Terrain Roughness Study

ComStudy 2 Path Profile

TX

Lat:	40-15-31.0 N
Lon:	122-05-24.0 W
AMSL:	488 m
Tower AGL:	123 m

RX

Lat:	39-59-58.3 N
Lon:	122-10-30.8 W
AMSL:	82 m
Tower AGL:	9 m

Profile Info

Distance:	29.70 Km
Bearing:	194.15 deg
# of points	200
K value:	1.333
Frequency:	150.0000
Clearance:	0.6

Losses

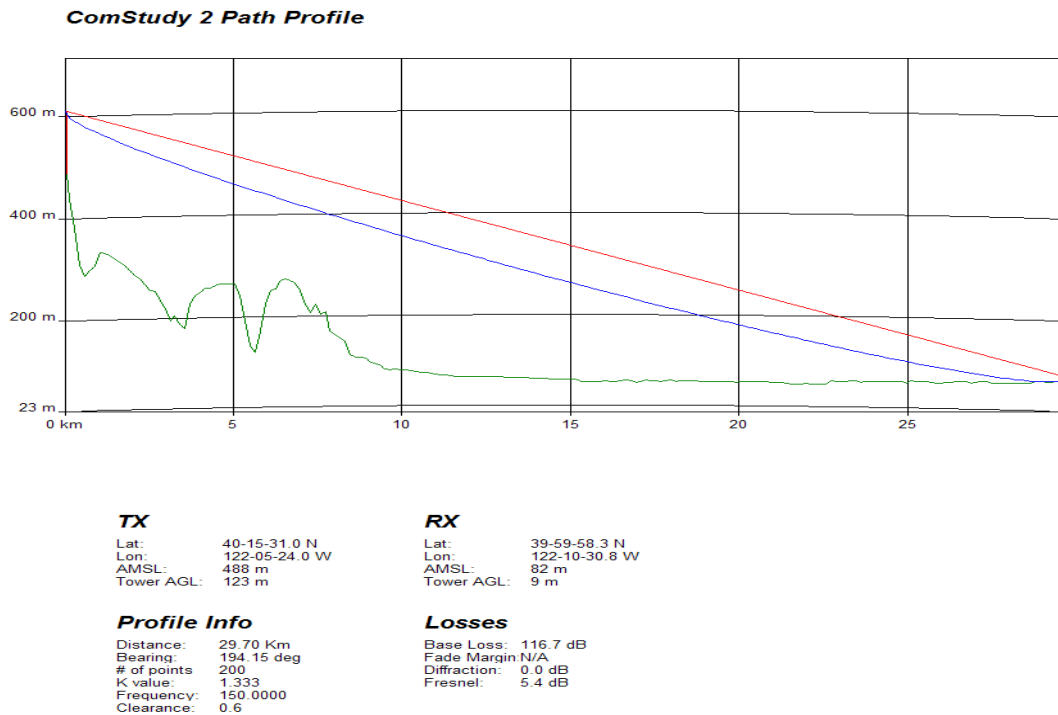|	
Base Loss:	116.7 dB
Fade Margin	N/A
Diffraction:	0.0 dB
Fresnel:	5.4 dB

This is a path profile from the proposed transmitter site to the predicted Longley Rice 70 dBu contour.   Longley Rice predicts that the contour extends a distance of 29.7 Km on a radial of 195 degrees from the proposed transmitter site. This contour runs directly through Gerber, California. The boundaries of Gerber extend from 21.1 Km out to 23.5 Km from the proposed transmitter site on the 195 degree radial. As can also be seen, the terrain roughness begins at the transmitter site and remains very rough out to a point of approximately 10Km. From that point on, the land is very flat. Delta-h calculations show this roughness to be quite divergent depending upon how the model is applied. Using the model which starts at 10 Km and goes to 50 Km the roughness is non-existent. From the terrain profile above you can see that the terrain is rough out to 10 Km and then becomes very smooth. Using a Delta-h model from 3 Km to 16 Km gives a much different picture with a Delta-h of 111.2 meters. When a Delta-h model is run beginning at the transmitter site and ending at 30 Km you get the most accurate indicator of what is happening with a Delta-h of 268 meters and a Delta-F correction factor of -8.8 dB. This study was made using 60 points evenly spaced. When factoring -8.8 dB into 50:50 this provides a corrected city grade contour of 61.2 dBu (50:50). This contour corresponds exactly to the same distance as the Longley Rice 70 dBu contour at 29.7 Km. The terrain

is such that Longley Rice outperforms 50:50 by an almost a two to one ratio along this radial.

Because Longley Rice outperforms 50:50 by such a dramatic amount and because of the topography of the path from the proposed transmitter site to the community of license is so divergent from that used in standard prediction methods. It is felt that there is complete justification for the use of alternate methods to predict the city grade coverage, in this case the method is Longley Rice.   A Longley Rice coverage map is included showing.