

TO: SBA

Subject: RF Coverage Plot Analysis: Bath County, KY

Date: March 9, 2021

1. **METHODOLOGY.** The attached plots depict broadcast radio frequency (RF) coverage from the existing site to Bath County, KY and a proposed site approximately 0.3597 miles to the northwest. At each location, cellular industry typical LTE operating parameters were considered for omnidirectional antennas mounted at 235 feet above ground level at the existing site, and at 250 feet above ground level for the proposed site. Ground elevations are 1022 and 977 feet above mean sea level, respectively. 5G Broadcast RF coverage was not reviewed since it is not operational as of this date.

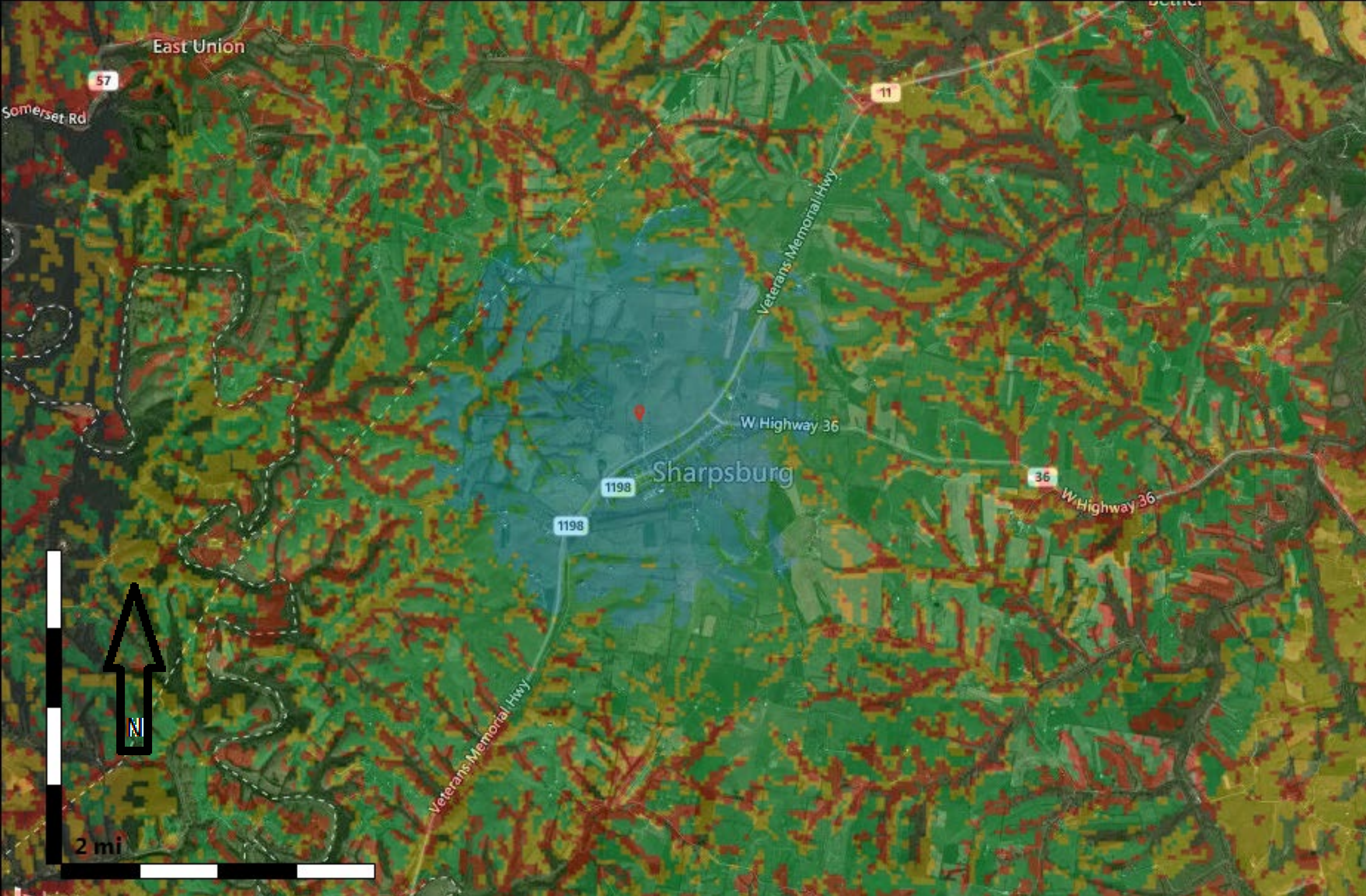
Plots for both locations were generated for 700, 850, 1900 and 2100 MHz operations. The signal levels depicted are associated with LTE service reliability where the strong coverage levels in green and blue occur near the towers and decrease with distance from the sites and intervening terrain obstructions. Signal levels greater than -70 dBm shown as blue are associated with feasible coverage within buildings. Marginal coverage is provided in the regions depicted in yellow between -90 dBm and -80 dBm and signal levels between -100 dBm and -90 dBm shown as red represent poor coverage associated with call failures.

A comparison of coverage performance for each site is based on low band (700 and 850 MHz) and high band (1900 and 2100 MHz) prediction results. Radiowave propagation conditions between these bands differ because of terrain and ground clutter (e.g. vegetation) effects at different frequencies. Generally, low band operations provide greater area coverage. Therefore, high band operations provide additional customer traffic capacity closer to the cellular site.

2. **COMPARISON.** The sites considered in these coverage plots provide service to the depicted locations and roads leading to Bath County, KY. For low band operations, the existing site provides strong coverage approximately 1.0 miles in all directions and to non-contiguous areas to 2.0 miles from the site. This includes 1.5 miles of Route 1198. The proposed site provides similar strong coverage 1.0 miles in all directions and to non-contiguous areas to 2.0 miles. This includes 1.0 miles of Route 1198.

For high band operations, both sites provide strong coverage to non-contiguous areas 2.0 miles in all directions.

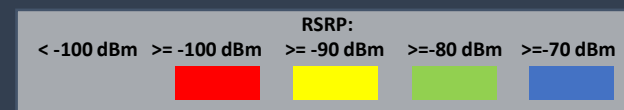
3. **CONCLUSION.** Based on the coverage comparison presented above, the proposed site provides comparable coverage to Bath County, KY due to its close proximity to the existing site. For wireless operators with antennas mounted on the existing site, the installation of additional antennas on the proposed site would be considered to be an "overbuild" or impractical given the coverage overlap.

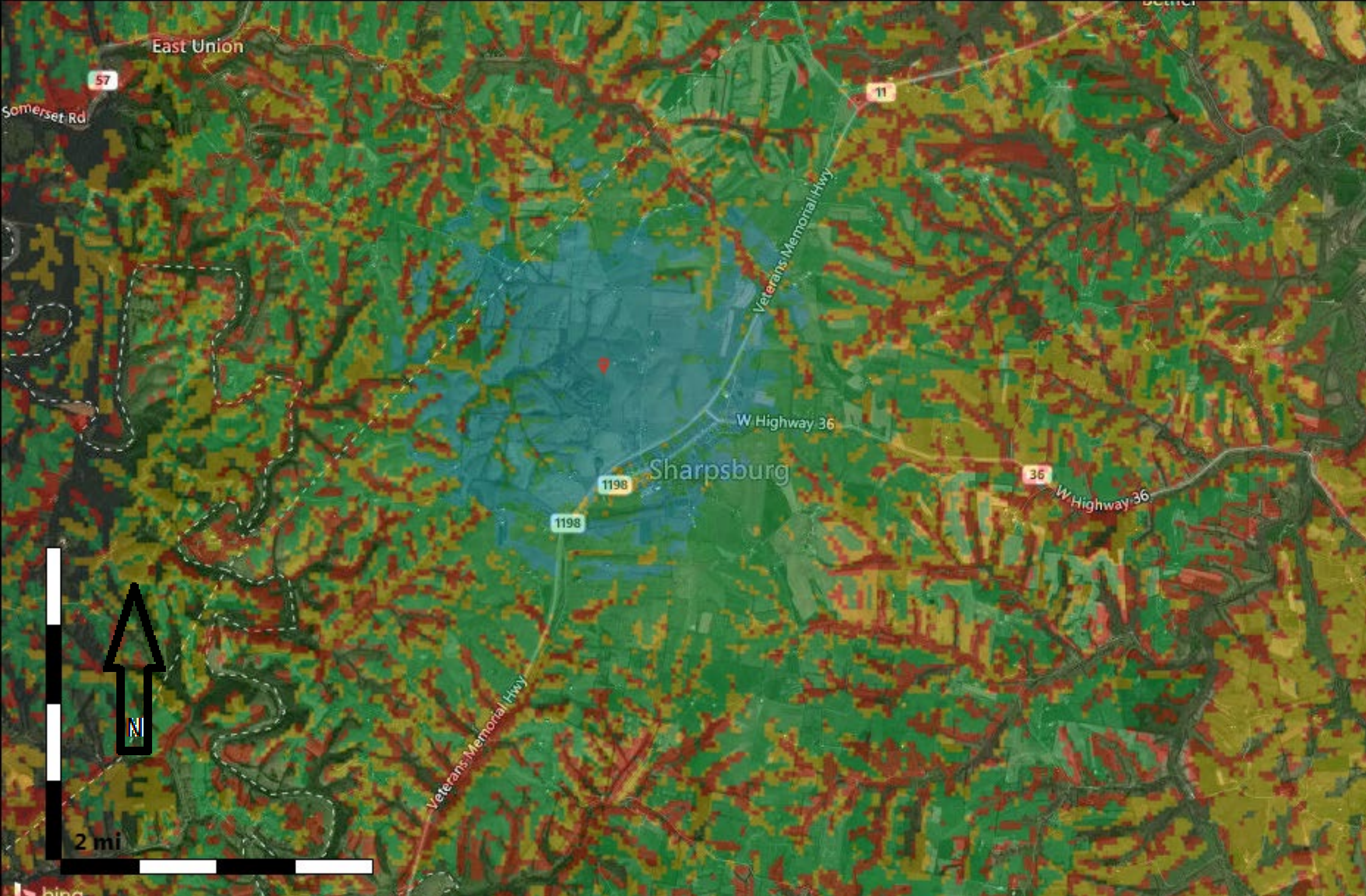


Existing Site
700 MHz Coverage

Site Name: KY12379
 Latitude: N38.206725
 Longitude: W83.930233

Antenna: 15.15 dBi Omni
 Alpha Rad Center (ft): 235
 Azimuth (Deg): 0
 ERP per RS (W): 2.0

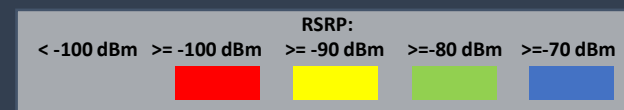


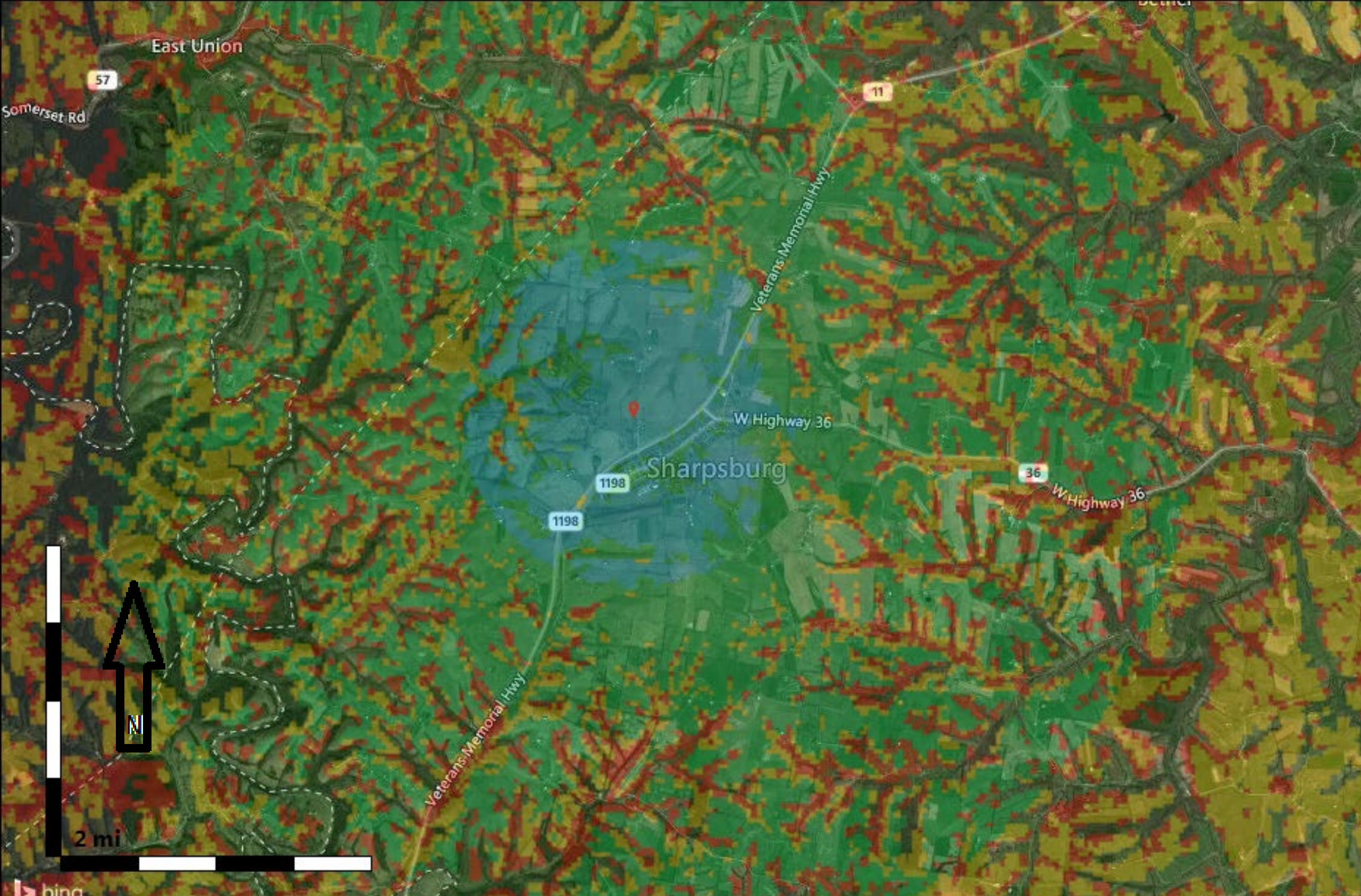


Proposed Site
700 MHz Coverage

Site Name: Proposed
 Latitude: N38.210928
 Longitude: W83.934067

Antenna: 15.15 dBi Omni
 Alpha Rad Center (ft): 250
 Azimuth (Deg): 0
 ERP per RS (W): 2.0

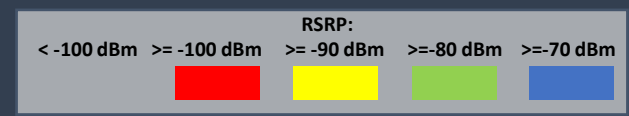


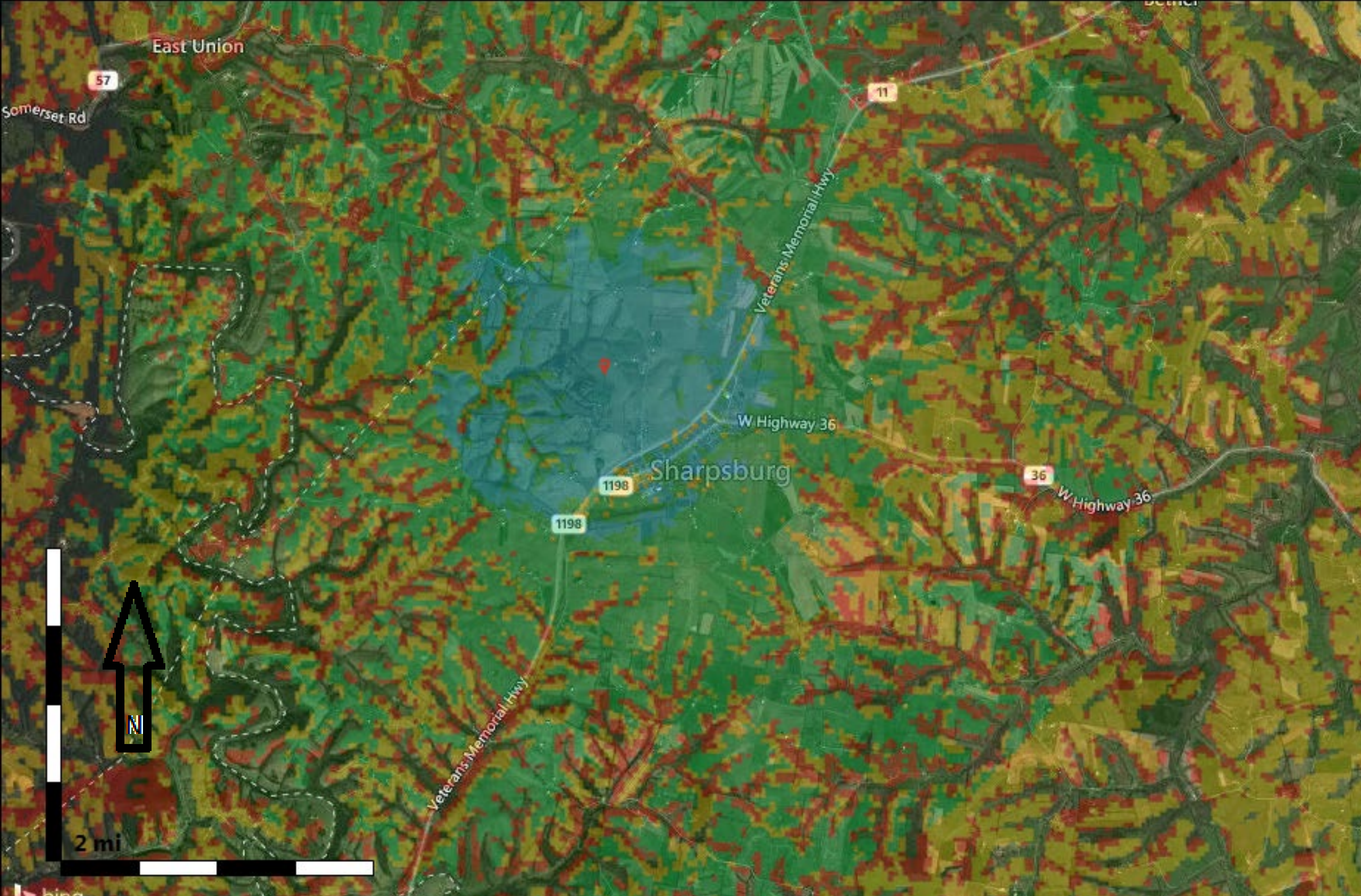


Existing Site
850 MHz Coverage

Site Name: KY12379
 Latitude: N38.206725
 Longitude: W83.930233

Antenna: 15.15 dBi Omni
 Alpha Rad Center (ft): 235
 Azimuth (Deg): 0
 ERP per RS (W): 2.0

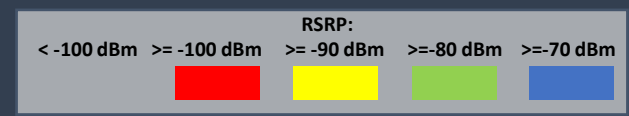


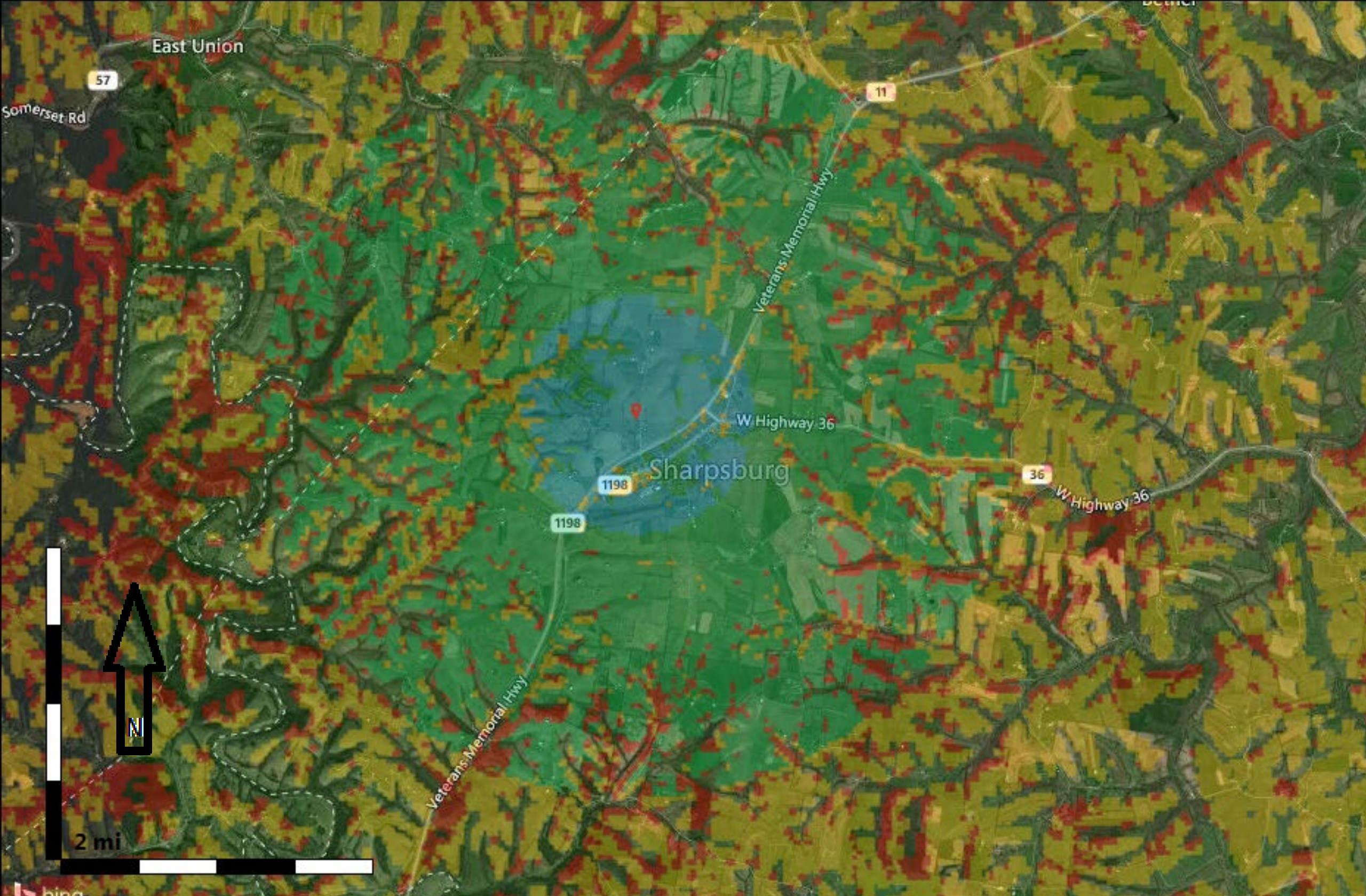


Proposed Site
850 MHz Coverage

Site Name: Proposed
 Latitude: N38.210928
 Longitude: W83.934067

Antenna: 15.15 dBi Omni
 Alpha Rad Center (ft): 250
 Azimuth (Deg): 0
 ERP per RS (W): 2.0

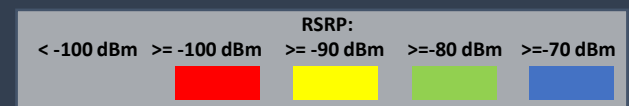


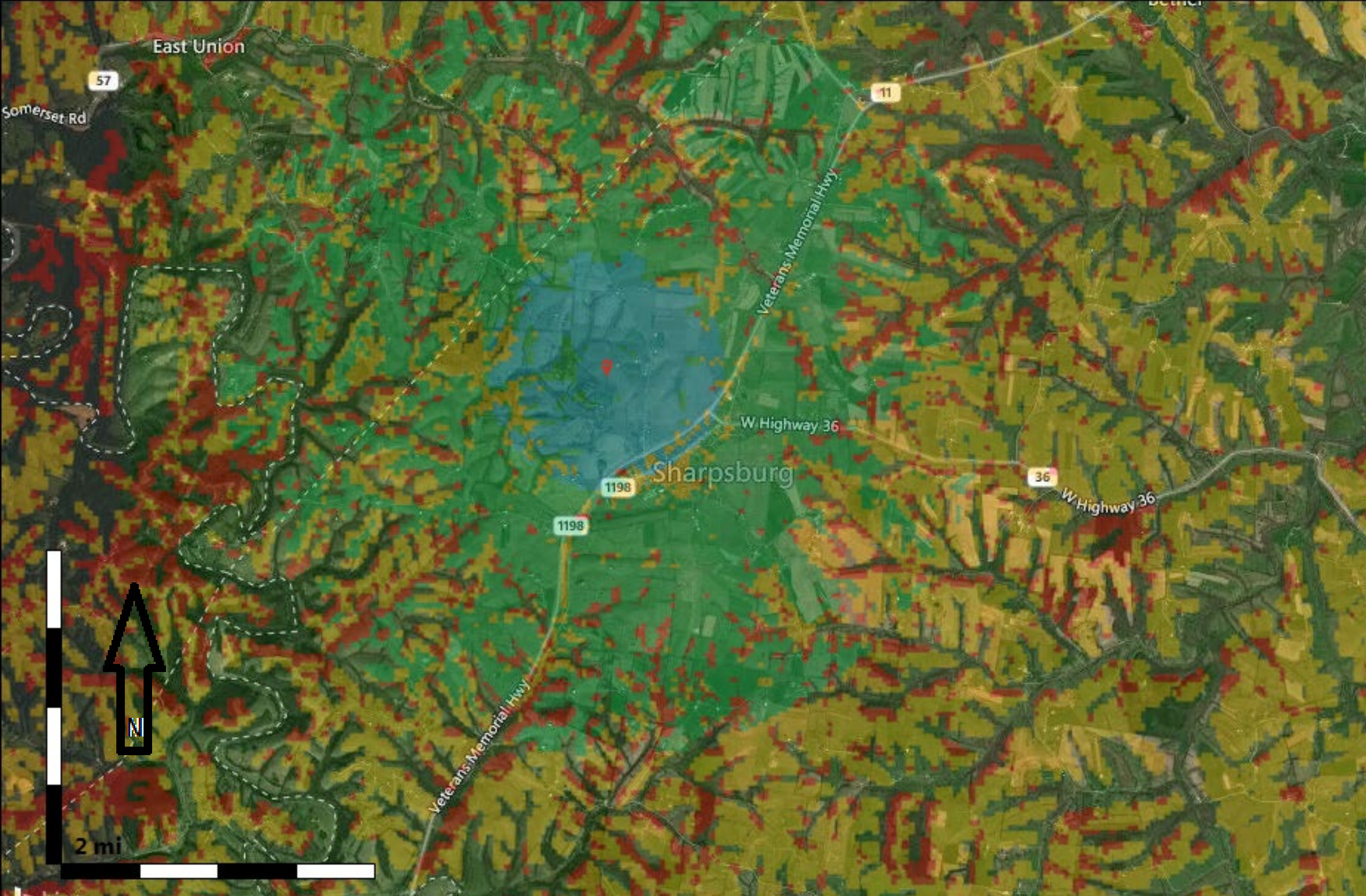


Existing Site
1900 MHz Coverage

Site Name: KY12379
 Latitude: N38.206725
 Longitude: W83.930233

Antenna: 17.15 dBi Omni
 Alpha Rad Center (ft): 235
 Azimuth (Deg): 0
 ERP per RS (W): 4.7

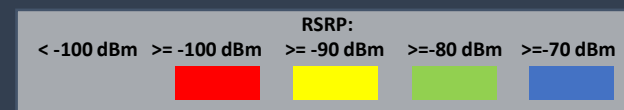


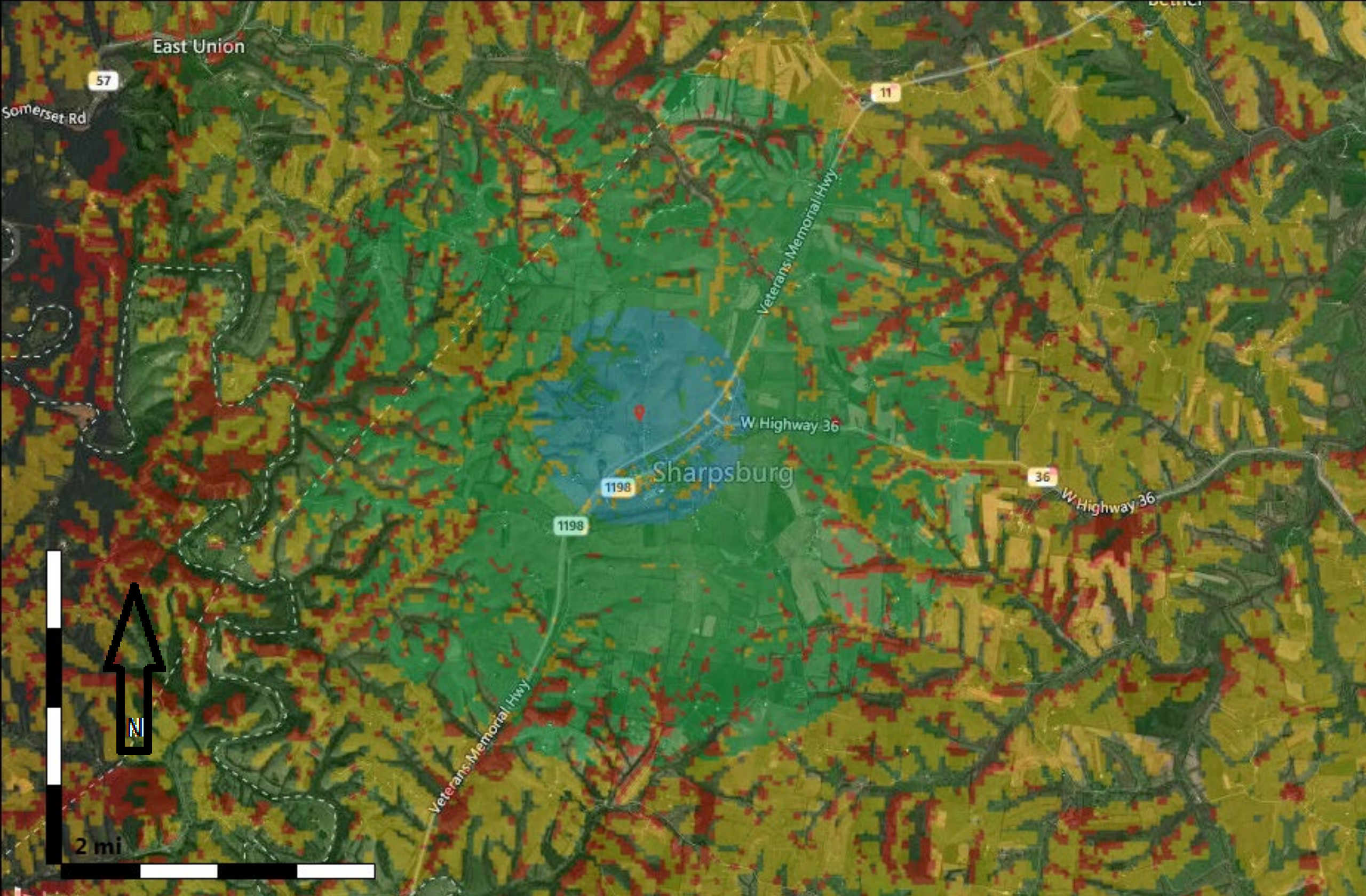


Proposed Site
1900 MHz Coverage

Site Name: Proposed
 Latitude: N38.210928
 Longitude: W83.934067

Antenna: 17.15 dBi Omni
 Alpha Rad Center (ft): 250
 Azimuth (Deg): 0
 ERP per RS (W): 4.7

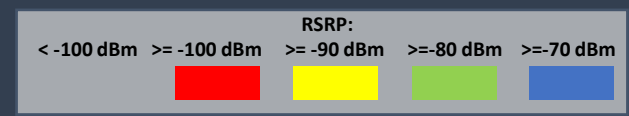


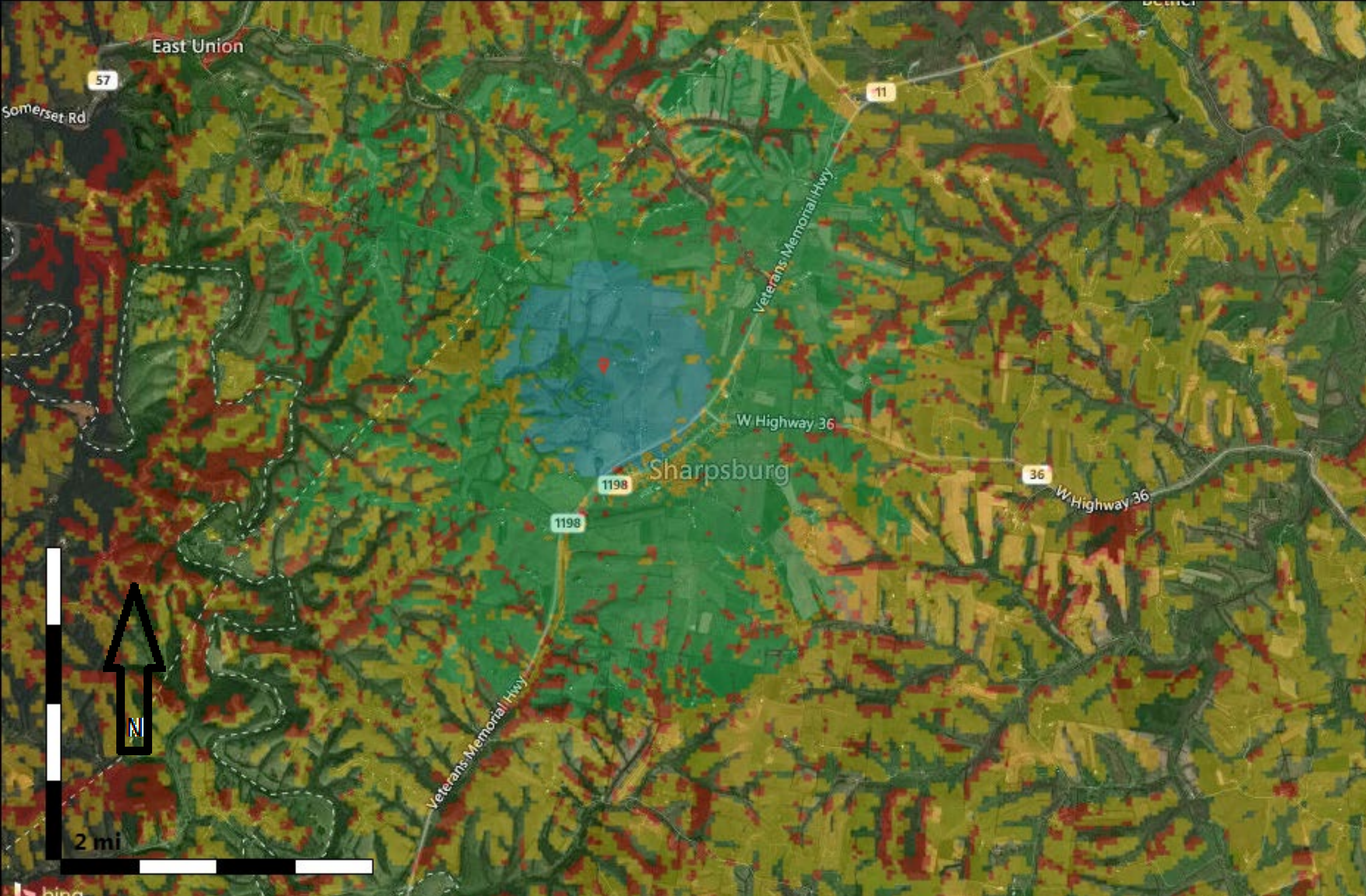


Existing Site
2100 MHz Coverage

Site Name: KY12379
 Latitude: N38.206725
 Longitude: W83.930233

Antenna: 17.15 dBi Omni
 Alpha Rad Center (ft): 235
 Azimuth (Deg): 0
 ERP per RS (W): 4.7





Proposed Site
2100 MHz Coverage

Site Name: Proposed
 Latitude: N38.210928
 Longitude: W83.934067

Antenna: 17.15 dBi Omni
 Alpha Rad Center (ft): 250
 Azimuth (Deg): 0
 ERP per RS (W): 4.7

