Attachment F – Photo-Simulations, Geographic Service Area Map and Alternative Site Analysis

ITEM 13-1—13-3: Alternative Site Analysis

Item 13-1—Coverage Justification: this AT&T site provides coverage along the I-15 corridor and Deer Springs Road intersection, which is a high-traffic area (q.v., Figure 1, green shading). To lose this site, AT&T would have a significant drop in coverage along both this portion of I-15 and the Deer Springs on-/off-ramps. For AT&T customers, they would experience a high volume of dropped calls, as the carrier signal would not have a site to hand off the call from adjacent sites in all directions.

Item 13-2—Nearby Sites: following are the closest sites to the subject site, and the reason why they are non-viable for a collocation for AT&T and Sprint, the two carriers located on this tower. Figure 1 illustrates the approximate location of these nearest sites.

In general, it should be noted that carrier signals propagate via line-of-site radio signals, which inherently have a limited broadcast range. In the most optimal environment for RF propagation (flat terrain with no physical barriers such as two-story buildings, sparse foliage, no other radio signals interfering, low barometric pressure and low humidity, and low call/data traffic), an average site can cover upwards of one mile. With each mitigating factor, the distance a signal can carry begins to diminish.

1. **Crown Tower**—too far away at 1.60 miles, to provide the coverage footprint that AT&T and Sprint are covering here (the intersection of Deer Springs and I-15 north- and south-bound. The signals would also experience physical interference from the topography and foliage in the area.
2. **Sprint/T-Mobile Collocation**—both carriers have a site here, which provides coverage to the residents in the northeastern part of Escondido, and interconnects with the subject site. It is too far away at 1.20 miles to meet the coverage objective, given the topography and landscape.
3. **Sprint Site**— Sprint has an existing site at this location, providing coverage along the Deer Springs interior, and interconnects to the Sprint site at the subject location. Topography and landscape (mature trees) prevent this location from covering the Deer Springs/I-15 intersectino.
4. **SBA Tower**—too far south (1.2 miles) to interconnect with the nearby Sprint/AT&T sites respectively, and would not cover the Deer Springs/I-15 intersection.
5. **Verizon Site**—too far away at .80 miles, given the hilly terrain/topography, and the tower is loaded with panel antennas and microwave dishes; there is no space on the existing tower. Regardless, the centerline for the antennas would be far too low and the distance too great to propagate to the coverage objective.

DEER SPRINGS CROWN CASTLE WIRELESS TELECOMMUNICATION FACILITY SCOPING LETTER
RECORD ID: PDS2018-ZAP-99-023W1; **PROJECT ADDRESS:** 2691 MESA ROCK ROAD, ESCONDIDO, CA 92025; **APN:** 186-611-20

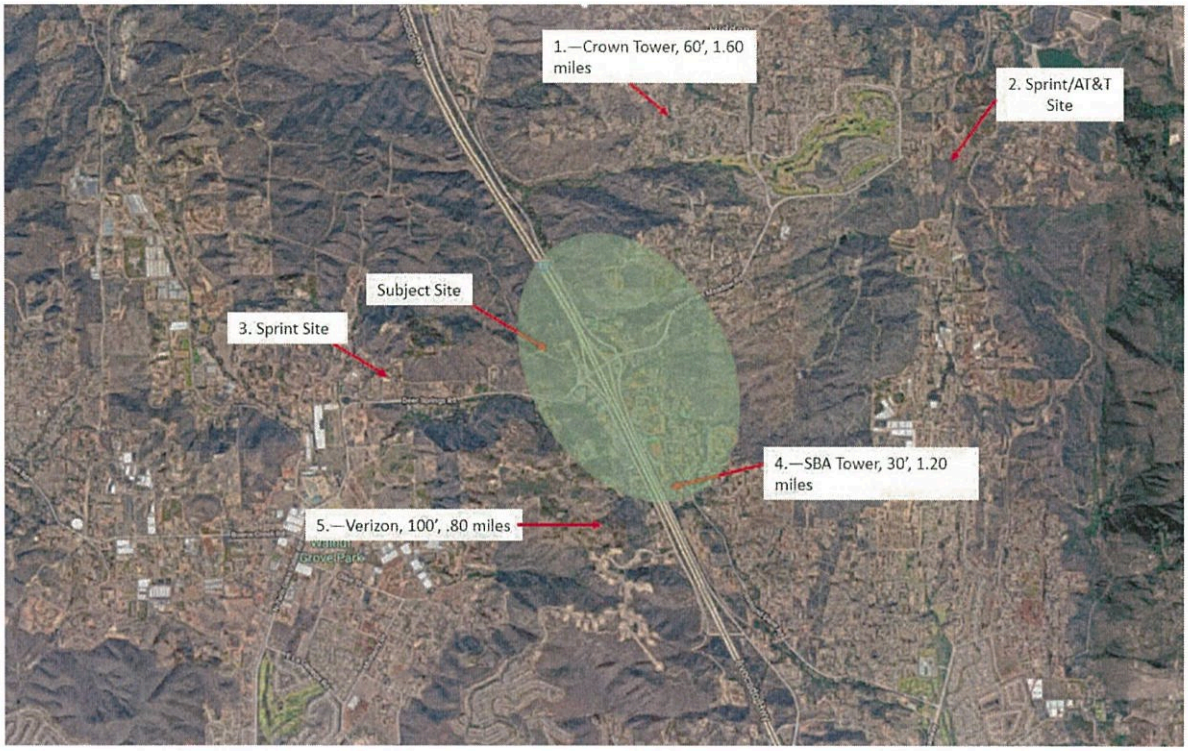


Figure 1

Item 13-3—Preferred versus Non-Preferred Zones: Per the scoping letter, this item is informational only and does not require a response/correction.

DEER SPRINGS CROWN CASTLE WIRELESS FACILITY FIRST ITERATION LETTER
RECORD ID: PDS2018-ZAP-99-023W1; **PROJECT ADDRESS:** 2691 MESA ROCK ROAD, ESCONDIDO, CA 92025; **APN:** 186-611-22 & 23

Item 14-2: Revised AT&T GSA

CAL00109 Coverage plots at 35,45 and 55 ft.
FA# 10086194 = BUN# 845113

October, 30 2018

Jorge Melchor

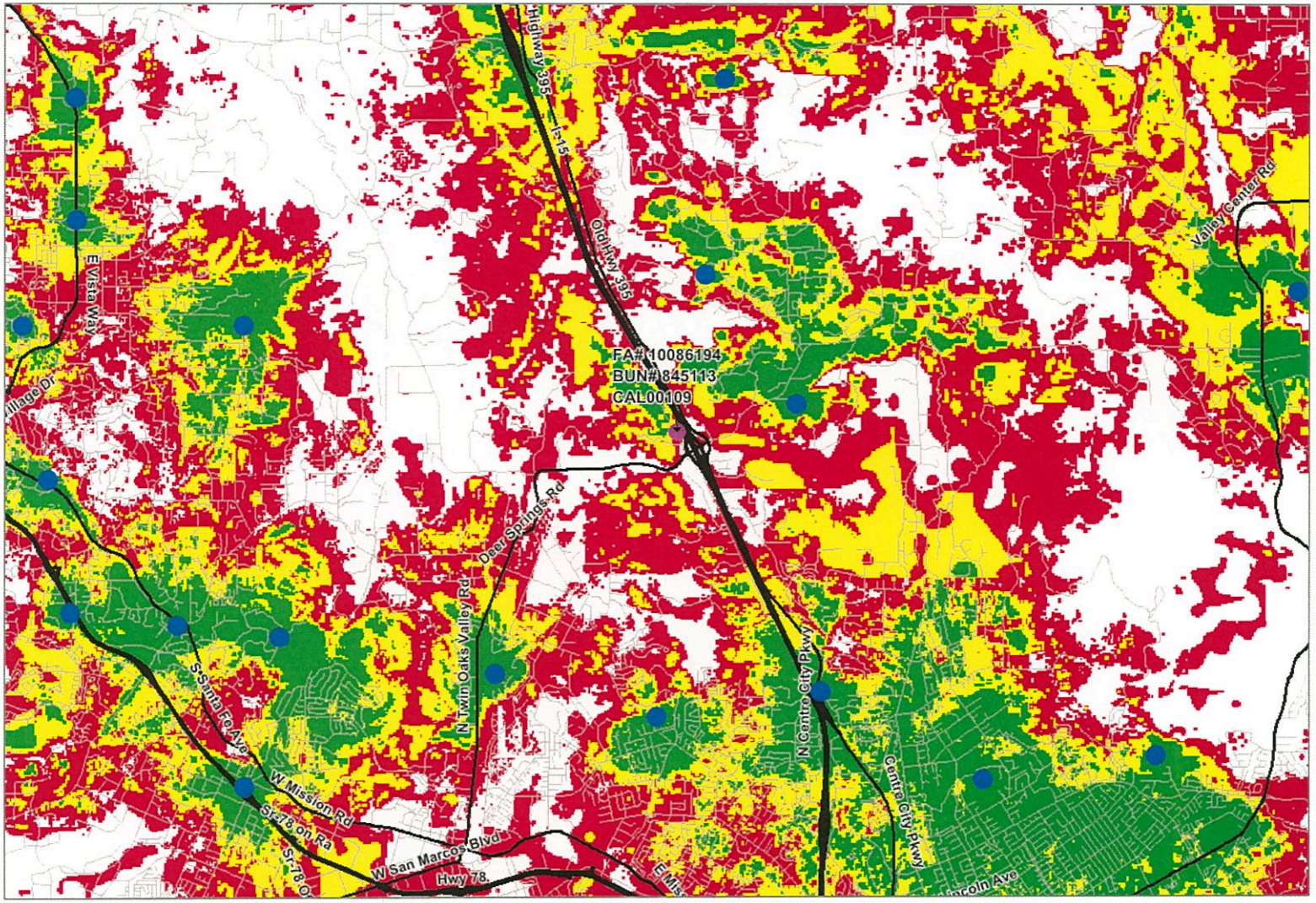
Coverage impact

Zone	Prediction	Legend	Reference area (mi²)	Baseline @ 55 ft	Rad center @45 feet	Delta 55 to 45	Degradation % 55 to 45	Rad center @35	Delta 55 to 35	Degradation % 55 to 35	Description
Focus Zone	RSRP (dBm) - Indoor		27.28	68.64	68.58	-0.06	0%	68.51	-0.13	-0.2%	
Focus Zone	RSRP (dBm) - Indoor	Good	27.28	9.58	9.45	-0.13	-1%	9.32	-0.26	-3%	RSRP is a measure or the signal level provided at a certain area or location. In this table it can be observed that the overll coverage gets reduced by 0.2% (0.13 square miles) when the rad center gets reduced from 55ft to 35ft. In additon please notice how the coverage that is considered good gets reduced by 3% when changing the rad center 55 to 35ft
Focus Zone	RSRP (dBm) - Indoor	Fair	27.28	28.37	28.26	-0.11	0%	28.14	-0.23	-1%	
Focus Zone	RSRP (dBm) - Indoor	Poor	27.28	68.64	68.58	-0.06	0%	68.51	-0.13	0%	

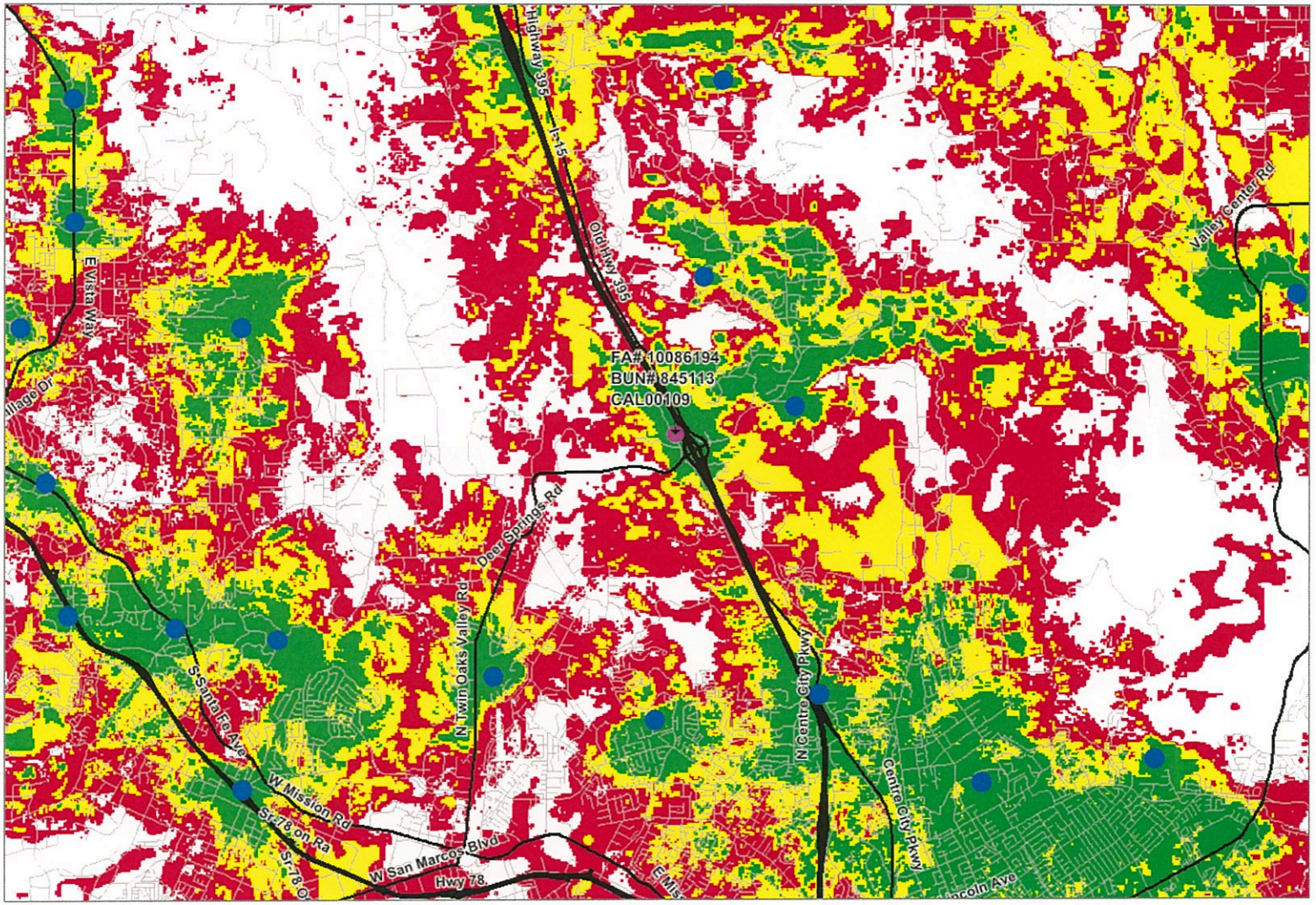
Throughput impact (speeds)

Zone	Prediction	Legend	Reference area (mi²)	Baseline @ 55 ft	Rad center @45 feet	Delta 55 to 45	Degradation % 55 to 45	Rad center @35	Delta 55 to 35	Degradation % 55 to 35	Description
Focus Zone	SINR (DL) (dB)		27.28	95.17	95.18	0.01	0%	95.19	0.02	0%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=15	27.28	0.31	0.3	-0.01	-3%	0.29	-0.02	-6%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=10	27.28	2.05	1.99	-0.06	-3%	1.93	-0.12	-6%	SINR is an indirect measure of throughput. When SINR degrades customers will experience less speed in their devices. Please notice that the best levels of throughput get degraded by 6% when the rad center is reduced from 55 to 35ft. Also notice how the bad levels of SINR increase by 0.02%
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=5	27.28	12.18	12.18	0	0%	12.11	-0.07	-1%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=2	27.28	20.83	20.87	0.04	0%	20.87	0.04	0%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=0	27.28	29.98	30.1	0.12	0%	30.14	0.16	1%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=-2	27.28	42.22	42.31	0.09	0%	42.35	0.13	0%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=-5	27.28	64.62	64.64	0.02	0%	64.72	0.1	0%	
Focus Zone	SINR (DL) (dB)	PDSCH C/(I+N) Level (DL) (dB) >=-10	27.28	95.17	95.18	0.01	0%	95.19	0.02	0.02%	

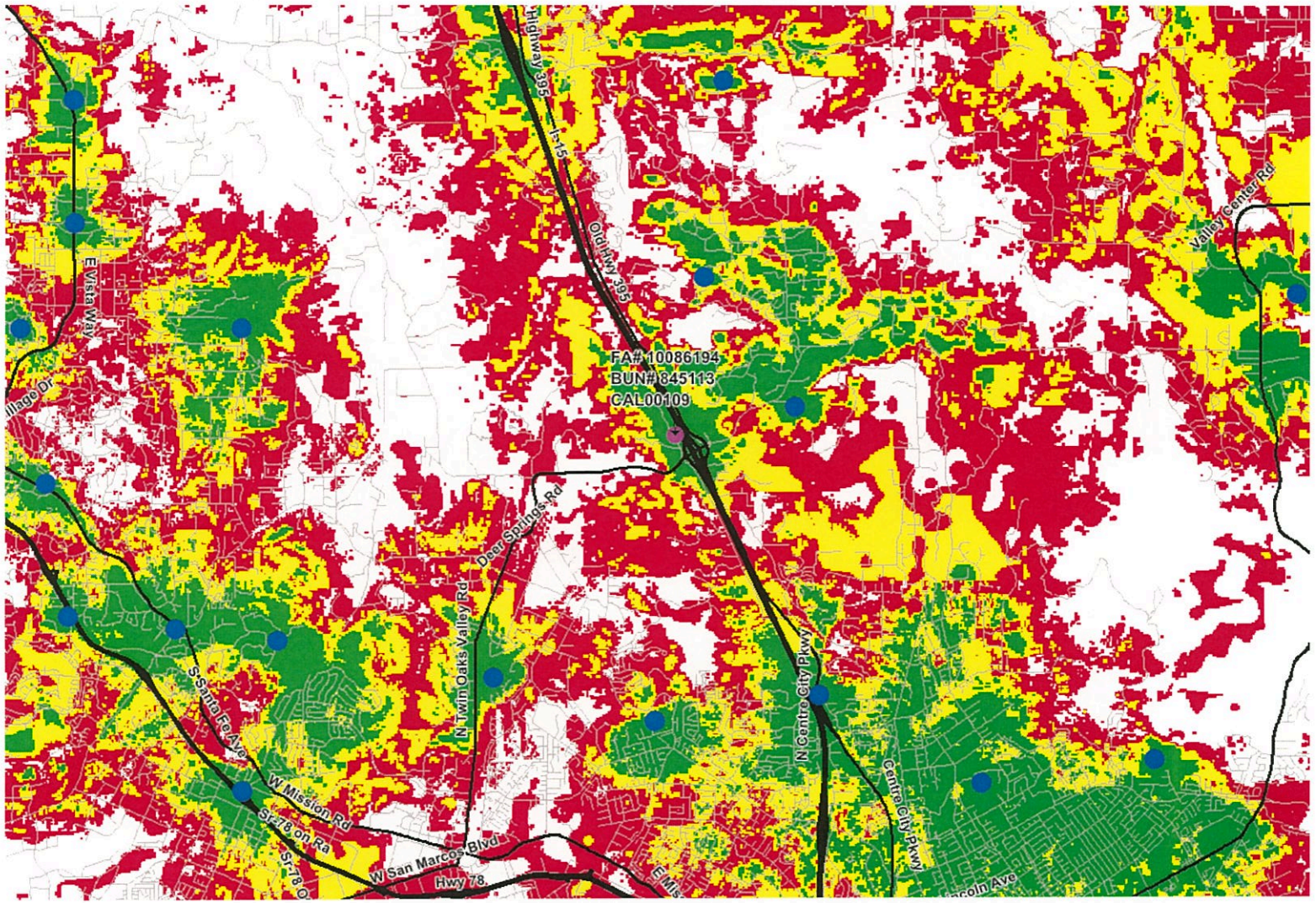
Coverage Without CAL00109



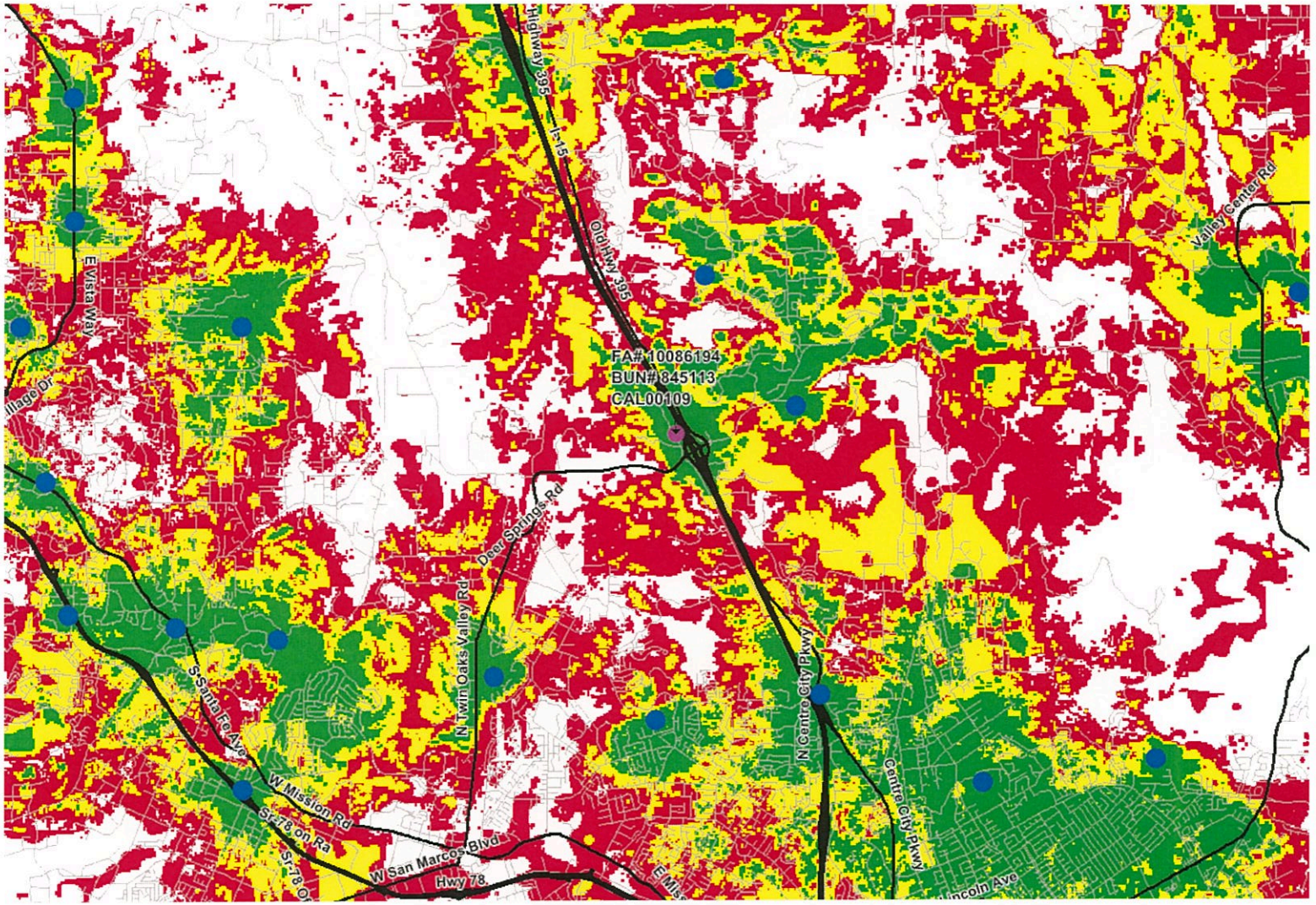
Coverage With CAL00109 @35ft rad center



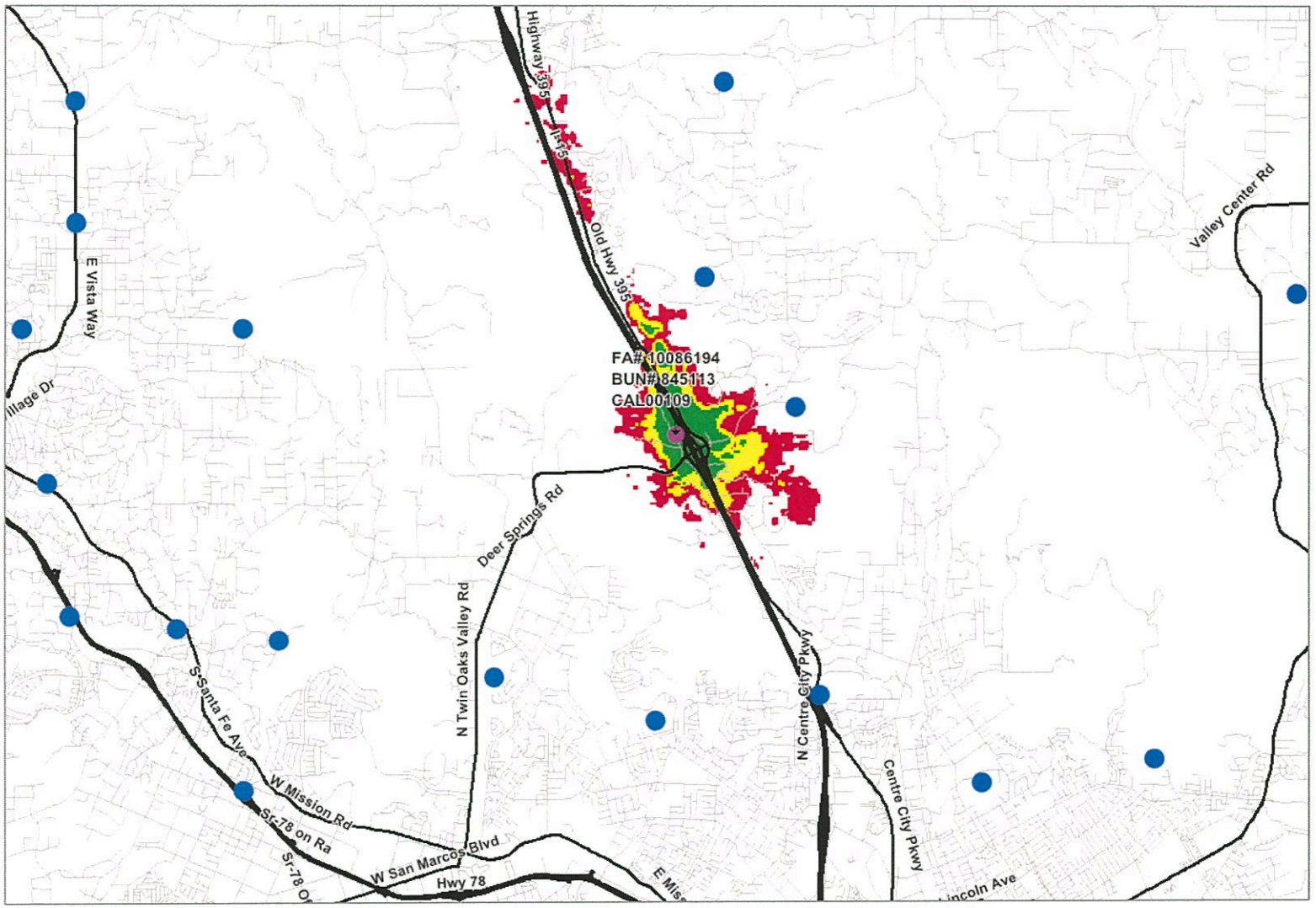
Coverage With CAL00109 @45ft rad center



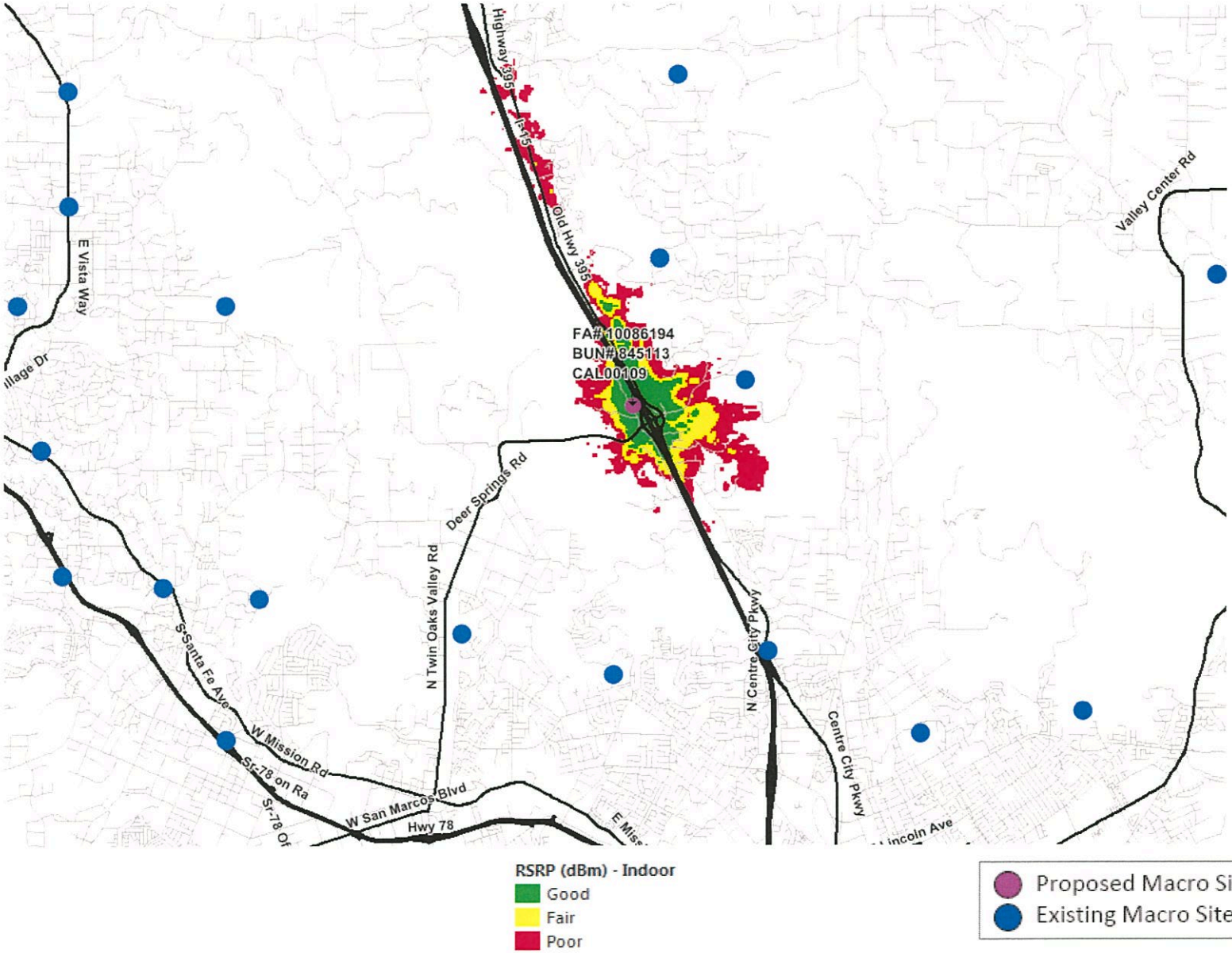
Coverage With CAL00109 @55ft rad center



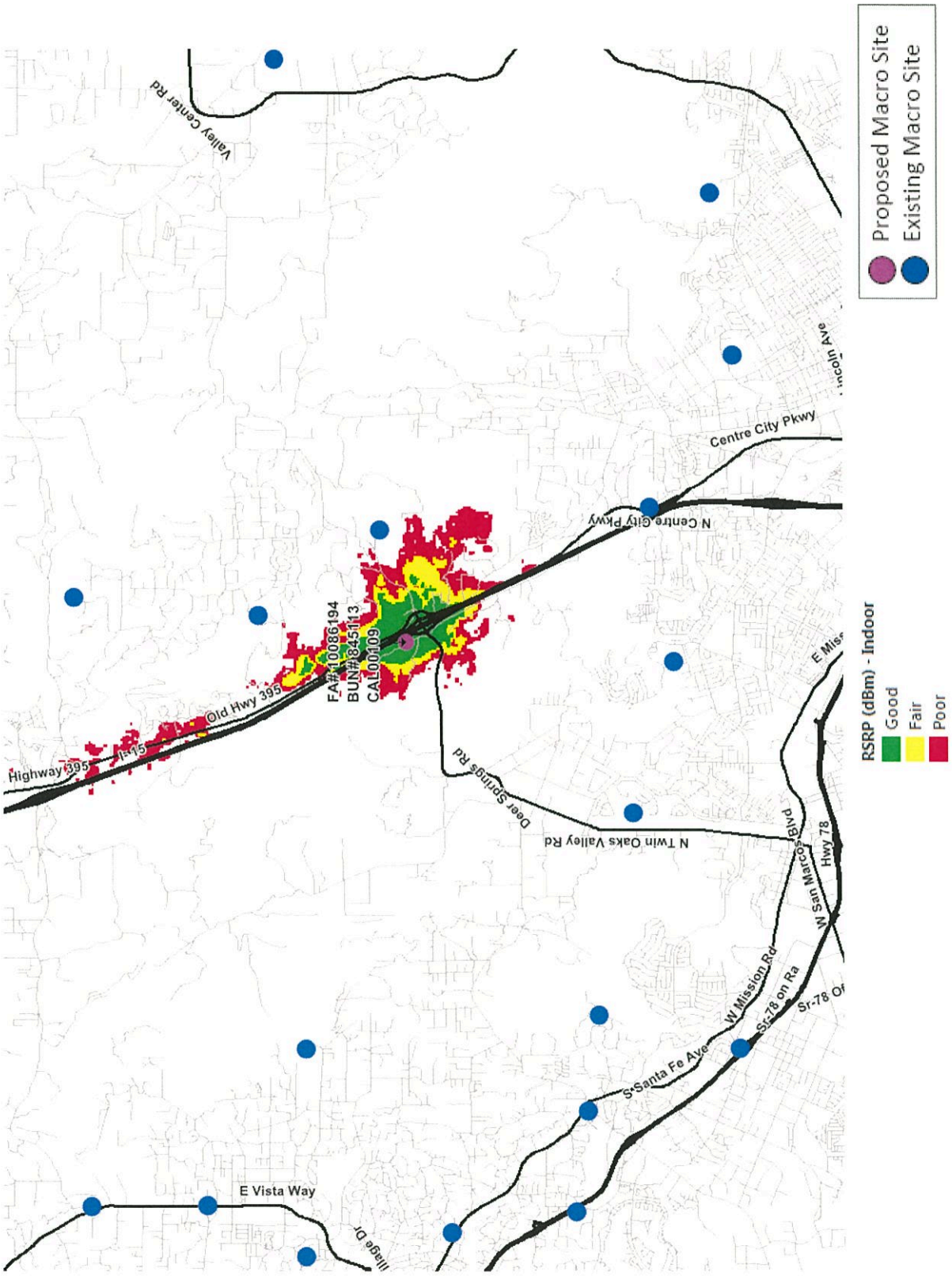
Single site coverage for CAL00109 @35ft rad center



Single site coverage for CAL00109 @45ft rad center



Single site coverage for CAL00109 @65ft rad center



ITEM 13-1—13-3: Alternative Site Analysis

Item 13-1—Coverage Justification: this AT&T site provides coverage along the I-15 corridor and Deer Springs Road intersection, which is a high-traffic area (q.v., Figure 1, green shading). To lose this site, AT&T would have a significant drop in coverage along both this portion of I-15 and the Deer Springs on-/off-ramps. For AT&T customers, they would experience a high volume of dropped calls, as the carrier signal would not have a site to hand off the call from adjacent sites in all directions.

Item 13-2—Nearby Sites: following are the closest sites to the subject site, and the reason why they are non-viable for a collocation for AT&T and Sprint, the two carriers located on this tower. Figure 1 illustrates the approximate location of these nearest sites.

In general, it should be noted that carrier signals propagate via line-of-site radio signals, which inherently have a limited broadcast range. In the most optimal environment for RF propagation (flat terrain with no physical barriers such as two-story buildings, sparse foliage, no other radio signals interfering, low barometric pressure and low humidity, and low call/data traffic), an average site can cover upwards of one mile. With each mitigating factor, the distance a signal can carry begins to diminish.

1. **AT&T (Crown Tower)**—near the subject site, this 30' high monopole is of insufficient height for additional carriers to locate. AT&T requires 10'-15' separation from its competition (to avoid RF interference), which would put a second carrier at a centerline of approximately 15', and a third carrier would be impossible.

   To combine both towers into one taller tower that could support 3 carriers would require an overall tower height of 80' or more, given the coverage objectives of all 3 carriers and their need for the existing respective centerlines and need to interconnect with neighboring sites. This would create a starker visual impact to the area than the existing two towers. In addition, this second tower is within a specific Crown portfolio for which there are convoluted rights involving multiple parties not controlled by Crown. Finally, the underlying landlord has plans to develop these parcels and is not willing to give up additional land to accommodate a new tower.
2. **Crown Tower**—too far away at 1.60 miles, to provide the coverage footprint that AT&T and Sprint are covering here (the intersection of Deer Springs and I-15 north- and south-bound. The signals would also experience physical interference from the topography and foliage in the area.
3. **Sprint/AT&T**—both carriers have a site here, which provides coverage to the residents in the northeastern part of Escondido, and interconnects with the subject site. It is too far away at 1.20 miles to meet the coverage objective, given the topography and landscape.
4. **SBA Tower**—too far south (1.2 miles) to interconnect with the nearby Sprint/AT&T sites respectively, and would not cover the Deer Springs/I-15 intersection.

5. **Verizon Site**—too far away at .80 miles, given the hilly terrain/topography, and the tower is loaded with panel antennas and microwave dishes; there is no space on the existing tower. Regardless, the centerline for the antennas would be far too low and the distance too great to propagate to the coverage objective.
6. **Sprint Site**— Sprint has an existing site at this location, providing coverage along the Deer Springs interior, and interconnects to the Sprint site at the subject location. Topography and landscape (mature trees) prevent this location from covering the Deer Springs/I-15 intersection.

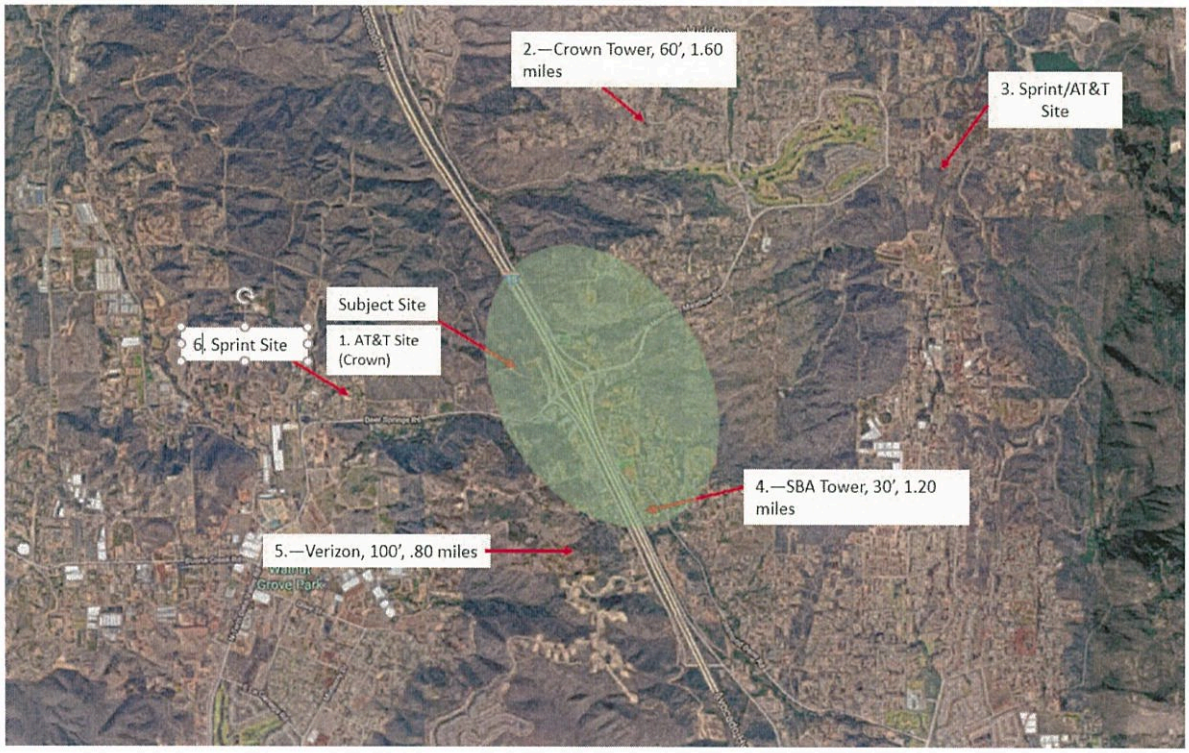


Figure 1

Item 13-3—Preferred versus Non-Preferred Zones: Per the scoping letter, this item is informational only and does not require a response/correction.

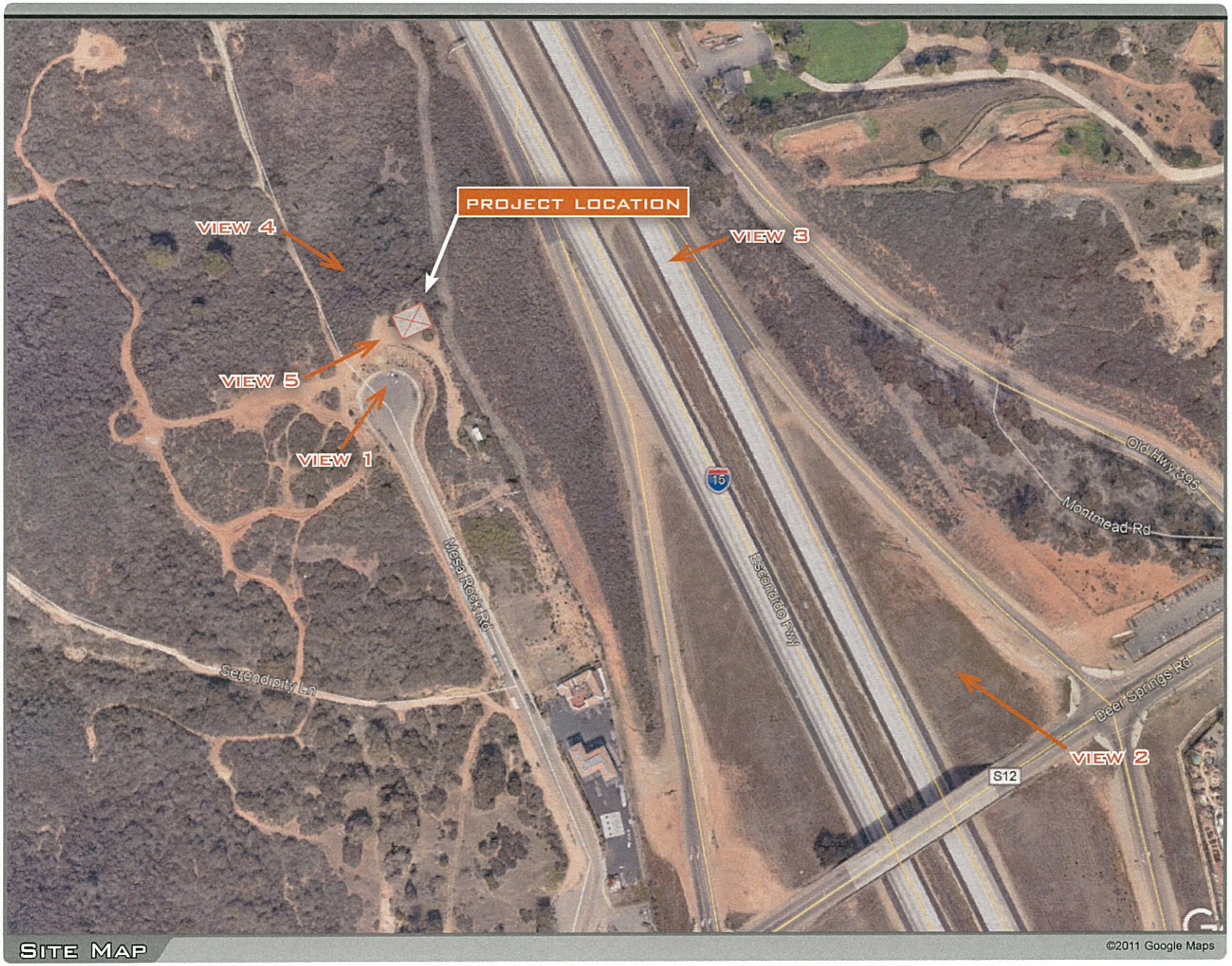
CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK RD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims



SITE MAP

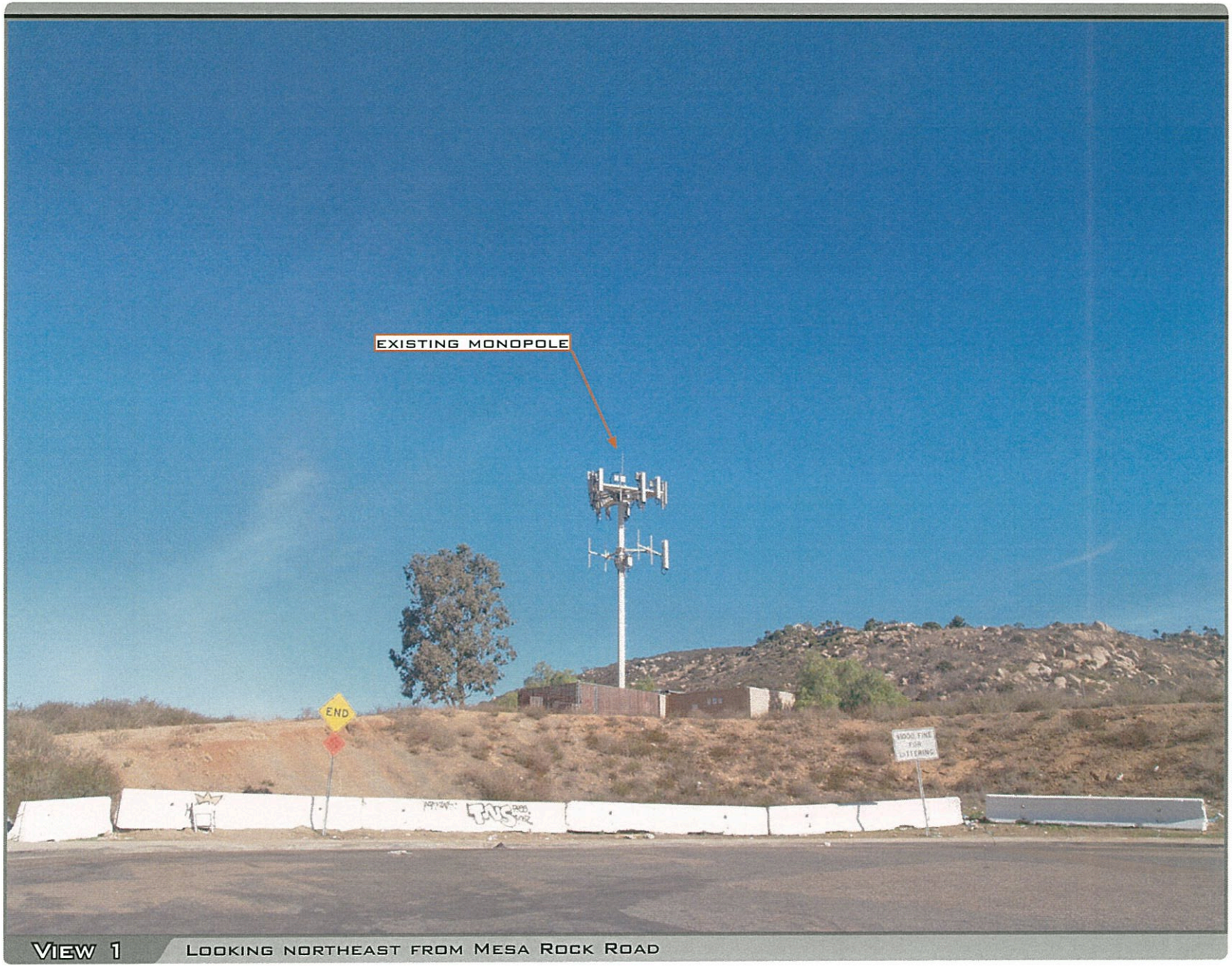
CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK RD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims



VIEW 1 LOOKING NORTHEAST FROM MESA ROCK ROAD

CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK RD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 2 LOOKING NORTHWEST FROM DEER SPRINGS ROAD

CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK RD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 3 LOOKING SOUTHWEST FROM I-15

CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK RD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 4 LOOKING SOUTHEAST FROM ADJACENT ACCESS ROAD

CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK RD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 5 LOOKING NORTHEAST FROM MESA ROCK ROAD

CROWN CASTLE

845113

DEER SPRINGS

26915 MESA ROCK ROAD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 1

EXISTING

PROPOSED LOOKING NORTHEAST FROM MESA ROCK ROAD

ACCURACY OF PHOTO SIMULATION BASED UPON INFORMATION PROVIDED BY PROJECT APPLICANT.

CROWN CASTLE

845113

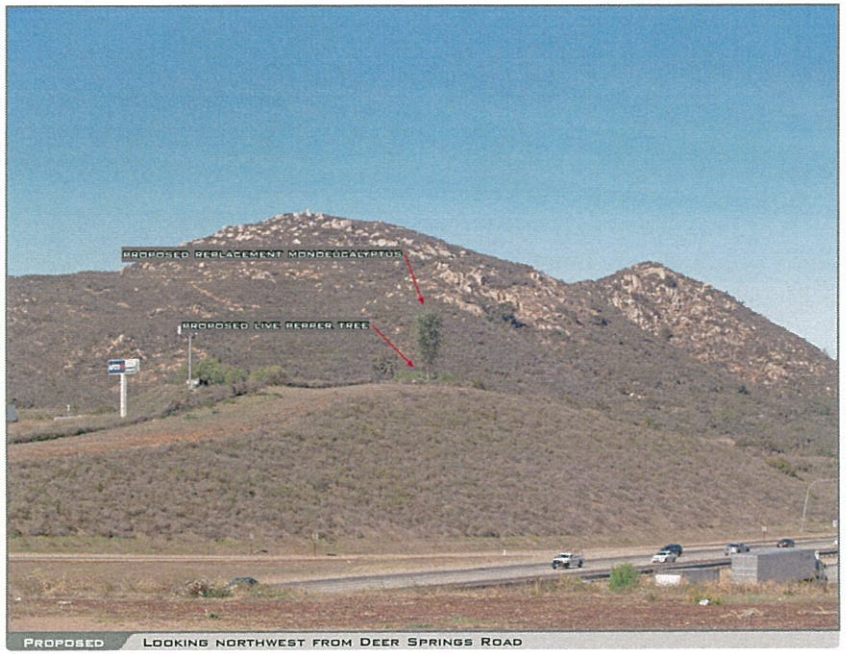
DEER SPRINGS

26915 MESA ROCK ROAD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 2

EXISTING



PROPOSED LOOKING NORTHWEST FROM DEER SPRINGS ROAD

ACCURACY OF PHOTO SIMULATION BASED UPON INFORMATION PROVIDED BY PROJECT APPLICANT.

CROWN CASTLE

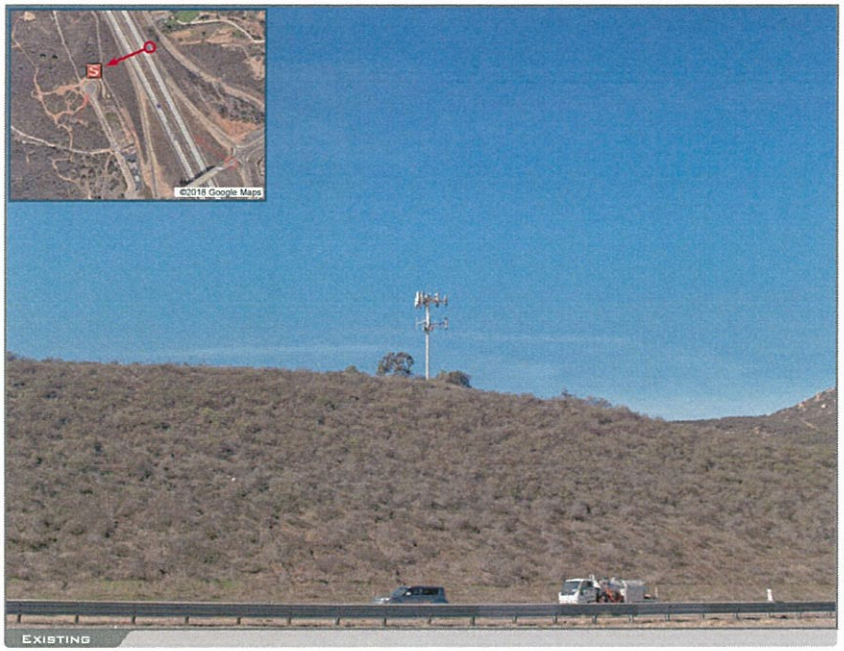
845113

DEER SPRINGS

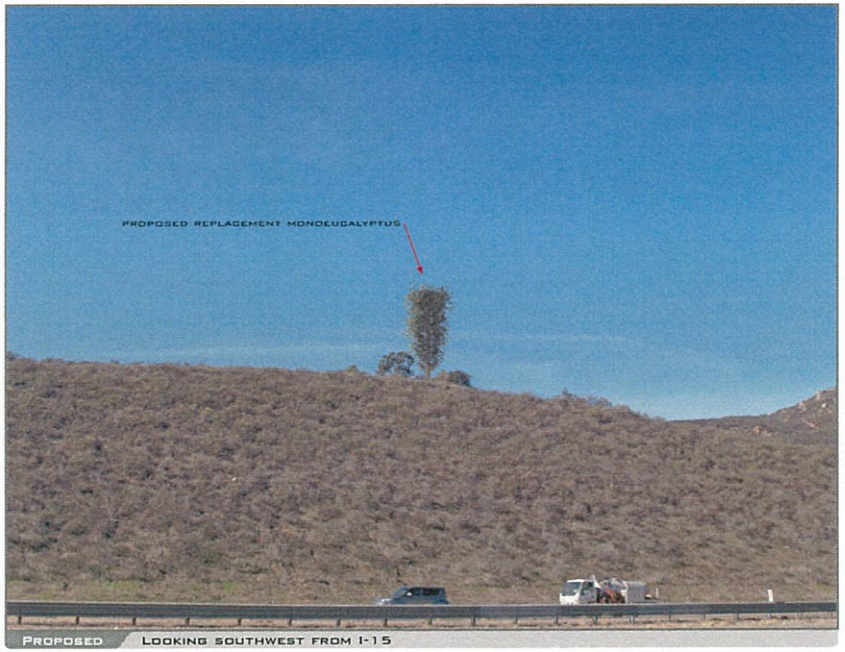
26915 MESA ROCK ROAD ESCONDIDO CA 92026

ARTISTIC engineering
AEsims.com
877.9AE.sims

VIEW 3



EXISTING



PROPOSED LOOKING SOUTHWEST FROM I-15

ACCURACY OF PHOTO SIMULATION BASED UPON INFORMATION PROVIDED BY PROJECT APPLICANT.