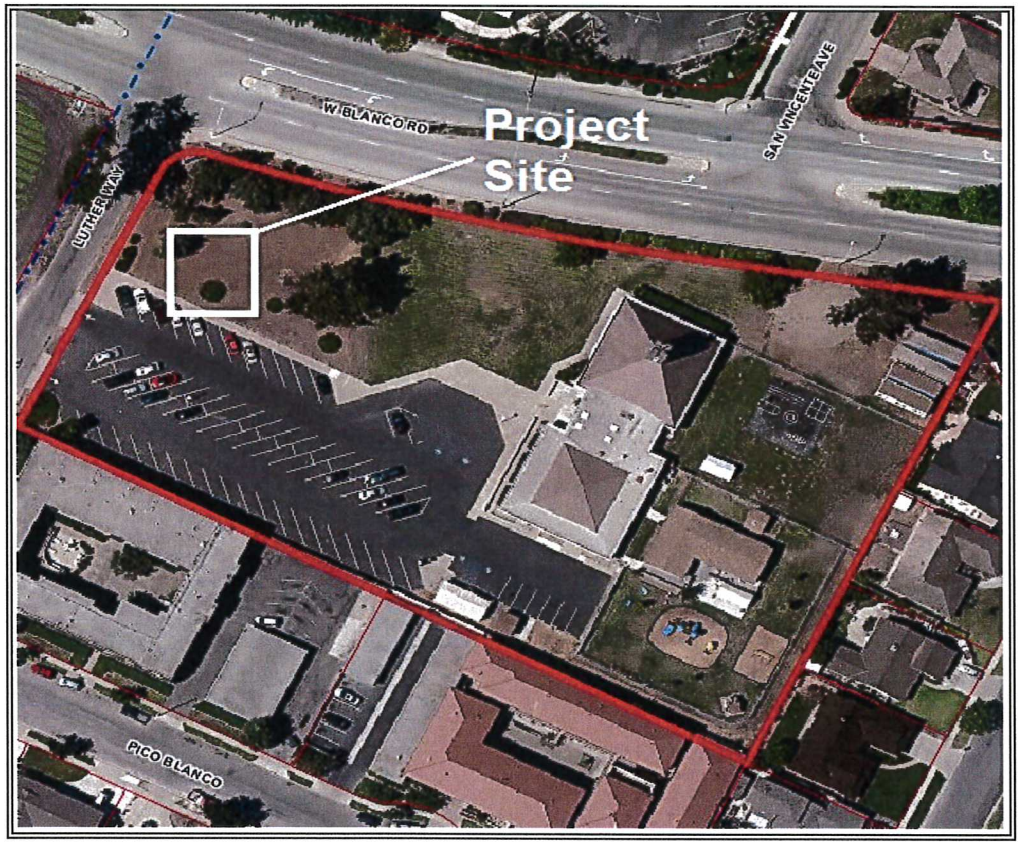
North

Vicinity Map



CONDITIONAL USE PERMIT 2018-009
1230 Luther Way

Exhibit A

I:\ComDev\ThomasW\Documents\CUP's\CUP 18-09 - 1230 Luther Way\CUP 2018-009 Vicinity Map.doc

verizon

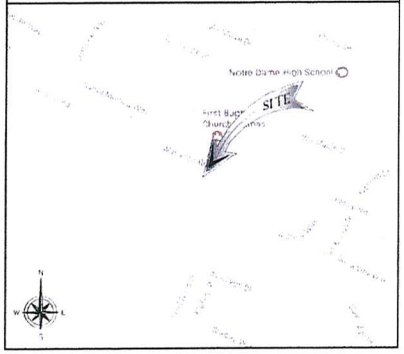
LUTHER & BLANCO

1230 LUTHER WAY
SALINAS, CA 93901
PROJECT TYPE: NEW SITE BUILD
LOCATION CODE: 438760

SITE INFORMATION

ZONING DRAWING

VICINITY MAP



PROJECT DESCRIPTION

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
LS-1	TOPOGRAPHIC SURVEY
LS-2	TOPOGRAPHIC SURVEY
A-1	SITE PLAN
A-1.1	DMP PLAN
A-2	ENLARGED SITE PLAN
A-3	EQUIPMENT AND ANTENNA LAYOUTS
A-4	ARCHITECTURAL ELEVATIONS
A-5	ARCHITECTURAL ELEVATIONS

ACCESSIBILITY NOTE

GENERAL NOTES

PROJECT TEAM

APPLICANT:
ENGINEERING:
RF ENGINEER:
ZONING:
SITE ACQUISITION:
CONSTRUCTION:

DRIVING DIRECTIONS

APPLICABLE CODES

APPROVALS

DO NOT SCALE DRAWINGS

811 Dig Alert
Know what's below. Call before you dig.
Call Two Working Days Before You Dig!
811 / 800-227-2600
digalert.org

verizon

SEQUOIA DEPLOYMENT SERVICES INC

celsius ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

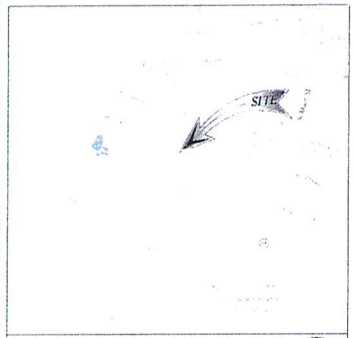
PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

DRAWN BY:
CHECKED BY:

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

Exhibit B



VICINITY MAP

APN

SITE ADDRESS

RECORD OWNER

TITLE REPORT

BASIS OF BEARING

BENCH MARK

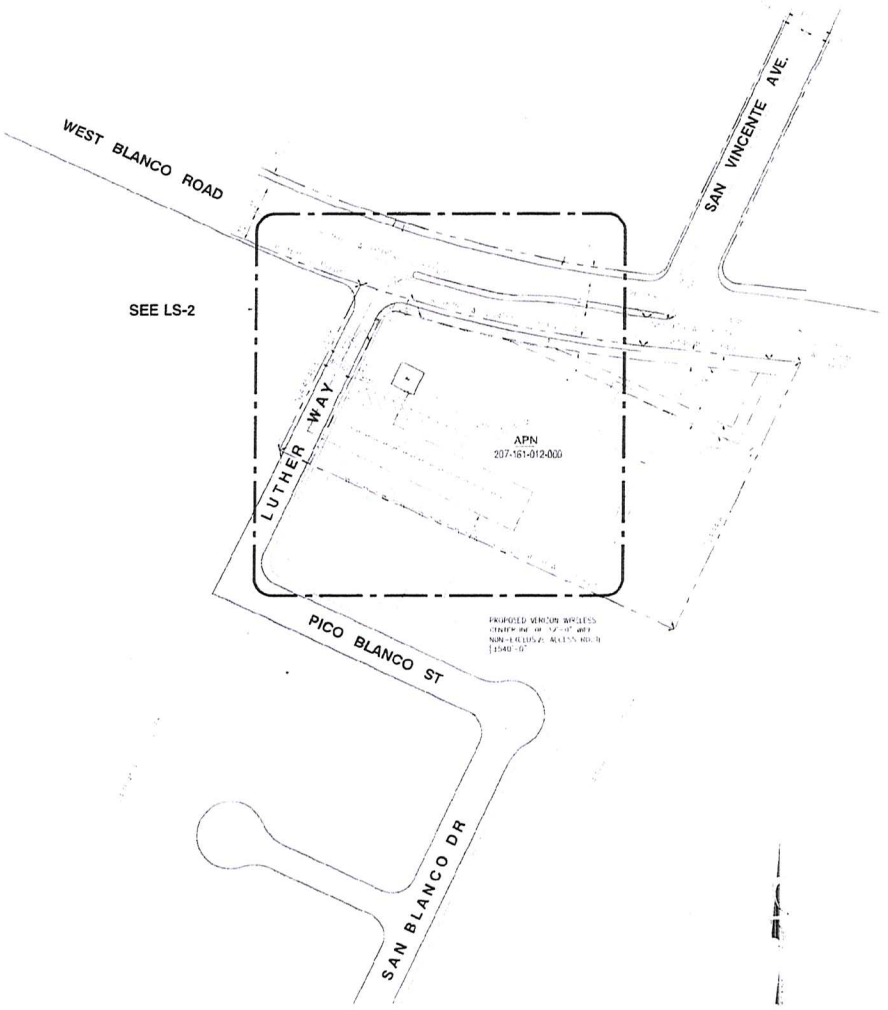
FLOOD ZONE

SCHEDULE B

"IT IS EXPRESSLY UNDERSTOOD THAT THE ABOVE DESCRIBED 0.420 OF AN ACRE PARCEL OF LAND IS CONVEYED TO SALINAS, A MUNICIPAL CORPORATION, FOR PUBLIC ROAD PURPOSES AND THAT WEST BLANCO ROAD IS ESTABLISHED AS A LIMITED ACCESS ROADWAY AND THE GRANTOR HEREBY RELINQUISH UNTO THE GRANTEE ALL ABUTTER'S RIGHT OR RIGHTS OF WEST BLANCO ROAD."

[DOES NOT INTERFERE WITH THE LOCATION OF VZW'S PROPOSED PREMISES, ACCESS AND/OR UTILITY ROUTE(S) PER DOCUMENT #64282 OF TRACT NO. 574 DATED MAY, 1968].

LEGAL DESCRIPTION



verizon

SEQUOIA

celsius ENGINEERING GROUP

NOVEMBER 7, 2017

FINAL SURVEY

LUTHER AND BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY,
SALINAS, CA 93901

TOPOGRAPHIC SURVEY

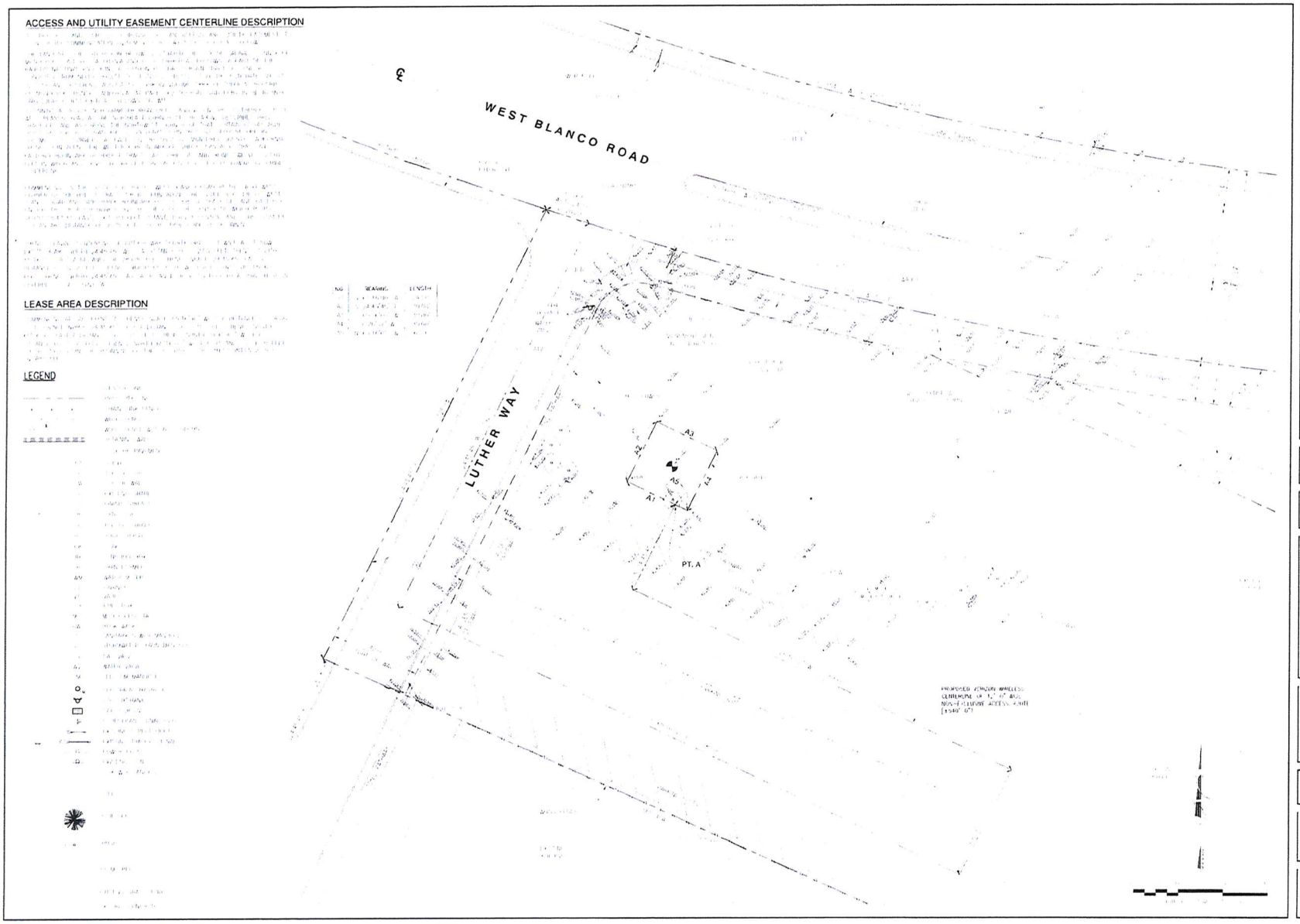
LS-1

Exhibit 7

ACCESS AND UTILITY EASEMENT CENTERLINE DESCRIPTION

LEASE AREA DESCRIPTION

LEGEND



verizon

SEQUOIA DEVELOPMENT SERVICES, INC.

celsius ENGINEERING GROUP

NOVEMBER 7, 2017

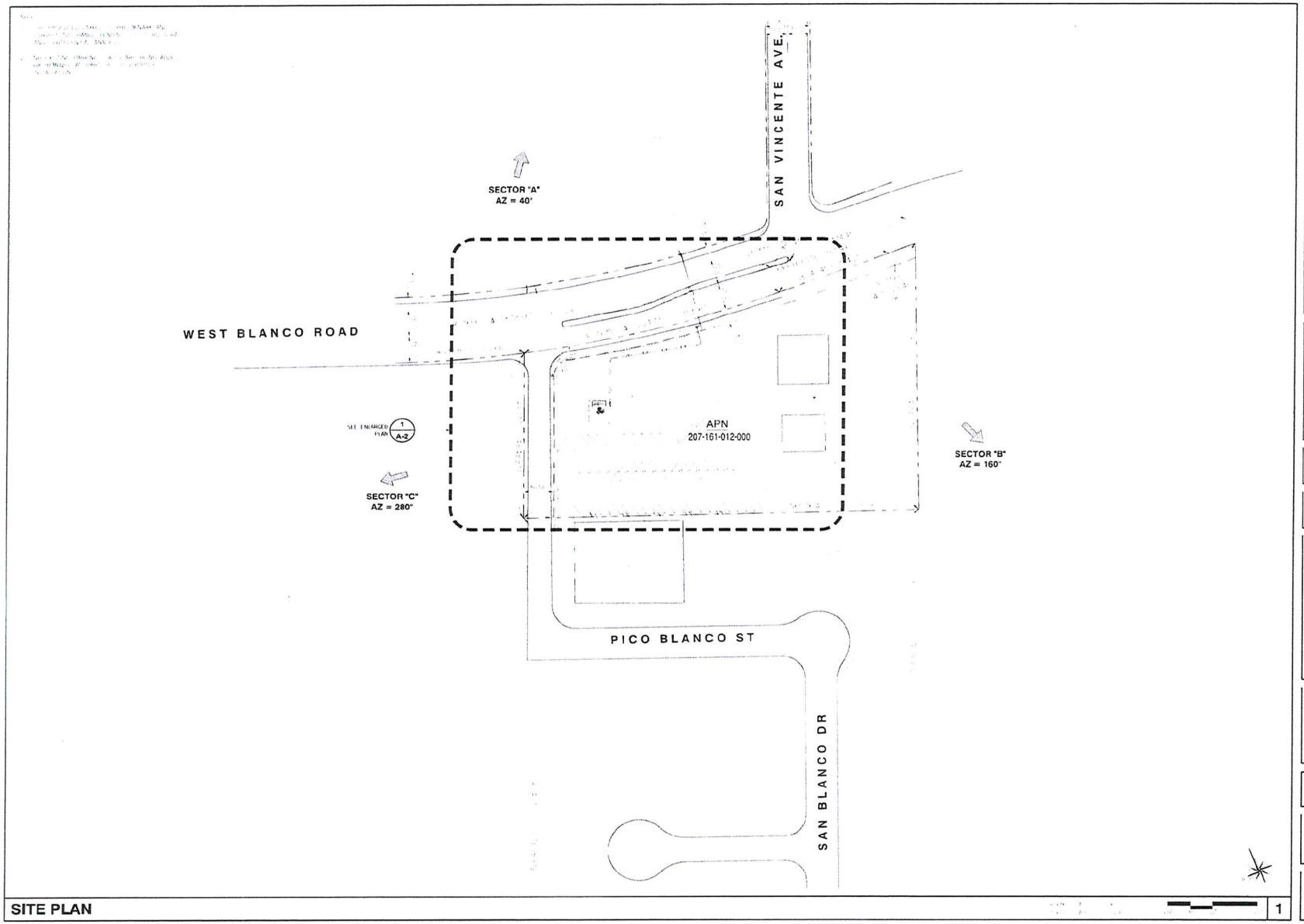
FINAL SURVEY

LUTHER AND BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY,
SALINAS, CA 93901

TOPOGRAPHIC SURVEY

LS-2

Exhibit D



SITE PLAN

1

verizon

SEQUOIA DEPLOYMENT SERVICES, INC

cersius ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

DRAWN BY:

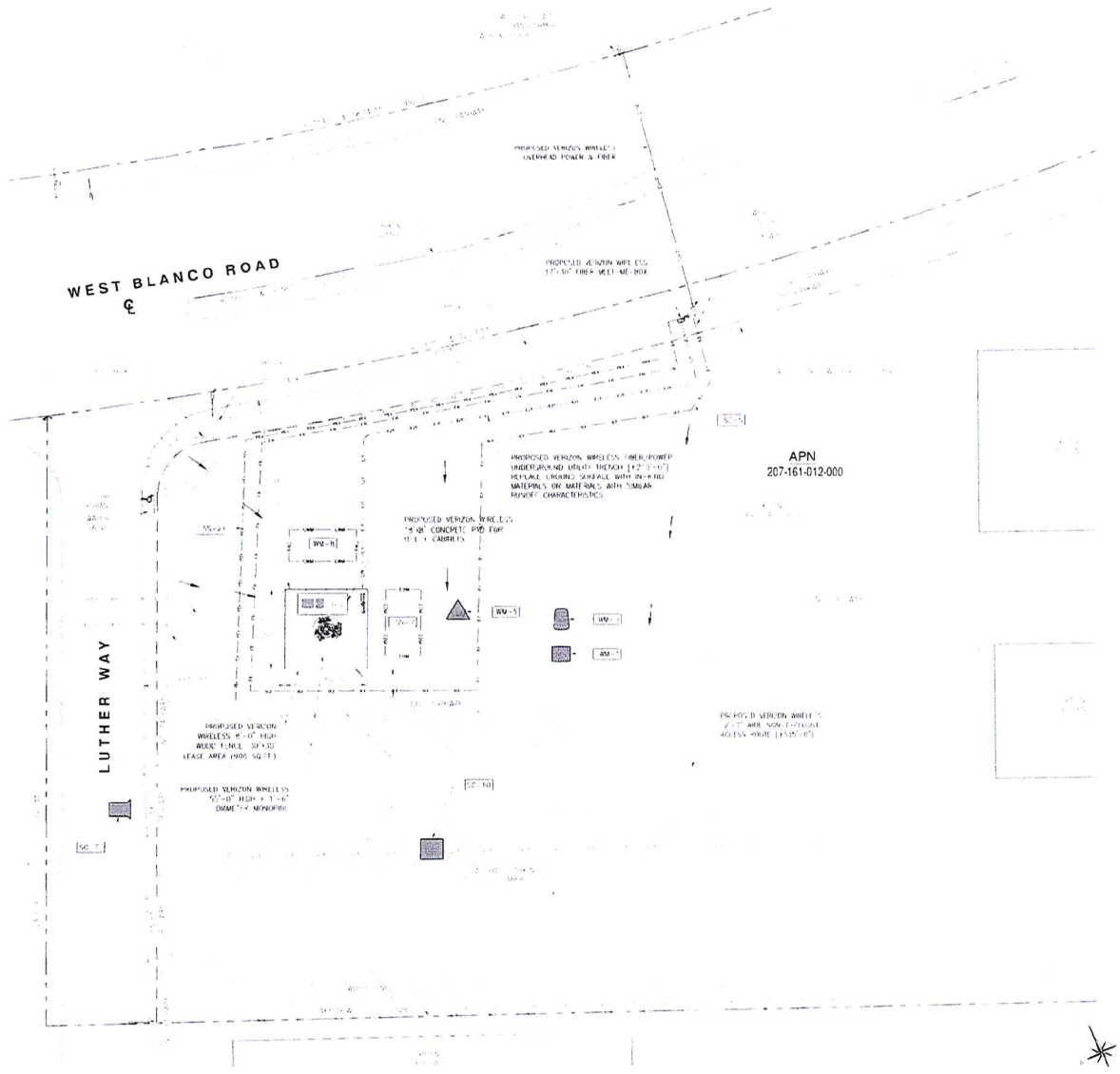
CHECKED BY:

SHEET TITLE:
SITE PLAN

SHEET NUMBER:
A-1

Exhibit E

NOTES BELOW REPRESENT KEY MINIMUM REQUIREMENTS FOR TEMPORARY CONSTRUCTION BMPS.



BMP LEGEND

PEV

EBM

FR

CWM

TOTAL LOT AREA: 148,000 SQ. FT

TOTAL EXISTING PERVIOUS AREA: 99,300 SQ. FT.

TOTAL EXISTING IMPERVIOUS AREA: 58,700 SQ. FT.

NEW CONSTRUCTION IMPERVIOUS AREA: 165 SQ. FT

TOTAL NEW IMPERVIOUS AREA: 58,865 SQ. FT.

BMP PLAN 1

verizon

SEQUOIA DEPLOYMENT SERVICES INC

celsius ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

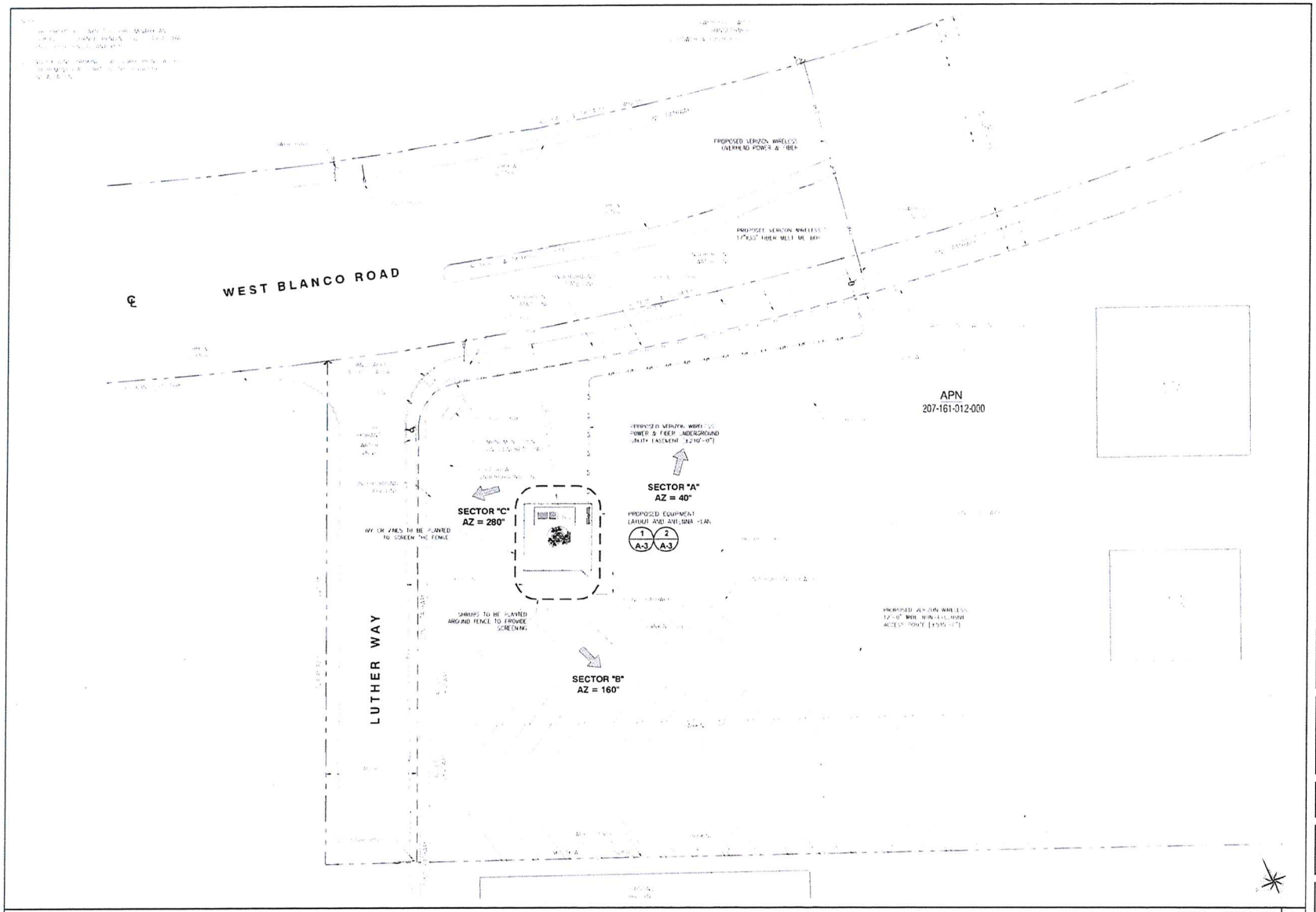
DRAWN BY:

CHECKED BY:

SHEET TITLE:
BMP PLAN

SHEET NUMBER:
A-1.1

Exhibit



ENLARGED SITE PLAN

1

verizon

SEQUOIA DEPLOYMENT SERVICES, INC.

celsius ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

DRAWN BY:

CHECKED BY:

SHEET TITLE:
ENLARGED SITE PLAN

SHEET NUMBER:
A-2

Exhibit 9

PROPOSED VERIZON WIRELESS
POWER & FIBER UNDERGROUND
UTILITY EASEMENT (±210'-0")

PROPOSED VERIZON WIRELESS EQUIPMENT LEASE SPACE

20KW DIESEL GENERATOR

POWER PLANT/MSC CABINET

FUTURE CABINET

FUTURE CABINET

PROPOSED VERIZON WIRELESS RACK-MOUNTED H.C. PANEL

PROPOSED VERIZON WIRELESS RACK-MOUNTED METER

PROPOSED VERIZON WIRELESS RACK MOUNTED TELCO CABINET

PROPOSED VERIZON WIRELESS RACK-MOUNTED DC SURGE, TYP. (3)

PROPOSED VERIZON WIRELESS 55'-0" HIGH X 1'-6" DIAMETER COLLOCATABLE MONOPINE

PROPOSED VERIZON WIRELESS GPS ANTENNA (1) TOTAL

PROPOSED VERIZON WIRELESS 8'-0" HIGH WOOD FENCE SCREEN ENCLOSURE (1600 SQ.FT.)

PROPOSED VERIZON WIRELESS ±8'-0" WIDE ACCESS GATE

PROPOSED IVY OR SIMILAR VINES TO BE PLANTED FOR FENCE SCREENING TYP. ALL AROUND

EQUIPMENT LAYOUT 1

PROPOSED ANTENNA SCHEDULE

SECTOR "A"
AZ = 40°

PROPOSED VERIZON WIRELESS 6'-0" HIGH PANEL ANTENNA MOUNTED ON ANTENNA SECTOR FRAME, TYP. (3)-PER SECTOR, (3)-SECTORS, (9)- TOTAL

PROPOSED VERIZON WIRELESS 55'-0" HIGH X 1'-6" DIAMETER COLLOCATABLE MONOPINE

PROPOSED VERIZON WIRELESS RRUS COLLAR-MOUNTED BELOW ANTENNA RING MOUNT ASSEMBLY, TYP (2) PER SECTOR, (3) SECTORS (6 TOTAL)

PROPOSED VERIZON WIRELESS RACK MOUNTED AUTO ANTENNA MAST BEHIND PROPOSED PANEL ANTENNA, TYP (4) PER SECTOR, (3)-SECTORS, (12) TOTAL

PROPOSED VERIZON WIRELESS 55'-0" HIGH X 1'-6" DIAMETER COLLOCATABLE MONOPINE

PROPOSED VERIZON WIRELESS DC SURGE COLLAR MOUNTED BELOW ANTENNA- RRU MOUNT ASSEMBLY (2) TOTAL

SECTOR "C"
AZ = 280°

SECTOR "B"
AZ = 160°

ANTENNA LAYOUT 2

verizon

SEQUOIA DEPLOYMENT SERVICES, INC.

celsius ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

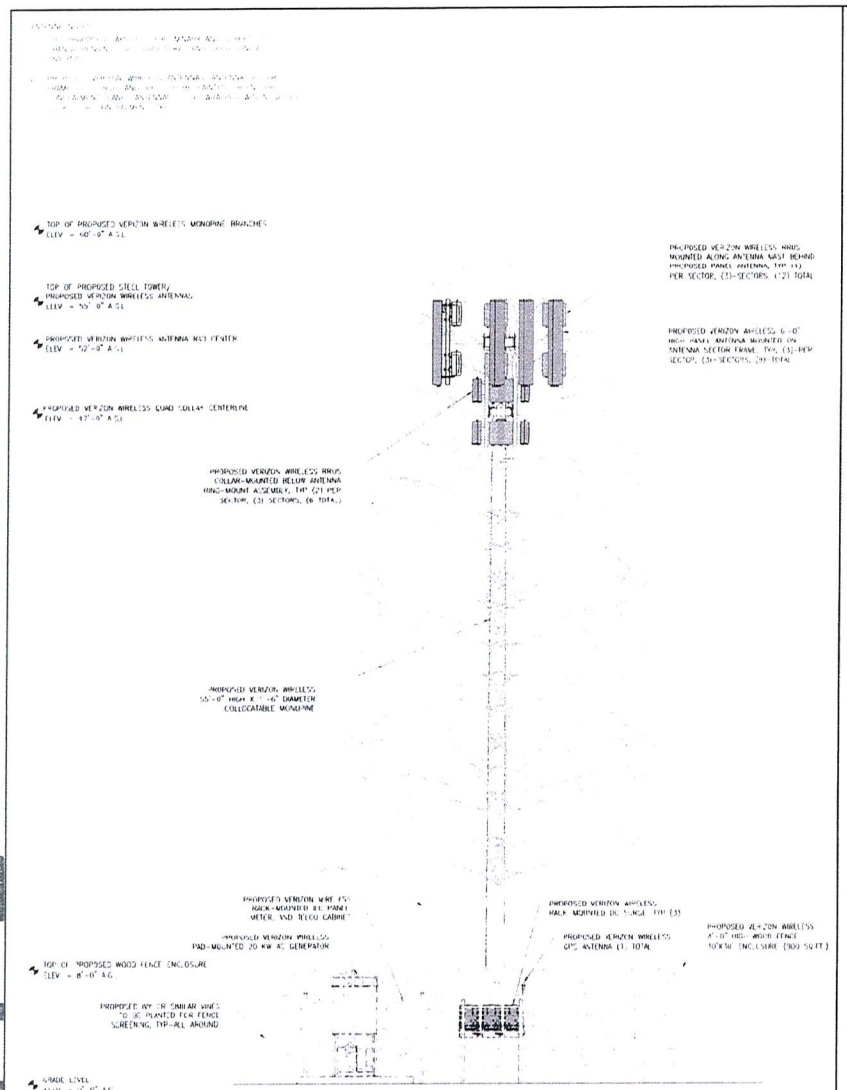
DRAWN BY:

CHECKED BY:

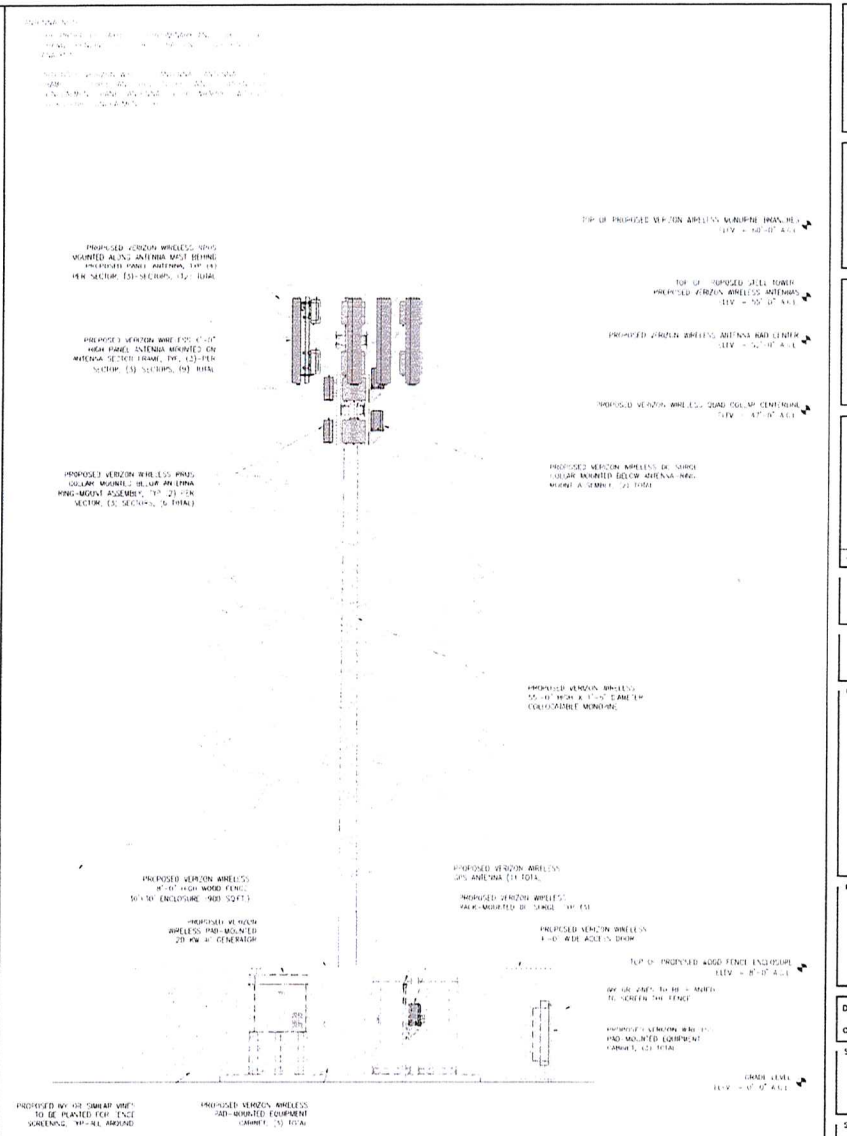
SHEET TITLE:
EQUIPMENT AND ANTENNA LAYOUT

SHEET NUMBER:
A-3

Exhibit 1



WEST ELEVATION 1



SOUTH ELEVATION 2

verizon

SEQUOIA DEPLOYMENT SERVICES, LP

celsius ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

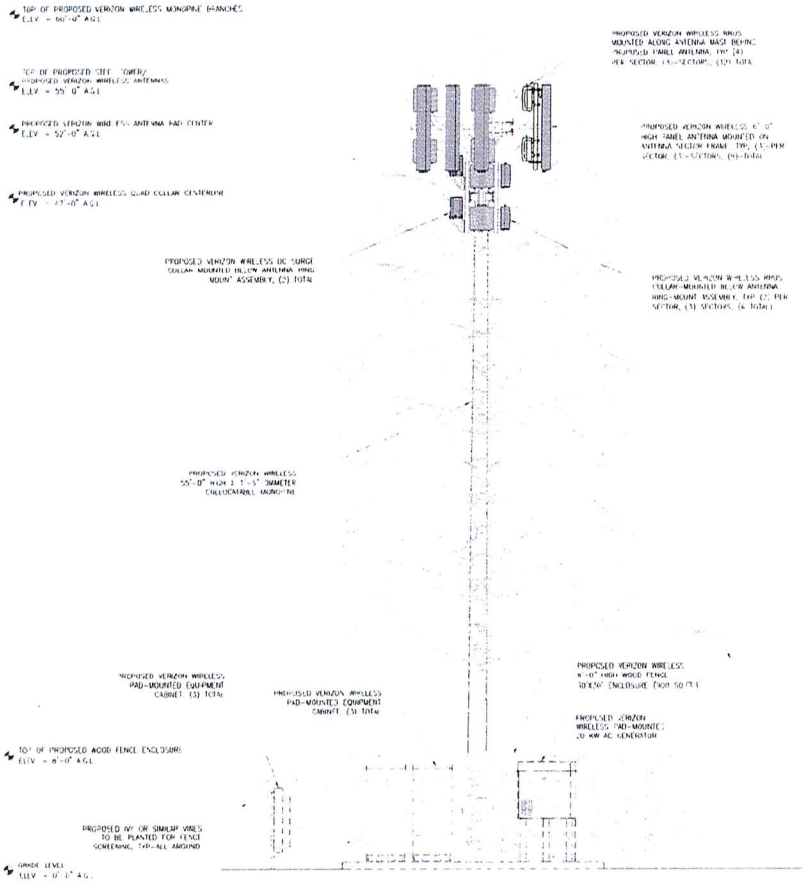
DRAWN BY:

CHECKED BY:

SHEET TITLE:
ARCHITECTURAL ELEVATIONS

SHEET NUMBER
A-4

Exhibit H



NORTH ELEVATION 1

verizon

SEQUOIA DEPLOYMENT SERVICES INC

CETSIUS ENGINEERING GROUP

ISSUED DATE:
MAY 31, 2018

ISSUED FOR:
100% ZD SET

LICENSURE:

PROJECT INFORMATION:
LUTHER & BLANCO
LOCATION CODE: 438760
1230 LUTHER WAY
SALINAS, CA 93901

DRAWN BY:

CHECKED BY:

SHEET TITLE:
ARCHITECTURAL ELEVATIONS

SHEET NUMBER:
A-5

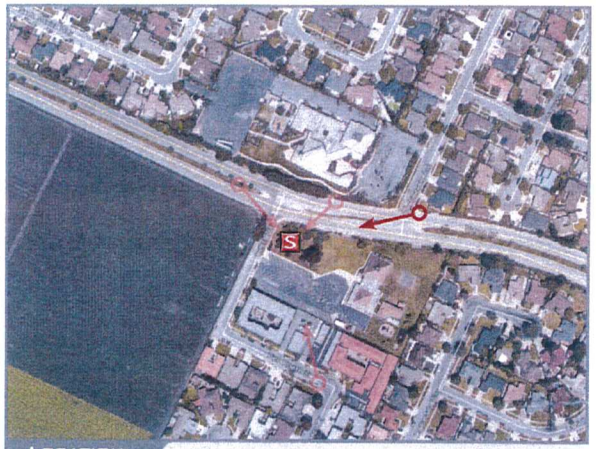
Exhibit 4

verizon

LUTHER & BLANCO

1230 LUTHER WAY SALINAS CA 93901

ARTISTIC engineering
AEsims.com
877.9AE.sims



LOCATION ©2018 Google Maps

EXISTING

PROPOSED LOOKING SOUTHWEST FROM BLANCO ROAD

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

Exhibit K-1

verizon

LUTHER & BLANCO

1230 LUTHER WAY SALINAS CA 93901

ARTISTIC engineering
AEsims.com
877.9AE.sims

LOCATION

EXISTING

PROPOSED LOOKING SOUTHWEST FROM BLANCO ROAD

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

Exhibit K-2

verizon

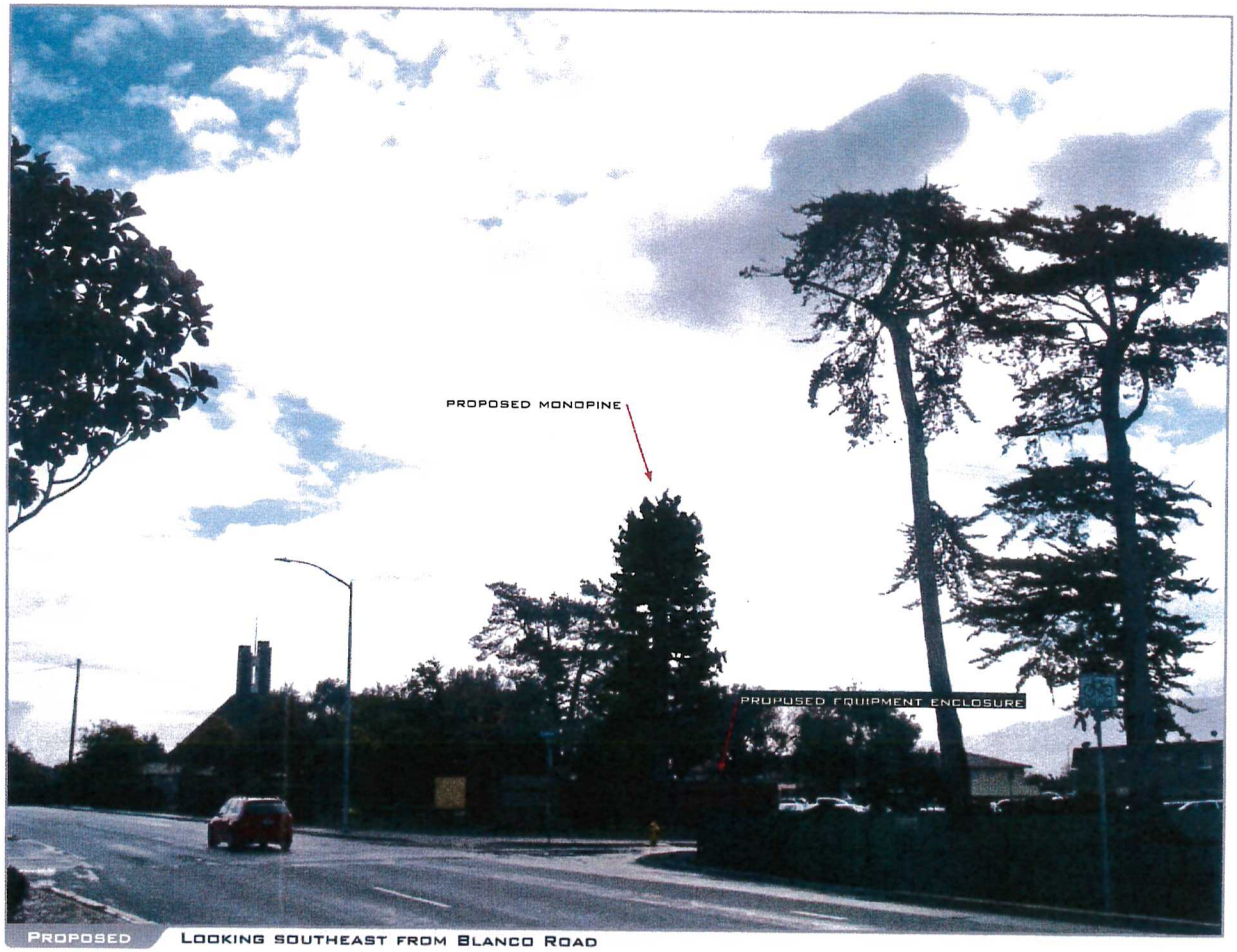
LUTHER & BLANCO

1230 LUTHER WAY SALINAS CA 93901

ARTISTIC engineering
AEsims.com
877.9AE.sims

LOCATION

EXISTING



PROPOSED LOOKING SOUTHEAST FROM BLANCO ROAD

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

Exhibit K-3

verizon

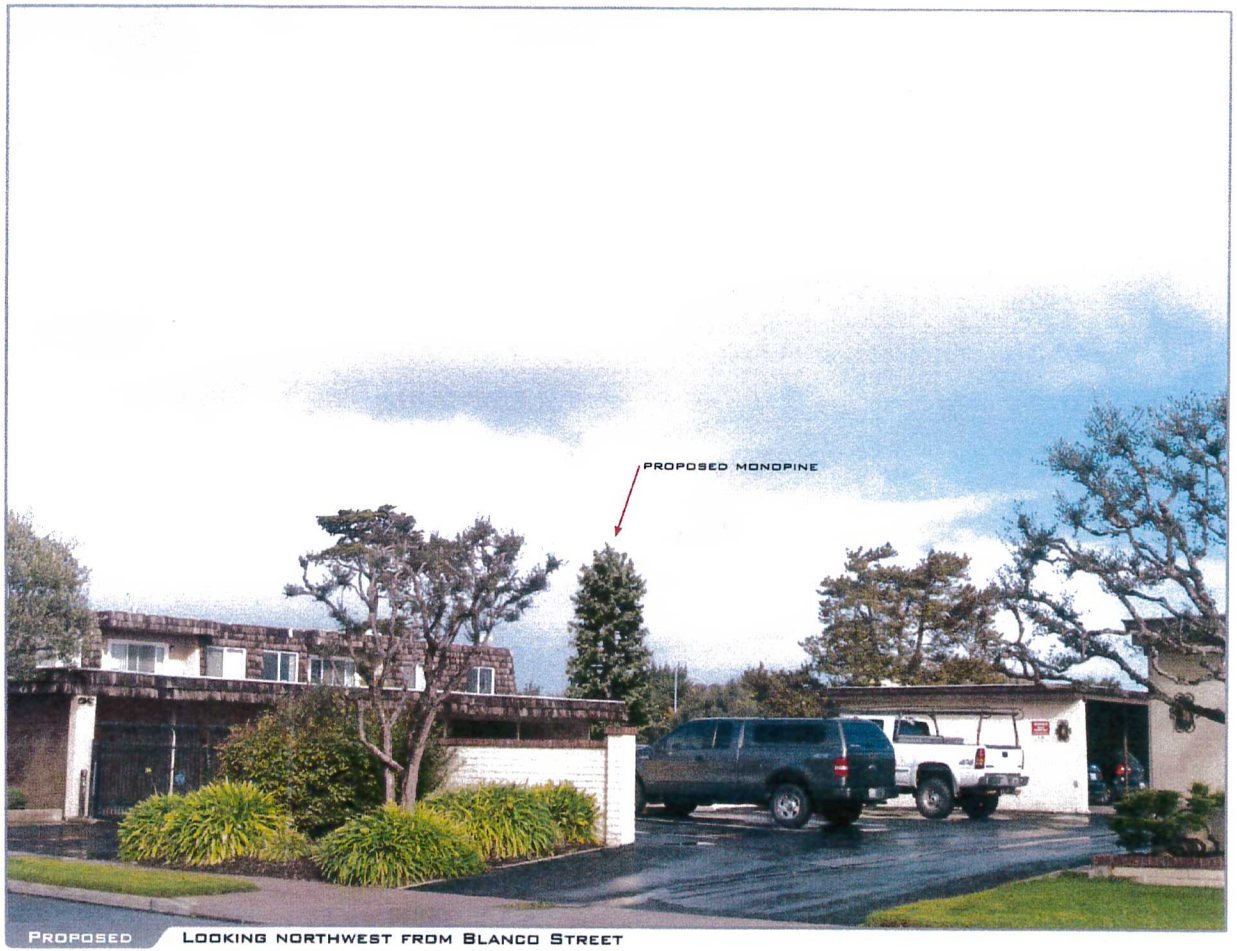
LUTHER & BLANCO

1230 LUTHER WAY SALINAS CA 93901

ARTISTIC engineering
AEsims.com
877.9AE.sims

LOCATION

EXISTING



PROPOSED LOOKING NORTHWEST FROM BLANCO STREET

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

Exhibit K-4

City of Salinas
DEVELOPMENT ENGINEERING (PW) • 65 West Alisal Street • Salinas, California
Phone: (831) 758-7251 • www.cityofsalinas.org

ENGINEER'S REPORT

PURPOSE: CUP2018-009 **DATE:** 6/13/2018
LOCATION: 1230 Luther Way **PLANNER:** Tom Wiles
OWNER/APPLICANT: Evangelical Lutheran Church/Sequoia Deployment Services

DEVELOPMENT PROPOSAL: Major wireless telecommunications facility with 60-ft monopole and 6-ft antennae.

RECOMMENDATION: Approve
SWDS THRESHOLD: Non-Priority

DEVELOPMENT REVIEW: *Development Review Submittal prepared by Cellsius Engineering Group, dated May 31, 2017*

APPLICATION INFORMATION REQUIRED FOR GRADING/BUILDING PERMIT REVIEW –

1. Lease areas and easements – Lease areas shall not extend into the public right of way.
2. Offsite Improvements – Any work within the Right of Way requires an encroachment permit.
3. Fees – No development impact fees will be assessed for the proposed improvements.

Notice: The Conditions of Approval for this Site Plan Review include certain fees and development requirements. Pursuant to Government Code Section 66020 (d)(1), this hereby constitutes written notice stating the amount of said fees, and describing the development requirements. The applicant is hereby notified that the 90-day appeal period in which he/she/they may protest these fees and development requirements, pursuant to Government Code Section 66020 (a), begins on the date the office land use permit is approved. If applicant files a written protest within this 90-day period complying with all requirements of Section 66020, he/she/they will be legally barred from challenging such fees and/or requirements at a later date.

CITY OF SALINAS

Adriana Robles 6/13/2018 (adrianar@ci.salinas.ca.us)
Adriana Robles, P.E. **Dated**
Permit Center Senior Engineer (758-7194) *for*
Jim Sandoval, PE City Engineer

Exhibit L

SEQUOIA DEPLOYMENT SERVICES, REPRESENTING VERIZON
MITIGATION MONITORING AND REPORTING PROGRAM
1230 LUTHER WAY
(CUP 2018-009)

Mitigation Number	Nature of Mitigation	Result after Mitigation	Party Responsible for Implementing	Party Responsible for Monitoring: Method to Confirm Implementation	Timing for Implementation
CU-1 Cultural Resources	In the event that cultural materials are encountered during grading/construction, all work shall cease until the find has been evaluated and mitigation measures put in place for the disposition and protection of any find pursuant to Section 21083.2 of the California Public Resources Code.	To ensure protection of any on-site cultural resources	Applicant, or Successor in Interest.	Public Works – Engineering - Community Development Department – Permit Services and Current Planning Divisions	During construction phase.
HAZ-1 Hazards and Hazardous Materials	For any future proposed antennas, a Radiofrequency (RF) analysis demonstrating that radio frequency energy would not cumulatively exceed amounts permitted by the Federal Communications Commission (FCC) shall be submitted to the Community Development Department prior to any approvals for additional antennas on the subject facility.	To ensure compliance with FCC regulations relative to RF emissions.	Applicant, or Successor in Interest	Community Development Department, Current Planning	Prior to issuance of any Minor Modification or Amendment to the Conditional Use Permit.
NOI-1 Noise	The maximum noise level of the generator shall not exceed the maximum allowed Zoning Code performance standards.	To ensure compliance with Zoning Code Performance Standards	Applicant, or Successor in Interest	Community Development Department, Current Planning	Life of the project.

Exhibit M

Verizon Wireless • Proposed Base Station (Site No. 438760 "Luther & Blanco")
1230 Luther Way • Salinas, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 438760 "Luther & Blanco") proposed to be located at 1230 Luther Way in Salinas, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install directional panel antennas on a new tall pole, configured to resemble a pine tree, to be sited at the Lutheran Church of Our Savior, located at 1230 Luther Way in Salinas. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–80 GHz	5.00 mW/cm^2	1.00 mW/cm^2
WiFi (and unlicensed uses)	2–6	5.00	1.00
BRS (Broadband Radio)	2,600 MHz	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

General Facility Requirements

Base stations typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the

Exhibit N

antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including zoning drawings by Cellsius Engineering Group, dated December 27, 2017, it is proposed to install nine JMA Wireless Model MX06FRO660-02 directional panel antennas on a new 55-foot steel pole, configured to resemble a pine tree, to be sited in the lawn area north of the parking lot for the Lutheran Church of Our Savior, located at 1230 Luther Way in Salinas. The antennas would employ up to 6° downtilt, would be mounted at an effective height of about 52 feet above ground, and would be oriented in groups of three toward 40°T, 160°T, and 280°T, to provide service in all directions. The maximum effective radiated power in any direction would be 27,080 watts, representing simultaneous operation at 11,480 watts for AWS, 5,000 watts for PCS, 5,120 watts for cellular, and 5,480 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.059 mW/cm^2, which is 10% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building* is 13% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

---

* Including the residences located at least 130 feet away, based on photographs from Google Maps.

No Recommended Mitigation Measures

Due to their mounting locations and height, the Verizon antennas would not be accessible to unauthorized persons, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. It is presumed that Verizon will, as an FCC licensee, take adequate steps to ensure that its employees or contractors receive appropriate training and comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the base station proposed by Verizon Wireless at 1230 Luther Way in Salinas, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

William F. Hammett, P.E.
707/996-5200

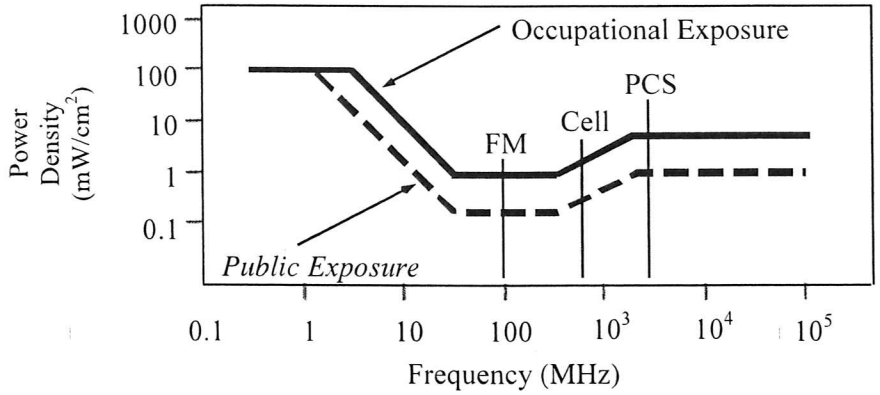
March 19, 2018

FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency	Electromagnetic Fields (f is frequency of emission in MHz)					
Applicable Range (MHz)	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm^2)	
0.3 – 1.34	614	*614*	1.63	*1.63*	100	*100*
1.34 – 3.0	614	*823.8/f*	1.63	*2.19/f*	100	*180/f^2*
3.0 – 30	1842/ f	*823.8/f*	4.89/ f	*2.19/f*	900/ f^2	*180/f^2*
30 – 300	61.4	*27.5*	0.163	*0.0729*	1.0	*0.2*
300 – 1,500	$3.54\sqrt{f}$	*$1.59\sqrt{f}$*	$\sqrt{f}/106$	*$\sqrt{f}/238$*	f/300	*f/1500*
1,500 – 100,000	137	*61.4*	0.364	*0.163*	5.0	*1.0*



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm^2,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm^2,

where θ_{BW} = half-power beamwidth of the antenna, in degrees, and
P_{net} = net power input to the antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of the antenna, in meters, and
η = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$$\text{power density } S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in } mW/cm^2,$$

where ERP = total ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, and
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

Verizon Wireless • Proposed Base Station (Site No. 438760 "Luther & Blanco")
1230 Luther Way • Salinas, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal telecommunications carrier, to evaluate the base station (Site No. 438760 "Luther & Blanco") proposed to be located at 1230 Luther Way in Salinas, California, for compliance with appropriate guidelines limiting sound levels from the installation.

Executive Summary

Verizon proposes to install a new base station, consisting of equipment cabinets, a back-up generator, and antennas on a tall pole to be sited at 1230 Luther Way in Salinas, California. Noise levels from the equipment operations will be below the pertinent permitted limits.

Prevailing Standards

The City of Salinas sets forth limits on sound levels in its Municipal Code. Section 37-50.180 has the following maximum permitted exterior noise levels by zoning district:

Zoning Districts	Maximum Noise Level
Residential, Public/Semipublic	60 dBA CNEL
Commercial, Mixed Use	65
Agricultural, Institutional, Parks/Open Space	70

The composite Community Noise Equivalent Level ("CNEL") to be used for this evaluation is an average over 24 hours, with a 5 dBA penalty applied to noise levels during evening hours (7 pm to 10 pm) and a 10 dBA penalty at night (10 pm to 7 am) to reflect typical residential conditions, where noise is more readily heard during evening and nighttime hours. By definition, sound from a continuous noise source will be 6.7 dBA higher when expressed in CNEL.

Parcels beyond the City's limits in unincorporated areas are subject to Monterey County's limits, given in its Municipal Code §10.60.030 for noise-producing devices as 85 dBA at a reference distance of 50 feet. That applies during daytime hours, because §10.060.040 limits nighttime sound levels to 45 dBA hourly average, at the nearest property line. For the purpose of this study, the emergency operation of the generator is exempt under §10.060.040C.3, which includes exemptions to the above standards for "equipment used in an emergency…." It is the generator's operation during periodic, no-load testing during daytime hours that is evaluated in this study for compliance at unincorporated areas.

Figure 1 attached describes the calculation methodology used to determine applicable noise levels for evaluation against the prevailing standard.

Exhibit O

General Facility Requirements

Wireless telecommunications facilities ("cell sites") typically consist of two distinct parts: the electronic base transceiver stations ("BTS" or "cabinets") that are connected to traditional wired telephone lines, and the antennas that send wireless signals created by the BTS out to be received by individual subscriber units. The BTS are often located outdoors at ground level and are connected to the antennas by coaxial cables. The BTS typically require environmental units to cool the electronics inside. Such cooling is often integrated into the BTS, although external air conditioning may be installed, especially when the BTS are housed within a larger enclosure.

Most cell sites have back-up battery power available, to run the base station for some number of hours in the event of a power outage. Many sites have back-up power generators installed, to run the station during an extended power outage.

Site & Facility Description

Based upon information provided by Verizon, including zoning drawings by Cellsius Engineering Group, dated December 27, 2017, that carrier proposes to place several equipment cabinets within a fenced compound to be constructed in the lawn area north of the parking lot for the Lutheran Church of Our Savior, located at 1230 Luther Way in Salinas. For the purpose of this study, the three equipment cabinets with active cooling fans are assumed to be one CommScope Model RBA-84 and two Ericsson Model RBS6101.

A Generac Model G007090 back-up diesel generator, configured with the manufacturer's Level 2 sound attenuated enclosure, is to be installed within the compound, for emergency use in the event of an extended commercial power outage. The generator is typically operated with no load for a single 15-minute period once a week during daytime hours on a weekday, to maintain its readiness for emergency operation.

Several directional panel antennas are proposed to be installed on a tall pole, configured to resemble a pine tree, to be sited within the compound; this portion of the base station is passive, generating no noise. The nearest residential parcel is located to the south, about 150 feet away. The parcel to the north, across West Blanco Road, is located about 160 feet away and is zoned Public/Semipublic. The parcel to the west is located in unincorporated Monterey County, about 90 feet away, and is zoned Farmland.

Ambient Noise Measurement

The residential property line nearest the proposed site was visited by the undersigned engineer on February 22, 2018, a non-holiday weekday, to set in place a Larson Davis SoundTrack LXT Sound Level Meter (Serial No. 0005461), under current calibration by the manufacturer. The monitoring

equipment was placed on the property line fence of the nearest residential parcel located at 1240 Luther Way, as shown in Figure 2, and it was retrieved the following day, to provide a 24-hour period for analysis. The measured ambient noise level at that location, without consideration of the proposed Verizon operation, was 63.7 dBA CNEL, already exceeding the City's "Residential, Public/Semipublic" noise limit of 60 dBA CNEL.

Study Results

The manufacturers provide the following maximum noise levels from their equipment:

Equipment	Maximum Noise Level	Reference Distance
CommScope RBA84-36	58.7 dBA*	5 feet
Ericsson RBS6101	72 dBA	1 meter
Generac G007090	68 dBA	23 feet

The maximum calculated noise levels at the nearest residential parcel to the south and at the public/semi-public parcel to the north, for the combined operation of all fans in all three cabinets, together with the measured ambient level, are 63.8 dBA CNEL at both locations, raising the existing ambient level by just 0.1 dBA, which is below the threshold of perceptibility.† On the day the generator is tested, the CNEL at those locations remains unchanged, at 63.8 dBA. The calculated noise levels to the south and north, together with the hypothetical, continuous emergency operation of the generator, are 64.2 and 64.6 dBA CNEL, respectively, raising the existing ambient levels by 0.5 and 0.9 dBA, respectively, increases that also are below the threshold of perceptibility.

The maximum calculated noise level for the combined operation of all fans in all three cabinets at the farmland parcel to the west is 44.6 dBA, meeting the County's applicable nighttime limit of 45 dBA. On the day the generator is tested, the maximum calculated noise in the unincorporated area is 52.0 dBA, well below the maximum day limit of 85 dBA.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that the operation of the Verizon Wireless base station proposed to be located at 1230 Luther Way in Salinas, California, will comply with the pertinent requirements for limiting acoustic noise emission levels.

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* Noise level assumed to be the same as manufacturer's reported noise level for the RBA72.

† A change of ±1.0 dBA or less is considered imperceptible.

Authorship

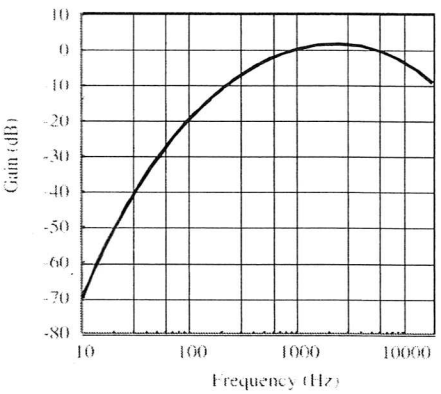
The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

William F. Hammett, P.E.
707/996-5200

March 19, 2018

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("L_P") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 μPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

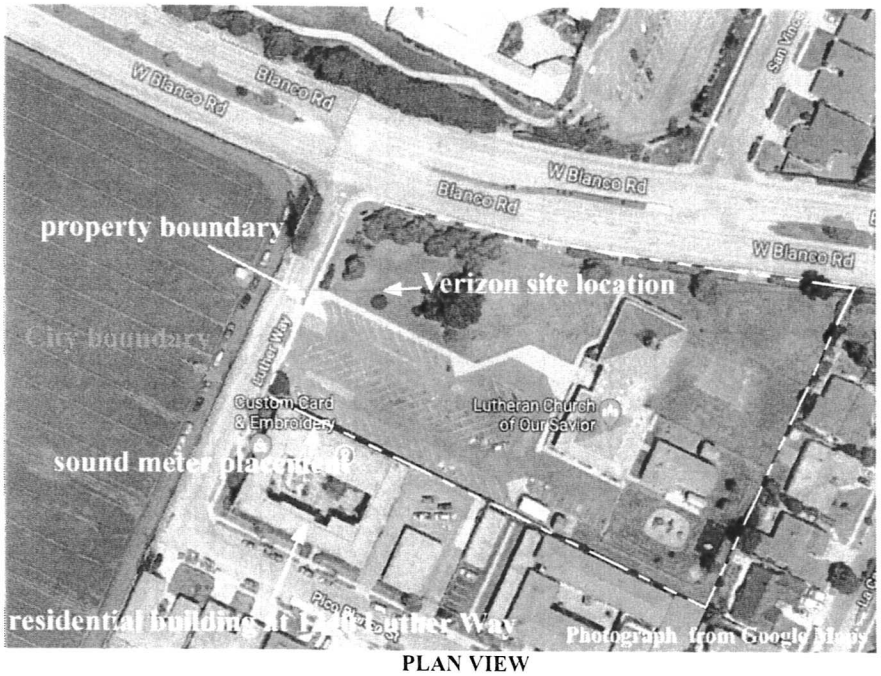
where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

$$L_T = 10 \log \left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

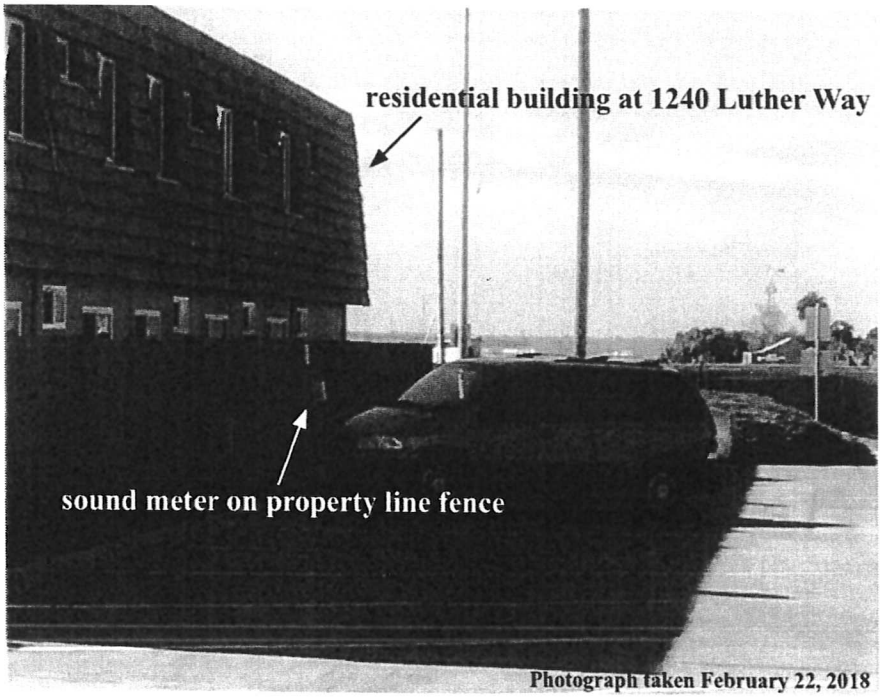
Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.

Verizon Wireless • Proposed Base Station (Site No. 438760 "Luther & Blanco")
1230 Luther Way • Salinas, California

Sound Meter Placement for 24-Hour Monitoring



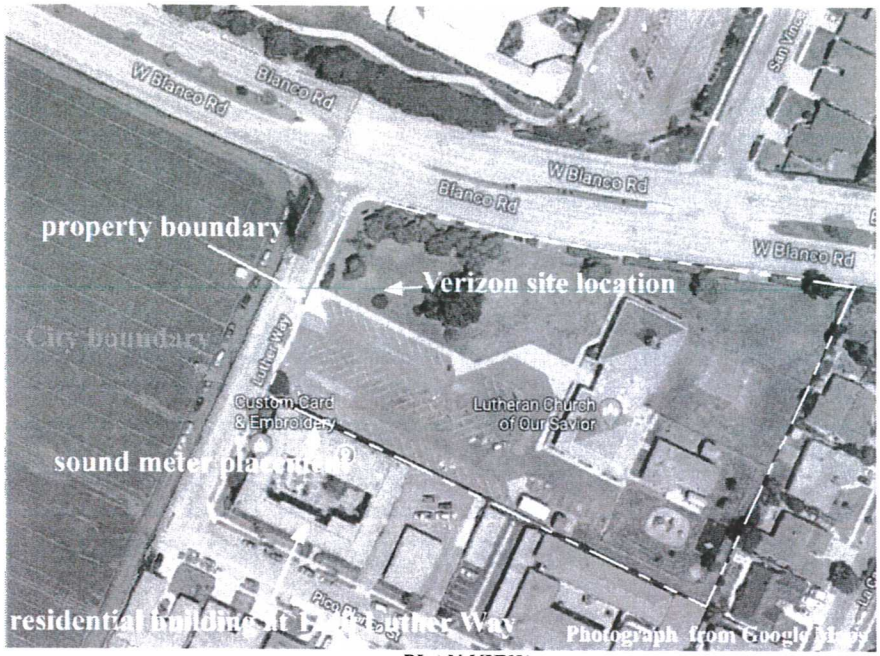
PLAN VIEW



VIEW LOOKING WEST

Verizon Wireless • Proposed Base Station (Site No. 438760 "Luther & Blanco")
1230 Luther Way • Salinas, California

Sound Meter Placement for 24-Hour Monitoring



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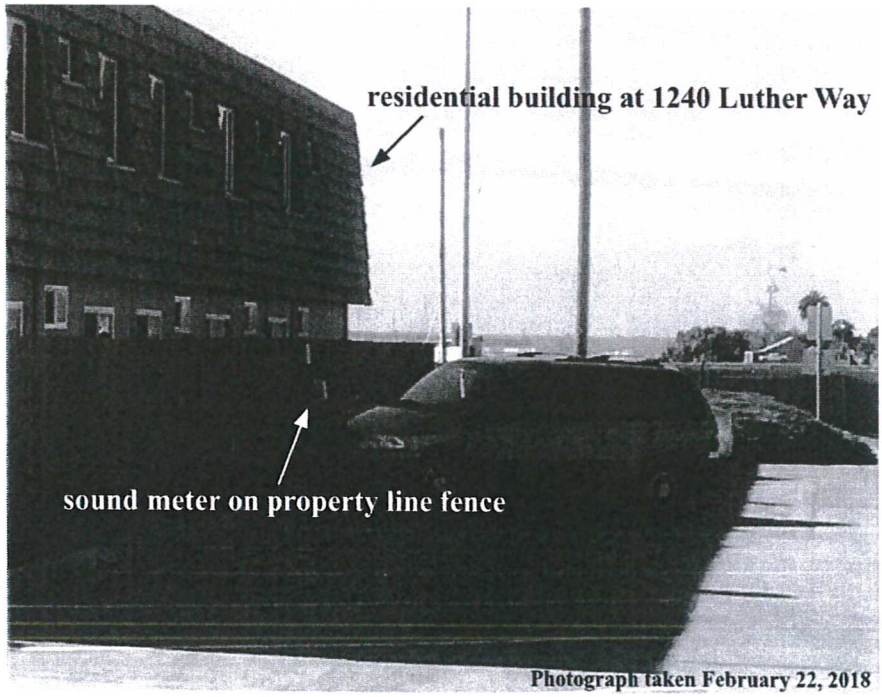

VIEW LOOKING WEST