Environmental Noise Assessment

CVL01987 Kerman AT&T Cellular Facility

Kerman, California

BAC Job # 2020-097

Prepared For:

Complete Wireless Consulting

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Introduction

The CVL01987 Kerman AT&T Wireless Unmanned Telecommunications Facility Project (project) proposes the installation of cellular equipment within a lease area located at 15023 West G Street in the City of Kerman, California (APN: 023-360-04T). Specifically, the project proposes the installation of equipment cabinets and an intake exhaust fan within an existing building, and the installation of an emergency diesel standby generator outside of the building. The project exhaust fan and emergency diesel standby generator have been identified as the primary noise sources associated with the project. The project site location and equipment layout plan are shown on Figures 1 and 2, respectively. The studied site design is dated August 12, 2020.

Bollard Acoustical Consultants, Inc. (BAC) has been contracted by Complete Wireless Consulting, Inc. to complete an environmental noise assessment regarding the proposed project cellular equipment operations. Specifically, the following assessment addresses daily noise production and exposure associated with operation of the project emergency generator and equipment cabinets.

Please refer to Appendix A for definitions of acoustical terminology used in this report. Appendix B illustrates common noise levels associated with various sources.

Criteria for Acceptable Noise Exposure

2007 Kerman General Plan Update

The Noise Element of the 2007 Kerman General Plan Update (Chapter 6) establishes allowable noise level limits for non-transportation (stationary) noise sources, such as those proposed by the project. The non-transportation noise level limits contained in Chapter 6 have been reproduced and are provided below in Table 1.

Table 1
Maximum Allowable Noise Exposure – Stationary Noise Sources[1]

Noise Level Descriptor	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq}, dB	50	45
Maximum Level (L_{max}), dB	70	65

[1] As determined at the property line of the receiving lands designated for noise-sensitive uses.
Source: 2007 Kerman General Plan Update, Noise Element, Table 20.

Project Noise Generation

As discussed previously, there are two project noise sources which are considered in this evaluation: the building exhaust fan and the emergency generator. The evaluation of potential noise impacts associated with the operation of each noise source is evaluated separately as follows:

Legend

- Parcel Boundaries (Approximate)
- Existing Equipment Building (Location of Proposed Equipment Cabinets)
- Proposed Location of Emergency Generator (Approximate)

N

Scale (Feet)

0 75 150

CVL01987 Kerman AT&T Cellular Facility

Kerman, California

Project Site Location

Figure 1

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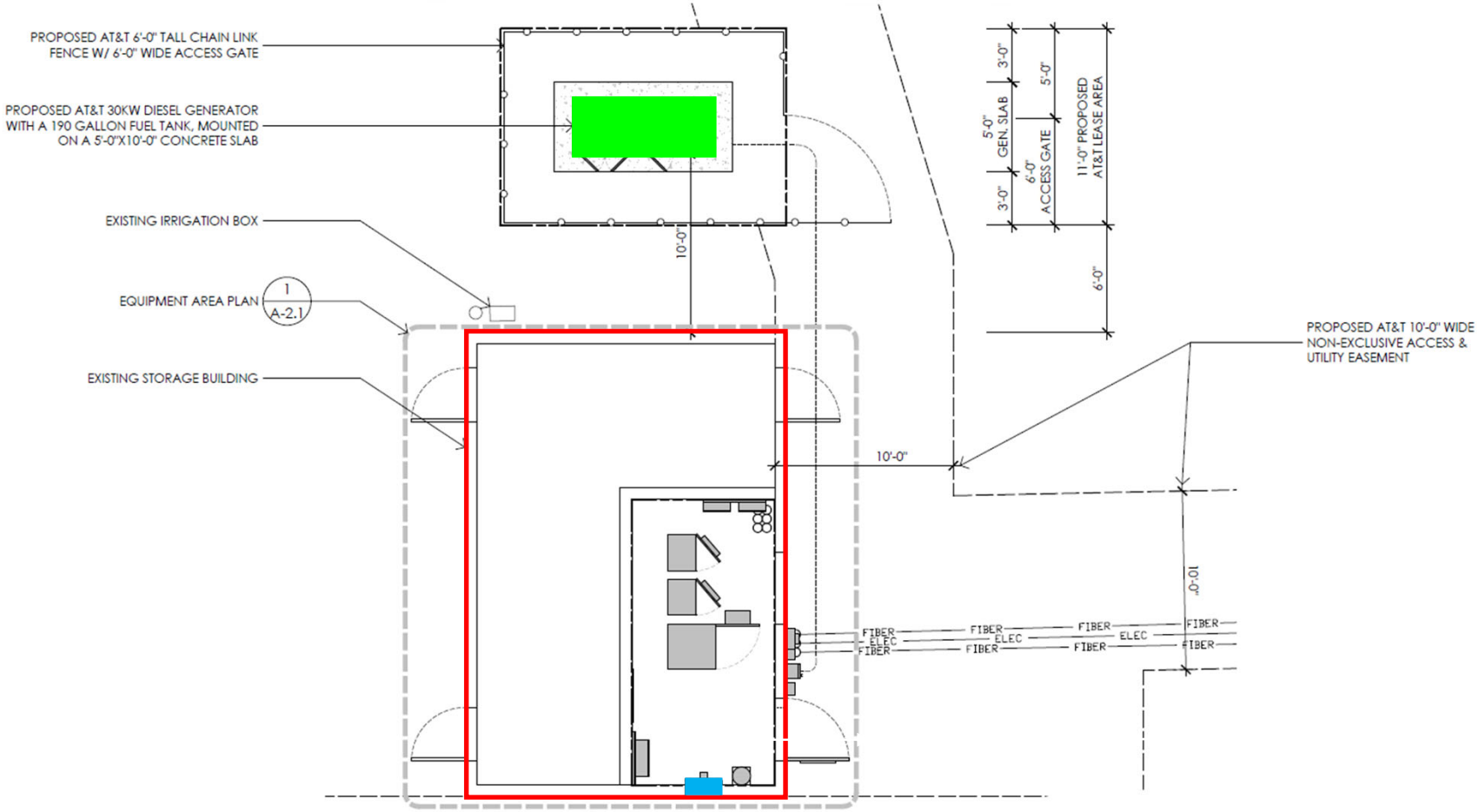

Legend

- Existing Equipment Building
- Proposed Emergency Generator
- Proposed Exhaust Fan

N

Scale (Feet)

0 5 10

CVL01987 Kerman AT&T Cellular Facility

Kerman, California

Project Equipment Layout Plan

Figure 2

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Exhaust Fan Noise Source and Reference Noise Level

The project proposes the installation of one (1) exhaust fan within the fully-enclosed existing building. According to the project site plans, the project proposes the installation of a J & D Manufacturing 12-inch 800 cfm variable speed exhaust fan (Model VES12) to circulate airflow. The site plans indicate that the fan will be installed on the interior side of mechanical louvers on the southern room wall. The location of the exhaust fan is shown on Figure 2.

Reference noise level data was not available from the equipment manufacturer (J & D Manufacturing). In order to quantify project exhaust fan noise level exposure, BAC utilized noise level data for a similar sized exhaust fan model used in recent cellular facility noise studies. Specifically, noise level data for an Acme Engineering & Manufacturing 12-inch thermostatically-controlled exhaust fan (Model DLD-E12E) was used to quantity project fan noise exposure. According to the manufacturer noise level data specification sheet (provided as Appendix C), the 12-inch Acme Model DLD-E12E exhaust fan has a reference noise level of approximately 13 sones (or approximately 65 dB) at a distance of 5 feet.

Generator Noise Source and Reference Noise Level

The project also proposes the installation of an emergency standby diesel generator outside of the existing equipment building to maintain cellular service during emergency power outages. Based on the project site plans, the generator assumed for the project is a Generac Industrial Power Systems Model SD030. It is further assumed that the proposed generator will be equipped with the Level 2 Acoustic Enclosure resulting in a reference noise level of 68 dB at a distance of 23 feet. The manufacturer's noise level data specification sheet for the proposed generator and acoustical enclosure is provided as Appendix D.

The generator which is proposed at this site would only operate during emergencies (power outages) and brief daytime periods for periodic maintenance/lubrication. According to the project applicant, testing of the generator would occur twice per month on weekdays only, during daytime hours, for a duration of approximately 15 minutes. The emergency generator would not operate at night, except during power outages. It is expected that nighttime operation of the project emergency generator would be exempt from the City's exterior noise exposure criteria due to the need for continuous cellular service provided by the project equipment.

Predicted Facility Noise Levels at the Nearest Noise-Sensitive Uses

According to footnote 1 in Table 1, the City's noise level limits are to be applied at the property line of a lands designated for noise-sensitive uses. The project parcel is zoned Open Space, Recreation, and Public Facilities (O). The adjacent parcels to the east of the project contain commercial uses, which are typically not considered to be noise-sensitive. The nearest noise-sensitive uses have been identified as residentially zoned parcels to the south of the project. Figure 1 shows the project parcel and adjacent land uses.

The proposed cellular equipment maintains various distances from the nearest noise-sensitive (residential) property lines to the south. Those distances were scaled using the provided site plans dated August 12, 2020. Assuming standard spherical spreading loss (-6 dB per doubling

of distance), project-equipment noise exposure at the property lines of the nearest noise-sensitive uses was calculated and the results of those calculations are presented in Table 2.

Table 2
Summary of Project-Related Noise Exposure at Nearest Noise-Sensitive Property Lines

	Distance from Cellular Equipment (ft)[2]		Predicted Noise Levels (dBA)	
APN[1]	Fan	Generator	Exhaust Fan, L_{eq}[3]	Generator, L_{max}
023-147-09	200	235	33	48
023-148-09S	200	235	33	48

[1] Parcel boundaries are shown on Figure 1.
[2] Distances scaled using the provided site plans dated August 12, 2020.
[3] Reference noise level data for an Acme Model DLD-E12E 12-inch exhaust fan was used in the analysis (65 dB at 5 feet.)
Source: Bollard Acoustical Consultants, Inc.

Because the proposed exhaust fan could potentially be in operation continuously during a given nighttime hour, the operation of the fan would be subject to the City of Kerman General Plan *nighttime* hourly average noise level standard of 45 dB L_{eq} (Table 1). As indicated in Table 2, the predicted exhaust fan noise levels of 33 dB L_{eq} at the nearest noise-sensitive (residential) property lines would satisfy the General Plan 45 dB L_{eq} nighttime noise level limit by a wide margin. As a result, no further consideration of exhaust fan noise mitigation measures would be warranted for the project.

Because the project generator would only operate during daytime hours for brief periods required for testing and maintenance (i.e., 15 minutes), and because generator noise is assumed to be exempt during emergency operations, noise from the generator would be subject to the City of Kerman General Plan *daytime* maximum noise level standard of 70 dB L_{max} (Table 1). As shown in Table 2, the predicted generator noise levels of 48 dB L_{max} at the nearest noise-sensitive (residential) property lines would satisfy the General Plan 70 dB L_{max} daytime noise level standard by a wide margin. As a result, no further consideration of generator noise mitigation measures would be warranted for the project.

Conclusions

Based on the equipment noise level data and analyses presented above, project-related equipment noise exposure is expected to satisfy the applicable City of Kerman General Plan noise level limits at the property lines of the closest noise-sensitive (residential) uses. As a result, no additional noise mitigation measures would be warranted for this project.

This concludes our environmental noise assessment for the proposed CVL01987 Kerman AT&T Cellular Facility in Kerman, California. Please contact BAC at (916) 663-0500 or dariog@bacnoise.com with any questions or requests for additional information.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Appendix C

ACME ENGINEERING &
MANUFACTURING CORP.
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Aluminum Blade Venturi Exhaust Fans
Model DLD

Achieve efficient, economical ventilation in industrial/commercial clean air applications. Fans are shipped assembled and have 2-and 3-wing stamped-aluminum fan blades. Heavy-duty venturi panel, fixed-position motor base with rigid supports. Motors are totally enclosed.

Performance

Model	Propeller Dia. (In.)	CFM Air Delivery*				Motor RPM	HP	Max BHP	Sones(**) 5 Ft. 1/8" SP	Watts
		0.0" SP	0.125" SP	0.250" SP	0.375" SP					
DLD-E12E	12	1477	1329	1094	767	1725	1/4	.16	12.8	290
DLD-E16E	16	2512	2365	2172	1915	1725	1/4	.25	21	400
DLD-E18E	18	2958	2752	2521	2217	1725	1/4	.25	19.0	390
DLD-E18F	18	3348	3125	2876	2570	1725	1/3	.33	21	475
DLD-E20F	20	3664	3364	3071	2757	1725	1/3	.33	17.8	495
DLD-E24F	24	3931	3315	2513	1174	1140	1/3	.33	13.3	335
DLD-E24G1	24	4348	3894	3406	2843	1725	1/2	.50	21	490
DLD-E20G	20	4403	4158	3897	3565	1725	1/2	.50	19.5	513
DLD-E24G2	24	5230	4891	4550	4200	1725	1/2	.50	30	672
DLD-E30H	30	8722	8104	7440	6724	1140	3/4	.75	23	783

(*) Performance certified is for Installation Type A, Free inlet, Free Outlet. Speed (RPM) shown is nominal. Performance is based on actual speed of test. Performance ratings do not include the effects of appurtenances in airstream. (**) The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical-free field calculated per AMCA Standard 301. Values shown are for Installation Type A free inlet fan sone levels.

Acme Engineering & Manufacturing Corporation certifies that the ventilators shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

U.L. 705 Listed

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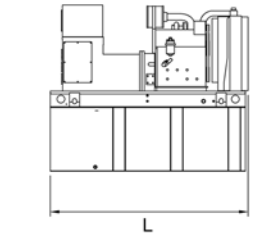
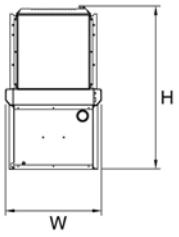
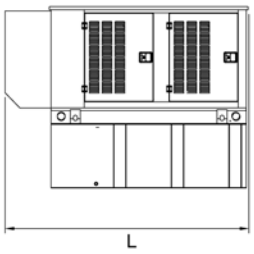
SD030 dimensions, weights and sound levels

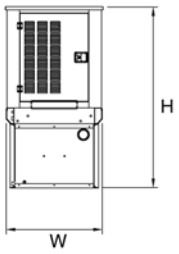




OPEN SET

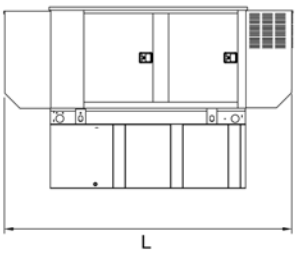
RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	76	38	46	2060	
20	54	76	38	59	2540	
48	132	76	38	71	2770	82
77	211	76	38	83	2979	
109	300	93	38	87	3042	

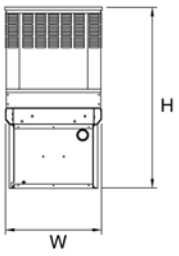




STANDARD ENCLOSURE

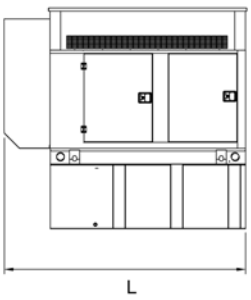
RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	95	38	50	2362	
20	54	95	38	63	2842	
48	132	95	38	75	3072	77
77	211	95	38	87	3281	
109	300	95	38	91	3344	

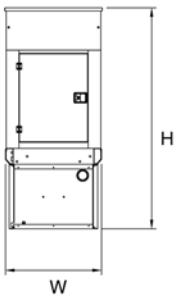




LEVEL 1 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	113	38	50	2515	
20	54	113	38	63	2995	
48	132	113	38	75	3225	70
77	211	113	38	87	3434	
109	300	113	38	91	3497	





LEVEL 2 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	95	38	62	2520	
20	54	95	38	75	3000	
48	132	95	38	87	3230	68
77	211	95	38	99	3439	
109	300	95	38	103	3502	

*All measurements are approximate and for estimation purposes only. Weights are without fuel in tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

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○ Florida DERM/DEP	OPT
○ Chicago Fire Code	OPT
○ IFC Certification	CALL
○ ULC	CALL

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