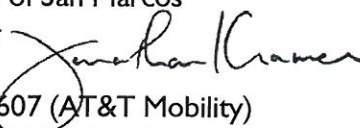


**ATTACHMENT F**  
RF Safety Evaluation

" F "

## Memorandum

To: Sean del Solar, City of San Marcos  
From: Jonathan L. Kramer   
Date: October 10, 2011  
RE: Case No. CUP 03-607 (AT&T Mobility)  
1441 North Twin Oaks Valley Road  
"Twin Oaks Golf Course"

At the direction of the City, I have reviewed the AT&T Mobility (AT&T) application to modify its existing wireless telecommunications facility at the broad leaf mono-tree located at the above referenced location, a golf course.

### **Project Description**

AT&T proposes to modify the existing site by removing 6 panel antennas, each about 4'-4" tall, and replacing them with 12 new panel antennas, each about 6'-4" tall. The new antennas are capable of supporting the current emission as well as the new Long Term Evolution ("LTE") 751 MHz band emissions.

The proposed antennas are to be mounted to the existing 33' tall existing broad leaf mono-tree at a height of 26'-3". The proposed antennas are shown in 3 sectors of 4 antennas per sector oriented towards 60° TN, 180° TN, and 300° TN.

AT&T also proposes to install 6 remote radio units, 6 tower mounted amplifiers, and 3 new DC surge suppressors to be mounted behind the proposed panel antennas.

AT&T proposes to remove the existing broad leaf branching and replace it with fuller branching to extend a minimum of 18" beyond the proposed antennas. The proposed panel antennas will also be camouflaged from view with broad leaf antenna socks.

The project does not propose to add additional equipment to the existing base telecommunications station ("BTS").

### **Project Purpose**

AT&T does disclose that the fundamental purpose of this project is to add LTE 751 MHz band operations to the existing site. The LTE band represents AT&T's merger of voice and data communications into a single, integrated high speed data stream.

AT&T's computer-projected existing coverage map (Figure I, below) tendered to the City, does not contain signal level data. Figure I does, however, contain coverage information but AT&T has not provided any information indicating



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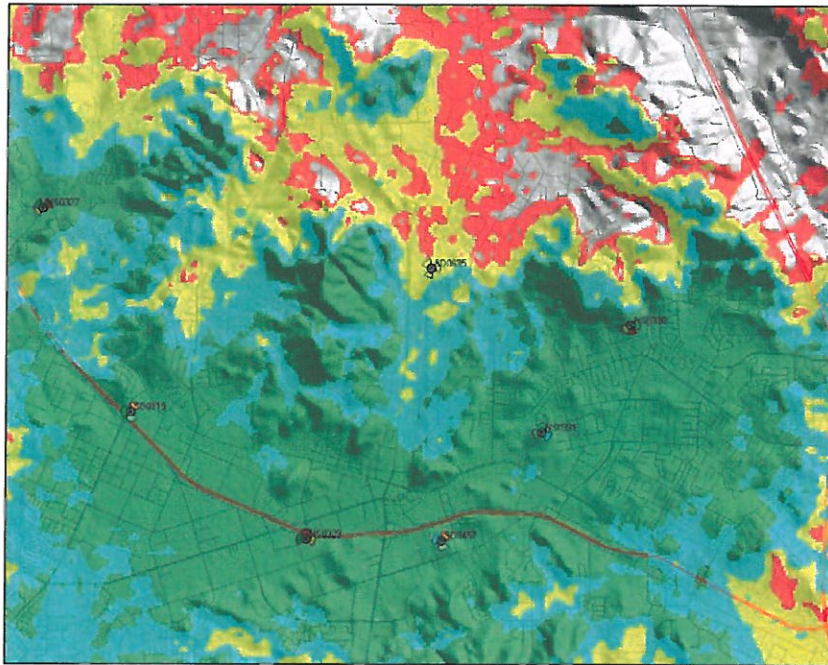
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AGENDA ITEM

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what each color on the coverage map indicates or which band(s) of service the coverage map represents. The coverage maps provided are unreliable.

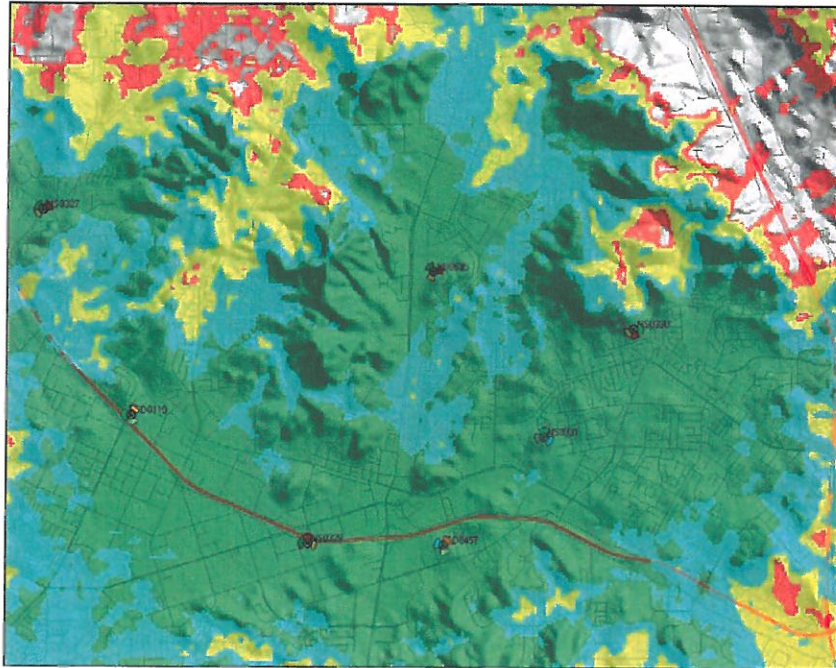


**Figure 1:** Existing signal coverage map. (Source: AT&T). See discussion below regarding the unreliability of this figure.

Although the current coverage map in Figure 1 does not indicate whether there is a lack of LTE coverage in the area (in fact, the lack of technical detail such as bands and signal levels on the map makes the map all but meaningless from a RF engineering viewpoint), I am aware that AT&T is just starting to deploy sites on the 751 MHz LTE band, therefore the current project is consistent with an initial build-out for the new LTE network. Accordingly, it is my current opinion that there is a gap of LTE-band coverage in the proposed area. I do not express an opinion as to the signal coverage levels for any other bands of service.

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**Figure 2:** Projected signal coverage with proposed site and other sites proposed for the San Marcos area. (Source: AT&T). See discussion below regarding the unreliability of this figure.

Figure 2 depicts what AT&T purports to be the proposed coverage with the proposed site online. However, like Figure 1, the coverage map in Figure 2 does not indicate which bands of service or what signal levels are represented, and is, as is Figure 1, meaningless. Therefore, I am unable to form a reasoned conclusion as to the signal coverage provided by the proposed project as AT&T has provided no technical basis for such a conclusion.

### ***Physical Design Considerations***

The proposed modification to the wireless telecommunications facility will alter the visual appearance of the broad leaf mono-tree from its current state because the new LTE antennas are substantially larger than the existing panel antennas.

To mitigate the visual impact of the proposed larger antennas, AT&T proposes to remove the existing broad leaf branching and replace it with fuller branching to extend a minimum of 18" beyond the proposed antennas. The proposed panel antennas will also be camouflaged from view with broad leaf antenna socks. These upgraded elements should be confirmed by conditions of approval in any permit granted by the City.

The two existing GPS antennas are mounted to the roof of the BTS enclosure and are completely visible above the BTS enclosure. Visible GPS antennas in this setting are aesthetically unappealing. I recommend that the City require that AT&T relocate the antennas to the mono-broadleaf tree somewhere completely hidden by the proposed new branch canopy, or by mounting them somewhere within the BTS enclosure below the roof (with selected roof tiles replaced with RF transparent tiles just above the relocated GPS antennas).

I note that AT&T does not disclose any new equipment or racks being added within its existing BTS building. The addition of LTE will necessitate the installation of new equipment. The City may wish to direct AT&T to show the relevant details on its site plans.

#### ***RF Safety Considerations***

The FCC completely occupies the field as to setting RF safety standards in the United States. The City is not permitted to set its own standards regardless of whether higher, lower, or even the same as the FCC's standards. The Commission does, however, permit the City to determine whether a proposed wireless project meets the required FCC 47 CFR § 1.1307 *et seq.* (the "FCC rules") and FCC Office of Engineering and Technology Bulletin 65 ("OET 65") RF safety requirements.

Under the FCC rules, certain types of wireless projects are deemed to be "categorically excluded" thus not subject to further RF evaluation under the rules due to identified factors including whether the antenna supporting structure is not a building or shared to perform some other function and the lowest portion of the transmitting antenna is at least 10 meters above ground.

The proposed project does not qualify for categorical exclusion under the FCC rules because it is mounted to a structure that is not a building, not shared to perform some other function, and but the antennas are not at least 10 meters AGL. An analysis of the RF emissions is necessary to determine whether a project design will comply with the FCC rules. If no RF emissions data were reported in the application, a reviewer cannot determine whether a facility will comply with the FCC rules.

AT&T has submitted third party RF emissions report by Telnet dated August 8, 2011. The emissions data in the Telnet report is sufficient to perform an independent analysis of the proposed emissions. Based on the frequency and proposed power to be emitted from AT&T's transmitting antennas, a controlled

access zone of just over 17.8 feet will extend outward from each transmitting antenna.

The existence of a controlled zone does not mean that the project violates the FCC rules; rather, it merely requires that the wireless carrier take affirmative steps to restrict access to the controlled zones. In this case, the controlled zones will be in inaccessible airspace at the same level as the proposed antennas. Although the airspace is inaccessible to the general population, the antennas will be accessible by personnel that are maintaining the antennas, thus under the FCC rules, the carrier must provide notice signage to comply with the rules.

To comply with the existing FCC OET Bulletin 65 rules regarding RF safety, I recommend the City condition the project as follows:

1. AT&T shall place and maintain permanent RF Notice signs in English and Spanish at the BTS access door. The signage must be compliant with FCC OET Bulletin 65 or ANSI C95.2 for color, symbol, and content conventions. The RF signage shall at all times provide a working local or toll-free telephone number to its network operations center, and such telephone number shall be able to reach a live person who can exert transmitter power-down control over this site as required by the FCC. The location of the sign must ensure that anyone approaching may clearly see the sign before entering the controlled zone.

If AT&T agrees to the condition just stated, there will be no RF emissions basis to deny or further condition the project.

/jlk