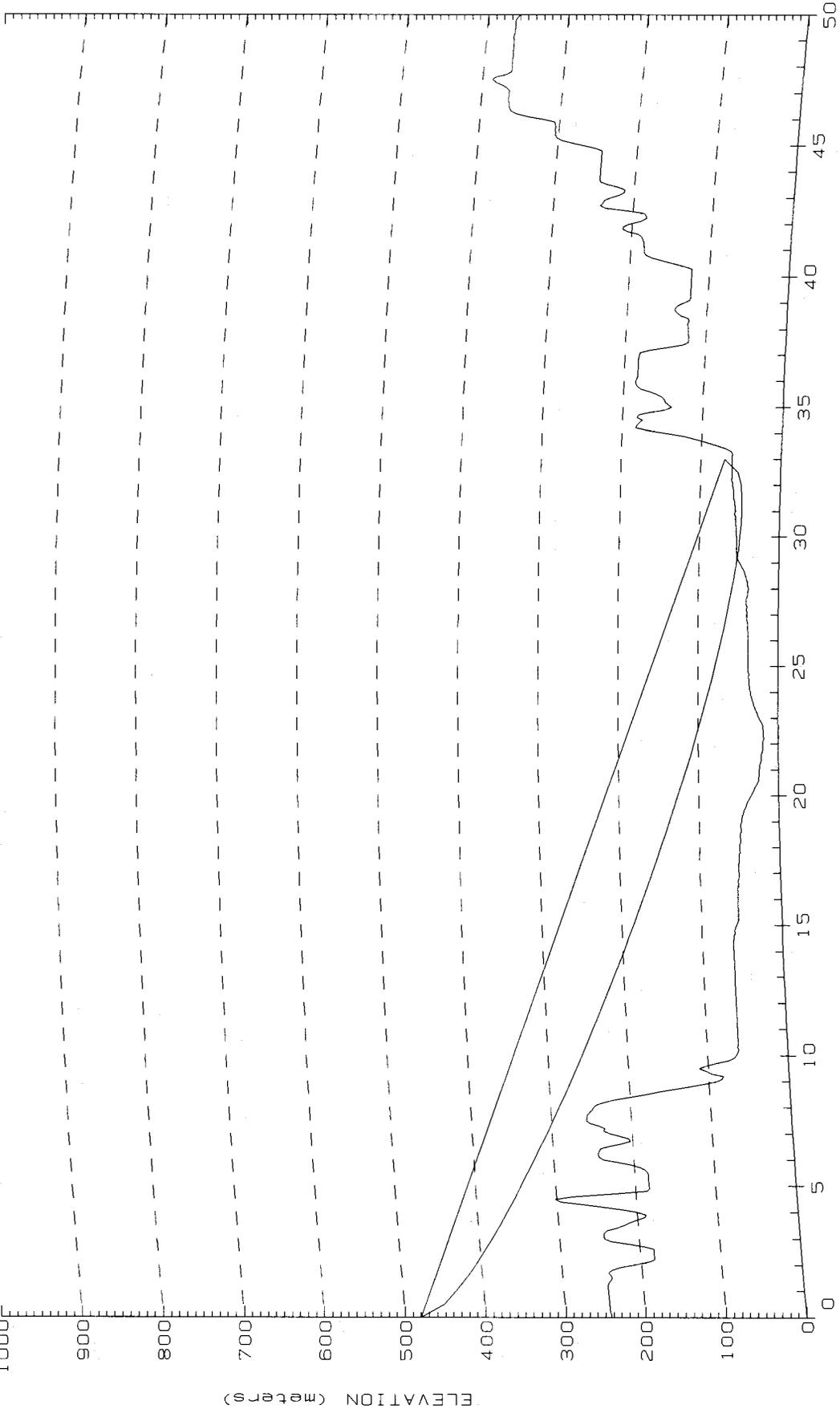
## KJUN-FM Scappoose, OR



Site: KJUN-FM  
 N 45 29 20 W 122 41 40  
 Ant. Elev. (AMSL): 480.0 m  
 Path azimuth: 332.00 degs.  
 1000

Frequency: 104.1 MHz  
 Path Length: 33.0 km  
 Total Path Loss: 105.1 dB  
 Excess Path Loss: 2.0 dB

Site: Scappoose 332 Deg  
 N 45 53 8 W 122 59 52  
 Ant. Elev. (AMSL): 70.6 m  
 Path azimuth: 151.78 degs.



DISTANCE (km)

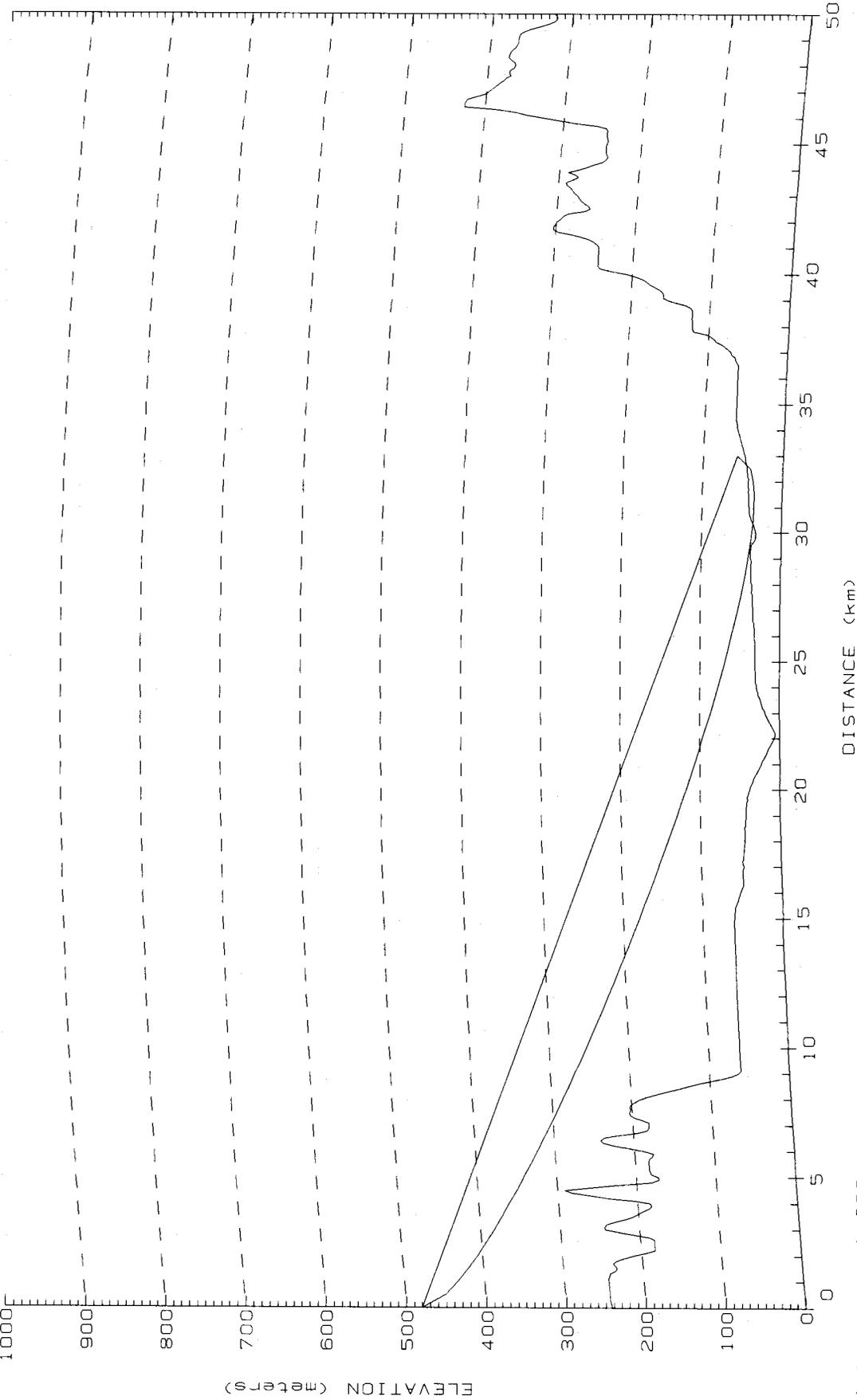
K factor: 1.333  
 Fresnel Zone: .60  
 3 Second Database - NAD 27  
 Rain loss: .0 dB  
 Urban loss: .0 dB  
 Foliage loss: .0 dB

Hatfield & Dawson  
 Consulting Engineers

Site: KJUN-FM  
 N 45 29 20 W 122 41 40  
 Ant. Elev. (AMSL): 480.0 m  
 Path azimuth: 334.00 degs.  
 1000

Frequency: 104.1 MHz  
 Path Length: 33.0 km  
 Total Path Loss: 104.3 dB  
 Excess Path Loss: 1.2 dB

Site: Scappoose 334 Deg  
 N 45 53 34 W 122 58 40  
 Ant. Elev. (AMSL): 57.6 m  
 Path azimuth: 153.79 degs.



DISTANCE (km)

K factor: 1.333

Fresnel Zone: .60

3 Second Database - NAD 27

Rain loss: .0 dB

Urban loss: .0 dB

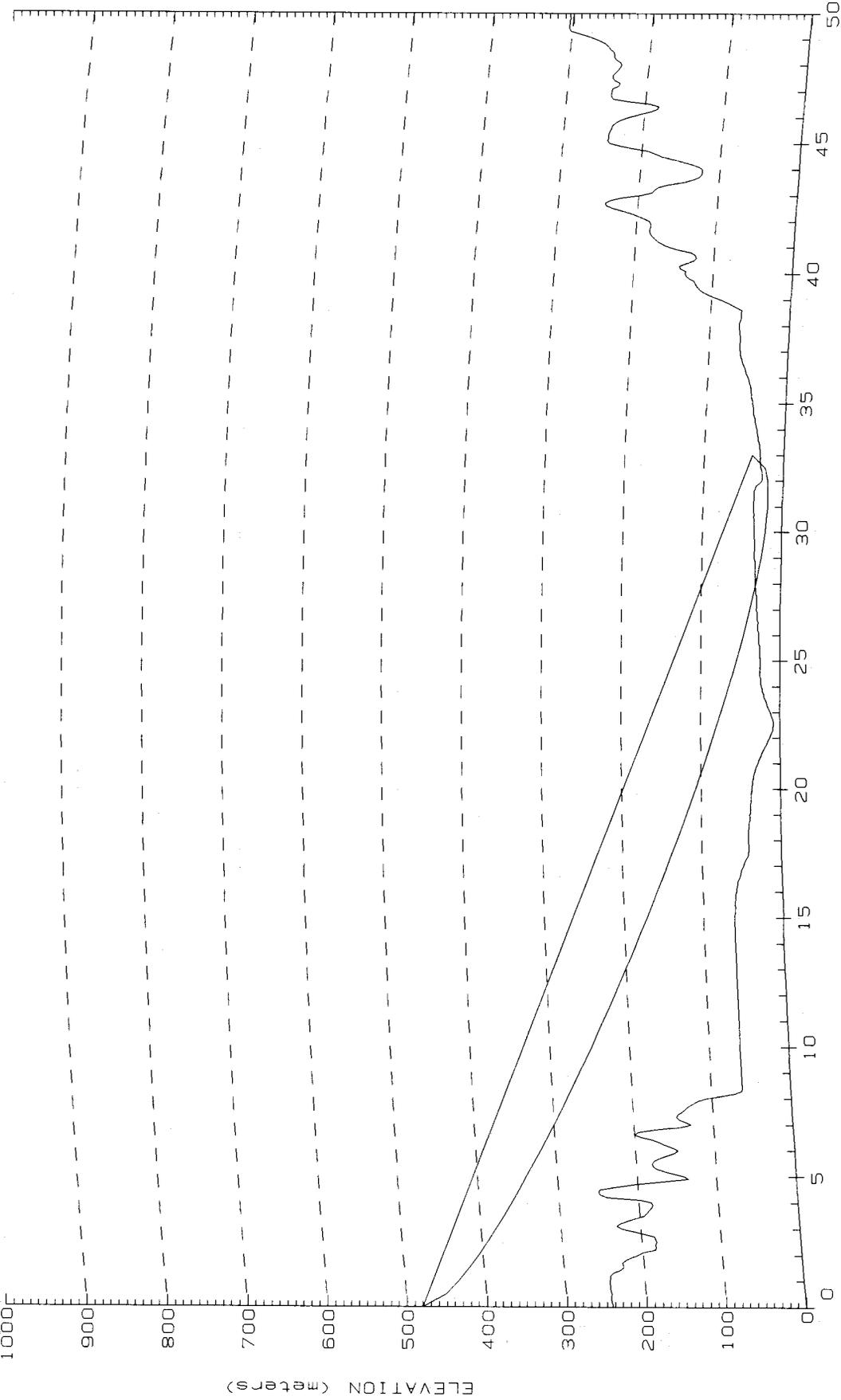
Foliage loss: .0 dB

Hatfield & Dawson  
 Consulting Engineers

Site: KJUN-FM  
 N 45 29 20 W 122 41 40  
 Ant. Elev. (AMSL): 480.0 m  
 Path azimuth: 336.00 degs.

Frequency: 104.1 MHz  
 Path Length: 33.0 km  
 Total Path Loss: 105.7 dB  
 Excess Path Loss: 2.6 dB

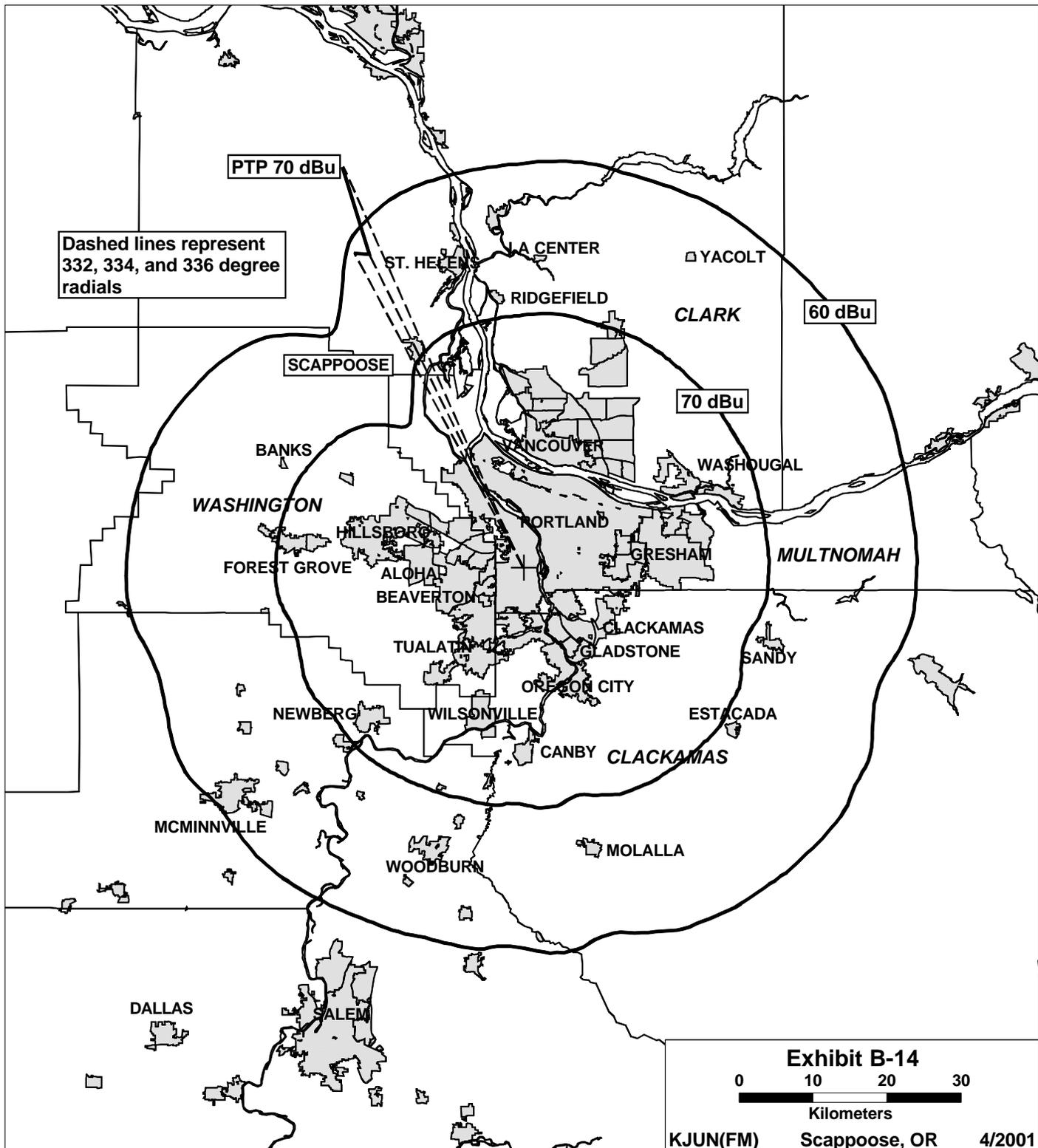
Site: Scappoose 336 Deg  
 N 45 53 58 W 122 57 26  
 Ant. Elev. (AMSL): 39.6 m  
 Path azimuth: 155.82 degs.



DISTANCE (km)

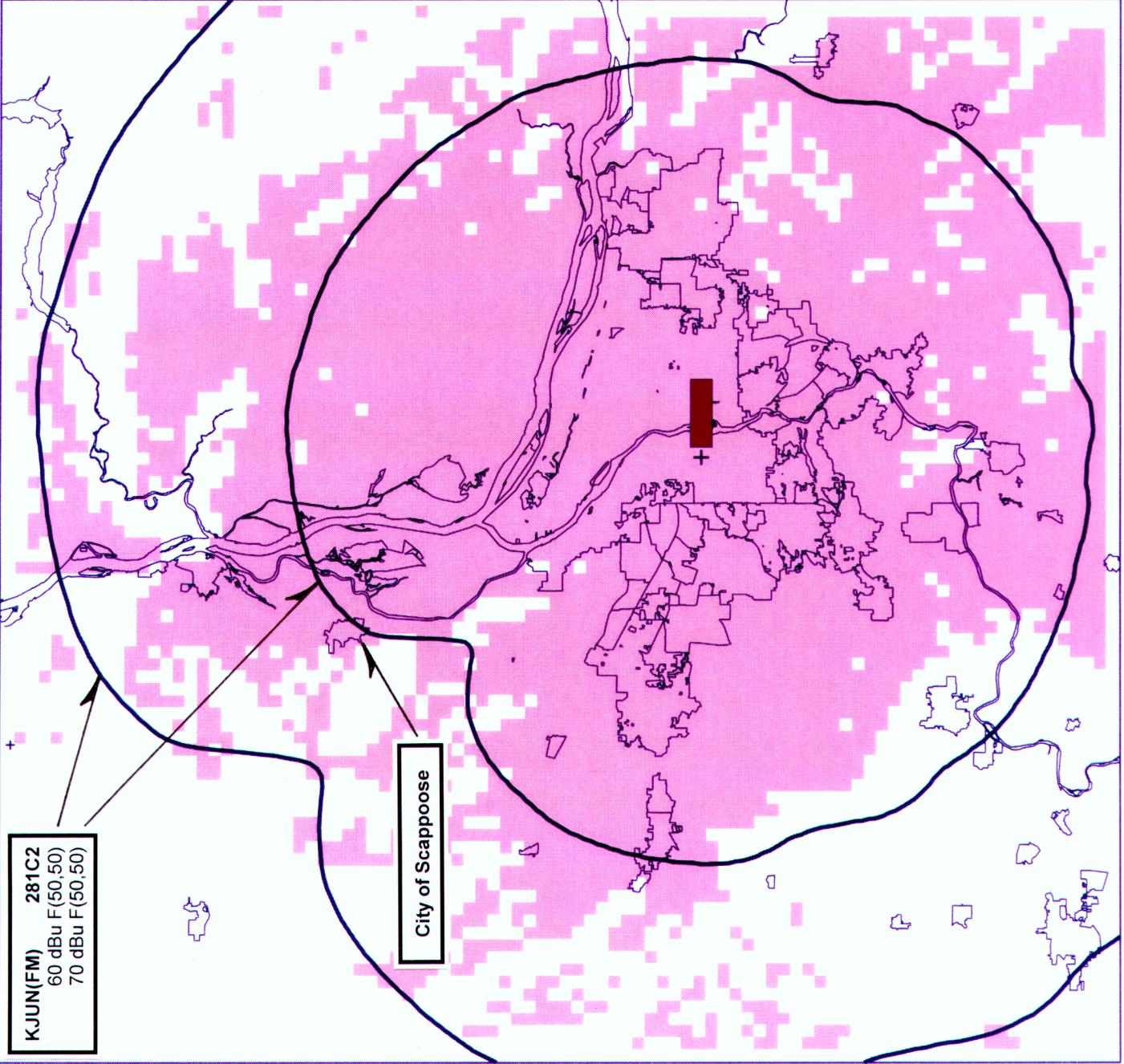
K factor: 1.333  
 Fresnel Zone: .60  
 3 Second Database - NAD 27  
 Rain loss: .0 dB  
 Urban loss: .0 dB  
 Foliage loss: .0 dB

Hatfield & Dawson  
 Consulting Engineers



**KJUN(FM) 281C2**  
 60 dBu F(50.50)  
 70 dBu F(50.50)

**City of Scappoose**



**SIGNAL (tm) :D:\KJUNC2\KJUNLR.MAP**

Propagation model: Longley-Rice v1.2.2  
 Time: 50.00% Loc: 50.00% Margin: .0 dB  
 Climate: Continental Temperate  
 Gndcvr: None  
 Atm. factor: None  
 K Factor: 1.333  
 RX Antenna: Omni  
 Height: 9.1 mtrs AGL Gain: .0 dBd

Field strength (at remote)

> 75.0 dBuV/m  
 < 75.0 dBuV/m

Minimum threshold level: -150.0 dBmW

Site	Ant Elv (mtrs)	ERPd (dBW)	Ant. Type /Orient	Coordinates
KJUNAK*	480.0	38.45	OM-H	N 45 29 20.00 W122 41 40.00
grp: 1	104.1000	MHZ		

**KILOMETERS**



**Longley-Rice Study**  
 Hatfield and Dawson